# Financial problems and delinquency in adolescents and young adults
*a 6-year three-wave study*

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# Financial Problems and Delinquency in Adolescents and Young Adults: A 6-Year Three-Wave Study

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## Abstract

The present study examined the link between financial problems and delinquency in adolescents and young adults ($N$ = 1,258). Using three measurement waves that covered a time span of 6 years, we conducted cross-lagged panel analyses. Overall, we found evidence that financial problems increase the risk of delinquency, and vice versa. Effects of delinquency on financial problems were larger than the other way around. In addition, a longer term (6 year) effect of delinquency on financial problems was found, whereas this effect was not found for financial problems to delinquency. Gender and age did not moderate the financial problem–delinquency link, suggesting that the bidirectional effect between financial problems and delinquency applies to adolescent and young adult males and females. Finally, we found some evidence to suggest that the indirect effects became stronger over time.

## Keywords

financial problems, delinquency, adolescents, young adults, gender

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Debts and financial problems of adolescents and young adults in Western countries have increased over time (Betti, Dourmashkin, Rossi, & Yin, 2007; Dwyer, McCloud, & Hodson, 2011; Verhagen, Van Heijst, Jurrius, Calkoen, & Koot, 2010). Young adults with a credit card spent on average almost a fourth of their income servicing debt in 2004 compared with about a fifth in 1992 (Draut & Silva, 2004). Young adult students are at risk to have debts due to a rise in college costs. In the past decade, student loans have increased together with the tuition fees (National Center of Education Statistics, 2010). The use of mobile phones has put adolescents at increased risk of debt (Billieux, Van der Linden, & Rochat, 2008).

Earlier findings have revealed that debt and financial problems have been found to be associated with delinquency (Blom, Weijters, & Van der Laan, 2011; Moffitt, Caspi, Harrington, & Milne, 2002; Siennick, 2009; Van Dam, 2005; Zara & Farrington, 2010). Delinquents (Blom et al., 2011; Siennick, 2009) and recidivists (Van Dam, 2005) are more likely to have debt and financial problems. Given the rise in debts and financial problems among young people and its associations with delinquency, the purpose of the current study was to examine the link between financial problems and delinquency in adolescents and young adults and the directionality of this relationship.

## The Relationship Between Financial Problems and Delinquency

Earlier studies have extensively focused on the environment of the individual such as the economic situation of parents, neighborhoods, or society, such as poverty (Hsieh & Pugh, 1993), parental income (e.g., Comanor & Phillips, 2002; Galloway & Skardhamar, 2010), neighborhood poverty (Leventhal & Brooks-Gunn, 2001), household economic resources (Bjerk, 2007), and unemployment (Phillips & Land, 2012). A meta-analysis of poverty and violence found that of the 76 reported study results, about 80% were significant and of moderate magnitude, suggesting that poverty and criminal behavior are associated (Hsieh & Pugh, 1993). Scholars have concentrated on distal economic factors, such as poverty and economic disadvantage in the family, neighborhood, or society.

Less emphasis has been put on a proximal approach: the economic situation of the individual at a micro level. This research has found that debt and financial problems in adolescents and young adults are significantly associated with delinquency (Blom et al., 2011; Moffitt et al., 2002; Siennick, 2009; Van Dam, 2005; Zara & Farrington, 2010). In particular,

serious offenders were at risk to have debt. For example, life-course persistent offenders, who start delinquency relatively early in life (before age 12) and continue offending after adolescence, were 4.5 times more likely to have debt at age 26 than the unclassified reference group of participants who had committed only one or very few minor delinquent acts as an adolescent or young adult (Moffitt et al., 2002). Furthermore, juvenile offenders with debt who had recently stayed in correctional centers were almost 5 times more likely to recidivate compared with their counterparts without debt (Van Dam, 2005).

An association between financial problems and delinquency was also found in the general population. In a sample of 2,117 adolescents (ages 10-17), it was found that financial problems were associated with self-reported delinquency, regardless of the offense type (violence, theft, or vandalism; Blom et al., 2011). Delinquent youths were almost 4 times more likely to have debt than non-delinquents. Examining specific types of debt in two large national U.S. samples, Siennick (2009) found that juvenile offenders were particularly more likely to have credit card debt or personal or unofficial debt, that is, debt from family and peers. Concerning specific types of financial problems, offenders were found to be about 1.5 times more likely to have all kinds of financial problems than non-offenders, including not being able to pay rent or utility bills.

Zara and Farrington (2010) focused on risk factors for adult onset offending and found that offenders whose criminal activities started during adolescence (early starters) were more likely to have debt at ages 16 to 18 compared with adult onset offenders (starting at age 21 or older). Thus, various studies using different samples have shown that debt and financial problems are associated with delinquency. However, almost all this research is cross-sectional—only one study (Moffitt et al., 2002) examined effects of offending on later debt longitudinally—which limits conclusions about the directionality of the relationship between financial problems and delinquency.

## Direction of Effects

Hypotheses about the directionality of the relation between youth debts and delinquent behavior can be derived from at least three theories of delinquent behavior. First, theories of, among others, Merton (1938) and Agnew (1985) explained delinquent behavior from the perspective of *strain*. In short, according to Merton (1938), delinquency is a consequence of a discrepancy between needs and desires of an individual on one hand and opportunities and expectations to reach these needs in a legitimate way on the other hand.

