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Delinquency and Popularity

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The current study examines the longitudinal bi-directional relationship between delinquent behaviour and popularity in a sample of high school students. Ethnicity of the adolescent and the ethnic composition of the classroom are included as moderating variables. Age, gender and education level serve as covariates. This study is part of a larger longitudinal SNARE (Social Network Analysis of Risk behavior in Early adolescence) project. Self-reports and peer nominations are obtained from 1161 students, mean age 13.17 years old (15.1% Immigrant), across 56 classrooms. Classrooms consist 0-10% immigrants (N=33), 10-30% immigrants (N=12) or >30% immigrants (N=11). Levels of delinquent behaviour differed significantly for boys and girls. A multivariate regression analysis shows a negative relationship between delinquency and popularity, only when ethnicity (i.e. individual factor) or ethnic classroom composition (i.e. contextual factor) is taken into account. Furthermore, popularity appears to be a positive predictor for delinquency six months later. Results in this study demonstrate the importance of integrating the influence of ethnicity, both at the individual as contextual level, when examining adolescents' perceptions of achieving popularity and status.

Key words   Adolescents, delinquency, popularity, ethnicity, classroom composition

De huidige studie onderzoekt de longitudinale bi-directionele relatie tussen delinquent gedrag en populariteit onder middelbare scholieren. Daarbij wordt onderzocht of deze bi-directionele relatie wordt gemodereerd door etniciteit en de etnische samenstelling van de schoolklas. In het model wordt gecontroleerd voor de covariaten leeftijd, geslacht en opleidingsniveau. De studie is gebaseerd op de data afkomstig van SNARE (Social Network Analysis of Risk behaviour in Early adolescence) project. Scores zijn verkregen door zelf-rapportage en peer nominaties van 1161 adolescenten (gemiddelde leeftijd=13.17; 15.1% immigrant), verdeeld over 56 verschillende schoolklassen. De schoolklassen bestaan uit 0-10% immigranten (N=33) 10-30% immigranten (N=12) of >30% immigranten (N=11). Een multivariate regressie analyse geeft een negatieve relatie weer tussen

delinquentie en populariteit, echter alleen wanneer etniciteit (individuele factor) en etnische samenstelling van de klas (contextuele factor) worden meegenomen in het model. Daarnaast vormt populariteit een significante voorspeller voor delinquent gedrag zes maanden later. Een verschil in delinquent gedrag wordt gevonden tussen jongens en meisjes. De resultaten benadrukken de invloed van etniciteit, op zowel individueel als contextueel niveau, in de studie naar populariteit.

Kernwoorden Adolescenten, delinquentie, populariteit, etniciteit, samenstelling schoolklas

Introduction

Antisocial behaviour in adolescence is an on-going problem and mostly starts in early adolescence (Steinberg & Morris, 2001). The engagement in norm breaking behaviour continues to be reported at alarming levels; in the Netherlands more than one third (38%) of the youth aged between 12 and 17 (minors), stated that they had been guilty of committing an offence in the last twelve months (Van der Laan & Blom, 2011). This number is based on self-reported delinquency and on the basis of police and judicial statistics. Remarkably, adolescents involved in antisocial activities seem to be more attractive models to their peers and are considered popular in social contexts. Relatively recently, researchers confirmed that once possessed high levels of popularity, may continuously be associated with higher levels of maladjustment-aggressive behaviour (Cillessen & Mayeux, 2004) and other high risk behaviours such as substance use or sexual risk behaviour (Prinstein, Choukas-Bradley, Helms, Brechwald, & Rancourt, 2011). The relationship between delinquent behaviour and popularity may thus be bi-directional; the initial delinquent behaviour leads to increased popularity, which in turn leads to increased delinquent behaviour, which further enhances popularity.

Peer network studies are particularly important for understanding this reciprocal relationship (Haynie & Payne, 2006). However, little empirical research has focused on the moderating effect of ethnicity-related variables in peer networks. Understanding the delinquency-popularity relationship across cultures would be of real interest for policymakers in a multi-ethnic society like the Netherlands, where non-Western immigrants committed 30% of all criminal offences (around 10% of the Dutch population is of non-Western origin) (Jennissen & Blom, 2007). The effect of ethnic classroom composition may be of special interest since adolescents spend a large proportion of their time at school and popularity depends on interactions between individuals and their social context (Rubin, Bukowski, & Parker, 2007). In this study, the aim is to investigate the bi-directional relationship between delinquent behaviour and popularity among adolescents, moderated by ethnicity and ethnic composition of the classroom.

Delinquent behaviour as predictor for popularity

Showing delinquent behaviour and achieving a popular status may be intertwined in reciprocal influence processes. The term delinquency in this study refers to relatively minor misbehaviour, such as shoplifting, graffiti painting or damaging property. Concerning popularity, the distinction between how much a child is liked and how popular he or she is, needs to be clarified. Whereas *acceptance* best defines the extent to which the child is liked by peers, *popularity* refers to social visibility, prestige and status in the group (Parkhurst & Hopmeyer, 1998; LaFontana & Cillessen, 1998; 2002). This study focuses on *popularity*.

