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How Context and the Perception of Peers' Behaviors Shape Relationships in Adolescence

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Disentangling Dyadic and Reputational Perceptions of Prosociality, Aggression, and Popularity in Explaining Friendship Networks in Early Adolescents

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4.1 Introduction

During late childhood and adolescence, friendships play an increasingly important role in satisfying the fundamental goals of affection and status (Giordano, 2003; Johnson et al., 2011). In light of these goals, adolescents evaluate the behaviors and characteristics of others based on whether they will gain affection or status. Being perceived as prosocial, aggressive, and popular has been associated with receiving friendship nominations (Cillessen & Rose, 2005; Rodkin, Farmer, Pearl, & Van Acker, 2000). Peers' prosocial (e.g., being cooperative and kind) and aggressive (e.g., starting fights and making fun of others) behavior may give early adolescents information about the potential affection they can gain through friendships, whereas peers' popularity may offer information on the status they might gain through friendships. However, there is little research on whether adolescents rely on their own perception of a peer's behavior (*dyadic perception*) or the reputation of that peer (*reputational perception*) when selecting friends.

Most previous research examining factors that contribute to friendships have usually aggregated peer nominations (e.g., who is popular, who cooperates with others) at the group level by counting the number of nominations received by each student in the classroom (or grade), and then either standardized these scores (z -scores) or divide them by the total number of possible nominations (proportion scores). These scores reflect the agreement among peers about friendships, status, or behaviors of classmates (or schoolmates). However, individual students may not have nominated the same children as aggressive and as a friend, even in cases where researchers find a positive correlation between aggressive behavior and friendship nominations (Kiefer & Ryan, 2011; LaFontana & Cillessen, 2002). Disentangling the dyadic nominations from aggregated scores might elucidate, for example, why previous literature has consistently found that although aggressive peers are usually rejected by others (Ladd, 2006), they still have a considerable number of friends (Rodkin et al., 2000). It might be that some classmates consider aggressive peers as violent and, therefore, do not nominate them as friends. At the same time, those students who nominate aggressive peers as friends might not perceive them as aggressive. Unfortunately, analyses that focus exclusively on the aggregated level are unable to disentangle the dyadic perception from the reputational one.

We aim to tackle this issue by distinguishing between how early adolescents' own perception (*dyadic perception*), and the reputation (*reputational perception*) of a peer's behavior is related to friendships. Specifically, we are interested in disentangling (1) the effect of student i 's perception of student j 's characteristics on student i 's friendship nomination to j (e.g., How does Jenny's perception of Jim as aggressive affects her friendship nomination to Jim?), with (2) the effect of other peers' nominations of j on i 's friendship nomination to j (e.g., How does Jim's reputation of being aggressive affects Jenny in her friendship nomination to him). In this paper, we analyze the effect of dyadic and reputational perceptions of peers' prosociality, aggression, and popularity on the formation and maintenance of friendship networks. This research emphasizes the importance of understanding the characteristics attributed to befriend other peers. In this way, this study can inform researchers about the processes that underlie how children establish their social relationships.

4.1.1 Goal-framing perspective on friendship selection

The goal-framing perspective (Lindenberg, 2001; 2008), which has been successfully applied in friendship selection (Sijtsema et al., 2009, 2019; Veenstra et al., 2007), states that goals related to fundamental needs such as affection and status are particularly powerful in influencing selective

attention and evaluation. According to this theory, individuals pay close attention to what they think is instrumental in (or disturbs) the achievement of their goals. As friendships contribute to achieving both affection and status, identifying which characteristics make peers attractive as friends become crucial (Lindenberg, 1996). In this study, we focus on the effect of early adolescents' dyadic and reputational perception of peers' prosociality, aggression, and popularity on friendship formation.

