Network features, social aggression, and status in children's peer groups: The role of key actors and network structure

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Introduction

The focus of bullying research in childhood has shifted from more direct (physical, verbal) to more subtle forms of indirect aggression that inflict harm through damaging relationships, through social exclusion, including use of gestures, or by damaging reputations (Murray-Close et al., 2016; Salmivalli & Peets, 2018). Developmental research has shown that such nonphysical, social forms of aggression can be used to compete for resources and to gain and maintain social standing within children's peer groups; when used strategically and with skill, these types of behaviors can damage peers' social standing while elevating one's own (e.g., Salmivalli & Peets, 2018). Network theorists have also asserted status-seeking can motivate the use of aggression; however, the capacity to use aggression competitively is also tied to the individual's position (betweenness centrality) within the network, as demonstrated in longitudinal research of school-based adolescent networks (Faris & Felmlee, 2011). That is, occupying a position that bridges structural holes in the network – allowing a person to control information flow and others types of exchanges (e.g., Burt, 1982) – conceivably confers power and status. Faris (2012) has argued, and shown, that the instrumental effectiveness of social aggression for status attainment holds for the smaller, bounded networks of adolescence that have flatter status hierarchies; Faris also reported that selective bridging, rather than high connectivity, is related to the attainment of status.

It is possible that individuals have power and influence within a network for differing reasons; that is, the link between power and use of social aggression might vary for differing types of key actors within a network. For instance, Faris and Felmlee (2011) reported that indirect aggression increases with betweenness centrality up to a point and then decreases: Those at the top of the hierarchy arguably have less need to use aggressive tactics to compete for resources. Understanding the motivation for and effectiveness of social aggression is likely related both to individual characteristics as well as position with the network (Neal, 2010).

The current research contributes to the literature by examining use of social aggression by key actors within 24 school-based, elementary-age peer networks, defined using Conway's (2012) typology of key players based on betweenness and closeness centrality. In the small, well-bounded networks of U.S. elementary-school classrooms, proximity to the core of the power structure might be as useful to consider as being in a position to influence the flow of information. Conway (2012) noted that various centralization measures should be more or less linearly related, so departures from linearity may signal key social roles in the social network. Using Conway's typology, we labeled students into four key social roles in the social network. Using Conway's typology, we labeled students into four key actor roles – dual role: high in closeness and betweenness; pulsetakers: high in closeness, low in betweenness; gatekeepers: high in betweenness, low in closeness; and low centrality: low in both closeness and betweenness.

Here, we investigate (1) whether children in these key actor roles use social aggression differently, (2) whether children in these roles attain different social standing in terms of popularity and influence, (3) whether the link between key actor position and social standing is mediated by differential use of social aggression. Given the number of networks, we also were able to examine whether the links between (a) key actors, based on network positions, (b) use of social aggression, and (c) non-network indicators of social status (e.g., popularity, leadership) vary based on the extent to which the network is centralized.

Method and Measures

Study participants included N=459 students from 24 4th and 5th grade U.S. classrooms (52.2% female). Children nominated up to three of their classmates, who had parental consent to take part in the study (> 80% in all classrooms), for 8 descriptors; the proportion of classmates nominating the child for each item was calculated. Proportion scores were combined into the following indices: **nonphysical aggression** (keeps certain people from being in their group; tell others they will stop liking them unless the friends do what they say); **leadership** (chosen as the leader); **unlikeability** (likes to play with the least); **popularity** (like to play with most; most popular, alpha=.82). To construct the **affiliation network**, children listed groups of peers who "hang out together a lot." An aggregated, dichotomized matrix was constructed: A tie between a dyad was determined "to exist", and coded as "1", if they received > 1 affiliation nominations, otherwise the cell value was "0." Two centrality variables – closeness and betweenness – were derived from the affiliation network.

