

Parental Autonomy Granting And Its Protective Effects Against Delinquent Peer Influence

Master Thesis – Sociology: Contemporary Social Problems

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Foreword

More than twelve years ago I completed the thesis for my studies at the University of Applied Sciences. I promised myself that I would never write a thesis again. Obviously, that promise did not stand the test of time. This time, more intrinsically motivated, more mature and more experienced, I thought things would be a lot easier. Perhaps I thought it would be a walk in the park this time. A walk in the park it certainly never was. But I have not had a single moment of regret for breaking my promise. The two years I spent back at university flew by. I would recommend to anyone who is thinking about going back to study to explore their options and pursue their ambitions. You will not be disappointed.

I would like to thank my thesis supervisor, Christof Nägel, for being very helpful, attentive and patient in his guidance. I am aware that I did not always follow the given time path. Therefore, I much appreciate the confidence you have shown from the beginning until the end and the flexibility you have shown in giving feedback and providing answers. This helped me greatly to survive the most stressful moments.

Also, I would like to express my gratitude to Evelien Hoeben, my supervisor at the NSCR. I am very grateful that you were always willing to share your endless expertise on the subject and that you kept encouraging me to get the most out of my thesis. I have learned more from than I could have possibly imagined and it helped me a lot to produce a product that I am proud of.

A big thank you goes out to all my classmates from the master and pre-master program. After having spent the first year nearly completely at home due to the covid regulations, I am glad that the second year we finally got to spend our college time together in person. Special gratitude goes out to Andrada Stan and Manouk Rietveld, my thesis teammates who have been incredibly supportive and motivating. I am glad to have been in a team with you both and I deeply respect you both for always staying so optimistic even at times when the road went uphill.

To whomever is reading this thesis: I hope you will enjoy doing so and that it provides you with some interesting food for thought.

René Aernoudts

Abstract

The author examined the relation between peer reports of peer delinquency and adolescent self-report of their own delinquency. Possible mechanisms of peer influence in relation to delinquent behavior were derived from differential association theory and social learning theory. In addition, it was examined to what extent the hypothesized relationship was moderated by parental autonomy granting. The sample consisted of 602 adolescents (mean age = 13.4 years) from 28 school districts in Iowa and Pennsylvania, USA. The results of multi-level negative binomial regression on five waves of panel data showed that peer delinquency and adolescent delinquency were positively associated on the between-person level. The within-person results reveal no effects of changes in exposure to peer delinquency over time. Parental autonomy granting as reported by parents negatively moderated the association on the between-person level, as for adolescents whose parents report high levels of autonomy granting the association was no longer significant. Adolescent reported parental autonomy granting was found to positively moderate the association on the between-person level, meaning that the positive association between peer delinquency and self-reported delinquency was only significant for adolescents who reported high levels of autonomy granting. The findings implicate that further research to the more refined mechanisms of parental autonomy granting as a potential protective factor is needed. Policy interventions aimed at reducing adolescent delinquency and protecting adolescents from the maladaptive effects of delinquent peer associations should take into account more well-established linkages between the peer and parent contexts.

Ethical statement

This study was approved by the Ethical Review Board of the Faculty of Social and Behavioural Sciences of Utrecht University. The approval is filed under number 22-0091.

1. Introduction

During adolescence, youths are exposed to an increased risk of engagement in delinquent behavior, in particular to interpersonal acts of theft and violence (Agnew, 2015; Sampson & Laub, 2005). A study by Brame et al. (2012) included self-reported arrests by youths in the United States and showed that at age 18, around 15.9 and 26.8 percent of adolescents self-reported having ever been arrested. This has negative consequences for both the adolescents engaging in delinquency as well as for society as a whole. Long-term consequences for young perpetrators include higher risk of offending during adulthood, problematic family and peer relationships and substance use (Colman et al., 2008; Scott & Brown, 2018). Also, adolescent delinquents are at an increased risk of becoming unemployed and to report lower levels of job quality at a later age (Carter, 2019). Societal costs of crime are also considerable. These costs include the anticipation of delinquency (investments in security), the consequences (physical and mental damage) and response to crime (e.g. prosecution, legal costs) and are substantially higher as a result of adolescent overrepresentation in delinquency (Piquero et al., 2013).

The problem of adolescents' elevated crime rates is often discussed in relation to the peer context, and in particular the association with delinquent peers. In criminology there has been a long-standing debate about the direction of the relationship between peer delinquency and one's own delinquent behavior. Contemporary studies, using statistical techniques that better facilitate the disentanglement of both effects, yielded support for both the perspectives of peer influence (being exposed to delinquent peers result in more delinquent behavior) and peer selection (delinquent individuals are more likely to associate with each other). This suggests that influence and selection perspectives are complementary rather than competitive (Gallupe et al., 2019; Monahan et al., 2009; Sijtsema & Lindenberg, 2018; Warr, 2002). The primary focus of the current study will be on the peer influence dimension and, more specifically, on the extent to which adolescents differ with regards to the relationship between exposure to peer delinquent behavior and their own levels of delinquency. A possible explanation for individual differences in susceptibility to peer influence will be explored. This explanation centers on the other major dimension of adolescents' life; the parent context. The peer and parent contexts have long been studied as separate influences in the lives of adolescents. Instead of operating as two isolated sources of influence, the parent and peer contexts interact with one another (Warr, 2002). Parents can take on a focused approach when addressing issues related to peers, but most research has so far focused mainly on the more general parenting practices in relation to the peer context (Brown & Bakken, 2011). Therefore the

current study will complement the extensive body of research on more general parenting practices in relation to the peer context with a focus on a more specific aspect of parenting; autonomy granting. This involves the parental encouragement of adolescents' individual expression and decision making (Silk et al., 2003). Some specific parenting practices were found to be conducive to the development of adolescent autonomy (Bámaca & Umaña-Taylor, 2006; Soenens et al., 2007). Adolescent autonomy has primarily been studied for its direct relationship to susceptibility to peer influence (Allen et al., 2006; Allen et al., 2012). This study will connect the literature on these two concepts by examining the potentially moderating effects of autonomy granting parenting practices on the relationship between peer delinquency and adolescent delinquency. Summarizing, the aim of this study is to answer the following research question:

“To what extent does parental autonomy granting moderate the association between adolescents' exposure to peer delinquency and their own level of delinquency?”