Risk behaviour is seen as a more normative entity in adolescence than in other life stages. According to Moffitt (1993), adolescents are trapped between biological and a social maturity, also known as the *maturity gap*. During this period, they are biologically capable to be sexual beings and want to establish intimate adult bonds. However, they still remain financially and socially dependent on their families, can hardly make important decisions and therefore are not treated as socially mature adults. By showing norm breaking behaviour, youth try to bridge this gap, which evokes feelings of independency and maturity (Moffitt, 1993). Several studies provide evidence for delinquency associated with popularity, but due to cross sectional designs, the majority cannot tell much about the direction of the relationship. Rubin, Bukowski, and Parker (2007) concluded in their review that adolescents who show higher levels of destructive behaviour are perceived as more popular in their groups than children who score low in these behaviours. LaFontana and Cillessen (2002) examined to which extent 408 fourth to eighth grade adolescents nominated their peers for prosocial and antisocial behaviours. They found positive bivariate correlations between overt aggression and popularity. The longitudinal research of Pellegrini and Long (2002) showed an initial increase in boys' physical aggression at the beginning of the transition to middle school. This declines over the course of the following year. According to them, an explanation would be the establishment of dominance among new peers and no further need to prove oneself.

Popularity as predictor for delinquent behaviour

In the present research, the alternate hypothesis - whether being perceived as popular leads to increased delinquent behaviour - will also be tested. Adolescents who have achieved popularity, may be extremely focused on their place in the peer group and feel entitled to have their self-interests served. Popular youth may be in a position to aggress without social condemnation (Rose, Swenson, & Waller, 2004), and reinforcement of this behaviour may enhance antisocial behaviour over time (Schwartz & Hopmeyer-Gorman, 2011). No clear theoretical explanation for this relationship was ever stated, but empirical evidence was found in several studies. Dijkstra, Lindenberg, Verhulst, Ormel and Veenstra (2009) found in a large sample (N=3312) a relationship between popularity and different types of antisocial behaviour (e.g. substance use, physical aggression, destructive behaviour). Again, the cross sectional design of the study made it impossible to draw firm conclusions about causality.

However, there are some longitudinal studies that show evidence of popularity being a predictor of an increase in risk behaviour over time. Firstly, Sandstrom and Cillessen (2006) found popularity in Grade 5 to be associated with increased levels of disruptive behaviours in Grade 8, for both girls and boys. Moreover, the longitudinal research of Mayeux, Sandstrom and Cillessen (2008) stated that popularity in Grade 10 predicted increased alcohol use and sexual activity in Grade 12. Researchers controlled for the initial level of the risk behaviours and the results were consistent across genders. Prinstein and colleagues (2011) found in a multivariate analysis an association of high popularity with higher levels of later marijuana use and more sexual intercourse partners.

Bi-directional relationship between delinquent behaviour and popularity
Aforementioned studies mostly examined one way cross sectional effects. To investigate whether delinquency and popularity are mutual related, a longitudinal design including both pathways is needed. Up to now, four studies have investigated both predictive pathways over time in one longitudinal design, while controlling for the initial level of the predicted behaviour and certain covariates (Cillessen & Mayeux, 2004; Prinstein & Cillessen, 2003; Rose, Swenson, & Waller, 2004; Mayeux et al., 2008). In fact, these studies showed some inconsistent findings. Firstly, Cillessen and Mayeux (2004) found bi-directional associations among popularity and aggressive behaviour across 5 years from Grade 5 to Grade 9 by using a cross-lagged path model. They found high short-term and at least moderate long-term stability for the status-aggression link for both boys and girls. Same results were found in a 17-month period longitudinal research of Prinstein and Cillessen (2003), but only for girls and only in relational (not overt) aggression. Another longitudinal study found bi-directional results for only older youth (seventh and ninth grade) in the sample (Rose et al., 2004). The final longitudinal study of Mayeux and colleagues (2008) suggested that high popularity among peers is associated with an increase in negative behaviour over time. The reversed relationship was found to be significant only for boys who smoked. Unless these longitudinal studies suggest the existence of a bi-directional relationship in risk behaviour and popularity, the overall results are neither clear nor consistent. Thereby, none of the studies clearly depicted delinquent behaviour as specific risk behaviour. The current analysis will be unique in its attempt to examine both predictive paths of delinquent behaviour and popularity in one longitudinal design, controlled by the initial level of the predicted behaviours and the covariates age, gender and education level.

Ethnicity and classroom composition as moderator
Some of the abovementioned studies controlled for ethnicity, but none of them investigated whether the delinquency-popularity relationship is truly applicable to different ethnicities or class compositions. The effect of ethnicity and ethnic composition of the classroom has been studied with respect to a variety of outcomes, including risk behaviours such as alcohol use (Monshouwer, et al., 2007) or externalising behaviour (Gieling, Vollebergh, & Dorsselaer, 2010). In general, these studies

found moderating effects for these behaviours, including differences for majority (Dutch) and minority (immigrant) adolescents. In a cross sectional multilevel analysis, Monshouwer and colleagues (2007) found a two-way interaction effect of ethnicity and classroom composition on risk behaviour. They stated that immigrant children in more ethnic heterogeneous situations (10-30% immigrant) had less risk of episodic heavy drinking than Dutch children. Furthermore, Gieling and colleagues (2010) conducted the same analysis and found similar effects on antisocial behaviour. They firstly found that ethnic minority students report higher levels of externalising behaviour, even when controlled for age, gender, education level and class size. The level of problem behaviour equals that of the Dutch majority group at a two-third constitution in the class of minority students. They explained this effect by the *ethnic density* hypothesis: living among members of one's own ethnic group can work as a buffer against some of the negative influences related to being a member of a minority group. Immigrants in the Netherlands are a minority group and may experience these negative influences because their integration in the host society is sometimes hindered by discrimination and restrictive policies (Stevens & Vollebergh, 2007). As result: a weak social position at the bottom of the existing social hierarchy. A sufficient number of other in-group members leads to feelings of acceptancy, security and network supportancy (Gieling et al., 2010).