This theory has mainly bearing on individuals with a low socio-economic status (SES), because they generally have less resources and opportunities to reach their goals. The assumption is that the strain between desires and chances to fulfill these desires might lead to delinquent behavior. This assumption seems applicable to financial problems and delinquency. If youngsters have debts or financial problems, they have less access to material goals and this could result in delinquent behavior to fulfill their desires. Thus, it can be hypothesized that debts and financial problems in young people increase the risk of delinquent behavior (Hypothesis 1).

Second, Moffitt (1993) proposed a typological model that differentiates various types of offenders on the basis of their delinquent trajectory over the life course. The two most well-known types are life-course persistent offenders, whose antisocial behavior continues throughout life, and adolescence-limited delinquents, whose antisocial behavior is restricted to the teenage years. She also found evidence for her hypothesis that these groups have different etiologies. Whereas adolescent-limited offenders have relatively unproblematic backgrounds and are mainly influenced by antisocial peers, life-course persistent offenders have problems in various domains, including neuropsychological deficits and poor family functioning. According to Moffitt, life-course persistent offenders also experience relatively more problems later in life, such as problems related to jobs, family life, and finances. It can be derived from this model that financial problems are not risk factors for delinquent behavior. Delinquency and financial problems may be interrelated, but rather than resolving financial problems, delinquency only increases these problems (Hypothesis 2).

Finally, Gottfredson and Hirschi's (1990) general theory of crime attributes delinquency to lack of self-control. Self-control is shaped in childhood by various factors, such as parenting. When children have developed relatively low levels of self-control by middle childhood, this latent criminal propensity remains relatively stable during the life course, according to Gottfredson and Hirschi. A lack of self-control may not only cause delinquent behavior but also other types of analogous risk behaviors aimed at immediate gratification. In a comparable way, Jessor (1991) postulated that various risk behaviors among youth—such as delinquency, drug use, school dropout, and general deviant behavior—can be considered a risky lifestyle. Involvement in any one of these behaviors will likely increase the risk of involvement in other problem behaviors, because these risk behaviors share a similar etiology. It is therefore possible that both having financial problems and delinquent behavior are risk taking behaviors that have a similar origin. On the basis of these theoretical assumptions, effects of financial problems and delinquent behavior likely are reciprocal (Hypothesis 3).

## The Current Study

In summary, some research, albeit limited, shows that debt and financial problems are associated with delinquency and offending behavior in young people. However, at this point, we cannot draw firm conclusions about the direction of the link between delinquency and debt. The presence of problematic debt could be a risk factor for delinquent behavior, as strain theories would suggest, but criminal behavior could as well set off a trajectory of financial problems, given that offenders are more likely to have debt later in life (at age 26, Moffitt et al., 2002). A study that systematically examined the directionality of the association between financial problems and delinquency in a longitudinal design has not been conducted.

Therefore, the current study examined the following research questions:

**Research Question 1:** Are financial problems associated with delinquent behavior in adolescents and young adults?
**Research Question 2:** What is the direction of the effect?
**Research Question 3:** Is the financial problems–delinquency link moderated by gender and age?

Given that the incidence of delinquent behavior is relatively high among (late) adolescents and young adults, and financial resources and knowledge are relatively scarce among these age groups, it is important to gain more insights into financial problems in young people and the co-occurrence with delinquency in this group. Moreover, age is associated with financial problems: Older participants have been found to have more financial problems than younger participants (Nelissen, Van de Ven, & Stapel, 2011; Oosterbeek & Van den Broek, 2009). Furthermore, girls' delinquency differs in type and frequency from boys' delinquency (Moffitt et al., 2002; Zahn, 2009). However, potential gender and age differences in the link between financial problems and delinquency have not been conducted. Thus, we examined age and gender as moderators of the relationship between financial problems and delinquency in an exploratory manner.

## Method

### Sample

We conducted secondary analyses on the Utrecht Longitudinal Study of Adolescent Development (USAD; Meeus, Branje, & Overbeek, 2004; Meeus & 'T Hart, 1993). In 1991, a national sample of 3,392 Dutch adolescents and

young adults aged 12 to 24 was drawn from an existing panel of 10,000 households. No differences were found between the sample and figures published by the Dutch Central Statistical Office (CBS) with respect to district, urbanization level, educational level, and religious affiliation ('T Hart, 1992). The sample can therefore be regarded as representative of the Dutch indigenous adolescent population of the early 1990s. The sample for the follow-up measurements consisted of a random selection of 1,300 participants. Of the initial 3,392 participants, who participated in the first wave, 822 refused to contribute to the second and third wave. Therefore, the non-response rate between Waves 1 and 3 was 24%, and 2,570 participants were eligible for the longitudinal study. Of the 2,570 participants, 1,302 were selected for follow-up. The time interval between the waves was 3 years.