To translate the results of the current study into an advice for potential prevention policy, a policy question was formulated. The policy implications of this study should provide guidance for organizations that are concerned with policy on the prevention of youth crime. Directions will be formulated with regards to the possible tools that can be provided to parents in ensuring their children are less likely to engage in future delinquent activities. The policy question is formulated as following:

‘To what extent can parental autonomy granting be incorporated in the policy of organizations that aim for prevention of youth externalizing problem behavior?’

In the following sections, existing literature will be reviewed on susceptibility to peer influence, peer influence in relation to delinquency and parental autonomy granting as a potential protective factor against delinquent peer influence. Drawing from Self-Determination Theory (Sutherland, 1947) and Social Learning Theory (Akers et al., 1979), this study tested hypotheses that adolescents who are exposed to delinquent peers become more likely to demonstrate delinquent behavior themselves and that this positive relationship is weaker for those whose parents adopted autonomy granting parenting practices. The hypotheses were tested using longitudinal, multi-informant data from the PROSPER (PROmoting School-community-university Partnerships to Enhance Resilience) Peers project. Multilevel analyses were conducted with self-report data from 602 adolescents, complemented with reports from their peers and their parents.

2. Theory

2.1 Susceptibility to peer influence in adolescence

From the start of adolescence, youths become increasingly oriented towards their peers as the frequency and intensity of interactions with peers increase (Berndt, 1979; Steinberg & Monahan, 2007). As a result, it is not unusual for adolescents to spend more time with their peers than with their parents by the time they reach their middle teens (Warr, 2002). Like many other social arenas that adolescents act within, the relationships with peers not only become more intense, they also increase in complexity (Brown, 2004). Peers become adolescents' main source of self-esteem, identity and protection as they become less attached to their parents (Warr, 2002). In addition, Reiter et al. (2021) found that early adolescents are typically more uncertain about their own preferences than others, leading them to turn to their peers in search for confirmation. As a result, adolescents assess the norms of the peers (or peer groups) to determine what kind of values and behavior would be approved and align with these accordingly (Brechwald & Prinstein, 2011). According to several studies, susceptibility to peer influence peaks during mid-adolescence, which roughly covers the period between 14 and 18 years old, after which youths become more resistant to peer influences. The result is a curvilinear trend of susceptibility throughout adolescence (Berndt, 1979; Blakemore & Mills, 2014). Other studies show that the trend is not curvilinear, but rather a steadily increasing trend in resistance, from early to late adolescence (Steinberg & Monahan, 2007; Sumter et al., 2009).

2.2 Peer influences in relation to delinquent behavior

Even though peer influence is not exclusively associated with maladaptation (Berndt, 1979; Reiter et al, 2021), it can play an important role in explaining adolescent delinquency. Explanations for peer influences in relation to delinquency have historically often built upon differential association theory and social learning theory. Differential association theory's central proposition states that someone is likely to conform to the definitions that are predominantly observed in his or her social environment. If definitions favorable to delinquent behaviors are prevalent in one's environment in comparison to definitions that are unfavorable to delinquency, this means that this person is more likely to adopt the delinquent definitions as their own (Matsueda, 1988; Sutherland, 1947; Warr, 2002). Differential association theory's explanations with regards to peer influence and adolescent delinquency

are generally well-supported by empirical evidence. It was tested using survey data obtained from a community sample by Bruinsma (1992) and in a high-risk sample by Thornberry et al. (1994). Both studies found consistent support for the theory's explanatory structure. In some more recent studies, additional empirical support was found by Ward & Forney (2020) and Janssen et al. (2016), who found both within-person influence of delinquent peers (effects of fluctuations in exposure) and between-person influence (effects of being more exposed to delinquent peers than others). Furthermore, the theory is supported by the work of Weerman et al. (2011). While they criticized differential association theory for being too general, they did find evidence for the presence of peer influence while controlling for potential peer selection effects using advanced social network analysis techniques.

Where differential association theory explains that people develop their own definitions and behavior as a result of exposure to observed definitions, social learning theory builds further on this by proposing two additional processes; reinforcement and imitation. The process of reinforcement relates to the anticipated punishment and rewards for certain behaviors. If the anticipated benefits of behaviors outweigh the anticipated punishment, the probability that someone will engage in the behavior increases. Imitation occurs when someone mimics an observed behavior of another individual; which is more likely when the observed consequences of the behavior are predominantly favorable (Akers et al., 1979; Akers & Jennings, 2019; Hoeben & Thomas, 2019; Warr, 2002). According to a meta-analysis by Pratt et al. (2010) empirical support for social learning theory is generally strong. However, they found that this applies specifically to the elements of differential association that the theory is rooted in, and much less so for differential reinforcement. Brauer & Tittle (2012) conducted a systematic literature review of experimental studies to assess empirical support for the theory. They found that, even though the specific elements of reinforcement have received too little attention in earlier works, a large body of research supports social learning theory. In an attempt to explore the underlying mechanisms of delinquent peer influence, Warr (2002) specifically elaborates on the group influence processes that underly the development of delinquent behavior of adolescents. He found that influence processes leading to antisocial acts particularly take place within groups. Driven by a fear of ridicule by peers, a desire for status within a group and recognition of loyalty as a fundamental virtue, adolescents may decide to engage in delinquent behavior that they would otherwise not engage in, and that they may even morally reject themselves.