Moderating effects of ethnicity and class composition on popularity were also investigated (Jackson, Barth, Powell, & Lochman, 2006). Peer ratings for fifth grade black children were more influenced by ethnic classroom composition than for whites. Again, the *ethnic density hypothesis* (Gieling et al., 2010) provides a useful explanation: lower representation in the classroom might go along with feelings of intimidation by the dominant racial group, resulting in fewer peer nominations (Jackson et al., 2007).

Studies, which address the question whether ethnicity and/or classroom composition influence the association between delinquency and popularity, only checked a one way relationship: delinquency on popularity. Meisinger and colleaugues (2007) did cross-sectional research on several predictors for popularity across majority-black and majority-white classrooms with 516 fourth, fifth and sixth grade children and found a moderating effect of classroom composition. Antisocial behaviours were associated with elevated levels of popularity in majority-black classrooms, whereas in majority-white classrooms these behaviours were negatively associated with this construct. Variation in gender across classrooms was found, but the researchers did not include ethnicity as possible moderator in their analyses. Possibly, in light of the *ethnic density hypothesis* (Gieling et al., 2010), for immigrant students, this relationship would be weaker if they are nested in majority-black classrooms. Moreover, based on the *control theory* (Hirschi, 1969) - which assumes that delinquent acts result when an individuals' bond to society is weak or broken - it would also be plausible that in majority-white settings, immigrants will show higher levels of delinquent behaviour for being a minority group. The study of Rodkin and colleaugeus (2000) reported individual ethnic differences in the light of ethnic

classroom composition and indicated that, in multiethnic settings (>40% ethnic minority students), antisocial behaviours and popularity are stronger positively related for immigrant youth than for native youth. However, the cross sectional design of both studies makes it impossible to say something about the bi-directional relationship.

In sum, main and interaction effects of ethnicity and classroom composition on the constructs popularity and delinquency were found. Furthermore, two studies found classroom composition (Meisinger et al., 2007) and ethnicity*classroom composition (Rodkin et al., 2000) to be a moderator for the relationship delinquency and popularity. Nevertheless, up to now it is unknown whether ethnicity and classroom composition also moderate the alternate relationship. In the end, some of the aforementioned studies were longitudinal and some controlled for covariates, but there were no longitudinal studies, which controlled for the covariates age, gender and education level. According to prior findings and in light of the *ethnic density hypothesis* (Buhgra & Arya, 2005) and the *control theory* (Hirschi, 1969), it is plausible that, for immigrant children, delinquent behaviour has a greater impact on their popularity status than for Dutch children. Contrariwise, popular immigrant children may extremely feel the need to use destructive behaviour to overcome hierarchy and stay visible. In other words, Moffitt's (1993) theory may be of greater impact on immigrant children than Dutch children. Overall, regarding the bi-directional relationship, immigrant students may experience a beneficial effect of a more culturally diverse classroom (Gieling and colleaugues, 2010).

Present study

In the present study, the moderating role of ethnicity and ethnic classroom composition will be examined in the longitudinal bi-directional relationship between delinquency and popularity (see Figure 1). Prior research showed some inconsistent findings in the bi-directional relationship. Therefore, the first aim of this study is formulated as the following sub question:

1) W*ill there be a bi-directional relationship between delinquent behaviour and popularity over time?*

Based on prior research findings, a positive bi-directional relationship between delinquent behaviour and popularity over time is expected. Furthermore, prior research already shows an effect of ethnicity and ethnic classroom composition on the constructs delinquent behaviour or popularity (e.g. Gieling et al., 2010; Jackson et al., 2007). Though it is completely unknown whether ethnicity and ethnic classroom composition moderate this longitudinal bi-directional relationship. In this research, both a two-way as a three-way moderating effect on the longitudinal bi-directional relationship will be investigated. The Non-Western immigrant group will be compared to the native Dutch group. The following two sub questions were formulated:

2) *Will delinquent behaviour be more strongly related to popularity for Immigrant adolescents compared to Dutch adolescents within a particular classroom?*

3) *Will popularity be more strongly related to delinquent behaviour for Immigrant adolescents compared to Dutch adolescents within a particular classroom?*

Based on the *control theory* (Hirschi, 1969) and the *ethnic density* effect (Buhgra & Arya, 2005), it is expected that the classroom density will serve as protective factor for immigrant adolescents (Jackson et al., 2007). Compared to Dutch adolescents, delinquency will be more strongly positively related to popularity for immigrant adolescents. This relationship will equal that of the Dutch majority group by an increasing number of immigrant children in classrooms. Secondly, popularity will be more strongly positively related to delinquency for immigrant adolescents, but will equal that of the Dutch majority group by an increasing number of immigrant children in classrooms. In all situations there will be controlled for covariates age, gender and education level. Further elaboration on this decision can be found in the method section of this article.
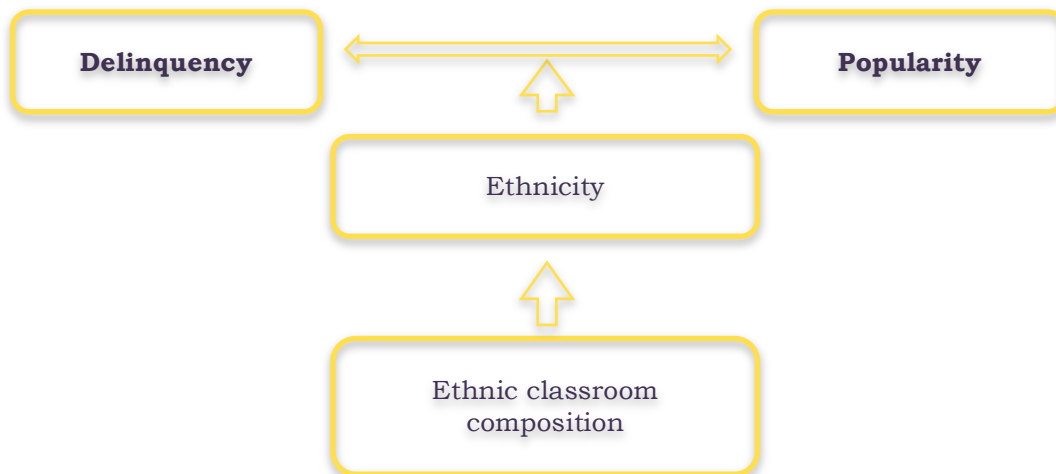