In this study, we will use data of all waves, Times 1 (T1), 2 (T2), and 3 (T3), which covers a span of 6 years. Of the 1,302 participants participating in all waves, 1,258 reported on delinquency and financial problems. Thus, the final sample for the present study consisted of 1,258 adolescents (ages 12-17 at T1) and young adults (ages 18-24 at T1). The final sample consisted of 534 males (42%) and 724 females (58%) from 1,038 families. The respondents were evenly distributed over the two age categories (based on age at first wave): 640 adolescents (51%) and 618 young adults (49%). Furthermore, the educational level of the respondents could be differentiated as 59% low-middle and 41% high. In total, 99% of the sample consisted of adolescents who were of Dutch origin, and only 1% came from a different ethnic backgrounds.

## Procedure

The respondents were interviewed in their homes. They were also asked to complete an extensive questionnaire in the presence of the interviewer. They were then given another questionnaire to fill out on their own within a week and send back to the research organization.

## Measures

*Demographic variables. Gender* (1 = male, 2 = female) as well as *age* of the respondents were included. At Wave 1, there were two *age group*s: 1 = adolescents (12-17 years), 2 = young adults (18-24 years). *Social class* referring to the SES of the family (in terms of profession/trade and income situation) was divided into five categories from 1 = *low* (unskilled labor) to 5 = *high* (university level and upper class). Participants were asked about their living situation; they were asked whether they lived with their parents, lived alone,

lived with a romantic partner, and whether they had children of their own. *Outside parental home* was defined as participants who lived outside the parental home versus those who lived in the parental home. Furthermore, participants reported their level of education and whether they had a paid job.

*Financial problems.* The life events questionnaire (Ross & Mirowsky, 1997) was used to assess negative life events. Participants were asked whether they had experienced any of 24 negative life events during the past 3 years, including whether they had experienced financial problems or large debts. If they had experienced a negative life event, they reported whether it had a small or large impact on their lives. Answer categories therefore included (a) *no*, (b) *yes, small impact*, and (c) *yes, large impact*.

*Delinquency.* Delinquency was measured by the number of different delinquent acts committed in the previous 12 months. The scale consisted of 21 items pertaining to 3 types of delinquent behavior: violent crime, vandalism, and crime against property (Luijpers, 2000). The delinquent acts ranged in seriousness from using public transportation without paying for a ticket up to injuring someone with a knife or other weapon. First, for the 21 items of delinquent activities, participants were asked whether they had *ever* been involved in delinquency. Next, for each of the delinquency items, where they had responded with "yes," they were then asked whether they had done so during the past 12 months on a 2-point scale ($0 = no$ and $1 = yes$). The scores on all items were summed. Examples of items are as follows: "Have you ever wounded anyone with a knife or other weapon?" "Have you ever covered walls, buses, or entryways with graffiti?" "Have you ever bought something which you knew was stolen?"

## Attrition

Analyses were carried out to test whether there were differences between the subjects who participated in the longitudinal sample and those who did not in terms of gender, age, SES, whether participants lived in the parental home, financial problems, and delinquency, measured at Wave 1. Chi-square tests showed that remaining in the longitudinal sample was associated with gender, $\chi^2(1) = 15.8$, $p < .001$; age group, $\chi^2(1) = 34.8$, $p < .001$; and living situation, $\chi^2(1) = 8.9$, $p < .01$. Fewer males, young adults, and those who lived outside the parental home stayed in the study than females, adolescents, and participants who lived with their parents. Independent *t* tests showed no differences between participants in the longitudinal study and non-participants in terms of SES, financial problems, and delinquency. Thus, although

selective attrition was found with regard to age and gender, the number of participants in each gender and age group was large (at least 500) and no selective attrition was found with respect to financial problems and delinquency, indicating that selective attrition had only limited effects on our results.

## Analyses

Structural Equation Modeling (SEM) was used to investigate the development of delinquency and debts over time. The software package M*plus* (Muthén & Muthén, 2007) was used to fit the proposed models to the data. In the analysis, financial problems was treated as a categorical variable, and delinquency as a censored variable. Censored variables are variables with a large fraction of observations at the minimum or maximum value. For delinquency, many respondents have a score of 0. Regression coefficients from analyzing censored dependent variables are called Tobit regression coefficients (Tobin, 1958). M*plus* estimates models with categorical and censored variables with Weighted Least Squares Mean and Variance (WLSMV) adjusted estimation. Given that the data have a multi-level structure (the sample consisted of 1,258 subjects nested within 1,035 families), the dependence of the observations was taken into account by using corrected chi-square and standard errors, together with Robust Maximum Likelihood estimation. This is available with the method Type = Complex in the M*plus* program (Muthén & Muthén, 2007).

Goodness of model fit was judged based on the chi-square test of model fit, the root mean squared error of approximation (RMSEA; Steiger & Lind, 1980), and the comparative fit index (CFI; Bentler, 1990). A significant chi-square value indicates a significant discrepancy between the model and the data. In large samples, the overall chi-square test is very powerful and is nearly always significant. Therefore, we mainly considered approximate fit measures, such as the RMSEA and CFI. RMSEA values smaller than .05 indicate close fit, and values smaller than .08 are considered satisfactory. CFI values larger than .95 indicate reasonably good fit (Hu & Bentler, 1999).

