Do Dictators Have the Most Friends?
Prosocial Behaviors in Adolescents' Social Networks.

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Introduction

Adolescence is a critical period of social development.

Begin to form lasting friendships
  Select peers as friends based on interest instead of convenience
  (Csikszentmihalyi, & Larson, 1984, Sawyer et al., 2018)

Peer status becomes more important
  Individual advantages for high status peers, e.g., well-being
  High status more influential on group attitudes and behavior
  (Choukas-Bradley, et al., 2015; Valente et al., 2009)

Introduction

Adolescence is a critical period of <u>pro</u>-social development

Development of prosocial behaviors
      "Behaviors that benefit others, such as helping or giving"
      (Eisenberg et al., 2006; Fabes et al., 1999)

Advantages
      Societal: positive contribution to the world
      Individual: physical and mental well-being
      (Baumsteiger, 2019, Caprara & Steca, 2005,
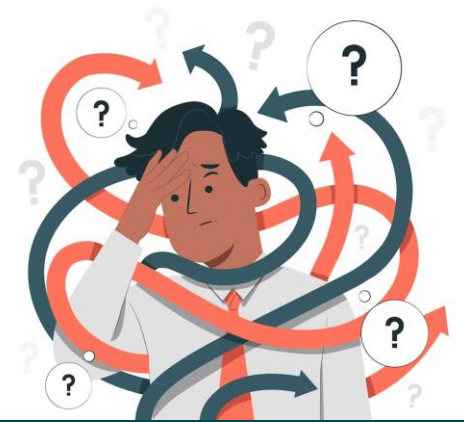   Whillans et al., 2016)

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Theory

Social identity theory
(Tajfel, 1979; Zavalloni, 1973)

Sense of self based on the peer group

– Classify themselves and others into groups based on *social categories* (e.g., race, gender, religion, or nationality).

– Identify with the group we have categorized ourselves as belonging to.

– Behave in accordance with the group.

Theory

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Social exchange theory
(i.e., Cropanzano & Mitchell, 2005)

Process of cost-benefit analysis

- Exchange goods and services in social contexts.

- Prosocial exchanges generate obligations for future rewards

- Increase the social capital and fosters high quality relationships

Theory

Social network theory
(i.e., Freeman 1979, Borgatti & Halgin, 2013, Liu et al., 2017, McPherson et al., 2001)

Individuals embedded in social structures

– Adolescents do not act within a social vacuum, but behavior is affected by the social network

– Actors hold a certain structural position within these social networks: Centrality

– Similarity breeds connection: Homophily

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Research Question

How are prosocial behaviors of adolescents relating to the social networks?

Giving to others

Centrality

Homophily

Some previous work

Experimental work
- Adolescents increase in their prosocial intentions after viewing prosocial behavior of others, especially high-status adolescents (N = 304; Choukas-Bradley et al., 2015)

Egocentric networks
- Pro-social behaviors (i.e., donating blood, clothing, money, and time) are related to the number of friends reported by the participants (e.g. O'Malley et al., 2012).
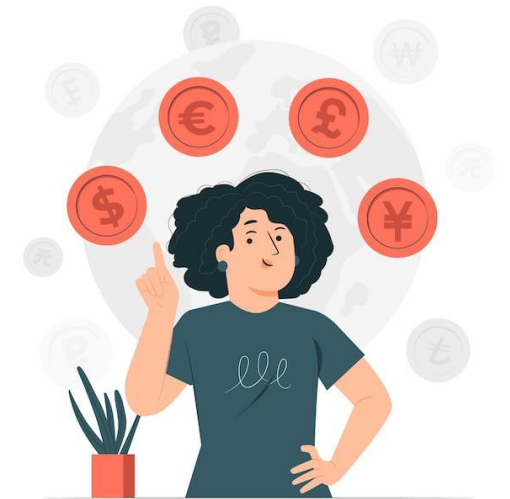
Full networks
- Adolescents with many social relations showed more self-reported prosocial behavior (N = 661; van den Bos et al., 2018).
- No evidence of a correlation between the number of close friends and the number of donated coins in a dictator game (N = 79; Brañas-Garza et al., 2010)

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The current study

Secondary data set collected by *van de Groep et al.* (2020)

Full social networks of secondary school classes in the Netherlands (year 1-4)
    Middle + high school (grade 7 - 10)

Pro-social behavior: Dictator game

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The current study

Multi-level ERGM's

H1: *Homophily*

The probability of a tie between two nodes in a social network decreases as the difference between the number of donated coins the two nodes increases

H2: *Popularity*

The probability of an incoming tie increases as the number of donated coins of the adolescent increases.

