Birds of a feather ... Selection and socialization processes in youths' social networks

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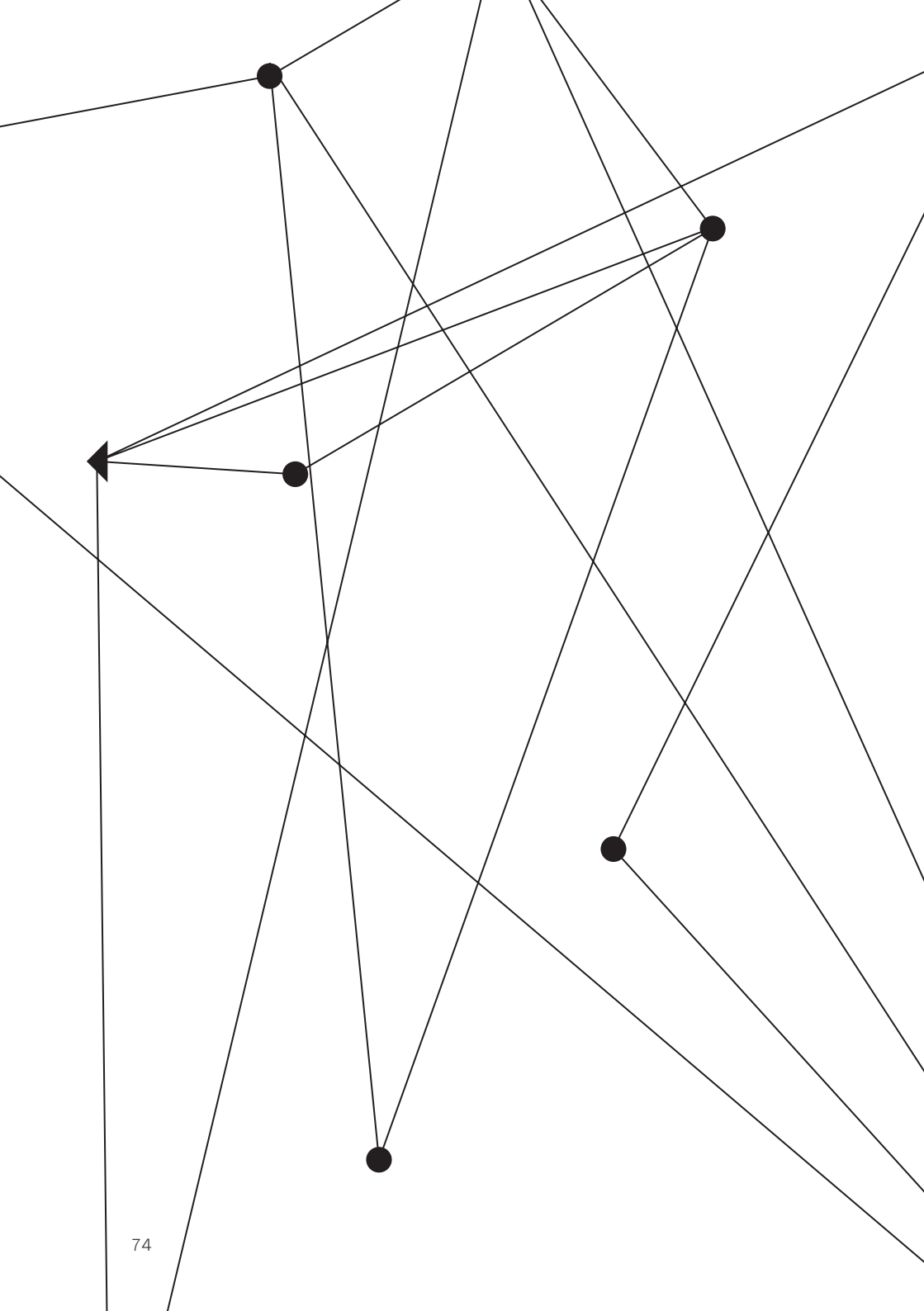

CHAPTER 4

Peer Influences on Internalizing and Externalizing Problems among Adolescents: A Longitudinal Social Network Analysis

Abstract

Adolescents who like each other may become more similar to each other with regard to internalizing and externalizing problems, though it is not yet clear which social mechanisms explain these similarities. In this longitudinal study, we analyzed four mechanisms that may explain similarity in adolescent peer networks with regard to externalizing and internalizing problems: selection, socialization, avoidance and withdrawal. At three moments during one school-year, we asked 542 adolescents (8th grade, M-age = 13.3 years, 51% female) to report who they liked in their classroom, and their own internalizing and externalizing problems. Adolescents tend to prefer peers who have similar externalizing problem scores, but no significant selection effect was found for internalizing problems. Adolescents who share the same group of friends socialize each other and then become more similar with respect to externalizing problems, but not with respect to internalizing problems. We found no significant effects for avoidance or withdrawal. Adolescents may choose to belong to a peer group that is similar to them in terms of externalizing problem behaviors, and through peer group socialization (e.g., enticing, modelling, mimicking, and peer pressure) become more similar to that group over time.