4.1.2 Prosociality, aggression, friendships, and the dyadic perception

Friendships reflect personal preferences at the dyadic level, which directly links to the goal of affection. Friendships become more important as adolescents increasingly interact with each other (Newcomb & Bagwell, 1995) and are, therefore, central to fulfilling the needs for intimacy and belonging (Bukowski & Sippola, 2005). Behavioral characteristics such as prosocial and aggressive behavior might indicate the affection that a potential friendship may yield. Friendships containing at least one aggressive child are characterized by more frequent, lengthy, and intense conflicts, whereas friendships of prosocial children show positive qualities and lower conflict (Cillessen, Jiang, West, & Laszkowski, 2005). Here, we argue that early adolescents' perception of peers' prosocial and aggressive behaviors may provide valuable information about the quality of friendships with them. The perception of peers' prosocial and aggressive behavior might enable children, on the one hand, to obtain affection by establishing supportive and trustful friendships with prosocial peers, and, on the other hand, to avoid detrimental friendships by not befriending aggressive peers. Because affection is formed in dyads, we argue that children's personal (dyadic) experiences are more likely to steer the selection and maintenance of friendships rather than the reputation of their peers' prosocial behavior and aggression. Put differently, friendship selection is more likely to be driven by students' own perceptions of peers' prosocial or aggressive behavior rather than by the aggregated perception of classmates (i.e., reputation) about the same peers' behaviors.

Starting in early adolescence, peers play a central role as recipients and sources of support (del Valle et al., 2010). Prosocial behavior is closely related to friendship emergence, stability, and satisfaction (Barry & Wentzel, 2006; Parker & Asher, 1993; Hiatt, Laursen, Mooney, & Rubin, 2015), because intimacy and mutuality, two important aspects of friendship, can be reached through the exchange of help and support. Prosocial peers tend to form and maintain friendships more frequently than their less prosocial peers (Bowker et al., 2010), as well as to establish more positive interactions and to experience positive well-being (Cillessen, Jiang, West, & Laszkowski, 2005). Furthermore, in comparison to other classmates, prosocial children are inclined to value their interactions and to be intrinsically motivated to build relationships (Hawley et al., 2002). As prosocial peers exhibit positive characteristics, it is likely that they are attractive as potential friends. Because prosocial behavior is linked to establishing intimate and close interactions, we expected that early adolescents would befriend peers based primarily on their own experience of peers' prosocial behavior. Consequently, prosociality would be likely to positively affect friendships on the dyadic but not on the reputational level (*hypothesis 1*).

Conversely, physical aggression is usually seen as a negative feature because it directly compromises closeness and intimacy with a peer (Ojanen et al., 2012). Aggressive youths tend to develop poorer interactions with their peers, such as excluding their peers and experiencing diminished well-being (Slee, 1995). Aggressive adolescents tend to have an unclear understanding of relational expectations, often hampering the establishment of social relations by being perceived

as unfriendly (Veenstra, 2006). Furthermore, some aggressive children lack the necessary social skills to provide emotional and practical support, therefore, becoming less attractive as potential friends who offer affection (Sijtsema, Lindenberg, et al., 2010). Yet, aggressive children can develop instrumental friendships. For example, bullies usually pursue friendships strategically to reach power and status instead of personal fulfillment (Hawley et al., 2002; Ryan & Shim, 2008). As aggression is linked to having detrimental relationships, we hypothesized that early adolescents would avoid befriending peers based primarily on their own experience of peers' aggressive behavior. Therefore, aggression would be likely to negatively affect friendships on the dyadic but not on the reputational level (*hypothesis 2*).

4.1.3 Popularity, friendships, and the reputational perception

Popularity has been portrayed as a shared recognition among peers that a particular individual holds power, prestige, visibility, and social dominance (Cillessen, Schwartz, & Mayeux, 2011; Bellmore and Cillessen, 2006). Especially during late childhood and adolescence, peers tend to attach great importance to popularity (LaFontana & Cillessen, 2010). Popular adolescents possess many characteristics that make them attractive, such as having fun and exciting social lives and being socially powerful and visible, getting much attention from teachers and classmates (Adler & Adler, 1998; Hawley et al., 2007; Vaillancourt & Hymel, 2006). Consequently, peer relationships and groups are, to a large extent, defined along the dimension of popularity (Dijkstra, Cillessen, & Borch, 2013). Being popular requires a degree of compatibility with the values and behavioral orientations of the larger peer structure, such as classrooms or schools (Brown et al., 1986). In order to be popular, it is necessary that others want to be associated with them (Dijkstra, Cillessen, Lindenberg, & Veenstra, 2010).