We used modification indices (MIs) to guide model specification. To guard against chance results, we tested MIs at a Bonferroni corrected level of significance. We used as a critical value the chi-square that is associated with a two-sided level of significance (α) of .05 divided by the number of possible modifications under consideration. The difference in fit between nested models was tested with the chi-square difference test using the DIFFTEST option in M*plus*, which is required using WLSMV estimation (Asparouhov & Muthén, 2006).

We started the modeling procedure by fitting an autoregressive model to the delinquency and financial problems variables. Autoregressive effects are effects between the same variables across different time points. This model was extended with cross-lagged effects, and reciprocal effects between delinquency and financial problems at the same time points. Financial problems and delinquency may not influence each another directly from one time point to the next, with 3 years in between, but the effect may rather be indirect or mediated. For example, financial problems T1 might add up and predict financial problems T2, which in turn, affect delinquency T2. Therefore, we added reciprocal paths to our cross-lagged panel model (e.g., Fergusson, Horwood, & Rider, 2005; Gershoff, Aber, & Clements, 2009; Oud, 2002). To adjust for non-observed confounding factors, we modeled two latent variables for delinquency and financial problems (see, Fergusson et al., 2005, for an extensive explanation of this method). We assumed that financial problems at all three waves were influenced by fixed sources of variance that are constant over time (Confounding Financial Problems); likewise, delinquency at T1, T2, and T3 was influenced by fixed sources of variance that are constant over time (Confounding Delinquency). These latent variables were permitted to be associated in our model. We also compared the parameter estimates across age and sex using multi-group models. In these models, we started by constraining all parameters to be equal across groups and freed parameter constraints when it significantly improved model fit.

## Results

Table 1 provides sample characteristics of the USAD cohort. At T1, participants were on average 17.8 years of age. The majority lived within the parental home (77.7%). A little less than half (41.5%) had a paid job. Financial problems increased over time: At T1, 90 participants (7.2%) reported financial problems, 126 (10.0%) had financial problems at T2, and 146 (11.6%) reported financial problems at T3. Delinquency rates were substantial and decreased slightly over time. At the first measurement wave, 514 participants (40.9%) reported one or more delinquent acts, 502 (39.9%) reported any delinquency at T2, and 380 (30.2%) reported any delinquency at T3. The adolescent cohort (ages 12-17 at T1) reported the highest levels of delinquency: At T2, more than half (62.5%) had engaged in delinquency in the past year. Theft was the most common delinquent act; about half of the delinquent participants reported theft.

Correlation matrices are presented in the appendix (Table A1) and in Table 2. Given that living in the parental home was strongly associated with youths' age—all adolescents (ages 12-17) lived in the parental home at Wave 1—and

**Table 1.** Characteristics of the USAD Sample.

| Characteristic | N | n | % |
|---|---|---|---|
| Age (*N, M, SD*) | 1,258 | 17.8 | 3.8 |
| Age group | 1,258 | | |
|   Adolescents | | 640 | 50.9 |
|   Young adults | | 618 | 49.1 |
| Gender | 1,258 | | |
|   Male | | 534 | 42.4 |
|   Female | | 724 | 57.6 |
| Social class (*N, M, SD*) | 1,079 | 3.1 | 1.1 |
| Living situation | 1,258 | | |
|   Within parental home | | 978 | 77.7 |
|   Outside parental home | | 280 | 22.3 |
| Level of education (*N, M, SD*) | 1,191 | 2.3 | 1.0 |
| Income (*N, M, SD*) | 880 | 3.0 | 1.0 |
| Has paid job | 1,258 | | |
|   No | | 736 | 58.5 |
|   Yes | | 522 | 41.5 |
| Financial problems T1 | 1,258 | | |
|   No | | 1,168 | 92.8 |
|   Yes, minor | | 71 | 5.6 |
|   Yes, serious | | 19 | 1.5 |
| Financial problems T2 | 1,258 | | |
|   No | | 1,132 | 90.0 |
|   Yes, minor | | 85 | 6.8 |
|   Yes, serious | | 41 | 3.3 |
| Financial problems T3 | 1,258 | | |
|   No | | 1,112 | 88.4 |
|   Yes, minor | | 84 | 6.7 |
|   Yes, serious | | 63 | 4.9 |
| Delinquency T1 (*N, M, SD*) | 1,258 | 0.82 | 0.9 |
| Delinquency T2 (*N, M, SD*) | 1,258 | 0.70 | 1.0 |
| Delinquency T3 (*N, M, SD*) | 1,258 | 0.48 | 2.6 |

*Note.* USAD = Utrecht Longitudinal Study of Adolescent Development; T = Time.

that social class was not associated with financial problems and delinquency (see Table A1), SES and living status were not included in the path models. Autoregressive cross-lagged path analyses included age, gender, financial problems, and delinquency. Table 2 presents the correlations between these variables. Expectably, cross-sectional associations between financial problems

