

Peer effects in aggressive and prosocial behavior in early adolescence:

An empirical test of selection, socialization and the role of social cognition.

Andres Molano¹, Stephanie Jones¹,
Joshua Brown² & Lawrence Aber³

¹ Harvard University ² Fordham University
³ New York University

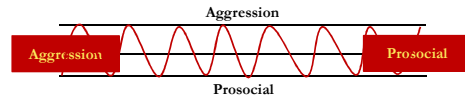
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Selection and Socialization in Aggressive and Prosocial Behavior

- Mounting evidence supporting the socialization effect of peers on the development of aggressive behavior among children (Brechwald & Prinstein, 2011; Dishion & Tipsord, 2011).
 - Above and beyond selection based on Aggression, gender or social status (Knecht et al., 2010; Sijtsema et al., 2010)
- Little research exploring how *socialization* or *selection* processes play a role in the transmission of prosocial and helping behavior in social groups.
 - Prosocial & Aggressive behavior:



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Individual Moderators

- Patterns of representation and manipulation of stimuli from the social environment play a fundamental role in the link between exposure to environmental risks and the development of social behavior (Aber, Brown & Jones, 2003; Crick & Dodge, 1994; Gershoff & Aber, 2003).

Hostile Attributional Bias

- Children and adolescents who tend to interpret social cues as intentionally harmful may be more likely to overestimate the prevalence of aggressive behavior in their social groups, and in turn, may be more inclined to adopt it.

Prosocial Fantasies

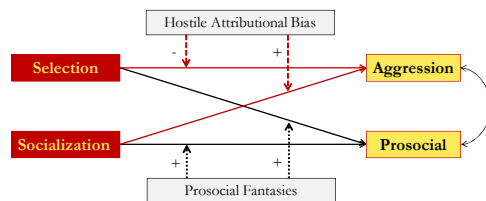
- Individual tendency to imagine scenarios to help could act as a moderator of selection and socialization by rendering individuals hyper-vigilant to situations in which their peers enact their fantasized behaviors.

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Research Questions

1. Examines the effects of peer levels of prosocial and aggressive behavior on the co-evolution of social behavior and social networks in a population of elementary school students over a period of one academic year.
 - Selection & Socialization of Aggressive and Prosocial Behavior.
2. Explores heterogeneity in the magnitude of these effects that is associated with individual social-cognitive processes.



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Analytic Sample

- Participants of the experimental evaluation of the 4Rs Program in New York City public elementary schools (Jones, Brown & Aber, 2011).
- Focus on the change in social networks and social behavior in the second year of the study (Fall 2005 and Spring 2006), during which all consented participants were in the 4th grade of elementary school.
- 900 consented students, nested in 74 classrooms across 18 schools.
 - Mean age at Time 1 is 8.62 years (s.d. = 0.69).
 - 49.07% are male
 - 45.3% are Hispanic, 41.0% are African-American, 9.11% are classified as members of other ethnicities and 4.56% are non-Hispanic White.

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Sources of Information

Social Networks

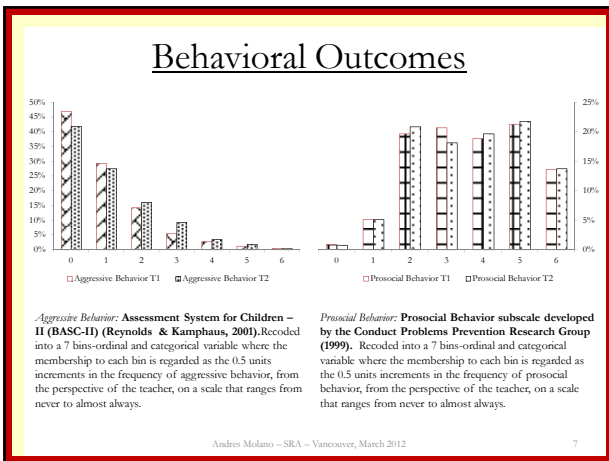
- Identify students in their classrooms who “hang around together a lot,” following Social Cognitive Maps procedures (Cairns et al. 1985, 1989, 1995).
- Resulting network of relationships at each of the two time points is represented in a matrix that is binary and symmetric.