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1 Introduction

In the Netherlands, as in other countries, classrooms in middle schools are a social unit in which adolescents follow classes and socialize together. Though they may have different teachers for different courses, all children in the class remain together, at least throughout a year. Though this stable and mostly secure social environment offers advantages, peers may also affect each other's externalizing problem behavior (Burk, Kerr, & Stattin, 2008) and internalizing problem behavior (Haselager, Hartup, Van Lieshout, & Riksen-Walraven, 1998). Similarity between friends is often described as friendship homophily (e.g., Mercer & DeRosier, 2010). Being or becoming similar as regards salient characteristics and characteristics that matter to adolescents contributes to mutual acceptance and popularity (Laursen, Hafen, Kerr, & Stattin, 2012). Similarities between adolescent friends may be explained by friends becoming more similar over time, processes in which peers that are similar befriend one-another, or by processes in which adolescents that are dissimilar from the peer group either remove themselves or avoid a group.

Adolescents becoming more similar to one another over time has been referred to as socialization (cf., Mercer & DeRosier, 2010). Towards adolescence, children tend to become more challenging for themselves as well as for their environment. The prevalence as well as the intensity of both externalizing and internalizing problem behavior rise (Eccles, 1999; Martel, 2013). Adolescents' social network of peers is partly responsible for this increase. Through processes like peer pressure, modeling, mimicking and instruction or through a combination of these, they socialize each other and eventually become more similar (cf., Mercer & DeRosier, 2010). When dealing with a type of externalizing problems that is commonly referred to as delinquency or anti-social behavior, this socializing is actually deviancy training (Dishion & Dodge, 2005). With regard to internalizing problem behavior, this socialization may be explained in terms of co-rumination; the excessive discussing of problems between peers (Rose, 2002). Not all similarity in peer relationships and friendships is due to socialization; adolescents are likely to choose or

select friends that are similar to them as regards important characteristics, including problem behavior (Burk, Steglich, & Snijders, 2007). Other mechanisms have been suggested to account for peer similarity, namely withdrawal and avoidance. Withdrawal means that depressed children stop their engagement with dissimilar peers, whereas avoidance means that peers try not to interact or communicate with dissimilar peers. As a result of withdrawal and avoidance, depressed children may end up with a peer group of similarly depressed children (Schaefer, Kornieko, & Fox, 2011).

In the current study, we focus on social network influences on adolescents' internalizing and externalizing behaviors. The current article expands upon the existing literature in three ways. First, though both selection and socialization effects have been reported for internalizing and externalizing behaviors, most studies focus on either internalizing or externalizing behaviors, whereas internalizing and externalizing problems frequently are experienced concurrently (Dubois & Silverthon, 2004; Sameroff, 2000). This is referred to as co-morbidity. Studying these problems separately easily leads to misattributions or incomplete explanations. By concurrently studying internalizing and externalizing problems, this caveat is avoided. Second, relatively few studies have analyzed withdrawal and avoidance effects, especially for externalizing problems. Third, most studies on peer influences on externalizing problem behaviors focus on more severe forms of externalizing problems, in the current study we shall focus on less severe but more frequent forms of externalizing problem behaviors.

Peer Influences on Externalizing Problems

There is a large body of literature concerning socialization and selection effects of adolescents' delinquency, and these studies have often reported support for both selection and socialization (Burk et al., 2008; Burk et al., 2007; Svensson, Burk, Stattin, & Kerr, 2012). Peer similarity in terms of delinquency can be explained using the differential association theory (Matsueda, 2001), which states that individuals in a group that has a favorable attitude towards crime will have access to learning and opportunities that will make them more

likely to commit a criminal act themselves, or the deviancy training theory (Dishion & Dodge, 2005). The latter suggests that adolescents' antisocial behavior will increase as a result of peer approval provided when adolescents share, discuss or plan aggressive and antisocial behaviors. Social control theory (Hirschi, 1969) may help to explain the selection of adolescent peers, because it suggests that adolescents with weak ties to society and conventional institutions may engage in delinquency, and select like-minded friends. It has even been suggested that socialization and selection do not happen independently, but that during adolescence the opportunities to select delinquent friends increases because parental supervision diminishes, and that this wider available network of delinquent friends then provides new learning opportunities (socialization) with regard to delinquent behavior (Snyder et al., 2005). However, Weerman (2011) suggested that peer influence is not a decisive factor in adolescent delinquency, as in his study he found no support for selection and only weak support for socialization with delinquency as a dependent variable. Weerman (2011) suggested that adolescents' friendship choices are more the result of general mechanisms, such as proximity and reciprocity, than of delinquency.