**Table 2.** Correlations Between Age, Gender, Delinquency, and Financial Problems.

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1  Age | — | | | | | | | |
| 2  Gender | .03 | — | | | | | | |
| 3  Delinquency T1 | −.16*** | −.27*** | — | | | | | |
| 4  Delinquency T2 | −.18*** | −.28*** | .48*** | — | | | | |
| 5  Delinquency T3 | −.26*** | −.28*** | .41*** | .47*** | — | | | |
| 6  Financial problems T1 | .53*** | −.10* | .17** | .03 | −.01 | — | | |
| 7  Financial problems T2 | .28*** | −.05 | .15** | .19*** | .07 | .68*** | — | |
| 8  Financial problems T3 | .03 | −.06 | .18*** | .26*** | .31*** | .45*** | .61*** | — |

*Note.* $N$ = 1,258. T = Time.
*$p$ < .05. **$p$ < .01. ***$p$ < .001.

and delinquency were found on each of the three measurement waves. Furthermore, bivariate analyses show that delinquency at one time point is related to financial problems at the next time point, but not vice versa (Table 2).

## Cross-Lagged Panel Model

A cross-lagged panel model was used to examine the directionality of the relationship between financial problems and delinquency (see Figure 1). The model was specified by allowing the autoregressive paths (arrows from a variable at one measurement wave to the same variable at the next measurement wave), reciprocal paths (arrows between financial problems and delinquency at one measurement), and 3-year lagged effects (diagonal arrows) to be freely estimated. Reciprocal paths within each measurement were assumed to be constant; for example, the path Delinquency T1 → Financial problems T1 was set equal to Financial problems T1 → Delinquency T1. The model fit the data adequately, $\chi^2(1, N = 1,258) = 0.017$, $p > .05$, RMSEA = .000, CFI = 1.000. The autoregressive coefficients of financial problems were significant: Financial problems at T1 significantly predicted financial problems at T2 ($\beta_{F2F1} = .30$) and from T2 to T3 ($\beta_{F3F2} = .57$). Delinquency showed low non-significant autoregressive effects ($\beta_{D2D1} = .07$ and $\beta_{D3D2} = −.05$). Each of the reciprocal paths between financial problems and delinquency was significant, indicating that financial problems and delinquency are related to each other reciprocally at each time point ($\beta_{D1F1} = .002$ and $\beta_{F1D1} = .13$; $\beta_{D2F2} = .03$ and $\beta_{F2D2} = .14$; $\beta_{D3F3} = .08$ and $\beta_{F3D3} = .22$).

The cross-lagged paths from delinquency to financial problems were non-significant ($\beta_{F2D1} = .07$, $\beta_{F3D2} = .06$). Likewise, financial problems did not
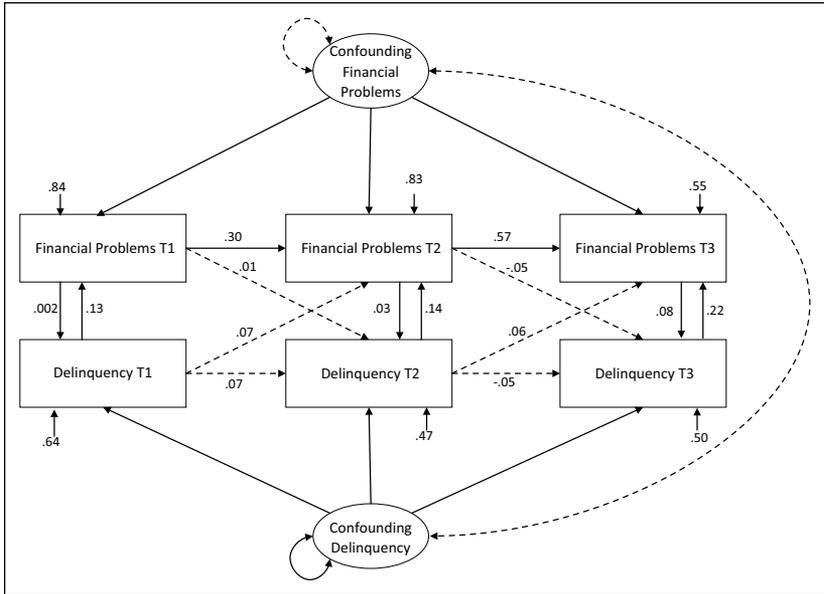
**Figure 1.** Autoregressive cross-lagged path model with standardized parameter estimates.

*Note.* $\chi^2(1, N = 1,258) = 0.017$, $p < .05$, RMSEA = .000, CFI = 1.000. Dashed lines indicate non-significant path estimates. RMSEA = root mean square error approximation; CFI = comparative fit index.

exhibit significant 3-year cross-lagged effects on delinquency ($\beta_{D2F1} = .01$, $\beta_{D3F2} = -.05$). However, significant *indirect* effects were found for paths from financial problems at one time point $T_i$ to delinquency at the next time point $T_{i+1}$ (3 years later), adjusting for financial problems measured at $T_i$, and vice versa (Table 3). These findings suggest that reciprocal effects between financial problems and delinquency exist, and that indirect longer term effects exist between financial problems and delinquency.