2.3 Individual differences in susceptibility to delinquent peer influence

Susceptibility to peer influence not only varies throughout the life course, it may also vary between individuals based on personal characteristics. Relatively little is known about the causes of individual differences in susceptibility to influence. One potential explanation for these differences in susceptibility to peer influence is the development of autonomy in adolescents. Allen et al. (2006) described the role of adolescent autonomy specifically within the peer domain, defining it as the capability to think and act independently and the ability to successfully advocate their viewpoint in a discussion with a friend. In their study, they observed adolescents in a laboratory based assessment in which adolescents had to reach agreement with a close friend on hypothetical dilemmas and provide reasoning for their choices. In addition, surveys were completed that measured the extent to which adolescents were influenced by negative behaviors of their peers, such as substance use and deviancy. It was found that adolescents who were observed to be less successful in negotiating their position in the hypothetical dilemmas were also reported in the survey to be more susceptible to negative peer influences. Possible mechanisms of this relationship were put forward by Allen & Loeb (2015), who state that a failure to develop the skill and tact that adolescents need to 'stand their ground' while maintaining their connections with peers can lead them to conform to deviant norms. Empirical evidence for the role of autonomy in relation to delinquent peer influence is not yet strongly developed. This may be the result of the wide range of conceptualizations of autonomy that was applied in earlier works. For example, Steinberg and Silverberg (1986) described autonomy as a combination of three aspects; emotional autonomy (or detachment) from parents, self-reliance and resistance to peer influence. This is very broad definition, in which resistance to peer influence was seen as an aspect of autonomy rather than as a distinct construct. This conceptualization was criticized by Ryan & Lynch (1989), who commented that emotional autonomy rather reflects a sense of detachment of adolescents from their parents, which should not be confused with the development of independence. While detachment is part of a natural developmental process, parents may still have an important role to play by supporting adolescents in the development of autonomy (Chan & Chan, 2008; Lamborn & Steinberg, 1993). Therefore, in the current study, autonomy will be strictly seen as a concept that is distinct from detachment.

2.4 Parental Autonomy Granting

The importance of autonomy in the development process of adolescents and the notion that parents have an important role to play in this process raises the question *how* parents can

support their children in becoming autonomous individuals. Two distinct conceptualizations of parental autonomy support were explored by Soenens et al. (2007). The first is promotion of independence (PI). Within this conceptualization, parents stimulate their offspring to become less reliant on them. They do so by, for example, refraining from interfering in decision making processes. This conceptualization seems to have resemblances with Steinberg and Silverberg's (1986) notion of emotional autonomy as a form of detachment from parents. The second conceptualization is based on promotion of volitional functioning (PVF). Like with PI, it encourages a child to make its own decisions. PVF is distinct from PI in that it puts emphasis on the values and interests that underly these decisions. Parents can promote volitional functioning by acknowledging the perspective and feeling of adolescents, encouraging them to integrate these into their decision making process. The emphasis that is put on values and reasoning shows some resemblances with the facet of autonomy that was tested by Allen et al. (2006), which is the capability to assert one's own viewpoints. Soenens et al. (2007) tested both conceptualizations of parental autonomy granting in relation to self-reported social well-being, using cross-sectional data with self-reported measures of PI and PVF. PVF was found to be the only significant predictor of adolescent social wellbeing. The association between parental autonomy granting and delinquency was tested specifically for the peer domain by Soenens (2009). They argued that autonomy granting is often confused with a very permissive parenting style through which adolescents are granted unrestricted freedom, while it is very well possible for parents to set clear rules for behavior while supporting their child's autonomy. This can be achieved by clearly explaining to a child or adolescent the rationale behind the guidelines that are provided. The results of their study showed that adolescents who reported that their parents more often provided meaningful rationale for their guidelines were less likely to engage in delinquent behavior. Similarly, Mounts (2004) presented support for the negative relationship between parental autonomy granting in the peer domain and adolescent substance use, delinquency and friendship conflict. It is however worth noting that the majority of self-report items used to measure autonomy granting in that study seem to have closer resemblances with PI as conceptualization of autonomy than PVF. In addition to studies highlighting the adaptive effects of autonomy granting parenting practices, some mixed results were found by Brauer (2016). In his study, autonomy granting was measured in relation to decision-making and communication style. While both self-report measures contained items that strongly related to PVF, the results only revealed an effect for autonomy granting in decision making. While on the longer term it was related to lower levels of engagement in delinquency, on short term

adolescents would be more likely to engage in delinquency. The explanation proposed by the author was that autonomy in decision making makes adolescents better aware of consequences in the long term, but more likely to encounter opportunities for delinquent behavior on the short term.

2.5 The current study

Literature shows that there is ample empirical evidence for the presence of peer influence, particularly among adolescents. Differential association theory and social learning theory provide explanations for the relationship between peer influence and delinquent behavior. Until now, these explanations are still predominantly supported by literature. Therefore, it is hypothesized that:

H1: Adolescents who demonstrate higher levels of association with delinquent peers are more likely to demonstrate delinquent behavior themselves.

The current study will attempt to address the research gap that exists between two areas of literature. The first area is the one that supports the notion that development of autonomy in adolescents makes them less susceptible to influence from delinquent peers (Allen et al., 2006). The second is the area that proposes that autonomy granting parenting practices result in lower levels of delinquency among adolescents (Brauer, 2016, Mounts, 2004; Soenens et al., 2009). After combining insights from both areas, it is hypothesized that:

H2: For adolescents who are granted higher levels of autonomy by their parents, the positive association between association with delinquent peers and their own level of delinquent behavior is weaker.