Individual Attributes

- **Aggressive Behavior:** BASC-II - frequency in which a particular student have “hit other children” or “called other children names” in the past 30 days.
- **Prosocial Behavior:** Number of times a particular student have “is helpful to others” or “cooperates with peers” in the past 30 days.
- **Hostile Attributional Bias:** Dichotomous version of an adaptation of the Home Interview Questionnaire (Dalberg, Teal & Behrens, 1996)
- **Prosocial Fantasies:** Dichotomous version of an adaptation of the What I think Instrument (Rosenfeld, et al., 1982).
- Female

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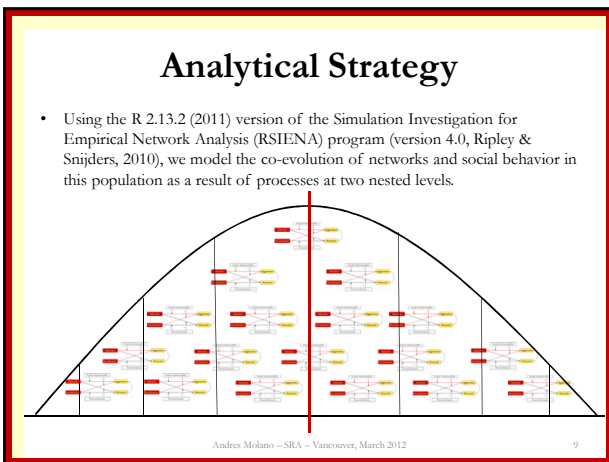


Network Outcomes

36 school-wide matrices (18 for each measurement occasion) where each cell that represent the existence of a social relationship between each part of actors from the perspective of all other participants in the classroom.

Network	Time 1			Time 2			Network Change			
	Size	% Female	N ties	Density	Degree	N ties	Density	Degree	Distance	Jaccard Index
1	40	52.5%	76	9.7%	3.80	79	10.1%	3.95	154	33.6%
2	52	55.8%	130	9.8%	5.00	80	6.0%	3.08	248	25.7%
3	46	54.3%	93	9.0%	4.04	59	5.7%	2.57	200	20.6%
4	44	59.1%	91	9.0%	4.14	61	6.4%	2.77	184	24.6%
5	30	53.3%	47	10.8%	3.13	45	10.3%	3.00	92	33.3%
6	27	48.1%	32	9.1%	2.37	20	5.7%	1.48	68	20.9%
7	48	56.2%	92	8.2%	3.83	75	6.6%	3.13	210	22.8%
8	44	45.5%	141	14.9%	6.41	59	6.2%	2.68	312	72.5%
9	54	51.9%	109	7.6%	4.04	52	3.6%	1.93	218	19.3%
10	39	61.5%	86	11.6%	4.41	62	8.4%	3.18	200	19.4%
11	36	58.3%	67	10.6%	3.72	49	7.8%	2.72	76	50.6%
12	103	55.3%	240	4.6%	4.66	132	2.5%	2.56	492	20.8%
13	68	60.3%	236	10.4%	6.94	166	7.3%	4.88	356	38.6%
14	74	52.7%	83	3.1%	2.24	88	3.3%	2.38	238	17.9%
15	31	38.7%	45	9.7%	2.90	33	7.1%	2.13	96	23.8%
16	64	46.0%	108	5.4%	3.38	73	3.6%	2.81	234	21.5%
17	50	64.0%	169	13.8%	6.76	87	7.1%	3.48	252	34.0%
18	50	49.0%	122	10.0%	4.88	83	6.8%	3.32	250	24.2%
TOTAL	900	53.5%	1967	9.3%	4.26	1303	6.4%	2.89	3880	45.3%

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Processes of Social Selection

	Model 1			Model 2		
	Mean	S.E	Variance	Mean	S.E	Variance
Network Dynamics						
Rate Parameter						
Density						
Transitive Triads						
Popularity (Sqrt)						
Female						
Aggression						
Prosocial Behavior						
Hostile Attribution Bias (HAB)						
Prosocial Fantasies (Pros. Fant)						
Basic Gender						
Aggression Selection						
Prosocial Selection						
Aggression Selection X HAB						
Prosocial Selection X Pros. Fant.						