Hitherto, milder externalizing behaviors have received less attention in the peer similarity literature than delinquency (Burk et al., 2008; Burk et al., 2007; Svensson et al., 2012; Weerman, 2011) or substance use (Knecht, Burk, Weesie, & Steglich, 2011; Steglich, Snijders, & West, 2006; Urberg, Degirmencioglu, & Tolson, 1998). This attention for graver types of adolescents' externalizing problem behaviors seems unbalanced in light of the fact that most adolescents share a considerable part of their time in school classes. The majority of infractions in classrooms are of a non-grave, nonviolent nature. They are more akin to disobedience (Raffaele Mendez & Knoff, 2003), or classroom disruptions (Raffaele Mendez & Knoff, 2003; Skiba & Rausch, 2006). Though compared to delinquency and substance use these may seem small problems, such 'small' but frequent disruptions are a significant source of stress for teachers (Clunies-Ross, Little, & Kienhuis, 2008), and an important reason for student expulsions or suspensions.

These are likely to increase future student misbehavior (Skiba & Rausch, 2006). Though we know less of peer influences on milder forms of behavior problems, Baerveldt, Völker and Van Rossem (2008) suggested that peer influences will be more pronounced for lighter forms of delinquency than for more severe delinquency, because adolescents who demonstrate severe problem behaviors are likely to have problems that make it difficult to create and maintain friendships.

It has been suggested that rejection plays a central role in the development of externalizing problems among adolescents. Adolescents who demonstrate problem behaviors may be rejected by their peers, and thus end up making friends with similar behavior problems. This group of friends can then serve to further socialize problem behaviors within the group (Vitaro, Pedersen, & Brendgren, 2007). However, several scholars also point out that engaging in externalizing problem behaviors is often appreciated by adolescents, and may serve to enhance popularity among peers (Ellis et al., 2012; Govender, 2011; Salmivalli, 2010). This potentially makes it an important characteristic in friendship selection (Snyder et al., 2005). Baerveldt and colleagues (2008) explain that peer similarity among the most delinquent peers may happen because delinquent adolescents withdraw or are rejected from normative peer groups and 'end up' with delinquent peers, but also suggest that for lighter forms of problem behavior such rejection is less likely to happen. Overall, most existing studies suggest that peer influences shape adolescents' problem behaviors, but which peer mechanisms are most influential remains unclear.

Peer Influences on Internalizing Problems

Similar to externalizing problems, many studies now suggest peer influences on internalizing problems. Studies investigating the characteristics of friends of children with internalizing problem behavior have provided evidence for friends who are similar with regards to depressive complaints (Haselager et al.,1998), anxiety (Mariano & Harton, 2005), suicide ideation and attempts (Yoder, 1999), and general internalizing problems (Henrich, Kuperminc, Sack, Blatt, & Leadbeater, 2000). Pachucki, Ozer, Barrat, and Cattuto (2015) found

no support for socialization, but Mercer and colleagues (2010), and Prinstein and Stevens (Prinstein, 2007; Stevens & Prinstein, 2005) did. Giletta and colleagues found support for socialization, but only in best friendship dyads and with female adolescents (Giletta et al., 2012). Others found support for selection (Hogue & Steinberg, 1995), and for a combination of selection and socialization (Kiuru, Burk, Laursen, Nurmi, & Salmela-Aro, 2012; Reitz, Dekovic, Meijer, & Engels, 2006; Stevens & Prinstein, 2005). Co-rumination may explain similarities in adolescent's internalizing problem behaviors. Co-rumination refers to the excessive discussing of problems between peers, and may simultaneously strengthen friendships, but also contributes to an increase in internalizing problems (Rose, 2002; Rose, Carlson, & Waller, 2007). With regard to selection processes, it has been suggested that there is an interplay between selection and de-selection processes (Van Zalk, Kerr, Branje, Stattin, & Meeus, 2010), wherein similarly depressed peers are selected as friends and non-similar peers are deselected as friends. The selection of depressed peers as friends suggests that there is a preference among adolescents to befriend similarly depressed peers. Depressed people may start to prefer the company of similarly depressed people, who may be more apt at providing comfort (Rook, Pietromonaco, & Lewis, 1994). Moreover, depressed friends may provide a social comparison which may make one feel better about one's own depression (Gibbons, 1984). However, Coyne (1976) suggests that an initial reaction to a depressed interaction partner may be one of pity and sympathy, but persisting complaints and pleas for help are likely to lead to rejection and the indirect expression of resentment. In line with this reasoning. Schaefer and colleagues (2011) suggest an explanation of similarities in depression between adolescent friends that does not focus on selection but on withdrawal (similar to de-selection) and avoidance (similar to rejection). They state that depressed adolescents make unattractive friends even to similarly depressed peers, but because they are rejected by everyone else, they will have to 'lower their standards' and accept friendship with similarly depressed peers. Furthermore, because of negative reactions depressed adolescents may receive from friends and peers, they may invest less in their existing friendships and eventually withdraw from them. Much

like externalizing problems, studies point to peer influences on internalizing problems, but again it remains unclear which mechanisms are most important in explaining peer similarity in internalizing problems.

