

Selecting and Retaining Friends: Cigarette Smoking Similarity Among Adolescent Friends

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Cigarette Smoking Facts

- Tobacco use is the leading **preventable** cause of death.
- Thousands of adolescents begin smoking every day.
 - 3,800 will try their first cigarette; 1,000 will begin smoking regularly.
- More than 80% of adult smokers began smoking during adolescence.

Under what conditions do adolescents start smoking?

Friend Cigarette Smoking Similarity

- Friends tend to resemble one another on cigarette smoking behavior.

Possible mechanisms:

Selection. Friends chosen for similarity.

De-selection. Friendships are ended for dissimilarity.

Socialization. Friends become more similar as a result of influence.

Friend Cigarette Smoking Similarity

- We know much of cigarette smoking similarity is a product of **selection** and not **socialization** (Kiuru, Burk, Laursen, Salmela-Aro, Nurmi, 2010; Veenstra & Dijkstra, 2011).
- We know very little concerning the role of **de-selection**.
- We know very little about the moderating role of the **friendship group**.

Goals and Hypotheses

1. The first goal is to understand the role of **de-selection** in adolescent cigarette smoking similarity?
2. The second goal is to understand how selection, de-selection, and socialization effects vary by the level of cigarette smoking in a **friendship group**?

Hypotheses:

- If nonsmokers guarantee a smoke-free environment by avoiding smokers, smoking becomes an important **selection** criterion.
- If smoking groups are more heterogeneous with respect to smoking, smoking friendship groups imply a sufficient condition for **de-selection**.

Method

- **Participants.** 1419 Finnish Students (729 females, 690 males) between 15 – 17 years of age at 1st data collection.
 - Participants were drawn from 9 schools as part of the larger *Kuopio School Transition (KST)* study (Salmela-Aro, Niemivirta, & Nurmi, 2003)
- **Measures.** Self-report measure of cigarette smoking (Rimpelä, 2003).
 - “Which describes your smoking during the past week?” on a scale from 1 (I have never smoked) to 5 (I smoke once a day or more often).
- **Friendship Nominations.** Each participant nominated up to three same-grade schoolmates (Coie, Dodge, & Coppotelli, 1982).
 - “Whom do you most like to spend time with?”

Cigarette Smoking: The Current Sample

- From the 1419 participants in the total sample, 436 participants reported some cigarette smoking.
- Of the 268 friendship groups created from the total sample, 127 friendship groups reported some cigarette smoking.
 - Friendship groups were created from friendship nominations and ranged in size from 2 to 7 participants per friendship group.

Plan of Analysis

- SIENA 3.2 (Snijders, Steglich, Schweinberger, & Huisman, 2007) was used to examine network (*friendship choice*) and behavioral (*individual smoking*) change.
 - Group-level interactions for friendship group smoking were included in the model.
 - Intraclass correlations were used to illustrate significant interaction effects.

Control Parameters

- Network control parameters:
 - *Reciprocity* (tendency to reciprocate friendship nominations)
 - *Transitivity* (tendency to nominate friends of friends)
 - *Out-degree* (density of nominations in the social network)
 - *Gender similarity* (tendency to nominate same-sex friend)
- Behavioral control parameters:
 - *Linear shape* (linear tendency to smoke cigarettes)
 - *Quadratic shape* (deviations from the linear tendency to smoke)
 - *Gender effect* (changes in smoking as a function of gender)

Results: Control Parameters

- Network control parameters:
 - *Reciprocity* (Est.= 2.27**, SD=0.25)
 - *Transitivity* (Est.= 0.48**, SD=0.03)
 - *Out-degree* (Est.= -3.00**, SD=0.08)
 - *Gender similarity* (Est.= 0.71**, SD=0.13)
- Behavioral control parameters:
 - *Linear shape* (Est.= -0.29, SD=0.25)
 - *Quadratic shape* (Est.= 0.44**, SD=0.05)
 - *Gender effect* (Est.= 0.25, SD=0.14)

Note. $p < .05^*$, $p < .01^{**}$. Two-tailed tests are presented.