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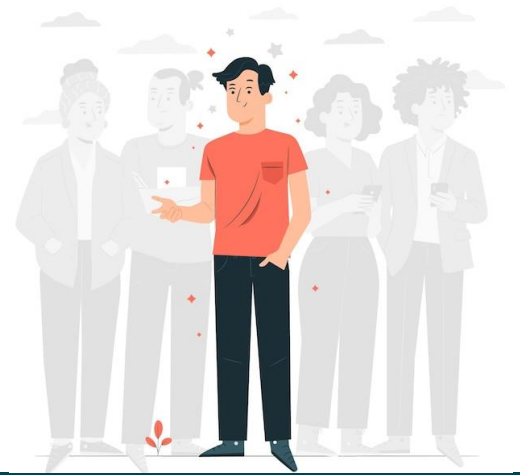University
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Participants

Original sample, *N* = 520 adolescents in 29 secondary school classrooms.

Only included classes with at least 60% participation (Marks et al, 2013).

Analytical sample, *N* = 383 in 19 secondary classes in 5 different schools.

Age between 12–16 years; *M* = 14.20, *SD* = 0.94; 46.8% male

Network size between 16 and 27 participants per class
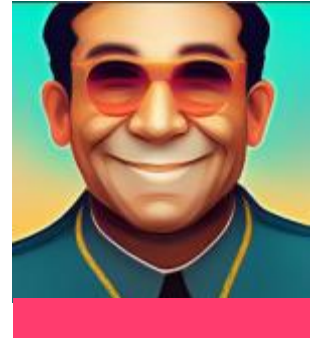
Dictator game

Not a game

Each trial, divide 10 coins between yourself and a target:
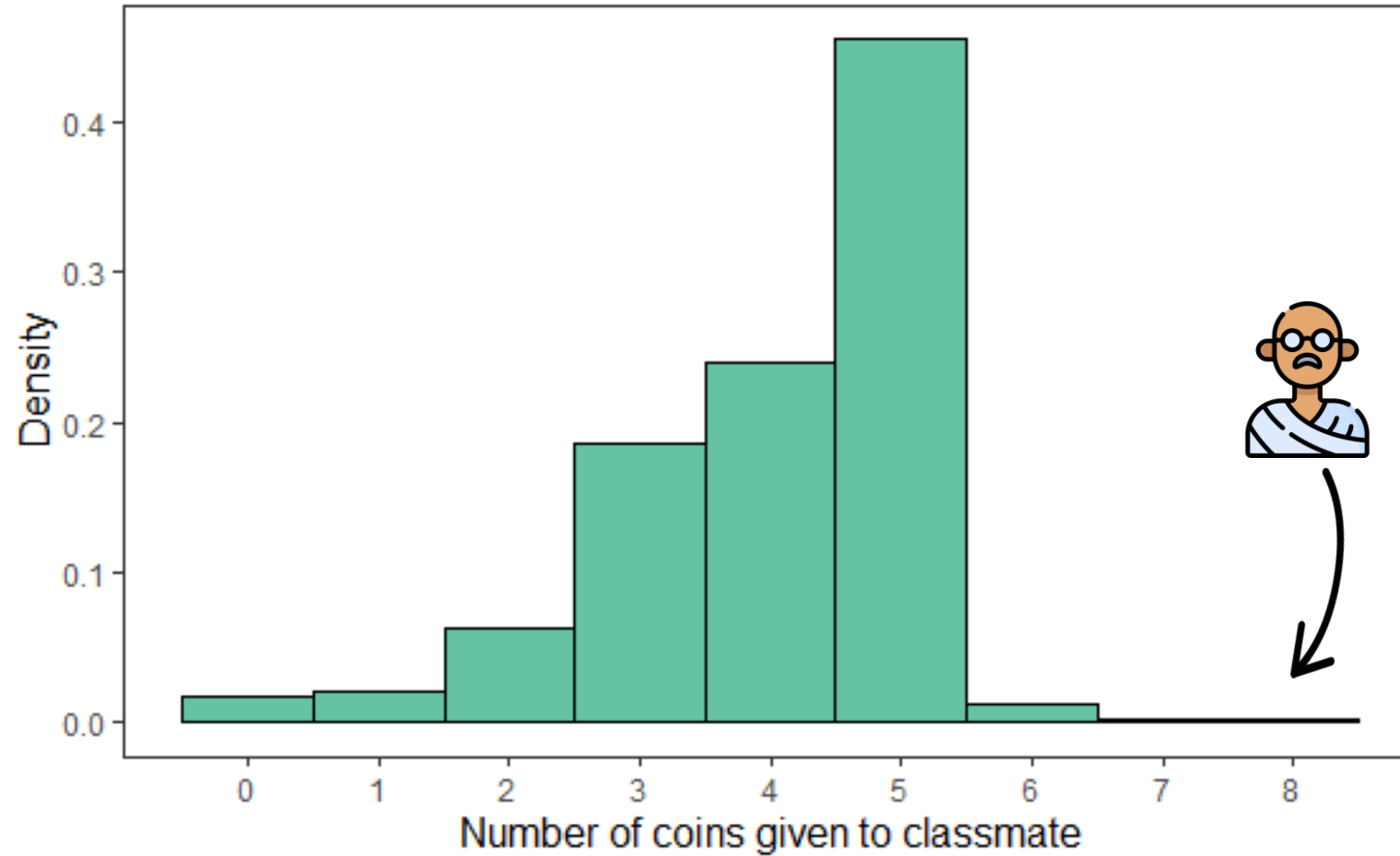friend, a stranger, or a classmate