Current Study

The current study is meant to advance our knowledge about youth peer influences on both internalizing and externalizing problem behavior. Because we wanted to focus this study on problems that were prevalent among adolescents, we focus on relatively less severe but more frequently manifested externalizing problem behaviors. Previous studies on peer influences on externalizing problem behavior strongly focused on major or minor delinquent acts (Burk et al., 2008; Burk et al., 2007; Svensson et al., 2012). Other additions over existing literature include the simultaneous inclusion of internalizing and externalizing problems, and the simultaneous inclusion of selection, socialization, withdrawal and avoidance effects, which to the best of our knowledge have not been combined in a single analysis for externalizing or internalizing problem behavior. The simultaneous inclusion of internalizing and externalizing problems hitherto has only been provided by Van Zalk et al. (2010).

In the Netherlands, students in the eighth grade receive almost all of their lessons in the same class and stay together as a class. This class is the social and educational unit, and pupils do not move between classes as is common in school systems in other countries. Therefore, we chose to analyze the in-class networks of these adolescents. For this study, we collected data for entire classrooms, where each student reported on their own behavior, thereby eliminating inflated similarities caused by projection effects (Baerveldt et al., 2008; Prinstein & Wang, 2005).

Earlier research reports socialization and selection effects for externalizing problem behaviors (Burk et al., 2008; Burk et al., 2007), and the existence of avoidance and withdrawal effects have been suggested (Baerveldt et al., 2008; Snyder et al., 2005), though not actually studied. Literature is

somewhat contradictory, especially regarding the existence of avoidance effects for externalizing problem behavior. Based on Baerveldt et al. (2008), we expect that for relatively lighter externalizing problem behaviors there will be selection and socialization effects, but no avoidance or withdrawal effects. Earlier research regarding peer influences on internalizing problem behaviors suggests the existence of socialization, selection, withdrawal and avoidance. Based on the results regarding co-rumination (Rose, 2002; Rose et al. 2007) and the results of Van Zalk et al. (2010), we hypothesize socialization effects for internalizing problems. The theory and results regarding the existence of selection, withdrawal and avoidance effects is more contradictory, but based on the work by Coyne (1976) and Schaefer et al. (2011), we expect avoidance and withdrawal but no selection effects for internalizing problems.

Because both ethnicity (e.g., Van Geel & Vedder, 2010) and gender (e.g., Leadbeater, Kuperminc, Blatt, & Hertzog, 1999) have been found related to internalizing and externalizing problems, and simultaneously both gender and ethnicity have been found to be related to friendship selection (e.g., Baerveldt, Zijlstra, De Wolf, Van Rossem, & Van Duijn, 2007; Burk et al., 2007), we control the analyses for gender and ethnicity selection effects.

2 Method

Participants

The sample used for this study consisted of 542 students (51% female) from 24 eighth grade classes in four schools in the western part of the Netherlands. Students ranged in age from 12 to 16 years (*M-age* = 13.3 years; *SD* = 0.5), and 98% of the students were early adolescents (aged 14 or less) during the first round of data collection. The sample was ethnically mixed: 62% of the students had a Dutch background, 11% were Turkish, 2% Moroccan, 1% Surinamese, 1% Dutch-Antillean and 16% had some other ethnic background, many with a mixed ethnic background, e.g., Dutch-Moroccan. For 8% percent of the pupils the ethnic background was not known. The highest level of education that either parent finished determined SES: 4.1% did not complete

school or finished only primary school, 15.3% finished junior vocational high school, 11.4% general academic junior high school, 9.2 % pre-university level school, 6.5% senior vocational high school, and 16.6% held a university degree. Many students did not know their parents' education or did not answer the question about their parents' education, viz, 33.9%.

Measurements

Peer nominations. Students could nominate up to seven students that they liked within their classroom, although some nominated more than seven. We chose to include all the nominations the students made. We then created a matrix for each classroom wherein a one indicated a nomination of a classmate (*like*), also referred to as a tie, and wherein a zero indicated the absence of a nomination, also referred to as the absence of a tie. Note that ties in the matrix, were not necessarily reciprocated, so that each nomination was reflected as a tie in the matrix, regardless of reciprocity. Using reciprocated nominations as opposed to unilateral nominations will lead to a loss of information because when using unilateral nominations missing actors cannot nominate other children, but can receive incoming ties, which is not possible when using reciprocated nominations. The Siena program accounts for reciprocity through inclusion of a reciprocity parameter (for a similar analysis procedure see Sentse, Kiuru, Veenstra, & Salmivalli, 2014). Classrooms tended to be rather small, so for each school the nominations of the students of all participating classrooms were combined into one school matrix, to preserve power in the statistical analyses. Because students could not nominate out-of-class friends, potential ties between students from different classrooms were coded as structural zeroes, representing the impossibility of ties between these students in our model.