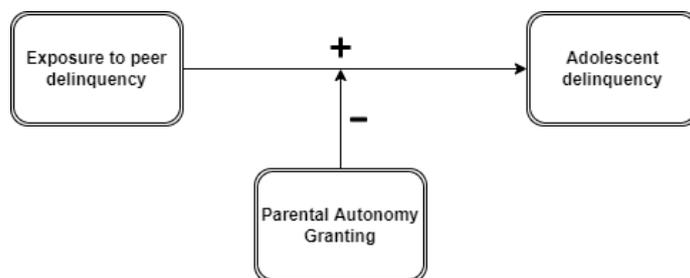


Figure 1: Hypothesized model

3. Methods

3.1 Sample

Multi-informant longitudinal data was used from the PROSPER project. PROSPER is a research collaborative delivering evidence based prevention programs, which originally started in 2001. Data were collected in 28 school districts in Iowa and Pennsylvania, United States of America. In order to be eligible for the study a school district had to (1) have between 1300 and 5200 students enrolled while (2) at least 15% of these students had to be eligible for free or reduced-cost school lunches. Out of the 68 school districts, 20 did not meet the eligibility requirements, five refused to participate and 10 were not selected based on random assignment. This resulted in 28 school districts participating in the in-school assessment. All students and their parents provided informed consent. The project started with an in-school assessment of two cohorts of six graders in 2002 (first cohort) and 2003 (second cohort). From the second cohort of adolescents participating in the in-school assessment, 2267 families were randomly selected for participation in the additional in-home assessments. This includes measures on an extended range of topics, including parenting practices. In the current study, data from the in-school and in-home assessments were combined, so only respondents whose families participated in the in-home assessments could be included. The in-home assessments included reports not only completed by adolescents, but also by their parents. Of the 2267 selected families, 980 families (43%) completed at least one wave of the in-home assessment. The sample of families that participated in the in-home assessment constituted a panel that was approached for follow-up. Families could only participate in the follow-up waves if they had also participated in the first wave. Nonetheless, 2 families started participating in the first follow-up assessment in the spring of 6th grade, while one family first participated in 9th grade. These were excluded from the current study. In addition, three families were removed from the sample by the PROSPER researchers as they were subject to a non-identifiable treatment condition. The average age in the first wave was 11.4. The sample used in the final analyses includes slightly more female (52.8%) than male (47.2%) adolescents. The number of adolescents living in single-parent households increased from 4.8 at the first wave, to 7.0 in the fifth wave.

3.2 Measures

3.2.1 Adolescent delinquency

A measure of adolescent self-reported delinquency was composed using items from the in-school survey. Adolescents were asked how often in the past twelve months they engaged in delinquent behaviors such as purposely damaging or destroying things that do not belong to them, stealing something worth less than \$25,-, hitting someone with the idea of hurting them and carrying a hidden weapon. The full list of items can be found in appendix B. Five response options were used, ranging from 1 (“Never”) to 5 (“Five or more times”). A reliability analysis was performed, resulting in a Cronbach’s alpha of .89 across all waves of the survey for the scale of eleven items that were included in the analysis. For each respondent the overall delinquency score per wave was calculated by summing up the scores on all items. Respondents with a missing delinquency score on all five waves were excluded from the analyses, reducing the sample size to 903.

3.2.2 Peer delinquency

As part of the in-school survey, adolescents were asked to nominate up to two of their best friends and up to five of their closest friends in their grade, so seven friends in total. Several respondents either nominated themselves or nominated the same friend more than once. All self-nominations and duplicate nominations were converted to missing values. As all nominees had to be from the same grade, they were also eligible for participating in the PROSPER survey. Therefore they all were asked to complete the same questions about their own delinquency. The peer delinquency measure is thus not based on adolescents’ perceptions of their peer delinquency, but based on peer self-reports. For each respondent, an average peer delinquency score per wave was calculated by dividing the sum of peer delinquency scores by the total number of peers nominated peers who provided valid information about their own delinquency. Respondents with missing peer delinquency scores on all five waves were excluded from the analyses, further bringing down the sample size to 875.

3.2.3 Parental autonomy granting

Measures on parenting practices were taken from the in-home survey. Both adolescents and their parents completed questions on various topics related to parenting. Parents were asked to complete four questions, which were ‘I often listen to my child’s point of view about rules and responsibilities’, ‘I talk with my child about ways to resist peer pressure’, ‘When my child and I have disagreements, I avoid placing all of the blame on him or her’ and ‘When there is a problem at home, I sit down with my child so we can figure out how to solve it’

Items completed by adolescents included identical statements about both their father (or male guardian) and mother (or female guardian). These were “When the two of you have a problem to solve, how often does he listen to your ideas about how to solve the problem?” and “When the two of you have a problem to solve, how often does he consider your ideas for solving the problem?”. A reliability analysis was conducted for both separate scales. Cronbach’s alpha for the four-item parent reported scale was .72. For the four-item adolescent reported scale Cronbach’s alpha was .74. The parent-reported measure and adolescent-reported measure significantly correlated with one another, as can be seen in table 5.

3.2.4 Covariates

Gender was measured with a dummy variable, with a score of 0 representing males and 1 representing females. An *Age* variable was constructed by subtracting the birth year from the year in which the interview was conducted. Age represents the mean age across all the waves. Additionally, dummy variables for each wave were included to control for age related changes in delinquency. To control for the potential effects of living in a single-parent household, a variable was constructed that reflects whether adolescents live with two parents (either biological parents, stepparents or caregivers) or with a single parent only. Two-parent households were coded with a 0, single-parent households with a 1. Respondents with missing values for these controls in all five waves were excluded from the analyses, resulting in a final sample of 602 respondents.