Figure 1. Research model

Methods

Research design and procedure

The present study used the data of the longitudinal SNARE project (Social Network Analysis of Risk behaviour in Early Adolescence; N=1283). This longitudinal research is designed to explain the social development and the involvement in risk behaviour of adolescents. Questionnaires were spread among first and second grade students on two secondary schools, one in the middle and one in the northern regions of the Netherlands. Parents received an information letter and had the opportunity to refuse their child from participating by submitting an enclosed reply card (*informed passive consent)*. In

total, 29 students refused participation due to emigration (N=1), illness (N=7) or other reasons, such as not being interested or having dyslexia (N=21). The project consisted of a baseline measurement and six follow-up measurements within a three-month time stretch. The baseline measurement (T0) started in September 2011. The first measurement (T1) took place in October; the second (T2) during half December and the third measurement (T3) took place in March 2012. At time of this study, only waves T0, T1 and T3 were conducted and analysed. Students filled out a questionnaire on a computer under the supervision of a teacher and one or more investigators/research assistants. A special software program, named Socio TM Software, was developed to ensure the sociometric (peer-rated) questions were measured correctly. The anonymity and privacy of the students were warranted.

Sample

A total of 1283 children participated in the four assessment waves of SNARE. Respondents with missing values on T1 and/or T3 (N=97) and Western immigrants (N=25) were removed from the data file. Analyses were conducted on the remaining sample of 1161 respondents (mean age = 13.17; SD = .71; 50.5% female). Of these children, 45.2% studied at lower-level education (i.e. preparatory secondary school for technical and vocational training) and 54.8% at 'middle/high-level education (i.e. preparatory secondary school for (below) university level). A total of 986 (84.9%) children were of Dutch origin, against 175 children (15.1%) of non-Western origin (immigrant). Children were spread over 56 school classes from two different high schools in the Netherlands. The sample contained 33 classrooms with less than 10% immigrant, 12 classrooms with 10-30% immigrants and 11 classrooms with more than 30% immigrants.

Measures

Delinquency – Eighteen items assessing the frequency and severity of delinquent behaviour during the past month were measured on T1 and T3. The scale is a composite scale, based on prior research wherein 23 items were adapted from the 'self-reported delinquency scale' of Moffitt and Silva (1988). Only items that directly referred to criminal offenses were included (Van der Laan et al., 2010). Participants were asked for example: 'How many times did you damage property of acquaintances (family members, peers) on purpose during the past month?' or 'How many times did you get in a serious fight or quarrel with acquaintances during the past month?'. Students rated their own behaviour on a five-point Likert scale (1= 0 times; 2 = 1-3 times; 3 = 4-6 times; 4 = 7-12 times and 5 = more than 12 times). The scale demonstrated good reliability (α =. 91 at T1 and α =. 98 at T3). A high score suggested a high rate of delinquent behaviour.

Popularity – Popularity, a peer-rated variable, was measured on both waves (T1 and T3) and operationalized as 'being most popular' or 'being less popular'. Respondents had to select three names from a list of all classmates or could subscribe names of peers outside their classroom in an open textbox. The construct was based on the total number of within-classroom nominations the students

received on the questions 'Who is the most popular?' and 'Who is the least popular?' By using both nominations, a composite popularity score was created ('most popular' minus 'least popular') (Cillessen & Mayeux, 2004). Because of unequal class sizes, composite scores at T1 were standardized into Z-scores.

Ethnicity – Ethnic status (0 = Dutch and 1 = immigrant) was based on the child's as well as the parents' nationality. Those reporting on the nominal scale that either he/she or one of his/her parents was born in a non-Western country (i.e. Turkey, Morocco, Surinam, Netherlands Antilles/Aruba, Indonesia/Moluccas or another non-Western country) were scored as 'immigrant' (Gieling et al., 2009).

Ethnic classroom composition – As a measure of ethnic classroom composition, the percentage of immigrant students in a classroom was calculated and recoded into three categories: <10% Immigrant children, 10-30% immigrant children and ≥ 30% Immigrant children (Monshouwer, et al., 2007). The <10%-classroom functioned as reference category.

Covariates

Three covariates (measured at T0) were included in the analyses for their potential effect on the dependent variables (e.g. Rubin et al., 2007; Rose et al., 2004; Farmer et al., 2003). Gender was included as a dummy-coded variable (1=male), age in years as a continuous variable and education level was categorized to two levels (low and middle/high). Furthermore, the initial level of popularity and delinquency was controlled for when drawing conclusions about causality.