We found some evidence to suggest that the effect of delinquency at financial problems was stronger than the other way around. The standardized indirect effects of delinquency on financial problems were larger than those of financial problems on delinquency (see Table 3). We also found a significant total indirect 6-year effect of delinquency T1 on financial problems $T_3$ ($\beta_{F3D1} = .07$). Furthermore, total (direct and indirect) effects of delinquency at $T_i$ on financial problems $T_{i+1}$ were significant ($\beta_{F2D1} = .12$, $\beta_{F3D2} = .13$), but not the other way around ($\beta_{D2F1} = .02$, $\beta_{D3F2} = -.01$).

**Table 3.** Standardized Indirect Effects.

| Indirect effect | Parameter estimate (SE) |
|---|---|
| Fin. problems T1 → Fin. problems T2 → Delinquency T2 | .009 (.004)* |
| Fin. problems T1 → Delinquency T1 → Delinquency T2 | .000 (.000) |
| Total indirect effect | .009 (.004)* |
| Fin. problems T2 → Fin. problems T3 → Delinquency T3 | .043 (.013)* |
| Fin. problems T2 → Delinquency T2 → Delinquency T3 | −.002 (.002) |
| Total indirect effect | .041 (.013)* |
| Delinquency T1 → Delinquency T2 → Fin. problems T2 | .010 (.008) |
| Delinquency T1 → Fin. problems T1 → Fin. problems T2 | .038 (.017)* |
| Total indirect effect | .048 (.019)* |
| Delinquency T2 → Delinquency T3 → Fin. problems T3 | −.011 (.013) |
| Delinquency T2 → Fin. problems T2 → Fin. problems T3 | .080 (.029)* |
| Total indirect effect | .069 (.031)* |

*Note.* Fin. = financial; T = Time.
*$p < .05$.

Effects from T2 to T3 were stronger than effects from T1 to T2, suggesting that financial problems and delinquency influence each other more strongly over time. Constraining the indirect effect from financial problems at T1 on delinquency at T2 (via financial problems at T2) to be equal to the indirect effect of financial problems at T2 to delinquency at T3 indeed deteriorated the model fit significantly, $\chi^2_{\text{difference}}(2, N = 1{,}258) = 6.9, p < .05$.[1] Constraining the indirect effect from delinquency at T1 on financial problems at T2 through financial problems at T1 to be equal to the indirect effect of delinquency at T2 to financial problems at T3 also significantly deteriorated model fit, $\chi^2_{\text{difference}}(2, N = 1{,}258) = 7.5, p < .05$.
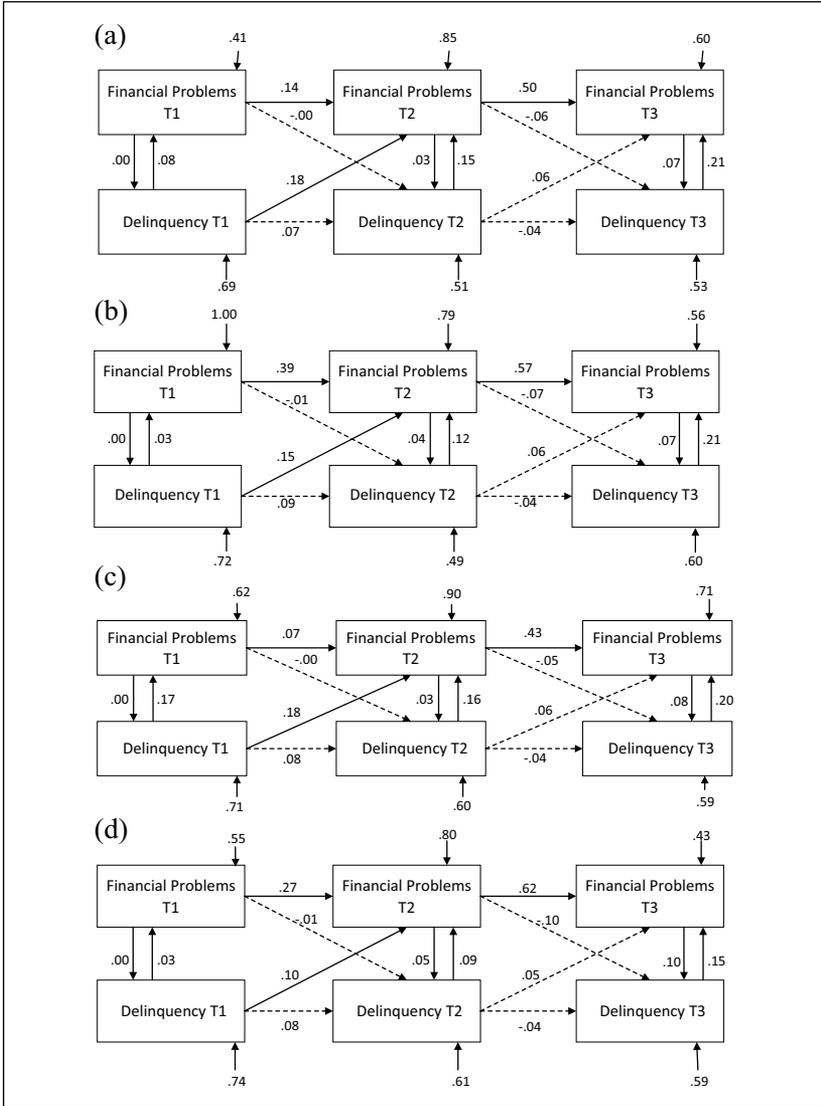
## Multi-Group Model

Next, multi-group models were tested to examine potential moderating effects from age and gender. Four groups were created: adolescent males, young adult males, adolescent females, and young adult females. Adolescent males and females were 12 to 17 years of age at T1, and young adult males and females were 18 to 24 years of age at T1. With equality constraints on the autoregressive paths, the cross-lagged paths, reciprocal paths, thresholds, and intercepts in each group, the initial multi-group model yielded an acceptable fit to the data, $\chi^2(49, N = 1258) = 66.53, p < .05$, RMSEA = .034, CFI = .982. This suggests that we did not find moderator effects of age and gender and that the model is relatively similar across groups.