The exact identity not given, so just 'a' classmate.

Instructed that number of donated coins affects the payout at the end (not true).

Other participants can not see the number of coins that you donate

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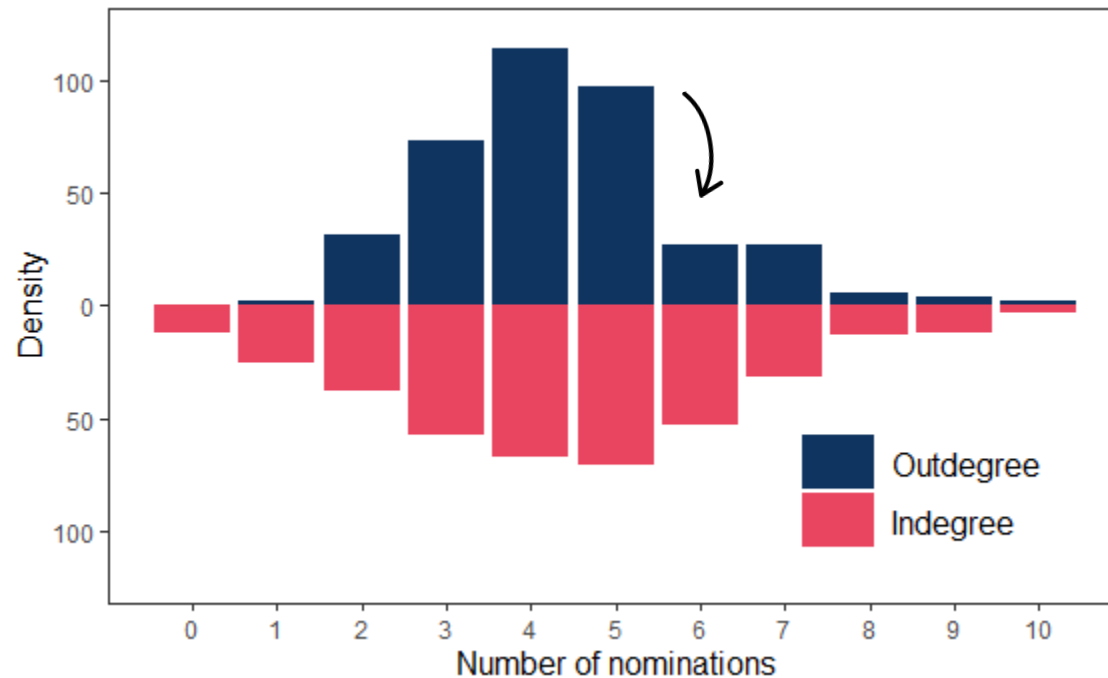Rotterdam