Data analysis

Analyses were done in SPSS Statistics version 20.0. Outliers were checked. Descriptive statistics were conducted for the total sample (N=1161) at waves T1 and T3. For both waves, mean scores of delinquency and popularity were compared for gender and ethnicity by conducting independent samples t-tests. To check differences in mean scores for education level and classroom composition, the one-way ANOVA and, in case of significance, a post hoc test was conducted. With a bivariate regression analysis, the linear relationship with the covariate 'age' was tested. Possible violation of the assumptions underlying the linear regression analyses was also checked (Field, 2009). To check the direct bi-directional relationship between popularity and delinquent behaviour, firstly two bivariate linear regression analyses were conducted. These analyses gave also an impression of the relationships between variables and a preliminary look for multicollinearity. Subsequently, two multivariate regression analyses were done to check the bi-directional relationship while controlling for covariates and the initial level of the dependent variable. In the end, two separate multivariate regression analyses were run to test longitudinal bi-directional relationship when moderated by ethnicity, ethnic classroom composition and ethnicity*ethnic classroom composition. Two- and three way interaction terms were computed by multiplying the independent variable with 'ethnicity' (Dutch = reference) and/or the

dummy coded classroom variables (<10% immigrants = reference). For the two-way interaction on popularity, the variables 'Ethnicity*delinquency' and 'Class*delinquency' were added and, for three-way interaction effect on popularity, the term 'Class*ethnicity*delinquency' was added. The same procedure was followed in the second analysis for the effect on delinquency, but then with popularity as dependent variable. Every time was controlled for gender, age, education level and the initial level of the predicted variable. Results were found to be significant at $p<.05$.

Results

Descriptive statistics

Means and standard deviations for the 1161 respondents at waves T1 and T3 were first conducted on the variable delinquency. Scores ranged from 1 to 5 and mean scores were generally low at both waves, indicating that on average, the respondents did not frequently engage in delinquent behaviour (M=1.06, SD=.22 at T1 and M=1.12, SD=.48 at T3). Noteworthy, the respondents showed significantly more delinquent behaviour during the past month at T3 than they did during the past month at T1 ($t(1160)$ = -4.20, $p<.001$). Next, mean scores of delinquency were compared for gender, education level, ethnicity and classroom composition. Results are depicted in Table 1. Mean scores differed by gender at both waves and by education level and classroom composition at T1. Furthermore, the continuous variable 'age' showed a positive linear relation with delinquent behaviour during the past month at T3 (r=.06, $p<.05$); higher age is related to higher levels of delinquent behaviour.

Secondly, descriptive statistics were computed for variable popularity at T1 and T3. The average increase in popularity nominations at T3 compared to T1 was not significant (p =. 21), which implied popularity to be a constant construct over time. Again, mean scores were compared for the covariates, ethnicity and classroom composition (see Table 1). Significant differences were found for ethnicity. Furthermore, a positive linear relationship was found between the continuous covariate 'age' and popularity at T3 (r=. 07, $p<$. 05); higher age predicted higher levels of popularity.

Table 1.

Means and Standard Deviations for Popularity and Delinquency at T1 and T3 by covariates

		Popularity T1		Popularity T3		Delinquency T1		Delinquency T3	
		M	SD	M	SD	M	SD	M	SD
Gender	Female	.49	6.39	.26	5.62	1.03[b-j]	.11	1.07[c-j]	.33
	Male	.15	5.32	.67	6.63	1.08[b-k]	.28	1.17[c-k]	.60
Education level	low	.36	5.37	.52	5.47	1.08[a]	.25	1.14	.50
	middle/high	.29	6.26	.41	.6.65	1.04[a]	.18	1.11	.47
Ethnicity	Dutch	.15[d]	6.07	.30[e]	6.24	1.05[g]	.14	1.12[g]	.48
	Immigrant	1.30[d]	4.50	1.41[e]	5.47	1.10	.43	1.12	.53
Classroom composition	<10% immigrants	.29[h]	6.02	.60[h]	6.03	1.05[f-i]	.15	1.14[i]	.54
	10-30% immigrants	.56	5.60	.49	6.31	1.10[f]	.38	1.10	.39
	>30% immigrants	.17	5.72	.04	6.28	1.05[f]	.12	1.09	.38

Note: N = 1161. Means with the same letter in their superscript differ significantly according to an independent samples t-test or a one-way ANOVA (for Class Composition) (p<. 05).

Bi-directional relationship between Delinquency and Popularity

According to a bivariate regression analysis, delinquent behaviour (T1) accounts for a very small but significant positive proportion (.4%) of the variation of Popularity (T3) (B=1.9, SE=.85, β=.07, p<.05). Once controlled for covariates age, gender, education level and Popularity (T1), this relationship turned out to be negative and non-significant (p=.20). The main effects for age (p=.99), gender (p=.45) and education level (p=.73) were non-significant. A significant effect was found for the initial level of Popularity (T1) (β=.80, p<.001). This result probably explained the biggest part of the explained variance of the model (see Table 2, Step 1).

For the alternate hypothesis, the bivariate analysis also showed a significant positive relationship (B=.06, SD=.01, β=.12, p<.001). Popularity (T1) accounts for 1.5% of the variation of Delinquent behaviour during the past month (T3). Even in a multivariate analysis, when controlled for covariates and Delinquency at T1, this relationship remained significant (p<.001), 4.5% of the variation was predicted by Popularity and covariates (see Table 3). Thus, the more popular children were at T1, the more delinquent behaviour they showed at T3. The covariate gender was also a significant predictor for Delinquent behaviour at T3; males show more delinquent behaviour than girls. The other covariates age (p=.53) and education level (p=.75) had no significant effect (see Table 3).