From a goal-framing perspective, to achieve status, it may be useful for early adolescents to befriend popular peers rather than peers of similar status. Befriending high-status peers can enhance one's own status, a phenomenon known as "basking in reflected glory" (Cialdini & Richardson, 1980). As popularity is about a shared recognition of who is popular in the peer group, we expected that for choosing friends, the reputational perception of popularity would overrule the dyadic perception. Accordingly, the selection of friends would be driven by the reputational but not by the dyadic perception of peers' popularity (*hypothesis 3*). To conclude, we investigated the interplay of early adolescents' dyadic and reputational perceptions of prosociality, aggression, and popularity with friendship networks. For this purpose, we used longitudinal social networks analysis, specifically, the stochastic actor-oriented models (SAOM) (Ripley et al., 2018).

4.2 Method

4.2.1 Sample

Participants were 1,170 fourth, fifth, and sixth graders (52% girls_{T1}; Age range_{T1} = 10 to 12 years old) from 30 classrooms in four schools in metropolitan Santiago, Chile. All schools were public subsidized, which is the case for 54.6% of schools in Chile (Ministerio de Educación de Chile, 2015). According to the Chilean national socioeconomic classification, one school corresponds to lower-middle, two schools to middle, and one school to upper-middle socioeconomic status (based on parents' educational level, family income, and school vulnerability index, which measures the percentage of students in a school that is considered vulnerable based on family income, medical needs, birth weight, and residential conditions). In the Chilean education system, students tend to

spend their entire elementary education (first to eighth grade) with the same classmates and in the same schools. Therefore, classrooms are stable environments in which peer relationships unfold. Despite this particularity, research on adolescent peer relationships with Chilean samples has shown similar patterns to American and European populations (Berger & Rodkin, 2012; Dijkstra, Berger, & Lindenberg, 2011), and the study of peer relationships and adolescent development in Latin America follows similar trends to those in western societies (Berger et al., 2016).

In view of SAOM missing data requirements, only classrooms that had a participation rate higher than 80% were included in the analyses, resulting in a sample of 18 classrooms. Because the participation considerably declined from the third wave onwards, we only examined waves 1 and 2 (collected in April and October of the same academic year). Finally, two classes were excluded due to convergence issues in the social network analyses (i.e., low reliability of estimates). The final sample contained 694 students from 16 classrooms (45% girls) (see Table 4.1). A small number of students named almost everyone (above 85%) as friends in their classroom (6 and 5 participants in the first and second wave, respectively). As these students may have interpreted the question differently from their classmates, we recoded their outgoing nominations as missing data while retaining their incoming nominations. Similar strategies to handle outliers have been used in previous research with longitudinal social network analyses (Light et al., 2013; Van Rijsewijk et al., 2019).

4.2.2 Procedure

Principals were approached and informed about the study and asked for their authorization. Surveys were administered to the whole classroom in regular classroom hours in the presence of research assistants. Surveys were completed during regular class hours, taking approximately 45 minutes per classroom. During the survey, participants answered the questionnaire individually, while trained administrators assisted participants when needed. All instruments and procedures were approved by the Institutional Review Board of the local university and by the funding institution. Parental active consent and students' assent were gathered for all participants taking part in a 3-year research project (five assessments, with six months intervals) that focused on peer relationships (see also Berger & Caravita, 2016; Cuadros & Berger, 2016; Palacios & Berger, 2016).

4.2.3 Measures

A standard peer-nominations procedure was used to assess prosociality, aggression, popularity, and friendships (Berger & Rodkin, 2012; Cillessen & Mayeux, 2004; Logis, Rodkin, Gest, & Ahn, 2013). Participants were asked to nominate classmates from a roster with all names listed.

Friendship (T1-T2). Participants could nominate an unlimited number of their classmates whom they considered to be their best friends (*'Who are your best friends?'*). For friendships, we constructed adjacency matrices for each classroom in each wave, containing 0 and 1, representing the absence and presence of a nomination between actors i and j .

Prosociality, Aggression, and Popularity (T1). Participants could nominate an unlimited number of their classmates whom they considered as prosocial (*'Who cooperates? They help and share with others'*), aggressive (*'Who starts fights? They hit, kick, or punch others'*) and most popular in their classroom (*'Who are the most popular and visible students in your class?'*). For the dyadic perception, we constructed adjacency matrices for each classroom in wave 1, containing 0 and 1, representing the absence and presence of a nomination between actors i and j . For the reputational perception, we computed