To construct the three *key actor roles*, a 2X2 grid was constructed for each classroom, using the median values of betweenness and closeness centrality: **gatekeepers** are those > median on betweenness and < median on closeness; **pulsetakers** are those > median on closeness and < median on betweenness; **dual roles** are those > median both on closeness and betweenness; and a **low centrality** group was constructed of those < median on both centrality measures. Classroom-based **centralization** scores were calculated based on degree.

Key Actor Positions
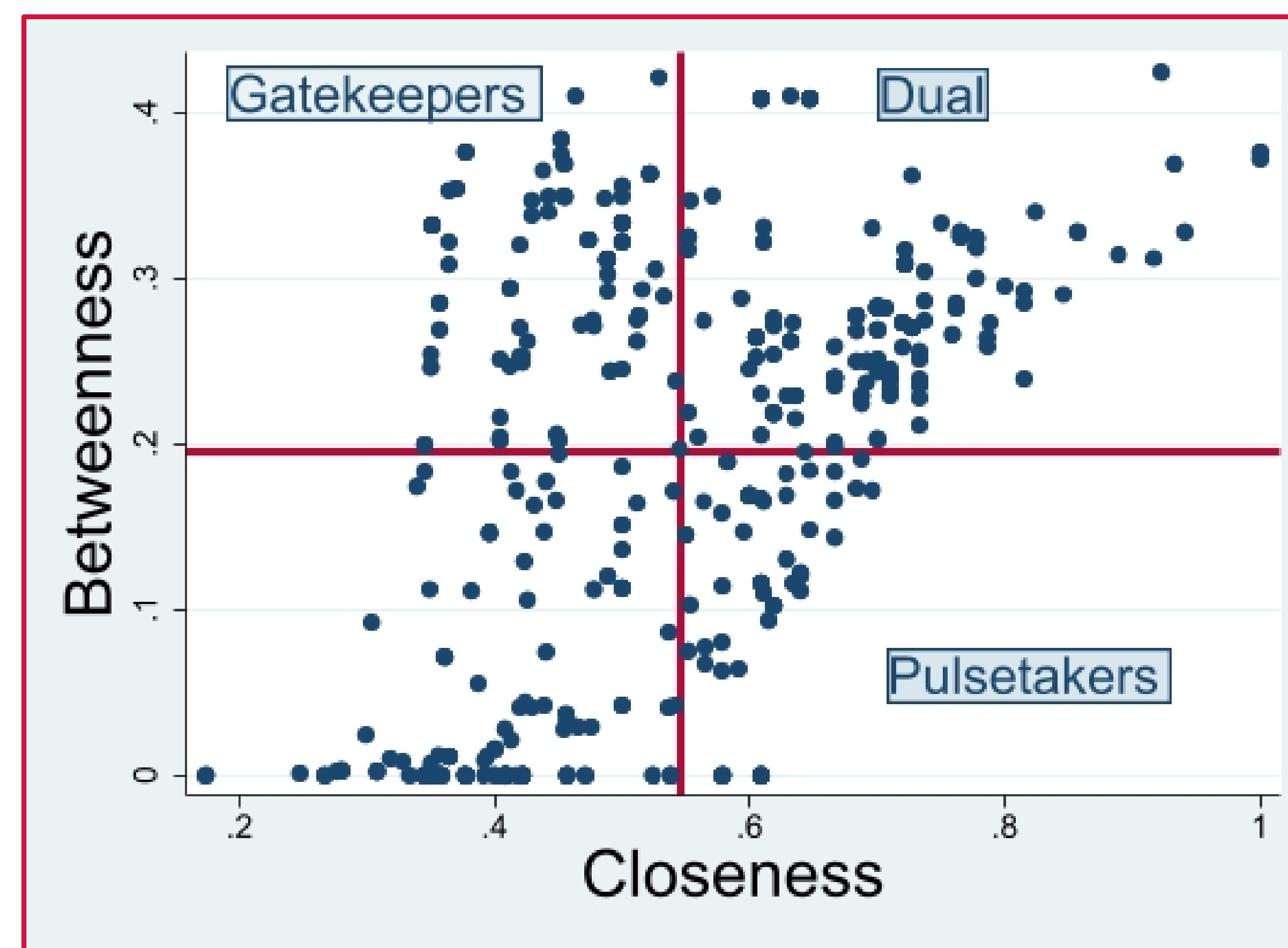
Key Actor Typology based on Conway (2010)