Delinquency as predictor for Popularity, moderated by ethnicity and classroom composition

Results of the multiple regression analysis are depicted in Table 2. Interaction terms and main effects of the variables ethnicity and classroom composition were included (R^2 = .64). No three-way-interaction was found for classroom composition, ethnicity and delinquent behaviour on popularity.

However, when comparing groups in the two-way interaction model, the negative relationship for immigrant children differed significantly from this relationship for Dutch children (see Figure 2). Thus, immigrant children who show more delinquent behaviour at T1, scored lower on popularity at T3. Furthermore, a two-way interaction effect of classroom composition with delinquent behaviour was found (see Figure 3). In contrast to the reference category, for children in classrooms with a relatively high level of immigrants (10-30%) leads more delinquent behaviour to a decrease in popularity. No difference was found for children in '>30% immigrant' classrooms ($p=.13$).

Table 2

Linear regression analysis for Delinquency, Ethnicity and Classroom composition as predictor for Popularity

		B	SE	β
Step 1	Age	.02	.16	.00
	Gender (female = reference)	.15	.22	.01
	Education Level (low = reference)	-.08	.22	-.01
	Popularity at T1	4.87	.11	.80***
	Delinquency	-1.42	.98	-.05
	Immigrant[a]	-.41	.79	-.02
	10-30% immigrant class[b]	-.53	.31	-.03
	>30% immigrant class [b]	-.72	.36	-.05*
Step 2	Immigrant[a]*10-30% immigrant class[b]	1.44	1.02	.04
	Immigrant[a]*>30% immigrant class[b]*	1.05	.92	.05
	Immigrant[a]*Delinquency	-3.48	1.68	-.09*
	10-30% immigrant class[b]*Delinquency	3.96	1.81	.11*
	>30% immigrant class[b]*Delinquency	3.86	2.55	.04

Note: N=1161; R^2 = .64. * $p < .05$; ** $p < .01$; *** $p < .001$; [a]Dutch = reference; [b]<10% immigrant class = reference
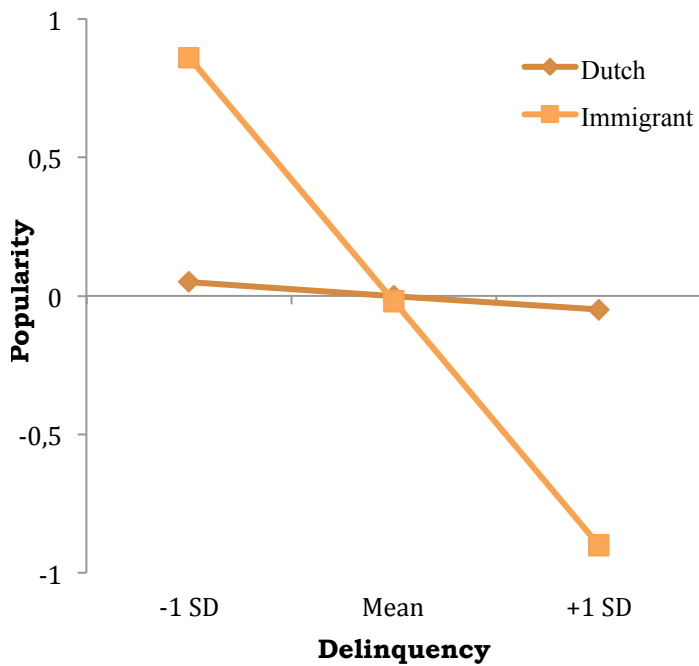
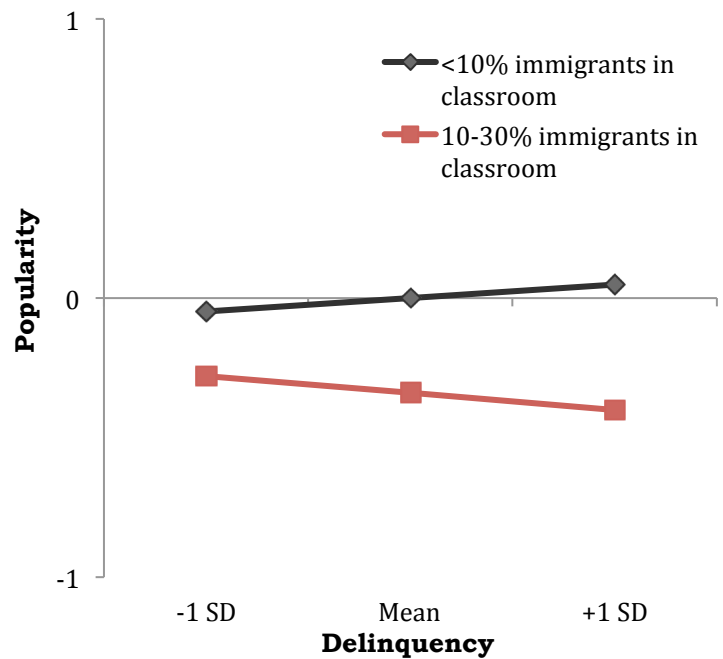*Figure 2.* Two-way interaction effects between delinquenc and ethnicity as predictor for popularity.

Figure 3. Two-way interaction effects between delinquency and classroom composition as predictor for popularity.