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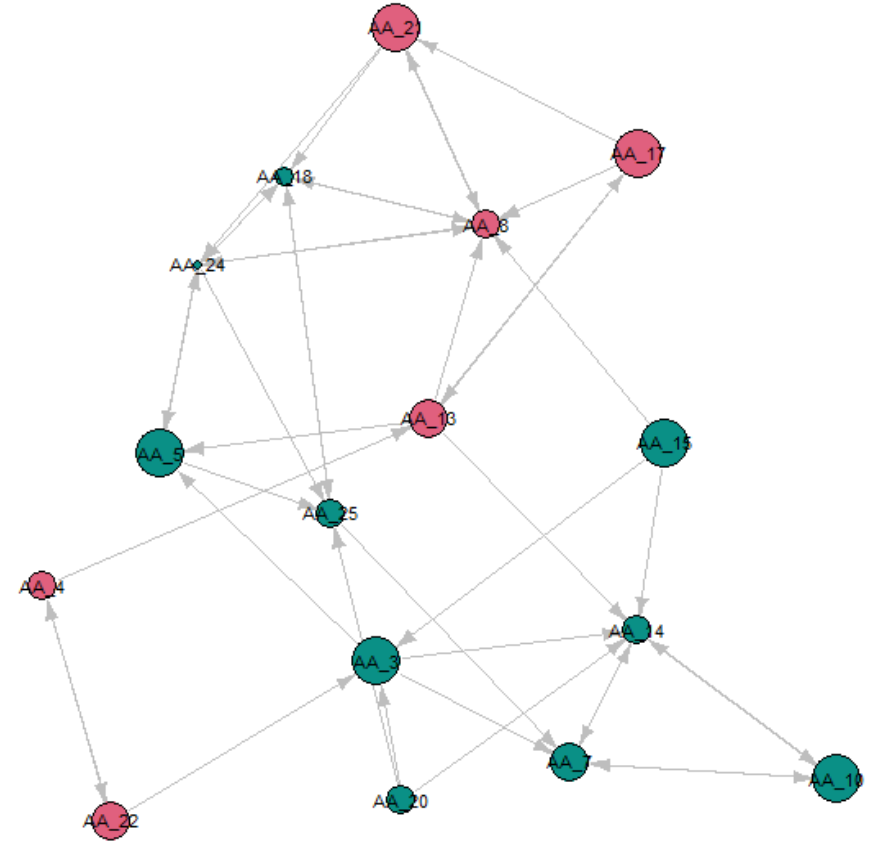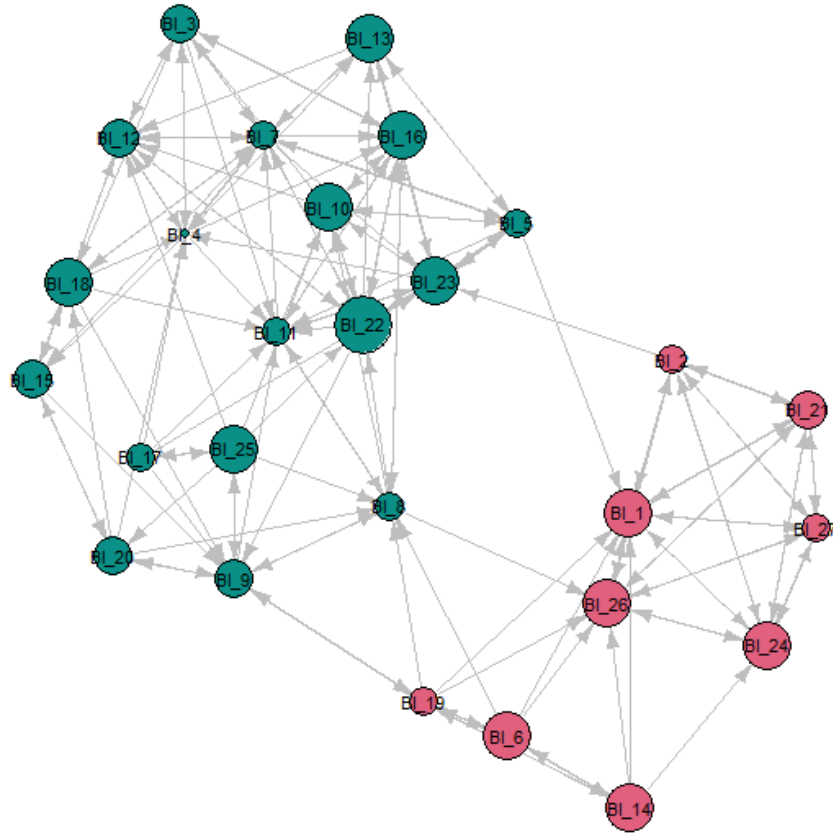NETWORK

Dictator game

$(M = 4.05, SD = 1.22)$

Social networks

Name generator (max 5 peers):
    "which classmates do you like"
    "which classmates do you consider to be your friend?