Main Effects

- **Selection:**
 - *Smoking ego X smoking alter evaluative* (preference to nominate, and be nominated by, others with similarly high levels of smoking)
- **De-selection:**
 - *Smoking ego X smoking alter endowment* (indication that selection effect differs from de-selection effects for cigarette smoking)
 - De-selection is calculated from evaluative and endowment effects: (Evaluative Est. + Endowment Est. = **De-selection Est.**)
- **Socialization:**
 - *Smoking average alter* (friend influence on cigarette smoking)

Results: Main Effects

- **Selection:**
 - *Smoking ego evaluative* (Est.= -0.05, SD=0.04)
 - *Smoking alter evaluative* (Est.= 0.04, SD=0.04)
 - *Smoking squared alter evaluative* (Est.= -0.09, SD=0.05)
 - *Smoking ego X smoking alter evaluative* (Est.= **0.20***, SE =0.10)
- **De-selection:**
 - *Smoking ego X smoking alter endowment* (Est.= **0.38****, SD= 0.12)
(Evaluative Est. + Endowment Est. = De-selection Est.)
- **Socialization:**
 - *Smoking average alter* (Est.= -0.05ns, SD= 0.15)

Note. $p < .05^*$, $p < .01^{**}$. Two-tailed tests are presented.

Interaction Effects

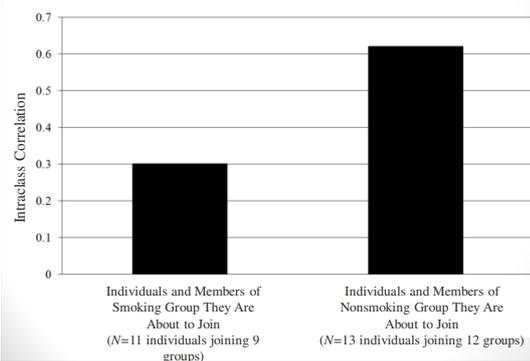
- **Selection by Friendship Group Smoking:**
 - *Smoking ego X smoking alter X friendship group smoking evaluative* (indication that friendship group cigarette smoking moderates preference to nominate others with similarly high levels of smoking)
- **De-selection by Friendship Group Smoking:**
 - *Smoking ego X smoking alter X friendship group smoking endowment* (indication that friendship group cigarette smoking moderates preference to end friendships based on cigarette smoking dissimilarity)
- **Socialization by Friendship Group Smoking:**
 - *Smoking average alter X friendship group smoking* (indication that friendship group cigarette smoking moderates influence on cigarette smoking)

Results: Interaction Effects

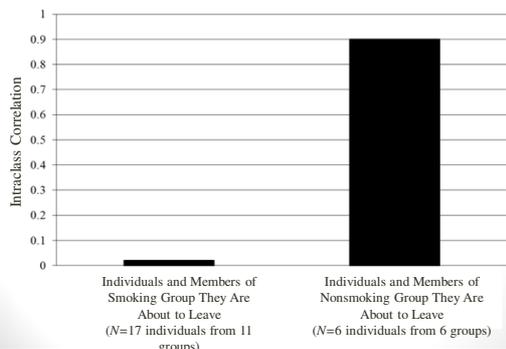
- **Selection by Friendship Group Smoking:**
 - *Smoking ego X smoking alter X friendship group smoking evaluative* (Est.= **0.11***, SD= 0.06)
- **De-selection by Friendship Group Smoking:**
 - *Smoking ego X smoking alter X friendship group smoking endowment* (Est.= **-0.48****, SD=0.13)
- **Socialization by Friendship Group Smoking:**
 - *Smoking average alter X friendship group smoking* (Est.= -0.13ns, SD=0.09)

Note. $p < .05^*$, $p < .01^{**}$. Two-tailed tests are presented.

Follow-up Illustration of SIENA Selection by Friendship Group Interaction



Follow-up Illustration of SIENA De-selection by Friendship Group Interaction



Conclusions

- De-selection on the basis of smoking dissimilarity contributes to change over time in friendship similarity.
- The magnitude of selection and de-selection effects vary as a function of level of smoking in an individual's friendship group.
- **Implications for Practice.** Intervention efforts should be targeted at smoking prevention.