Popularity as predictor for Delinquency, moderated by ethnicity and classroom composition

No significant three-way interaction effect was found for classroom composition, ethnicity and popularity ($p=.43$ for 10-30%*immigrant*popularity and $p=.53$ for >30%*immigrant*popularity). Neither was a two-way interaction found for ethnicity ($p=.75$) or ethnic classroom composition ($p=.41$ for 10-30%*popularity and $p=.11$ for >30%*popularity) with popularity. Like in the bi-directional analysis, main effects for Popularity (T1) and gender were found. Delinquency at T1 also seemed to be a significant predictor for showing delinquent behaviour at T3. Results of the multiple regression analysis with only main effects are depicted in Table 3.

Table 3

Linear regression analysis for Popularity, Ethnicity and Classroom composition as predictor for Delinquency

		B	SE	β
Step 1	Age	.02	.02	.03
	Gender (female = reference)	.09	.03	.09*
	Education Level (low = reference)	-.01	.03	-.01
	Delinquency at T1	.31	.07	.14***
	Popularity	.05	.01	.10***
	Immigrant[a]	.01	.04	.01
	10-30% immigrant class[b]	-.06	.04	-.05
	>30% immigrant class [b]	-.05	.04	-.04

Note: N=1161; R^2 = .05. * $p < .05$; ** $p < .01$; *** $p < .001$; [a]Dutch = reference; [b]<10% immigrant class = reference

Discussion

The purpose of this study was to investigate the bi-directional relationship between delinquent behaviour and popularity and the moderating effects of the adolescent's ethnicity and the ethnic classroom composition. Support was found for popularity being a predictor for delinquent behaviour six months later: higher popularity leads to more delinquent behaviour. Showing delinquent behaviour does not lead to more popularity over time after controlling for covariates. However, taking ethnicity and ethnic classroom composition into account, a negative relationship between delinquent behaviour and popularity was found only for immigrant children. At the level of classroom composition, this negative relationship was also found, except only for children in more ethnic heterogeneous classrooms (10-30% immigrants). In the end, no three-way interactions, modification by ethnicity of the child when embedded in a certain classroom, were found.

The bi-directional relationship between delinquency and popularity
The first aim was to provide evidence on longitudinal reciprocal influence processes for delinquency and popularity. Consistent with prior research (Parkhurst & Hopmeyer, 1998; Rubin et al., 2007; La Fontana & Cillissen, 2002; Rose et al., 2004), the bivariate regression analysis showed a significant positive bi-directional relationship between delinquency and popularity. In contrast, in the multivariate regression analyses when controlling for age, gender, education level and the initial level of the dependent variable, there was no support for the bi-directional relationship. The relationship proved to be significant for only one direction: delinquent behaviour was no longer a significant predictor for popularity six months later, while popularity was shown to be a significant predictor for delinquency

six months later. Thus, popular adolescents might engage in more delinquent behaviour over time while delinquency does not seem to contribute to their popularity. These results partly contradict previous findings, including Moffitt's theory (1993), whereby delinquency leads to more popularity over time. An explanation for the contradictive finding may be the relative low age of participants in this sample (first and second grade). The aforementioned studies included participants from at least fifth grade and above. Moffitt's theory (1993) was based on longitudinal findings from adolescents aged between 13 and 15 years. Current results thus shed light on a minimum age at which delinquent behaviour starts to be linked to popularity. Mayeux, Houser and Dyches (2011) recently confirmed this variation across ages in their review. In future research, studies could benefit from including a broader array of age groups and of risk behaviours to provide a more comprehensive picture of the exact onset of risky behaviour associated with popularity status. Thereby, a longer time frame (> 6 months) might overcome high stability for both popularity as delinquency and reveal stronger significant results.

Delinquency as predictor for popularity moderated by ethnicity and classroom composition

As already stated, delinquent behaviour was no predictor for popularity over time. However, the findings showed that ethnicity (i.e. individual factor) and ethnic classroom composition (i.e. contextual factor) are both significant moderators on the effect of delinquency on popularity (significant two-way interaction). This offers compelling support for the importance of taking both individual and contextual factors into account when examining the effect of delinquency on popularity.

First, when examining the individual factor as a moderator, immigrant students differ significantly from Dutch students in their negative relationship between delinquent behaviour and popularity. For them, showing delinquent behaviour seems not to be appreciated by classmates. This finding was against expectations and contrary to results of, for example, Gieling and colleagues (2010). They found a stronger, but positive relationship for immigrant youth. This difference might be caused by their much bigger sample size (N= 4563). Otherwise, the reason why immigrants in this study receive such negative peer nominations when showing delinquent behaviour is unclear and difficult to explain. As expected and in line with Hirschi's *control theory* (1969) and the *ethnic density* hypothesis, immigrants' visibility and popularity should increase as a function of their destructive behaviour. A possible explanation could be that the stereotypical image of minorities in the Netherlands, which is mostly characterized by higher levels of criminal and antisocial behaviour (Stevens & Vollebergh, 2007), influences classmates' perceptions when nominating behaviour of their immigrant peers. This perception may outweigh the actual impact of only delinquent behaviour. Nevertheless, this is an interesting hypothesis for future research.