Figure 2 shows the models with standardized parameter estimates in all four groups. The autoregressive coefficients of financial problems were all significant; financial problems showed stability across time points in each group. Stability was high between T2 and T3 in particular (βs ranging from .43 to .62). The estimates of the autoregressive paths were lower and non-significant for delinquency (βs ranging from −.04 to .09). All reciprocal paths were significant. Cross-lagged path from financial problems to delinquency were non-significant (βs ranging from −.10 to −.00). By conditioning on age and gender, delinquency now exhibited a significant 3-year lagged effect on financial problems from T1 to T2 in each group (βs ranging from .10 to .18).

## Discussion

The present study examined the link between financial problems and delinquency in adolescents and young adults. Overall, we found evidence that financial problems increase the risk of delinquency, and vice versa. Gender and age did not moderate the financial problem–delinquency link, suggesting that the effects between financial problems and delinquency apply to adolescent and young adult males and females. We found indirect effects from one point in time to the next point 3 years later, suggesting that indirect longer term effects between financial problems and delinquency exist. Effects of delinquency on financial problems were larger than the other way around. In addition, we found stronger effects between T2 and T3 paths compared with those between T1 and T2 paths, which suggests that effects become stronger over time.

With regard to the direction of the effect, we formulated three hypotheses on the basis of relevant theories: The presence of financial problems is a risk factor for delinquent behavior (Hypothesis 1); delinquent behavior is a risk factor for having financial problems, particularly in persistent offenders (Hypothesis 2); and cross-sectional or reciprocal paths exist between financial problems and delinquency (Hypothesis 3). Overall, our findings are consistent with strain theorists who argue that people experiencing financial or economic strain are more likely to engage in crime. However, we also found effects of delinquency on financial problems suggesting that delinquent adolescents and young adults are more likely to develop financial problems, maybe due to personal or unofficial debt, that is, debt from family and peers (Noorda et al., 2009; Siennick, 2009) or financial penalties. We also found evidence for the third hypothesis, as we found that financial problems and delinquency were related reciprocally. Thus, we found evidence for assumptions in different theories, but our findings are not consistent with theories

**Figure 2.** Multi-group models comparing standardized parameter estimates from the cross-lagged panel model across age and sex: (a) adolescent males, (b) young adult males, (c) adolescent females, and (d) young adult females.

*Note.* $\chi^2$(49, *N* = 1258) = 66.53, *p* < .05, RMSEA = .034, CFI = .982. Dashed lines indicate non-significant parameter estimates. For visual clarity, the confounding factors are not shown in these figures. RMSEA = root mean square error of approximation; CFI = comparative fit index.

claiming that delinquency is solely a consequence of financial problems or poor individual economic conditions, or vice versa as we found evidence for mutual effects.

Indirect effects of delinquency on financial problems were found to be stronger in magnitude than the other way around. In addition, we found total (indirect + direct) effects of delinquency at one time point on financial problems at the next time point, and direct effects from delinquency to financial problems over time in the multi-group model, whereas we did not find these effects of financial problems on delinquency. Our findings suggest that crime does not pay but instead, increases the risk of the development of financial problems in adolescents and young adults. Delinquent youth may follow different routes to financial debts. For example, life-course persistent offenders may have debts or other troubles with finances because their early onset offending initiates a chain of cumulative problems in various domains, whereas adolescent-limited offenders may have debts due to their relatively high impulsiveness (Moffitt et al., 2002). The magnitude of the effects of financial problems on delinquency was relatively small, and smaller than the effect of delinquency on financial problems. Although older strain theories focus exclusively on economic strain, more recent theories (Agnew, 2001) state that different types of strain exist, such as strain as a result of, for example, family conflict and poor school performance, and these other types of strain are associated with delinquency too. These other types of strain could be stronger than financial or economic strain in explaining delinquency in young people. In a large New Zealand cohort of almost 1,300 youngsters (Fergusson, Swain-Campbell, & Horwood, 2004), a link between childhood economic disadvantage and crime was found. This link was mediated by adverse family, individual, peer, and school factors (Fergusson et al., 2004). Thus, crime was not explained directly by poverty or financial problems in the family, but by a variety of individual, family, peer, and school factors that are associated with socio-economic disadvantage.