Table 4.1 Changes in networks variables across the two observations

Class	Size	Miss t1	Miss t2	Miss Av.	Jacc	Dist	FR t1	FR t2	FR 0→1	FR 1→0	FR 1→1	% girls	PR t1	AG t1	PO t1
2	40	.15	.00	.08	.19	381	8.50	7.12	182	199	90	55.0	.13	.10	.17
3	38	.05	.00	.03	.32	255	7.36	6.05	107	148	117	36.8	.08	.12	.17
4	40	.17	.02	.10	.33	311	9.66	8.51	146	165	154	52.5	.19	.13	.20
5	41	.02	.05	.04	.21	486	12.90	7.10	145	341	130	39.0	.19	.14	.29
8	41	.09	.14	.12	.37	360	10.27	11.17	166	140	181	42.5	.19	.14	.24
9	41	.07	.19	.13	.36	291	9.13	11.09	171	120	168	51.2	.16	.14	.17
11	37	.15	.10	.13	.33	171	6.01	5.27	76	96	85	51.4	.16	.16	.20
12	38	.10	.18	.14	.39	235	9.26	10.25	140	95	152	44.7	.12	.15	.23
13	39	.17	.05	.11	.32	227	6.67	8.43	130	99	109	53.8	.22	.12	.26
17	38	.26	.10	.18	.35	179	6.51	8.85	106	73	97	31.6	.16	.14	.17
18	40	.15	.15	.15	.35	367	12.55	10.73	154	213	193	60.0	.23	.09	.32
20	45	.35	.00	.18	.36	259	9.55	8.93	131	128	149	31.6	.16	.14	.17
21	43	.14	.00	.07	.38	240	7.73	6.62	103	137	149	42.2	.12	.06	.09
22	43	.25	.02	.14	.43	305	15.53	9.42	73	232	238	48.8	.24	.10	.23
23	45	.40	.00	.20	.42	253	11.59	8.24	127	126	187	46.5	.20	.05	.18
24	45	.22	.00	.11	.47	235	9.60	7.20	108	127	209	35.6	.08	.03	.13
Tot/Av	694	.18	.07	.13	.34	282.29	9.43	8.32	127.7	151.7	145.9	45.7	.16	.11	.21

Notes. Miss: % of missing data; Jacc: Jaccard index; Dist: Hamming distance; FR 0→1: Number of created friendships ties; FR 1→0: Number of dissolved friendships ties; FR 1→1: Number of maintained friendships ties; PR t1: Average degree of pro-sociality at time 1; AG t1: Average degree of aggression at time 1; PO t1: Average degree of popularity at time 1.

proportion scores for each variable (at time 1) by taking the number of nominations received on each variable and dividing them by the number of participants in the classroom minus 1.

Sex. Boys were coded 0, and girls were coded as 1.

4.2.4 Analytical Strategy

Analyses were conducted using longitudinal social network modeling (RSiena; ‘Simulation Investigation for Empirical Network Analysis’) (Ripley, Snijders, Boda, Voros, & Preciado, 2017; Snijders et al., 2013). This approach allows unraveling the dyadic and reputational perception of prosociality, aggression, and popularity on friendship networks while taking network structural effects (e.g., reciprocity, transitivity) as well as students’ individual covariates (e.g., sex) into account. RSiena models are actor-oriented models (Snijders, van de Bunt, & Steglich, 2010), which assume that actors (here: students) modify their relationships (here: friendships) between assessments based on structural (network) and individual preferences. The model determines likely trajectories between observations with information from the baseline as a starting point. The estimates of the model are obtained through an iterative simulation following a Markov Chain approach, expressing the strength of the effects included in the model. The unstandardized estimates resemble regression coefficients in logistic regression, indicating the strength of each effect in creating or maintaining a tie. To facilitate the interpretation of the findings, we calculated odds ratios by taking the exponential function of the parameter estimates. For example, an odds ratio of two indicates that a participant is twice as likely to reciprocate a friendship than not to reciprocate, all else being equal. However, this assumption is strong, as parameters in social network analyses often correlate and co-occur. Consequently, the odds reported should be interpreted with caution.