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Processes of Aggressive Socialization

	Model 1			Model 2		
	Mean	S.E	Variance	Mean	S.E	Variance
Behavioral Dynamics Aggression						
Rate Parameter						
Linear Shape						
Quadratic Shape						
Effect from Female						
Effect From Prosocial Behavior						
Aggression Average Socialization						
Effect from FLAB						
Aggression Average Socialization X FLAB						

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Processes of Prosocial Socialization

	Model 1			Model 2		
	Mean	S.E	Variance	Mean	S.E	Variance
Behavioral Dynamics Prosocial						
Rate Parameter						
Linear Shape						
Quadratic Shape						
Effect from Female						
Effect from Aggressive Behavior						
Prosocial Average Socialization						
Effect from Prox. Fant.						
Prosocial Average Socialization X Prox. Fant.						

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Summary of Findings

1. Identification of selection and influence among a population of early adolescents in New York City.
 - Aggressive and Prosocial Behavior as parallel outcomes:
 1. Evidence of Selection on similarity on Gender (Social clusters segregated by gender (Est=0.58, S.E.=0.09, p < .001))
 2. Statistical significant evidence of Social influence on Aggressive Behavior (Est = 2.89, S.E.=1.25, p < .01)
 3. Weaker evidence of Social influence on Prosocial Behavior (Est = 1.21, S.E.=0.93, p < .1)
2. Heterogeneity associated with individual differences in social-cognitive process.
 1. Influence effect of peer's aggressive behavior moderated by levels of HAB (Est = 3.57, S.E.=2.02, p < 0.5)
 2. No statistical significant evidence of Prosocial Fantasies as a moderator of Social influence or Social Selection of peer's prosocial behavior.

Validity Checks

1. Variability between classrooms:

- Membership to classroom:
 - Significant effects on 8/79 classrooms for network dynamics
 - Significant effects on 1/79 classrooms for behavioral dynamics
- **No significant mean and variance effects across schools**

2. Variability across schools:

- Wald-type tests suggest differences between intervention and control schools on:
 - Quadratic Shape of Aggressive behavior and Effect of Prosocial behavior on Aggression dynamics.
 - Prosocial Socialization estimated as positive and significant in the intervention schools. Non-significant Wald-type test.

3. Goodness of fit:

- Addition of structural and attribute based parameters in Models 1 and 2 are associated with significant improvements in the fit of the model – when compared to a baseline – across the 18 schools.

Conclusions

Selection effects:

- Gender is a powerful social organizer of the elementary school classroom (Adler & Adler, 1998; Maccoby, 1998)
- Social behaviors and cognitions do not significantly influence the dynamics of network change, on average, in this population.

Socialization effects:

- Stronger evidence for selection based on aggression than based on prosocial behavior – Different status of the behavior.

Role of Social Cognition:

- Indications of social cognition as a risk/protective factor for the socialization effect of peers on aggressive behavior.

Variability across levels:

- Need a Multilevel – SIENA model that could accurately represent multiple ecological levels in which social networks and behaviors are nested.

Further Directions

- Capitalize on variability within schools
 - Move from control to explanation.
- Other moderators of Socialization in Aggressive and Prosocial behavior in characteristics of:
 - A. Actors: Social position, popularity, Academic achievement, other forms of behavior.
 - B. The Relationships: Strength of the connection – Valued network data?
 - C. The Context: Norms of the classroom, student – teacher relationships, Emotional, Instructional and Organizational context
- **Can we intervene? Where? How?**

Thank You !

Andres Molano
Harvard University
acm929@mail.harvard.edu

Validity Checks

- Variability between classrooms – within schools.

– Estimated as:

	Δ Degree	Δ Aggressive Behavior	Δ Prosocial Behavior
<i>Intra-Class Correlations</i>			
School/Total	1.73%	2.75%	8.23%
Classroom/Total	16.34%	4.70%	4.48%
Individual/Total	81.93%	92.56%	87.30%

– Evaluated by:

1. Fitting School level models including dummies representing shared membership to a classroom – within school.
 - Membership to 8/79 classrooms have significant effects in network dynamics.
 - Membership to 1/79 classrooms have significant effects in aggressive behavior dynamics
 - Membership to 1/79 classrooms have significant effects in prosocial behavior dynamics
2. Fitting School level models including a “categorical” predictor coding classroom membership AND Combining school level projects using categorical coding into a macro-level model.
 - Non-significant effects of classroom membership on Network or Behavioral dynamics on average in this population.