3.3 Analytical Strategy

A multi-level negative binomial regression was conducted in Stata, consisting of two levels. Level 1 reflected measures of time and was nested in respondents at level 2. The variable distribution for the count variable delinquency was right-skewed and overdispersed (the variance of the dependent variable was higher than the mean value), with the majority of respondents reporting a score of zero on the dependent variable. This was the main reason to opt for a negative binomial regression. A random effects model that allows for distinct within and between effects was used. This is often considered to be a ‘hybrid’ model in between fixed effects and random effects models, which recognizes the possibility of differences in the relations between the variables on each level (Allison, 2009; Bell, 2019). In order to be able to disaggregate within-person and between-person effects, separate within-person and between-person variables were constructed for the independent variables and the moderator. The between-person variables represented the individual level mean on peer delinquency and the parental autonomy granting scales. The within-person variables were constructed by

group-mean centering the predictors; so the within-person scores represented the deviation from the individual level mean. The between-person variables were grand-mean centered. The null-model did not include any predictors and was solely intended to check for clustering within the data with respect to the dependent variable. In the first model, the between- and within-person independent variables were added as well as the covariates to test for main effects of the independent variables on the dependent variable. In the second model the between- and within-person variables for adolescent-reported parental autonomy granting were included. In the third model, the between- and within-person variables for parent-reported parental autonomy granting were included. In order to test the interaction effects, separate analyses were conducted using subgroups based on the parental autonomy granting measures. Subgroups were created based on the scores in the lowest and highest quartile for both the adolescent-report and parent-report measures, resulting in four subgroups. For each subgroup, the within- and between-person effects of peer delinquency were estimated. This approach facilitated a more accurate estimation of the interaction effects. Including a product term in a negative binomial regression model with count data would not have provided accurate data on the magnitude or even direction of the interaction (Mize, 2019).

4. Results

4.1 Descriptive Statistics

Table 1 shows the means, standard deviations and ranges for all variables. The overall score for delinquency was 1.01, while an increase is visible between the first wave (.87) and the last wave (1.38). The intraclass correlation of delinquency was .37, which suggests that 37 percent of variation occurs between individuals. The Wald Z. test for variance in the level 1 and level 2 show that variances in both levels are significant, which provides support for the multi-level approach to the analyses. The average score for peer delinquency more than doubled between the first (1.14) and the last (2.37) wave. The parent-reported measure for parental autonomy granting remained stable between the first (2.86) and the last wave (2.84) and an overall score of 2.83. The degree of parental autonomy granting as reported by adolescents decreased between the first (4.90) and last (4.27) wave.

Table 1: Descriptive Statistics

Variable	M	SD	Range	%
Age (overall)	13.37	.89	11-16	
Age T1	11.40	.50	10-13	
Age T5	15.43	.52	15-17	
Gender (ref. = male)	.47		0-1	
Male				47.2
Female				52.8
Single parent T1 (ref. = no)	.05		0-1	
No				95.2
Yes				4.8
Single parent T5 (ref = no)	.07		0-1	
No				93.0
Yes				7.0
<i>Dependent variables</i>				
Delinquency (overall)	1.01	2.99	0-55	
Delinquency (T1)	.87	2.33	0-55	
Delinquency (T5)	1.38	4.11	0-55	
<i>Predictors</i>				
Peer Delinquency (overall)	1.72	2.32	0-55	
Peer Delinquency (T1)	1.14	2.27	0-55	
Peer Delinquency (T5)	2.37	3.86	0-55	
Autonomy – parent report (overall)	2.83	.36	0-4	
Autonomy – parent report (T1)	2.86	.44	0-4	
Autonomy – parent report (T5)	2.84	.43	0-4	
Autonomy – adolescent report (overall)	4.55	.98	0-6	
Autonomy – adolescent report (T1)	4.90	1.07	0-6	
Autonomy – adolescent report (T5)	4.27	1.34	0-6	

Note: $N = 602$

4.2 Test of direct associations

Table 2 shows the coefficients for the direct association between the predictors (within-person and between-person) and the dependent variable as well as the standard errors and incidence rate ratios (IRR). The incidence rate ratio is the exponentiated value of the coefficient. In model 1, the direct association between peer delinquency and adolescent delinquency was tested while controlling for between-person variation in age, gender and family composition. The variable age reflects the mean age across all waves to control for between-person variations in age. In addition, dummy variables were added for the waves (ref. = wave 1) to control for age related changes in delinquency over time. The values of the dummy variables were not included in the table. The within-person effect of peer delinquency on adolescent

Table 2: Results multi-level negative binomial regression predicting adolescent delinquency

	Model 1			Model 2			Model 3		
	B	SE	IRR	B	SE	IRR	B	SE	IRR
Within-person									
Peer delinquency	.011	.014	1.011	.011	.014	1.011	.009	.014	1.009
Parental autonomy granting (adolescent-rep.)				.013	.050	1.013			
Parental autonomy granting (parent-rep.)							-.044	.158	.957
Between-person									
Peer delinquency	.183***	.034	1.201	.158***	.031	1.172	.180***	.034	1.197
Parental autonomy granting (adolescent-rep.)				-					
Parental autonomy granting (parent-rep.)				.488***	.071	.614			
Age	-.172	.097	.842	-.163	.094	.850	-.451*	.198	.637
				-					
Female	-.461**	.146	.631	.503***	.141	.605	-.433**	.146	.648
Single-parent household	-.100	.222	.905	-.058	.221	.944	-.029	.034	.971

Note: $N = 602$. The effects in all models were controlled for age related changes in delinquent behavior by including dummy variables for waves, which were not included in the table. The variable 'age' represents the mean age across the waves to control for between-person differences in age