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Social networks

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Classes overview

School	Class	Pupils	Size	Diameter	Reciprocity	Density	Transitivity	Degr_ass
A	AA	26	16	4	0.34	0.18	0.32	0.20
A	AB	28	18	7	0.52	0.25	0.59	-0.02
A	AC	27	21	7	0.46	0.20	0.56	0.08
A	AD	28	17	5	0.48	0.27	0.70	0.07
A	AF	22	16	5	0.59	0.33	0.72	0.05
B	BA	27	20	5	0.58	0.24	0.62	-0.11
B	BB	28	18	4	0.49	0.25	0.53	0.20
B	BC	29	20	5	0.62	0.21	0.57	-0.18
B	BE	30	20	5	0.47	0.24	0.59	0.17
B	BG	30	20	5	0.52	0.21	0.45	0.13
B	BH	28	24	7	0.47	0.19	0.63	-0.05
B	BI	27	27	7	0.51	0.22	0.53	0.02
C	CA	30	20	6	0.56	0.25	0.61	0.15
C	CB	30	19	7	0.60	0.22	0.57	0.05
C	CC	25	19	5	0.57	0.25	0.56	-0.12
C	CD	28	23	5	0.41	0.21	0.50	0.05
C	CF	31	25	7	0.59	0.20	0.53	0.18
C	CG	31	21	7	0.48	0.18	0.48	0.17
D	DE	25	19	6	0.62	0.25	0.48	-0.13

Descriptive Results

Assortativity in giving behavior (without controlling for network effects)

      Correlation of donated coins between two affiliated nodes

      r(1677) = .06, p < .001. (all ties)

      r(1148) = .09, p < .001. (only reciprocal ties)

Descriptive Results

Assortativity in giving behavior (without controlling for network effects)
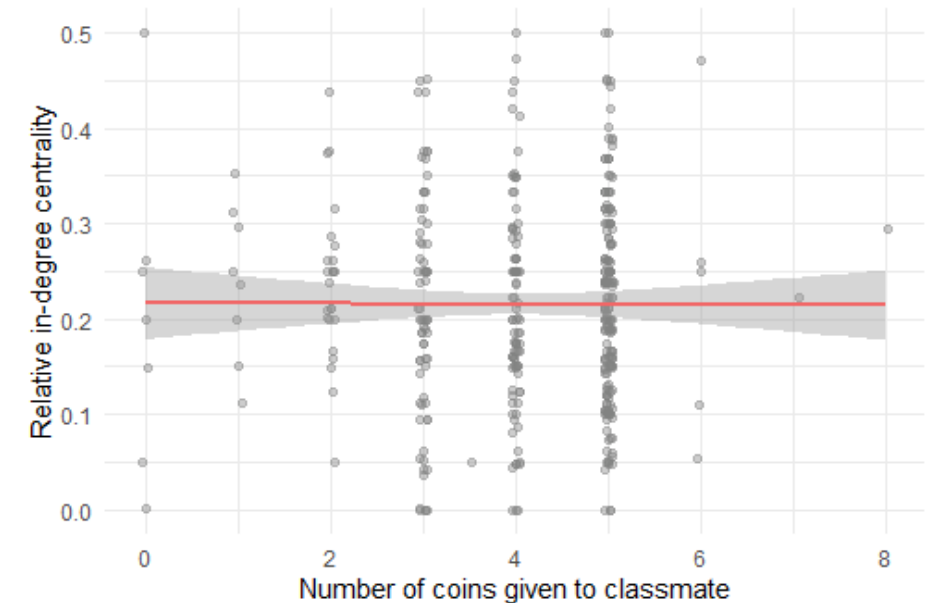   Correlation of donated coins between two affiliated nodes
    $r(1677) = .06, p < .001.$ (all ties)
    $r(1148) = .09, p < .001.$ (only reciprocal ties)