Missing data due to non-response were handled through the RSiena default missing data method, and participants who joined and left the classrooms network in-between time points were treated using structural zeros (i.e., impossible nominations). The model was estimated for each classroom separately using the Methods of Moments estimator and specifying 5,000 iterations in phase 3 for calculating standard errors. The estimation was performed in two steps. First, we analyzed each classroom separately and made sure that the algorithm converged well. Second, for each model, the findings of all classes’ analyses were combined in a meta-analysis using the Snijders-Baerveldt test (Snijders & Baerveldt, 2003). The meta-analysis combined the analyzed parameter estimates across classrooms by testing the mean and variance of parameter values among classrooms. Goodness-of-fit tests were conducted to each class to assess how well the model reproduced the observed data (Lospinoso & Snijders, 2019). Overall, the results for the four types of networks indicated a good representation of the indegree, outdegree, and geodesic distance distributions, and the triad census in all classrooms (p -values between .10 and .90).

4.2.5 Model specification

We included four types of effects: rate effects that model students’ opportunities to maintain ties, drop existing ties or creating new ties; structural network effects that model how the changes in each network depend on the network itself; effects for measuring the impact of the dyadic and reputational perception on friendships; and covariate effects (e.g., sex) that model how changes in each network depend on attributes of actors.

Structural network effects were included to capture the basic tendencies of actors to form and maintain relationships in each of the four types of networks. *Density* describes the tendency of actors to form relationships. *Reciprocity* is the tendency toward reciprocation of relationships (i.e.,

mutual ties). We included the *transitive triplets* effect that reflects the tendency to form friendships in triadic structures (friends of friends tend to be my friends). In addition to these effects, we included two degree-related effects to differentiate between actors who receive or send many (or few) nominations in each type of network. The *indegree-popularity*² effect reflects the tendency of actors with an already high number of incoming nominations to attract additional nominations, whereas the *outdegree-activity* effect reflects the tendency of actors with already high tendencies to nominate others to send additional nominations. Also, the *balance* effect was added, representing the tendency to have and create ties to other actors who make the same choices as the focal actor.

In order to test our hypotheses, we analyzed both the dyadic and reputational level dependencies. To measure the effect of the dyadic perception on friendships, we operationalized prosociality, aggression, and popularity as constant dyadic covariates (measured at wave 1). Specifically, we examined whether dyadic prosociality, aggression, or popularity nominations led to friendship nominations. To measure the effect of the reputational perception on friendships, we operationalized the reputational perception as the proportion of incoming prosociality, aggression, and popularity nominations (measured at wave 1). Thus, we analyzed whether the number of prosociality, aggression, or popularity nominations received led to friendship nominations. Additionally, we controlled for sex in the analyses. Research has shown that sex has an impact on friendship, prosociality, aggression, and popularity nominations (Card et al., 2008; van der Ploeg et al., 2020; Van Rijsewijk et al., 2016; Veenstra et al., 2013). We included the *same-sex* effect, indicating whether nominations tend to occur more often between actors of the same sex.

4.3 Results

4.3.1 Descriptive statistics

Table 4.1 provides the descriptive statistics averaged across the 16 classrooms. The average degree shows that students nominated around nine classmates as friends in the first assessment and eight classmates in the second assessment. The Jaccard indexes, which indicates the proportion of stable nominations among the total number of created, dissolved, and stable friendships, showed satisfactory stability in friendship networks for almost every class (.34 on average). Regarding the dyadic covariates, students' proportion scores were on average .16 for prosociality, .11 for aggression, and .21 for popularity.

4.3.2 Longitudinal social network analysis

Table 4.2 presents the results of the RSiena meta-analysis for friendship networks. The estimates and standard errors are based on the models estimated separately for the 16 classrooms. We also included the standard deviation of parameter estimates across classrooms (σ), and whether the standard deviation significantly differs from zero. Students had, on average, 17 opportunities for changing (or not) their friendship ties. A significant negative effect for the *density* was found (Est. = -1.19, $p < .001$, OR = 0.15), indicating that students were selective choosing friends. Furthermore, friendship nominations were likely to be reciprocated (Est. = 0.95, $p < .001$, OR = 2.58), and friends of friends tended to become friends as well (Est. = 1.01, $p < .001$, OR = 2.74).

² The term popularity here refers to the number of incoming nominations, but not to visibility or prominence.