Background variables. Gender, ethnic background, and SES were used as background variables. Ethnic background was measured by asking the students to mention in which country their parents were born. SES was measured by asking the students to report the highest level of education reached by their parents.

Externalizing problem behavior. For our measure of externalizing problem behavior, we used eight items that measured maladaptive behavior. Each started with "How often did you …". The items were: 1) tell a lie; 2) have a serious fight with a teacher; 3) exhibit bad behavior for which you were sent out of class; 4) lose your patience because you had to wait very long; 5) tease another student; 6) swear at a teacher; 7) have to go to the principal because of something you did; 8) bully another student. This newly formed self-report scale was inspired by other scales (Bendixen & Olweus, 1999; Koerhuis, 2007) and proved to be reliable (Cronbach's $\alpha = 0.84$). A five-point response scale was used ranging from *Never* to *Often* in the course of the last year. Because most students scored low on behavior problems, rounding the original continuous scores off to integers would have resulted in a very limited variation in the data. To solve this problem scale scores were multiplied by 3 and then rounded before entering them into the analyses (see Burk et al. (2007) for the application of a similar procedure).

Internalizing problem behavior. Our measure for internalizing behavior is a self-report scale first used in the ICSEY study (Berry, Phinney, Sam, & Vedder, 2006). We choose to use this scale because classrooms in the Netherlands tend to be ethnically diverse, and the ICSEY scale for internalizing problems was found unidimensional and reliable across various ethnic groups (Berry et al., 2006). It consists of 15 items designed to measure depression, anxiety, and psychosomatic symptoms. Sample items are: "I feel tired." and "My thoughts are confused." Students could indicate their answer on a five-point response scale, ranging from *Never* to *Often*. In the current study the scale has a Cronbach's alpha of 0.86. Because our analytic technique, SIENA, only accepts integer numbers as values for outcome variables, the scores were rounded ($\geq .05 = 1$) before entering them into the analyses, thus providing a possible range of scores from 1 to 5.

Procedure

A researcher administered questionnaires, with teachers present. During one school year, each school was visited three times, once during autumn,

once in winter and once in spring. The data-collection moments were approximately three months apart. During each round of data collection an identical questionnaire was administered. All students in each classroom were invited to participate in the study. They were informed that they could refrain from participating and that the information they provided would be treated confidentially and would only be seen by the research team. Parents received information prior to the study, and were invited to inform the school if they did not want their child to participate. The participation rate for the schools was lower than 30 percent, but for the consenting schools no parents withdrew their children from the study and all students decided to participate.

Plan of Analysis

For the analyses we used a social network analytic approach: the Simulation Investigation for Empirical Network Analysis (SIENA; Snijders, Steglich, Schweinberger, & Huisman, 2010). An important reason for using this approach is that it takes into account the so-called structural effects within social groups when studying the interplay of selection and socialization effects of adolescents. Another important benefit of SIENA is that selection and socialization effects can be disentangled. SIENA was designed to analyze social network models with repeated measures using dynamic actor-oriented models. A dynamic network consists of ties between actors that can change over time. Actors, in the current study the adolescents, in a network may 'choose' to start new ties, terminate old ties, or do nothing. This reflects social situations wherein people can, develop new sympathies for people in a network, lose their sympathy for someone, or wherein status quo can be preserved. The probabilities for a choice depend on the objective function, which expresses how likely it is that an actor changes his or her network in a particular way. Effects can be included in this objective function to test hypotheses or to control for covariates and structural network effects (Snijders et al., 2010; Snijders, Van de Bunt, & Steglich, 2010).

In our analyses we controlled for several structural network effects. We controlled for reciprocity (the tendency to return a friend's nomination)

because in general people tend to reciprocate ties, and Geodesic distance of two (a negative parameter suggests the tendency for network closure: becoming friends with friends of friends), because people tend to become friends with friends of friends. Such effects are very common in most social networks, thus it is advised in the Siena manual to always control for structural network effects (Snijders, Steglich et al., 2010). Because Haynie (2001, 2002) has shown that the density within a network is a powerful predictor of anti-social behavior, we also control for density, which reflects whether people tend to have many or few ties with others. As outlined in the current study section, we also control for gender and ethnicity selection effects, because adolescents tend to select friends that are similar in terms of gender and ethnicity, and these characteristics are tied to internalizing and externalizing problem behavior.