Association between giving behavior and in-degree
    In-degree: proportion in class
    $r(381) = .00, p = .95$

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Confirmatory Results

```
ergm(Network ~
        edges +                     # number of edges in a network
        mutual +                    # reciprocal edges in a network
        gwesp(fixed=FALSE) +        # triangles
        nodematch("Sex_f") +        # homophily based on sex
        absdiff("Age") +            # absolute difference in age
        absdiff("Give") +           # absolute difference in giving <H1>
        nodeicov("Sex") +           # effect of dummy sex on incoming edge
        nodeocov("Sex") +           # effect of dummy sex on outgoing edges
        nodeicov("Age") +           # effect of age on incoming edge
        nodeocov("Age") +           # effect of age on outgoing edge
        nodeicov("Give") +          # effect of giving on incoming edge <H2>
        nodeocov("Give")            # effect of giving on outgoing edge
```

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Confirmatory Results

Single ERGM per classroom

      7 fixing decay parameter for GWESP

      1 structural problem: No girls nominated a boy
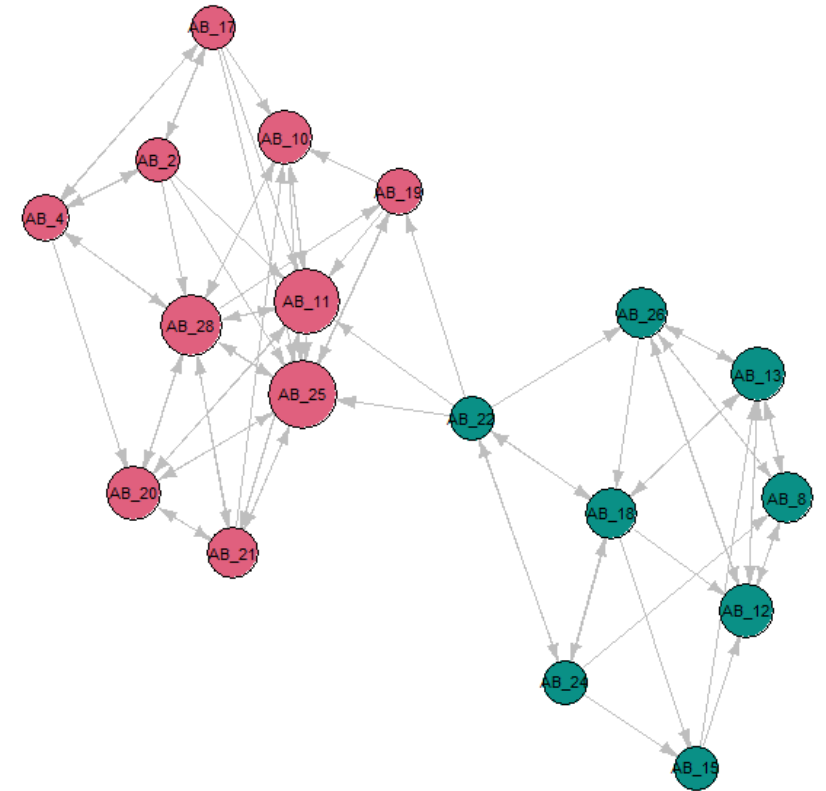
Confirmatory Results

Table 1

Results of the Multilevel ERGM

	LO	SE	*p-value*	Prob
Edges	−3.48	0.31	<.001	.03
Mutual	2.19	0.11	<.001	.90
Gwesp	0.84	0.07	<.001	.70
Gwesp decay	0.4	0.05	<.001	.60
Nodematch Sex	1.12	0.06	<.001	.75
Absdiff Age	−0.09	0.07	.189	.48
Absdiff Giving	0.04	0.02	.126	.51
Nodeicov Sex	0.03	0.08	.691	.51
Nodeocov Sex	0.01	0.08	.922	.50
Nodeicov Age	0.18	0.08	.025	.54
Nodeocov Age	−0.22	0.08	.007	.45
Nodeicov Giving	0.02	0.03	.548	.50
Nodeocov Giving	−0.02	0.03	.430	.50

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Discussion

This study showed no support that the social network is related to prosocial behavior in adolescents

But, there are some limitations.

... giving coins in this game is highly specific and covert behavior

... adolescents are sensitive to experience immediate rewards (Crone & Dahl, 2012)

... model fit of indegree and outdegree.

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Discussion

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Or, in the Whova app