Illustration of key actor role cutoffs based on aggregated classroom networks. Role designations in analyses below are based on classroom-specific median splits

Position, Social Aggression and Influence

		Popularity				Leadership				Unlikeability			
		Model 1		Model 2		Model 1		Model 2		Model 1		Model 2	
		Coef	p	Coef	p	Coef.	p	Coef	p	Coef	p	Coef	p
Key Actors	Pulsetaker	0.20	0.14	*0.19*	0.06	**0.10**	0.01	**0.10**	0.04	-0.04	0.33	-0.04	0.31
	Gatekeeper	0.03	0.87	0.13	0.44	0.01	0.86	0.05	0.48	**-0.07**	0.01	-0.02	0.52
	Dual roles	*0.06*	0.08	**0.17**	0.03	0.12	0.11	0.07	0.11	**-0.08**	0.03	**-0.08**	0.02
	Centralization	0.18	0.42	0.32	0.12	0.09	0.11	*0.14*	0.08	-0.11	0.14	*-0.03*	0.06
Interact w/ Centralization	Pulsetaker	-0.87	0.12	**-0.91**	0.00	**-0.40**	0.00	**-0.40**	0.01	0.13	0.45	0.36	0.42
	Gatekeeper	0.14	0.77	-0.33	0.51	0.07	0.74	-0.11	0.63	**0.16**	0.01	0.05	0.45
	Dual	-0.25	0.48	-0.47	0.16	-0.12	0.35	-0.19	0.16	0.26	0.31	0.14	0.30
Nonphysical Aggression				**0.59**	0.00			**4.82**	0.00			**0.22**	0.00
Constant		**0.34**	0.00	**0.20**	0.00	**0.16**	0.00	0.03	0.31	**0.05**	0.00	**0.12**	0.00
Wald Chi-2		**21.16**	0.01	**74.33**	0.00	**31.53**	0.00	**52.46**	0.00	**35.55**	0.00	**104.35**	0.00

Mixed effect regressions clustered on classroom networks. All models control for gender and majority race;

Core Findings and Discussion

In mixed level regressions, clustering on classroom network, we first regressed reported use nonphysical aggression (social exclusion threats) on the key actor role, classroom centralization, and the interaction between role and centralization, finding that gatekeepers are the least likely to engage in exclusion based social aggression (p = .015, model not shown). We then used key actor roles to predict social status outcomes including popularity, leadership, and unlikeability (Table 1, Models 1). Finally, we add in social aggression as an independent variable to see whether those actions mediate the link between key actor position and social regard (Table 1, Models 2).

We find:

1. *Dual role* students trend toward being seen as *more popular (p = .06)*, especially after controlling on social aggression (p = .04).

2. *Pulsetakers* are seen as *higher in leadership* (p = .01), especially in less centralized classes (p = .00)

3. *Gatekeepers* (p = .01) and *dual role (p = .03)* students are *less likely to be* seen as *unlikeable*.
   1. For *gatekeepers*, this is especially true in more centralized networks (p = .01).
   2. For gatekeepers this effect is mediated by social aggression (71% decrease in effect size; p value drops to n.s.)

4. *Relational aggression* leads to *greater popularity* (p = .000), higher levels of perceived *leadership* (p = .000), *and greater unlikeability* (p = .000).

The use of exclusion-based threats as social aggression appears to increase both positive (popularity, leadership) and negative (unlikeability) social outcomes. It appears that when students have greater structural potential for fragmenting the network (gatekeepers in centralized networks), they are *least* likely to threaten social exclusion, and they are seen as the least harmful. Our mediation analysis suggests that the impression of being benign actors seems to come from the lack of explicit social threats.

References and Acknowledgements

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