* $p < .05$

** $p < .01$

*** $p < .001$

delinquency was not significant ($p = .442$), indicating that increases in exposure to peer delinquency over time are not associated with increases in adolescent self-reported delinquency. The between-person effect of peer delinquency on adolescent delinquency was significant ($p < .001$) with an IRR of 1.201, indicating that adolescents whose peer delinquency score is one unit higher compared to other individuals are at a 20.1 percent higher risk of engaging in delinquent activity themselves. These results provide partial support for hypothesis 1. The predicted association between adolescents' exposure to peer delinquency and their self-reported level of delinquency was only found for between-person level differences. In the second model, parental autonomy granting as reported by adolescents was added. The within-person effect of the adolescent-reported variable was not a significant predictor ($p = .801$) of adolescent-self reported delinquency. The between-person effect of adolescent-reported parental autonomy granting was significant ($p < .001$) with an IRR of .614. This indicates that adolescents who report a score on parental autonomy granting that is one unit higher compared to other individuals are predicted to report a 38.6 percent lower score on delinquency. The third model includes parental autonomy granting as reported by parents. Again, no within-person effect was found ($p = .778$). The between-person effect of parent-reported parental autonomy granting was significant ($p = .022$) with an IRR of .637. This indicates that adolescents whose parents score one unit higher on parental autonomy granting compared to other individuals are predicted to report a 36.3 percent lower score on delinquency.

4.3 Test of interaction effects

Table 3 shows the results of the models that tested the moderating effect of parental autonomy granting as reported by adolescents on the association between peer delinquency and adolescent delinquency. Both for adolescents in the lowest and highest quartile of self-reported parental autonomy granting the within-person effect of peer delinquency on self-reported delinquency was not significant. This indicates that for both groups, changes in exposure to peer delinquency over time do not predict changes in self-reported delinquency. For adolescents who reported low levels of parental autonomy granting, the between-person effect of exposure to delinquent peers was not significant. For adolescents who reported high levels of parental autonomy granting this relationship was significantly positive ($p < .01$), with an IRR of 1.575. This indicates that within the high-autonomy group, adolescents who score one unit higher on peer delinquency compared to other individuals are predicted to report a 57.5 % higher score on self-reported delinquency. No support for hypothesis 2 was

found when autonomy granting was reported by adolescents. No significant interaction was found between parental autonomy granting and peer delinquency for within-person variation. A significant interaction in the opposite direction than hypothesized was found for between-person variation.

Table 3: Results multi-level negative binomial regression predicting adolescent delinquency for subgroups based on adolescent reported levels of parental autonomy granting

	Low autonomy (A)			High autonomy (A)		
	B	SE	IRR	B	SE	IRR
<i>Within-person</i>						
Peer delinquency	.010	.027	1.010	.008	.026	1.008
<i>Between-person</i>						
Peer delinquency	.087	.047	1.091	.455**	.172	1.575
Age	-.076	.142	.927	-.382	.274	.683
Female	-.369	.227	.692	-.752	.461	.471
Single-parent household	-.581	.421	.559	-.146	.849	.864

Note: $N = 149$. The effects in all models were controlled for age related changes in delinquent behavior by including dummy variables for waves, which were not included in the table. The variable 'age' represents the mean age across the waves to control for between-person differences in age

* $p < .05$

** $p < .01$

*** $p < .001$

Table 4 shows the results of the models that tested the moderating effect of parental autonomy granting as reported by parents on the association between peer delinquency and adolescent self-reported delinquency. Both for adolescents in the lowest and highest quartile of parent-reported parental autonomy granting the within-person effect of peer delinquency of self-reported delinquency was not significant. This indicates that for both groups, changes in exposure to peer delinquency over time do not predict changes in self-reported delinquency. For adolescents whose parents reported low levels of parental autonomy granting the between-person effect of exposure to delinquent peers on self-reported delinquency was significantly positive ($p < .01$), with an IRR of 1.222. This indicates that within the low-autonomy group, adolescents who score one unit higher on peer delinquency compared to other individuals are at a 22,2% higher risk of engaging in delinquency themselves. For adolescents whose parents reported high levels of parental autonomy granting the between-person effect of exposure to delinquent peers on self-reported delinquency was not significant. Partial support for hypothesis 2 was found when autonomy granting was reported by parents. No significant interaction was found between parental autonomy granting and

peer delinquency for within-person variation. A significant interaction in the predicted direction was found for between-person variation as the positive association between peer delinquency and self-reported delinquency was only found for the group whose parents reported lower levels of parental autonomy granting.

Table 4: Results multi-level negative binomial regression predicting adolescent delinquency for subgroups based on parent reported levels of parental autonomy granting

	Low autonomy (P)			High autonomy (P)		
	B	SE	IRR	B	SE	IRR
Within-person						
Peer delinquency	.001	.024	1.001	.064	.034	1.066
Between-person						
Peer delinquency	.200**	.070	1.222	.161	.088	1.175
Age	.369*	.161	.691	-.303	.224	.739
Female	-.316	.261	.729	-.702*	.334	.495
Single-parent household	-.181	.379	.835	-.138	-.138	.871

Note: N = 147. The effects in all models were controlled for age related changes in delinquent behavior by including dummy variables for waves, which were not included in the table. The variable 'age' represents the mean age across the waves to control for between-person differences in age

* $p < .05$

** $p < .01$

*** $p < .001$

4.4 Supplementary analysis:

As part of the PROSPER project, researchers assigned half of the families to a family focused intervention called the *Strengthening Families Program* while the other half was assigned to a control group. As the research questions of the current study do not entail tests of the intervention effects, all analyses were re-run while controlling for the effects of the intervention program. None of the previously reported findings changed as a result of including the extra control variable. As the results for the interactions were somewhat contradictory, additional analyses were conducted using the middle groups for both the adolescent- and parent reported parental autonomy granting variable. This included respondents whose scores fell into the second and third quartile. The results of this analysis show that the coefficients of the between-person measure of peer delinquency for the middle groups fall in between those reported for the low- and high-autonomy groups for both the adolescent reported autonomy variable (.170, $p < .001$) and the parent-reported autonomy variable (.186, $p < .001$).