Validity Checks

• Variability Between Control and Experimental Schools

	Model3 - CT			Model3 - TX			DIFF				
	Mean	SE	p	Mean	SE	t	MEAN	p			
Network Dynamics											
<i>Rate</i>	6.59	0.60	0.00	4.55	0.70	1.50	0.18	7.56	0.71	0.42	
Degree (density)	-1.77	0.19	0.00	-1.68	0.09	17.94	0.00	0.09	0.22	0.67	
Triangular Triads	0.38	0.04	0.00	0.45	0.06	8.12	0.00	0.07	0.07	0.29	
Degree Activity (Spr)	-0.06	0.08	0.72	0.50	-0.07	0.09	-0.71	0.50	-0.01	0.15	0.96
Triads	-0.20	0.10	0.03	0.03	-0.23	0.06	-1.77	0.08	0.03	0.12	0.91
Same Sex	0.71	0.10	0.00	0.43	0.10	2.77	0.00	-0.29	0.10	0.14	
Aggression	0.00	0.07	0.96	0.06	0.02	0.15	0.56	0.02	0.12	0.97	
Aggression similarity	0.42	0.27	1.53	0.16	0.12	0.53	0.23	0.83	-0.30	0.60	0.62
Hab											
<i>Hab's Aggression Similarity</i>											
Prosocial Behavior	0.01	0.07	0.89	0.93	-0.03	0.07	-0.44	0.68	-0.04	0.30	0.71
Prosocial Similarity	0.06	0.23	0.28	0.79	-0.43	0.56	-0.77	0.47	-0.49	0.61	0.43
Prosocial Fostering											
<i>Prosocial Fostering X Prosocial Similarity</i>											
Behavioral Dynamics - Aggression											
<i>Rate</i>	0.91	0.19	0.00	0.09	1.20	0.23	5.54	0.00	0.34	0.30	0.28
Behav: Linear Shape	-0.17	0.12	0.14	0.22	0.02	0.13	0.18	0.86	0.29	0.18	0.31
Behav: Quadratic Shape	0.10	0.09	0.17	0.30	-0.22	0.08	-2.67	0.00	-0.12	0.12	0.90
Aggression Average Influence	2.80	0.96	0.00	0.03	5.74	1.92	2.99	0.00	2.94	2.18	0.09
Hab											
Hab's Aggression Influence											
Main effect of Prosocial Behavior	-0.14	0.10	0.14	0.20	-0.49	0.11	-4.67	0.00	-0.35	0.18	0.02
Behavioral Dynamics - Prosocial											
<i>Rate</i>	1.20	0.29	0.00	0.00	1.62	0.21	7.57	0.00	0.34	0.36	0.36
Behav: Linear Shape	-0.05	0.11	0.60	0.70	-0.08	0.10	-0.76	0.47	-0.03	0.15	0.84
Behav: Quadratic Shape	-0.09	0.05	0.07	0.09	-0.08	0.04	-2.09	0.07	0.01	0.06	0.84
Prosocial Average Influence	-0.05	1.07	0.05	0.96	2.09	1.28	2.34	0.05	3.04	1.66	0.00
Prosocial Fostering											
<i>Prosocial Fostering X Prosocial Influence</i>											
Main Effect of Aggressive Behavior	-0.29	0.08	0.00	0.01	-0.13	0.05	-2.69	0.04	0.36	0.09	0.01

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Validity Checks

• Goodness of Fit of the Model.

Network	Model 1	Model 2
1	43.08***	48.89***
2	35.50***	33.39**
3	57.32***	56.77***
4	45.65***	56.45***
5	19.38*	29.19~
6	68.01***	33.24**
7	39.19***	67.39***
8	51.99***	55.70***
9	20.75*	32.88**
10	21.23*	34.74**
11	21.54*	36.94**
12	45.67***	44.74**
13	70.62***	72.82***
14	23.86**	88.87***
15	31.01***	31.26**
16	31.41***	45.58***
17	56.79***	78.28***
18	54.72***	65.60***
Degrees of Freedom	11	17

Parameters tested by fixing at zero:
 β Aggression Influence, β Prosocial Fostering, β Prosocial on Aggressive, β Prosocial Fostering by Prosocial Similarity, β Prosocial Influence, β Prosocial Fostering by Prosocial, β Prosocial Similarity by Prosocial, β Prosocial Fostering by Prosocial Fostering.

Note: Each cell represents the result of a χ^2 test with n-1 degrees of freedom.
 ~ p < .1; * p < .05; ** p < .01; *** p < .0001

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