Several effects were included in the objective function to test our hypotheses. Selection effects were included to test whether adolescents tend to select peers that are similar to them in terms of internalizing and externalizing problem behaviors. A positive and significant selection parameter for internalizing and externalizing problem behaviors would suggest the existence of a selection effect on these variables. Socialization effects were included to test whether adolescents tend to become similar to preferred peers in terms of internalizing and externalizing problem behaviors. A positive and significant socialization parameter for internalizing and externalizing problem behaviors would suggest the existence of a socialization effect on these variables. Withdrawal and Avoidance effects are studied by modeling the ego and alter effects of internalizing and externalizing problem behavior (Schaefer et al., 2011). A negative parameter on an ego internalizing or externalizing parameter (withdrawal) would suggest that adolescents who score high on this behavior tend to nominate fewer peers as friends, whereas a negative alter internalizing or externalizing parameter (avoidance) would indicate that adolescents who score high on this parameter are nominated less often by peers as friend.

In the current study we used a two-step approach for the analyses. First we ran network analyses per school. Then we performed a meta-analysis on the outcomes of the first analyses, to combine the findings from the individual schools (Snijders, Steglich et al., 2010).

3 Results

The means, standard deviations and correlations for internalizing and externalizing problems are provided in Table 1. A repeated measures ANOVA indicated no mean changes for either internalizing [$F(2, 838) = 2.839$, $p=.059$] or externalizing [$F(2, 838) = .561$, $p=.571$] problems over time in the entire sample. There were 122 children with missing data on externalizing and/or internalizing problems and were therefore excluded from the repeated measures ANOVA. These children could not provide outgoing ties, but could be nominated as friends, and were therefore not excluded from the SIENA analyses (see Huisman & Steglich, 2008 for an extended discussion on the handling of missing data in SIENA). Correlations between internalizing problems across the three measurements were high and statistically significant, as were correlations between externalizing problems across the three waves.

Table 1. Means, standard deviations and correlations for internalizing (Int.) and externalizing (Ext.) problems at the three measurements.

	M (SD)	Int.(T1)	Ext.(T1)	Int.(T2)	Ext.(T2)	Int.(T3)	Ext.(T3)
Int.(T1)	2.13 (.56)	-					
Ext.(T1)	1.52 (.45)	.11*	-				
Int.(T2)	2.14 (.63)	.66***	.15**	-			
Ext.(T2)	1.53 (.51)	.09	.67***	.34***	-		
Int.(T3)	2.07 (.62)	.61***	.15**	.74***	.18**	-	
Ext.(T3)	1.52 (.46)	.16**	.70***	.23***	.68***	.29***	-

*=p<.05; **=p <.01; ***=p<.001

As outlined in the method section, we first ran separate analyses for each school and then combined the outcomes of these analyses using a meta-analysis. The separate analyses for each school converged well, as indicated by low t-ratios and no standard errors for parameter estimates that exceeded three (Snijders, Steglich et al., 2010). After analyses for separate schools were run, results for the separate schools were combined in a meta-analysis to test our hypotheses. The results of the meta-analysis are summarized in Table 2. The 'network rate functions' are not related to the objective function. This reflects how often children change their network or their behaviors. The 'tendency' reflects whether respondents tended towards high or low scores on the scale. The non-significant and near zero parameter in our case reflects that children tended to score towards the middle of the scales. The 'quadratic tendencies' reflects the effect of the behavior upon itself. The structural network effects 'reciprocity' and 'geodesic distances of two' were significant, which indicates that adolescents tended to reciprocate friendship nominations and tended to become friends over time with friends of friends. The density parameter was negative and significant, which indicates that adolescents tend to have few ties with others. The sex similarity and ethnic similarity effects had positive values and were significant, which indicates that adolescents tended to select friends with similar gender and ethnic background.

Our hypotheses regarding externalizing problem behaviors were supported. We found a positive and significant socialization parameter for externalizing problem behavior, and a positive and significant selection parameter, which indicates support for our hypotheses regarding socialization and selection of externalizing problem behaviors.

Table 2. Outcomes of the SIENA analyses on selection and socialization problem behavior.

	Mean parameter		***SD***	
	Est.	S.E.	Est.	χ^2
Network dynamics				
Network rate 1	1.98***	0.19	0.25	10.43*
Network rate 2	1.69***	0.13	0.00	7.17
Density	-2.71***	0.15	0.00	2.71
Reciprocity	1.86***	0.22	.37	9.96*
Geodesic distances 2	-0.97*	0.30	0.45	4.50
sex similarity	1.96***	0.25	0.00	1.93
Ethnic background similarity	0.24**	0.10	0.00	3.22
Internalizing alter (avoidance)	-0.01	0.04	0.00	2.82
Internalizing ego (withdrawal)	-0.02	0.04	0.00	3.02
Externalizing alter (avoidance)	-0.02	0.04	0.00	0.92
Externalizing ego (withdrawal)	0.06	.03	0.00	1.03
Internalizing similarity (selection)	0.14	0.51	0.00	1.94
Externalizing similarity (selection)	1.25*	0.56	0.00	0.85
Behavioral dynamics				
Internalizing rate 1	3.69***	0.35	0.00	2.28
Internalizing rate 2	3.14***	0.58	1.06	8.86
Externalizing rate 1	3.47***	0.64	1.12	9.56*
Externalizing rate 2	2.58***	0.23	0.00	1.09
Tendency internalizing	-0.07*	0.03	0.00	3.85
Quadratic tendency internalizing	-0.03*	0.01	.00	4.42
Tendency externalizing	-0.04	0.03	0.00	0.71
Quadratic tendency externalizing	-0.02	0.01	0.00	4.76
Internalizing average similarity (socialization)	1.91†	1.04	1.51	6.95
Externalizing average similarity (socialization)	3.50***	1.01	0.00	3.05

† $p < .10$* $p < .05$; ** $p < .01$; *** $p < .001$.