5. Conclusion

The main purpose of the study was to examine to what extent parental autonomy granting moderates the relationship between peer delinquency and adolescent delinquency. Hypotheses predicting a direct positive association between peer delinquency and adolescent delinquency were based on differential association theory (Sutherland, 1947) and social learning theory (Akers et al., 1979). The prediction that parental autonomy granting would have a protective effect on this association was derived from literature that provides support for the importance of autonomy in adolescents' development of the capability to think and act independently, and the role of parents in promoting adolescents' volitional functioning (Allen, 2006; Soenens, 2007). A longitudinal study of a sample of 602 youths in early- to mid-adolescence from the United States was conducted to test these hypotheses, using survey data with a social network structure that includes responses from adolescents, their peers and their parents.

The findings of the present study with regards to the direct association between peer delinquency and adolescent delinquency yielded mixed results. The positive association was only confirmed when testing the between-person differences in the level of exposure to delinquent peers, while individual fluctuations in peer delinquency over time were not associated with changes in self-reported delinquency. Therefore the current study only provides partial support for the differential association theory and social learning theory. If the predominant observation of delinquent definitions would be the main mechanism in causing adolescents to adopt delinquent definitions themselves, one might suspect that an increase in delinquent behavior would logically follow an increase in exposure to delinquent peers. The findings of the current study do not fully align with studies by Ward and Forney (2020) and Janssen et al. (2016), which also disentangled within- and between-person associations between peer delinquency and adolescent delinquency and found empirical support for an association on both levels. An important difference between those studies and the current study is that they included measures of peer delinquency in which adolescent reported on their peers' delinquent behavior, while the current study incorporated the delinquency scores that were self-reported by the peers. Peer self-reported delinquency and perceptions of peer delinquency are different concepts as adolescents might use their own behavior to make predictions about behavior of their peers (Boman et al, 2012; McGloin & Thomas, 2016; Young et al., 2014). One could therefore logically argue that using such measure of peer delinquency would be more likely to yield an association with adolescents' self-reported delinquency. This issue was also addressed by Weerman & Smeenk (2005), who

state that when peer delinquency is reported by peer themselves and captured in a social network structure as in the current study, lower levels of association between peer delinquency and adolescent delinquency are found. While evidence for a within-person association was absent, the between-person results do provide support for a positive association between peer delinquency and adolescent delinquency. However, if adolescents that are – on average – exposed to higher levels of peer delinquency also report higher levels of their own delinquency but no effect of changes in time is visible, then the results of the current study can not be considered conclusive with regards to the empirical support for the presence of peer influence effects. After all, robust empirical support also exists for the relationship in the opposition direction; which is that delinquent adolescents are more likely to befriend those who are also delinquent (Gallupe et al., 2019). The between-person relationship does not control for the possible presence of such selection effects.

The test of the potentially protective effects of parental autonomy granting on the association between peer delinquency and adolescent delinquency has resulted in some contradictory findings. Only support was found for parent-reported autonomy granting as a protective factor. On the contrary, adolescents who self-reported high levels of parental autonomy granting seemed to be more susceptible to negative peer influence. A potential explanation for this is that there were some differences in the way the autonomy granting variables were constructed. The parent-reported autonomy items available in the dataset may be a more accurate resemblance of the important aspect of autonomy as the capability to reason based on personal values and interests (Allen et al., 2006; Oudekerk et al., 2015). The adolescent-reported items do reflect a certain openness to the ideas of adolescents, but perhaps less so to the particular underlying personal views which is a key element for promotion of volitional functioning (Soenens, 2007). This is also what distinguishes parental autonomy granting from the mere absence of psychological control (Hauser Kunz & Grych, 2013; Silk et al., 2003). The measures in the current study may reflect varying levels in the way the distinction between the two constructs is made. Another explanation is that there may be a discrepancy between the intention of parents to grant the adolescent autonomy, and the extent to which the adolescent perceives to be granted autonomy. Daddis (2011) found that adolescents consistently overestimate the amount of autonomy that their peers are granted by their parents and that such overestimation leads to an increased desire for more autonomy for themselves. While that study used a conceptualization of autonomy that more closely resembles absence of control, it is not unimaginable that the underlying mechanism is in place here as well.

6. Discussion

The current study has expanded the body of empirical research on the interplay between peer delinquency, adolescent autonomy and adolescent delinquency. It particularly contributed to literature by bridging the research gap that exists between two areas of literature. On one hand this is literature on adolescent autonomy development in relation to peer influence and on the other hand this is the literature on parenting practices that enhance the development of autonomy in adolescents. Therefore it provided useful directions for follow-up studies that are specifically targeted at the protective effects of autonomy granting parenting practices. A consideration that applies to the following suggestions for future research is that autonomy should be considered as an umbrella term. When studying autonomy or parental autonomy granting one should be aware of the wide range of concepts that has been applied in earlier works. Detachment from parents, (lack of) psychological control and promotion of independent thinking all were studied as reflections of autonomy. However, each has its own distinctive theoretical background (Beyers et al., 2003). First of all, the discrepancy between parent-reported and adolescent-reported autonomy granting should be addressed by replicating the current study while using identical items for both types of reports. This would also create an opportunity to use items that very accurately measure promotion of volitional functioning. Both the results from previous studies and from the current study provide an argument to study this specific conceptualization of parental autonomy granting more closely in relation to delinquency and susceptibility to peer influence. The results should provide an indication of whether the discrepancies are an artefact of the differences in operationalization or if there are substantial differences between autonomy granting as *intended* by parents and *perceived* by adolescents. A second suggestion for future research would be to tackle the potential confounding effects of peer selection by studying the relationship between peer delinquency, parental autonomy granting and adolescent delinquency using advance statistical methods that allow for disentanglement of influence and selection. A relatively recent technique that is suitable for the task is stochastic actor-oriented modelling, which models decisions of individual of actors based on the actors attributes and the network structure (Gallupe et al., 2019, Kalish, 2020). Applying such techniques to dataset with a social network structure, such as in the current study, could provide cleaner results.