Table 4.2 Friendship networks: Rsiena meta-analysis (16 classrooms)

Effect	Est.	SE	σ	OR
Friendship networks				
Rate parameter ^a	17.42***	1.05	2.29	-
Density	-1.93***	0.16	0.38	0.15
Reciprocity	0.95***	0.09	0.27**	2.58
Balance	0.05***	0.01	0.01	1.05
Transitivity triplets	1.01***	0.09	0.00	2.74
Indegree-popularity	-0.05***	0.01	0.02	0.95
Outdegree-activity	0.04***	0.01	0.00	1.04
Indegree-activity	-0.09***	0.02	0.05*	0.91
Same-sex	0.38***	0.06	0.20***	1.46
Prosociality (dyadic)	0.01	0.06	0.14	1.00
Prosociality indegree (reputational)	0.72**	0.24	0.50	2.06
Aggression (dyadic)	-0.16*	0.07	0.15	0.85
Aggression indegree (reputational)	-0.19	0.16	0.00	0.83
Popularity (dyadic)	-0.02	0.08	0.28***	0.98
Popularity indegree (reputational)	0.83***	0.17	0.26	2.29

Notes. * $p < .05$; ** $p < .01$; *** $p < .001$.; Est.: Estimate; SE: standard error; σ : across-classrooms standard deviation; OR: odds ratio; ^a Due to convergence issues, the rate parameter of three classes was fixed to the average of the rest of classes

We also found a positive *balance* effect, which refers to the tendency of having and creating ties to other actors who make the same friendship choices as ego (Est. = 0.05, $p < .001$, OR = 1.05) as well as a tendency for *same-sex* friendships (Est. = 0.38, $p < .001$, OR = 1.46). The positive *outdegree-activity* effect indicates the tendency for students who already nominated many others as friends to give extra friendship nominations (Est. = 0.04, $p < .001$, OR = 1.04). The negative *indegree-popularity* effect indicates that students who received many nominations were less likely to receive more nominations over time (Est. = -0.05, $p < .001$, OR = 0.95). Moreover, the negative *indegree-activity* effect indicates that students who received many nominations gave fewer nominations (Est. = -0.09, $p < .001$, OR = 0.91).

With regard to our hypotheses, there is no evidence that students' own perception of peers' prosociality was related to friendship selection (Est. = 0.01, $p = .956$, OR = 1.00), but students perceived by many classmates as prosocial received more friendship nominations over time (Est. = 0.72, $p = .002$, OR = 2.06). These results are contrary to *hypothesis 1*: only the reputational perception of peers' prosociality plays a role in friendship selection. Regarding the effects of the perception of peers' aggression on friendship selection, students perceived as aggressive on the dyadic level were less nominated as friends (Est. = -0.16, $p = .028$, OR = 0.85), but we did not find that students perceived as aggressive by many classmates were less nominated as friends (Est. = -0.19, $p = .219$, OR = 0.83). These results are in line with *hypothesis 2*: adolescents avoid befriending aggressive peers based on the dyadic but not on the reputational perception. There is no evidence that adolescents considered as popular on the dyadic level were more likely to be nominated as friends (Est. = -0.02, $p = .848$, OR = 0.98), but adolescents considered by many classmates as popular were more likely to be nominated as friends (Est. = 0.83, $p < .001$, OR = 2.29). These

results support *hypothesis 3*: the selection of friends is mainly driven by the reputational rather than the dyadic perception of peers' popularity.

4.4 Discussion

In this study, we examined the interplay of prosociality, aggression, and popularity with friendships in a sample of early adolescents in Chilean schools. We aimed to disentangle the extent to which the dyadic and reputational perception of prosociality, aggression, and popularity affect friendship networks. To this end, we used a longitudinal network approach, which yields a richer understanding of the development of early adolescents' friendship dynamics. The hypotheses were derived from a goal-framing perspective emphasizing the importance of affection and status goals for the cognitive and evaluative processes associated with friendship selection.

The study contributes to the distinction between dyadic and reputational perceptions. This distinction gives us a fine-grained picture of the way that perceptions of others' behavior affect peer relationships. For instance, the results of this study suggest that for befriending classmates, the reputation of peers as prosocial matters more than the dyadic perception of peers' prosocial behavior. The distinction between dyadic and reputational perception followed literature that focused on the impact of how adolescents perceive peers' behavior on the development of peer relationships (Pál et al., 2016; Palacios, Berger, et al., 2019). Previous studies have investigated the effect of the dyadic perception of disdain and respect on disliking and gossiping relationships (Kisfalusi et al., 2019; Pál et al., 2016) as well as the effect of victimization and aggression on friendships and disliking (Palacios, Berger, et al., 2019; Rambaran et al., 2020). Our study extends previous literature by examining the extent to which the dyadic and reputational perceptions of peers' prosociality, aggression, and popularity affect the formation and maintenance of friendship networks.