Secondly, the contextual classroom factor serves as a moderator. The relationship between delinquent behaviour and popularity for children in more ethnic heterogeneous classrooms (10-30% immigrants)

turned out to be negative and differed significantly from this relationship for children in the homogeneous Dutch classroom (<10% immigrants). The negative association of delinquency and popularity, which was also noticed at the individual level for only immigrants, seems to be reflected in classes with a higher number of immigrants. Remarkably, this association was not seen in most heterogeneous classrooms with >30% immigrant children. However, the current results showed that ethnic density really influences the social processes in classrooms. The almost generally accepted theory of Moffitt (1993) and, additional, the positive relationship between delinquency and popularity may not completely be generalized to all sorts of ethnic classroom compositions.

In the end, no evidence was found for the expectation that popularity increases for delinquent immigrant children if they are nested in more heterogeneous classrooms. In other words, no three-way interaction, as reported by Rodkin and colleagues (2000), was found. These researchers namely stated that, in multi-ethnic settings, popularity and antisocial behaviours such as delinquency were stronger positively related for immigrant youth than for native youth. A methodological explanation for non-significant findings could be the lack of power in this study for the immigrant group, which made it impossible to see variation between individuals within the classrooms. Another explanation is that the *'ethnic density'* effect (Buhgra & Arya, 2005) may rather be a *'group density'* effect; similar effects or group norms other than individual factors are experienced as more important in a classroom. These norms may vary between groups and settings (Gieling et al., 2010).

Popularity as predictor for delinquency moderated by ethnicity and classroom composition
Against expectations, no difference in the significant positive relationship between popularity and delinquency was found for immigrant children compared to Dutch children. Neither was there any variation between different classrooms. The current results are an important addition on prior research (e.g. Cillissen and Mayeux, 2004) because of the longitudinal effects. It thereby further expands findings of for example Monshouwer and colleagues (2007), in a way that popularity is no predictor for the ethnic differences, on both the individual as contextual classroom level, in risky behaviour. However, non-significant moderator findings in this study could be due to the earlier mentioned *power* problem in this study. Noteworthy is that immigrant adolescents do not engage in significantly more delinquent behaviour than their Dutch peers. An optimistic finding, since contemporary figures generally indicate that immigrant youth in the Netherlands show significantly more delinquent behaviour than native youth (Jennissen, 2007). An explanation could be again that the onset of juvenile delinquency is set at a later age than the mean age of children in this sample.

Strengths and limitations
The strength of the current study is clearly its longitudinal design, wherein the reciprocal effects of popularity and delinquent behaviour were investigated. This sociometric study is moreover unique in its sort by giving special attention to ethnicity and ethnic classroom composition. Some limitations

however need to be addressed. First, the current sample contained a low ethnic diversity (15% immigrant). All non-western adolescents were enclosed to one group whereby no attention was given to possible inter ethnic similarities or possible tensions (Stevens & Vollebergh, 2007). Whether the current findings are truly applicable to the total immigrant group is not something this study can answer. However, a considerable part of the immigrant group belongs to the biggest ethnic minority groups in the Netherlands (Turks, Moroccans, Antilleans and Surinames). Thereby, other non-Western immigrants too do share the characteristic of belonging to a minority group, which in general influences the social peer group processes (Mayeux, Houser, & Dyches, 2011). A relating limitation is that the sample included only children from the northern and middle parts of the Netherlands, whereby all ethnic heterogeneous classrooms were located in schools in the middle parts. Given the importance placed on ethnicity as both an individual as a social-contextual variable, replication with a sample in which each Dutch region is represented is recommended. A third drawback is the reliance on self-report measures of delinquent behaviour. Despite the emphasis on confidentiality during data collection - some adolescents may have felt uncomfortable reporting engagement in these activities - self-reports remain a solid tool for measuring youth's social behaviour (Levine, 2013). Incorporating other multi-informant methods such as observations and teacher reports would further extend the current findings.

Conclusion and implications

In conclusion, popularity is associated with an increased level of delinquent behaviour. Conversely, it is not delinquent behaviour that leads to more popularity, especially not for immigrant students. Implications of this research should be considered. Findings of this study firstly nuance prior studies where mostly positive bi-directional relationships between delinquency and popularity were suggested. Moreover, Moffitt's (1993) theory may not uphold for the younger age group and not be truly applicable to all ethnicities and different classrooms. Secondly, the reason why immigrant teens receive more negative peer nominations than native Dutch teens by showing delinquent behaviour is difficult to explain in this study and needs further attention. However, the negative feedback by peers and experiencing that delinquent behaviour is not a way to gain popularity may protect immigrant children from using destructive behaviour as a way to cope with their minority position in the Dutch society. Thirdly, the results do contribute to the debate on ethnic composition of classrooms and schools in the Netherlands. Whereas ethnic heterogeneous schools are often equalled with problematic outcomes (Gieling et al., 2010), current findings point to more positive aspects of classes with higher ethnic density. While in the more homogeneous Dutch classrooms (<10% immigrant) delinquent behaviour was rated as interesting and associated with popularity, this relationship does not seem applicable to the more ethnic heterogeneous classrooms. Fourthly, for all students was being popular a predictor for later delinquency. Risk behaviour mostly goes along with other risk behaviour such as alcohol intoxication and early sexual activity (Verdurmen et al., 2005; Prinstein et al., 2011). This

implies that popular adolescents are also at higher risk for negative physical and mental health outcomes such as sexually transmitted diseases and drug addiction. These effects need special attention of teachers and parents/caregivers. Interventions that target the source of involvement in delinquency may be of real importance.

This study gave new insight in the role of individual and contextual influences in the longitudinal association between popularity and delinquency. Why delinquent immigrant students decrease in popularity and which role this relationship plays in more ethnic heterogeneous classrooms, would be an interesting question for future research.

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