There are some limitations to the study that should be addressed when interpreting its results. First of all, the friendship nominations that each respondent was asked to make were limited to friends within the same school. This means that friends outside school were excluded from

the study, while these may very represent a group with specific influences. A study by Jose et al. (2021) examined the specific effects of non-school friends on adolescent deviancy. They found that out-school friendships are more likely to predict risky behavior. For the current study, this implies that some important links may be left undiscovered. A second limitation is the non-representativeness of the sample. The results of the study can therefore not be generalized to a larger population. Neither can they be extrapolated to different geographical contexts as they were obtained exclusively from schools in Iowa and Pennsylvania, United States. An important strength of the current study was the use of longitudinal social network data. It allowed to account for changes over time as well as differences between persons. Such data is often expensive and difficult to obtain (Gallupe et al., 2019). As a result of the social network structure, it was possible to include data from peer self-reported delinquency instead of projected peer delinquency measures. Also it allowed to include the parent perspective in addition to adolescents' own perspective, which provide indications of potential differences. Another important strength of the study is that the data tapped from a large amount of independent social networks rather than from a single large network. This reduces the chance that effects are found that are an artefact of network-specific characteristics (Ragan et al., 2014).

7. Policy implications

The implications of the results of the current study for policy interventions should be approached with care and placed within the appropriate perspective of a correlational study design, which does not eliminate the threat of confounding influences and directionality issues. The current study as well as an established body of prior research do not unequivocally provide support for peer influence as the sole underlying mechanism of the relationship between peer delinquency and adolescent delinquency. This means that the presence of peer selection effects should not be ruled out. Nonetheless the majority of existing interventions is currently targeted at peer influence (Henneberger & Mushonga, 2021). Within the Netherlands, Bureau Halt organizes meetings with adolescents and parents. Adolescents are presented with case studies to illustrate situations in which they may engage in behavior that they would not engage in if they were on their own. Also strategies are discussed for resisting negative peer pressure. Parents are involved in informative sessions in which specific attention is paid to parental monitoring strategies (the extent to which parents actively keep track of adolescents' activities and whereabouts) as preventive tools in reducing negative peer influence (Halt, n.d.). Interventions targeted at peer selection effects have yet received little

attention in previous studies and have not been tested in experimental settings (Henneberger & Mushonga, 2021). Nonetheless, an open view to multiple mechanisms operating simultaneously finds justification in literature (Gallupe et al., 2019). The empirical base of evidence for the role of parental autonomy granting in relation to delinquent peer influence is not yet sufficiently developed to serve as a base for an implementation in prevention policy. Nonetheless the current study as well as earlier research provide enough reason for policy makers to put parental autonomy granting on the agenda. Specifically, it is recommended that the scope of currently existing prevention policy is widened by investing in studies that examine the more refined aspects of parental autonomy granting, such as promotion of volitional functioning.

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Appendix A

Table 5: Bivariate correlations

	1	2	3	4	5	6	7	8	9
1. Adolescent delinquency									
<i>Within-person</i>									
2. Peer delinquency	.028								
3. Parental autonomy granting (adolescent rep.)	-.060**	-.101***							
4. Parental autonomy granting (parent rep.)	-.024	-.015	.069***						
<i>Between-person</i>									
5. Peer delinquency	.209***	0	0	0					
6. Parental autonomy granting (adolescent rep.)	-.163***	0	0	0	-.155***				
7. Parental autonomy granting (parent rep.)	-.052*	0	0	0	-.078***	.340***			
<i>Covariates</i>									
8. Age	.025	0	0	0	.110***	.003	.030		
9. Female	-.099***	.003	.012	.005	-.246***	.008	.075***	-.084***	
10. Single-parent household	.078***	.036	-.016	.006	.082***	-.094***	.000	.037	.002

Note: Between- and within person variables do not share variance. Cross-level correlations are therefore 0.

* $p < .05$

** $p < .01$

*** $p < .001$

Appendix B

List of adolescent self-reported delinquency items

We'd like to know whether you've done any of these things during the past 12 months.

During the past 12 months, how many times have you:

<i>Never</i>	<i>1</i>
<i>Once</i>	<i>2</i>
<i>Twice</i>	<i>3</i>
<i>Three or four times</i>	<i>4</i>
<i>Five or more times</i>	<i>5</i>
<i>Missing</i>	<i>9</i>

- | | |
|----------|--|
| C1DEVB01 | 73. Taken something worth less than \$25 that didn't belong to you |
| C1DEVB02 | 74. Taken something worth \$25 or more that didn't belong to you |
| C1DEVB03 | 75. Beat up someone or physically fought with someone because they made you angry (other than just playing around) |
| C1DEVB04 | 76. Purposely damaged or destroyed property that did not belong to you |
| C1DEVB05 | 77. Broken into or tried to break into a building just for fun or to look around |
| C1DEVB06 | 78. Thrown objects such as rocks or bottles at people to hurt or scare them |
| C1DEVB07 | 79. Been picked up by the police for breaking a law |
| C1DEVB08 | 80. Run away from home |
| C1DEVB09 | 81. Skipped school or classes without an excuse |
| C1DEVB10 | 82. Carried a hidden weapon |
| C1DEVB11 | 83. Avoided paying for things such as movies, rides, food, or computer services |
| C1DEVB12 | 84. Taken something from a store that you did not pay for |