We expected that prosociality would be likely to positively affect friendships on the dyadic but not on the reputational level. However, our results indicate the opposite, namely, early adolescents prefer to befriend peers that are widely perceived as prosocial. This means that on top of the reputational perception of prosociality, there is no additional effect of early adolescents' own perception of peers' prosocial behavior on friendship selection. Early adolescents may consider that peers perceived as prosocial by reputation are associated with being kind and empathic to others, turning them more trustworthy as friends. Conversely, the adolescents' own perception of other peers as prosocial could be linked to instrumental and short-term friendships. This idea is aligned with recent findings indicating that adolescents may question whether they want to receive help from certain peers (Ackerman & Kenrick, 2008; Dijkstra, Cillessen, Lindenberg, & Veenstra, 2010). Not all friends are salient as helpers, some helpers are not friends, and not all help nominations are mutual, suggesting that help relations might be sometimes instrumental as they aid in achieving personal goals, such as being helped with homework or being comforted with emotional problems (Van Rijsewijk, Snijders, Dijkstra, Steglich, & Veenstra, 2019).

We hypothesized that aggression would be likely to negatively affect friendships on the dyadic but not on the reputational level. As expected, we found that students perceived as aggressive on the dyadic level were less likely to be nominated as friends, but we did not find that students widely perceived as aggressive were less likely to be nominated as friends. Students make this decision based on their dyadic instead of the reputational perception. These results suggest that aggression is seen as an undesired characteristic that does not fit with the establishment of

supportive, intimate, and meaningful friendships (Ojanen et al., 2012; Sijtsema, Ojanen, et al., 2010).

We expected that popularity would be likely to positively affect friendships on the reputational but not on the dyadic level. As expected, only the reputational perception of popularity made friendship nominations more likely. First, the results are aligned with the idea that early adolescents give increasing importance to popularity as power, prestige, visibility, and social dominance became more relevant features in the transition from late childhood to adolescence. Popular adolescents are considered attractive as friends, probably because they are fun to be around with, have active social lives, are socially powerful (Hawley, Little, & Card, 2007; Vaillancourt & Hymel, 2006). Friendship with popular peers can enhance one's own status (Cialdini & Richardson, 1980).

4.4.1 Limitations and directions for further research

Our results contribute to existing research despite certain limitations. First, our measures of perception on the dyadic level referred to who is perceived as prosocial or aggressive in general but not to who helps whom or who is aggressive to whom. It is likely that the effects of befriending peers who help me and not befriending peers who are aggressive to me should be even larger than those effects found in this study. Second, we only examined the impact of the dyadic and reputational perception of other peers as prosocial, aggressive, or popular on friendship selection, and not vice versa. Future studies can incorporate these bi-directional effects by using multiplex network analysis. Third, there is an alternative approach to measure the reputational perception of peers' behavior by asking students whom they think that their classmates perceive as prosocial or aggressive (Pál et al., 2016). Future research could include this measure and compare it to the dyadic and reputational perception featured in this study. Fourth, this study did not include a measure of peer norms, which reflect the expected and accepted behavior of a social group (Dijkstra & Gest, 2015). Because the display of aggressive and prosocial behaviors might depend on the extent to which the peer context motivates adolescents to do so (Laninga-Wijnen et al., 2017; Wentzel et al., 2007), future research could consider the role of the social context. Finally, although we tested for parameters' differences across classrooms, these differences were not examined. Future studies can include characteristics such as classroom size, composition, or social norms to gain knowledge about classroom-level factors.

4.5 Conclusion

During adolescence, affection and status emerge as two significant goals. Early adolescents become aware of what they think is instrumental in (or disturbs) the achievement of those goals. As a result, they focus on cues and information that help them predict the usefulness or fitting of peer features for the realization of their goals. Accordingly, this study examined the extent to which early adolescents' dyadic and reputational perceptions of prosociality, aggression, and popularity affect friendship networks. Our findings indicate that early adolescents' friendship networks are affected in different ways by prosocial, aggressive, and popularity perceptions. As expected, friendships were driven by the dyadic perception of peers' aggression and by the reputational perception of peers' popularity. However, unexpectedly, friendships were only driven by the reputational perception of peers' prosociality. Overall, these results suggest the importance of including and examining the dyadic and reputational perception simultaneously.