Multi-group models showed that the effects of financial problems and delinquency are relatively similar for adolescent and young adult males and females. Moffitt, Caspi, Rutter, and Silva (2001) extensively investigated potential sex differences in the prevalence and impact of risk factors of delinquency and concluded that, in general, boys seem to be more likely to be exposed to risk factors of delinquency, rather than that they are more vulnerable to risk factors of delinquency, compared with girls. The associations between risk factors and delinquency were relatively similar, suggesting that the processes that explain delinquent behavior are fairly similar for boys and girls. In the present study, we also found that the relationship between financial problems and delinquency is similar for boys and girls.

Although we did not find a moderating effect of age, we found some evidence to suggest that bidirectional relations become stronger over time. Possibly, having financial problems and engaging in unlawful acts may interact and consequently produce worsening course of problems. Youths with debt and financial problems are more likely to commit lawful acts. Those who are incarcerated may have more difficulties to adjust after life in prison because of their financial problems, which in turn may increase the likelihood to re-offend. This is consistent with earlier research on the association between debts and delinquency in that it seems that delinquent young people are at risk of financial debt (Moffitt et al., 2002), and when they become imprisoned and (still) have debt after release, they are at increased risk of recidivism (Van Dam, 2005).

The current study is, to our knowledge, the first to analyze directionality of the link between financial problems and delinquency. Moffitt et al. (2002) examined longitudinal effects of offending trajectories on later financial problems, but they exclusively focused on males and on one direction of the effect (delinquency → financial problems), whereas the current study examined both males and females and both directions of the effect. Although the current study has many strengths, several limitations should be mentioned. First, we used self-reported delinquency data. The various methods used to measure offending behavior all have advantages and disadvantages. In particular, unlike official delinquency, self-reported delinquency is often thought to underestimate more serious offenses (Babinski, Hartsough, & Lambert, 2001). Second, financial problems were measured by asking participants whether they had experienced financial problems or large debts and whether this had a small or large impact on their lives. These rather subjective questions may have resulted in underreporting of financial problems. However, according to Agnew (2001), different types of strain can lead to criminal behavior, among which is *subjective stain*, which refers to conditions that are disliked by the participants who are experiencing these conditions. Finally, the sample consisted, for the most part, of Dutch participants. Therefore, we cannot generalize our findings to adolescents and young adults with other ethnic backgrounds.

The current investigation has several implications for policy and practice. First, interventions and aftercare programs for juvenile and young adult delinquents should focus on dealing with debt and financial problems. Given that delinquency predicted later financial problems, targeting financial problems in these offenders effectively could reduce the risk of future offenses. Debts of delinquent young people have been found to increase the risk of recidivism in earlier research (Van Dam, 2005). These delinquents may have more difficulties to adjust after life in prison because of their financial

problems, which in turn increases the likelihood to re-offend. Research on debts among adult ex-prisoners also shows that offenders with debts are more likely to re-offend than those without debts (Baldry, McDonnell, Maplesston, & Peeters, 2003; May, 1999).

Second, given that financial problems increase the risk of delinquency, prevention programs that aim to prevent juveniles from engaging in delinquency should address debt and financial problems. A few studies found some evidence that interventions that target financial problems are effective. For example, debt advice had decreased financial debt in adolescents and young adults after 1 year (Williams & Sansom, 2007). A recent review of financial interventions showed that financial education programs often are not evaluated and that studies that examined potential effects are of poor quality (McCormick, 2009). Some evidence was found that financial education is effective, though, and that effectiveness was associated with the youth's motivation for improvement of financial knowledge and skills (McCormick, 2009).

Given the rise in debts and financial problems among young people and its associations with delinquency, future research is warranted. Particularly, the field would benefit if studies further examine cause and effect of debt and crime in longitudinal studies and investigate how general risk factors that influence youth development, such as family factors and problems with peers, are related to financial problems in adolescents and young adults and how these factors affect the link between financial problems and delinquency.

## Appendix

**Table A1.** Correlations Between Variables (SES and Not in Parental Home Included).

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 Age | | | | | | | | | |
| 2 Gender | .04 | | | | | | | | |
| 3 SES | .10** | −.05 | | | | | | | |
| 4 Not in parental home | .56*** | .16*** | .02 | | | | | | |
| 5 Delinquency T1 | −.13*** | −.28*** | −.06 | −.14*** | | | | | |
| 6 Delinquency T2 | −.18*** | −.28*** | −.01 | −.09* | .47*** | | | | |
| 7 Delinquency T3 | −.22*** | −.29*** | −.07 | −.11* | .40*** | .47*** | | | |
| 8 Financial problems T1 | .51*** | −.07 | .08 | .31*** | .23*** | .08 | .08 | | |
| 9 Financial problems T2 | .24*** | −.06 | .10 | .20*** | .22*** | .25*** | .14* | .65*** | |
| 10 Financial problems T3 | −.01 | −.07 | .07 | .02 | .25*** | .29*** | .38*** | .39*** | .59*** |

*Note.* $n$ = 1,079. SES = socio-economic status; T = Time.
*$p$ < .05. **$p$ < .01. ***$p$ < .001.

## Declaration of Conflicting Interests

## Funding

## Note

1.  We constrained the two effects that constitute the indirect effect to be equal over time, as the analysis with a constraint on the indirect effects did not converge to a solution.

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