These results suggest that adolescents tend to like peers that are similar to them in terms of externalizing problem behavior and become more similar to liked peers in terms of externalizing problem behavior. Furthermore, in line with our hypotheses, we found non-significant effects for the ego externalizing problems effect (withdrawal) [p>.10] and the alter externalizing problems effect (avoidance) [p>.20], which suggests that peers with high problem behaviors do not nominate fewer peers, which would indicate withdrawal, nor do they receive fewer nominations from peers, which would indicate avoidance.

Our hypotheses regarding internalizing problem behaviors were only partially supported. As expected we found a non-significant selection effect for internalizing problems [p>.20], which suggests that peers do not nominate peers that are similar to them in terms of internalizing problem behaviors as liked. However, contrary to our hypotheses we also found no withdrawal or avoidance effects for internalizing problem behaviors, as indicated by non-significant internalizing ego and internalizing alter effects. This suggests that children who report many internalizing problems do not nominate fewer peers as liked, nor are they nominated less often as liked by their classmates then children with fewer internalizing problems. We found a marginally significant effect for socialization ($p < .10$), which we interpreted as small support for our hypothesis regarding the socialization of internalizing problems.

4 Discussion

In this longitudinal study, we set out to test peer influences with regard to two types of problem behavior: internalizing problem behavior and externalizing problem behavior, while controlling for structural network effects and gender and ethnicity selection effects. Many previous studies on peer mechanisms focus on either internalizing or externalizing behaviors, whereas internalizing and externalizing problems frequently are experienced concurrently (Dubois & Silverthon, 2004; Sameroff, 2000). In the current study, we entered internalizing and externalizing problems simultaneously to avoid misattribution. Furthermore, we analyzed avoidance and withdrawal effects for both internalizing and externalizing problems.

With regard to externalizing problem behaviors, all our hypotheses were supported. In line with previous studies we found significant effects for socialization and selection (Burk et al., 2008; Burk et al., 2007; Svensson et al., 2012), but we did not find significant effects for avoidance or withdrawal. It has been suggested that adolescents with externalizing problems may have problems maintaining friendships and are often rejected by peers (Baerveldt et al., 2008; Vitaro et al., 2007), but Baerveldt et al. (2008) stated that this is probably mostly true for severely delinquent adolescents, who may have personality problems that impede their capacity to form social bonds. Lighter forms of externalizing problems, which were the focus of the current study, may even be a valued trait among adolescents as it may signal evolutionary fitness, deviance of adult norms and the capacity to gain control of resources (Ellis et al., 2012; Govender, 2011; Salmivalli, 2010).

Overall, we did not find any mean change in level of externalizing behavior problems: that adolescents become more similar to liked peers does not necessarily indicate that their problems increase, the mean level of problem behaviors may also decrease to become more similar to that of liked peers. It has been suggested that there are different peer groups, for example nerds and jocks, with their own norms regarding externalizing behaviors (England &

Petro, 1998). With regard to externalizing problems, adolescents may choose to belong to a peer group that resembles their initial levels of externalizing problem behaviors, and through mimicking, peer pressure and, perhaps for some groups, deviancy training (Dishion & Dodge, 2005) become more attuned to the group norm over time.

Our hypotheses for internalizing problems were only partially confirmed. As expected, and in line with Schaefer et al. (2011), we found no significant effects for selection, but contrary to our expectations we also found no support for avoidance or withdrawal. We found a marginally significant socialization effect for internalizing problems, which may have happened because of co-rumination (Rose et al., 2007). However, the effect size was small, and perhaps, as Weerman (2011) concluded for delinquency, peer influences on internalizing problems are small at best and maybe other factors are more important in the emergence of internalizing problems among adolescents. It has already been reported that selection and socialization effects for internalizing problems in the classroom are weak (Van Zalk et al., 2010) or absent (Pachucki et al., 2015). However, Van Zalk et al. (2010) concluded that peer influences on depression are most pronounced for peer relations outside the classroom, and Giletta and colleagues (2012) showed that peer socialization of depressive symptoms only occurred in very best friends dyads. Because people may react hostile or dismissive towards people who speak of their depressed mood (Coyne, 1974; Rook et al., 1994), it may be that adolescents are very selective with whom they share their depressed thoughts. Classmates who are merely liked may not be trusted enough as a discussion partner for internalizing problems, which may explain why we found absent (selection, avoidance, withdrawal), or weak (socialization) peer influences for internalizing problems. Outside of the classroom it may be easier to arrange a personal conversation in which adolescents feel comfortable enough to talk of internalizing problems: even when a classmate is trusted enough to share internalizing problems, other classmates might overhear, and, at least during school time, it might be difficult to privately talk to classmates.

The dismissive attitudes towards internalizing problems (Coyne, 1974; Schaefer et al. 2011) and the sometimes positive attitudes of adolescents towards externalizing problems (England & Petro, 1998) may help to explain why we found peer influences for externalizing problems but not for internalizing problems. However, we should also keep in mind that in contrast to internalizing problems, externalizing problems are easily visible to most students and are frequently made even more salient by teachers who correct or punish students for this behavior (Bryan, Day-Vines, Griffin, & Moore-Thomas, 2012). Internalizing problems may not be readily visible in a classroom setting, hence it would be more difficult to select friends with internalizing problems or mimic their behavior (see Van Workum, Scholte, Cillessen, Lodder, & Giletta, 2013, for a similar reasoning in reference to happiness). To the best of our knowledge, this is the second study to examine peer influences on externalizing and internalizing problems simultaneously, we only know the study by Van Zalk et al. (2010) to also include both measures simultaneously. Given that internalizing problems and externalizing problems tend to be highly correlated, and may even be affected by the same underlying causes (Reitz, Deković, & Meijer, 2005), it may be that previous studies found peer influences on internalizing problems because externalizing problems were not controlled for in the analyses. We cannot but emphasize that based on our study it would be too soon to conclude that previous results regarding peer influences on internalizing problems are fully explained by not controlling for externalizing problems. We do suggest however, that future studies on peer influences on problem behavior should include both internalizing and externalizing problem behaviors in the analyses.

Our results on externalizing problems are in line with earlier studies reporting both selection and socialization effects on adolescents' delinquency. We used unilateral friendship nominations as the starting point of our analyses. Though this method establishes more contacts between adolescents, it may not adequately identify the best friendships. Stone and colleagues (Stone et al., 2013) found that only in reciprocal friendships children were likely to be similar with respect to internalizing problems, not in unilateral

peer relationships. And Giletta and colleagues (2012) showed that peer socialization of depressive symptoms only occurred in very best friends dyads. In the current study we may not have found selection and socialization effects for internalizing problems, because we focused on unilateral friendships only.

Our focus on within class social networks is an important limitation. Although students of about 13 years living in the Netherlands spend most of their time during weekdays in class with their classmates, classmates are by no means the only peers or persons to meet and to influence or to be influenced by. It is likely that students are influenced also by their out-of-school peers (Kiesner, Kerr, & Stattin, 2004; Van Zalk et al., 2010), by their parents and by other adults (Vedder, Berry, Sabatier, & Sam, 2009). Also, we had three moments of measurement with approximately three months in between each moment of measurement, while our measurement instruments instructed students to give an account concerning their problem behaviors over the last year. Given that our scale anchors started at *never*, and our questionnaires contained eight (externalizing) and fifteen (internalizing) items that reflected highly prevalent behaviors among adolescents, we believe that the scales were sensitive enough to 'capture' changes in the measured constructs. Furthermore, our general focus on internalizing problems differs from the focus on particularly depression in other articles on peer influence (Schaefer et al., 2011; Van Zalk et al., 2010). Future studies should establish to what extent the results in the current study can be generalized to other populations, and can be replicated (Bakker, Van Dijk, & Wicherts, 2012; LeBel & Peters, 2011).

The current findings make clear that the prevention of minor norm-breaking behavior in young adolescence should focus on a combination of both peer socialization (how to engage peers in more or less norm-breaking behavior) and peer selection (what makes norm breaking peers interesting?). This may seem a bigger challenge than it actually is. A good class climate, open discussions between teachers and students about norms and rules and how to interpret and maintain them, may improve the situation that is rather common, albeit disruptive (Olweus, 1997; Rigby, 2008; Troop-Gordon & Ladd, 2013).

Conclusion

In the current study, we found peer influences for 'light' externalizing problem behaviors but not for internalizing problem behaviors. In line with other studies and theories (Baerveldt et al., 2008; Snyder et al., 2005), it appears that at least mild externalizing problems are an important characteristic for deciding whom is liked or not among adolescents, and adolescents seem to adjust their externalizing behaviors to that of their peer group. We did not find peer influences on internalizing problems, and suspect that these are more likely to be affected by intimate relations, for example best friends, than by a preferred group of peers in the classroom (Giletta et al., 2012; Van Zalk et al., 2010). In conclusion, adolescents' externalizing problems especially may be affected by classmates; for this to happen, adolescents need not even be best friends. A mere preference for one another is enough to socialize externalizing problem behaviors.

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