

# Chain Reaction: How Teacher Communication Influences Attitude About Reform

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## Abstract

In this study, social network data collected from teachers in nine high schools are used to investigate the role that communicative peers (and their attitudes) play in the formation of teacher attitude. The results of this investigation indicate that teachers are influenced by those with whom they communicate, and that the pressure of peer influence is amplified with increased involvement in conversation. In addition, it is recognized that the role of peer-influence is limited to those individuals with whom a teacher communicates directly; teachers who are connected only through an intermediary, or a series of intermediaries, do not influence each other's attitudes toward reform.

## Research Questions

1. Are individual attributes associated with individual attitude about a reform? If so, which ones?
2. Are teachers' attitudes about reform correlated with the attitudes of those with whom they engage in conversation about the reform?
3. Are teachers' attitudes about reform correlated with the attitudes of those with whom they engage in conversation about *any* topic of professional or social concern?
4. What is the relationship between the number of communication partners that a person has and the correlation between partners' attitudes and the person's attitude about reform?
5. Is the correlation between the attitudes of individuals not directly connected to a focal teacher and that focal teacher similar to or different from the correlation with the attitudes of those individuals in direct communication with the focal teacher?

## Sample/Data

- 9 high schools working with schoolwide improvement programs
  - First Things First
  - High Schools That Work
  - SchoolNet
- 717 teacher surveys (Average Response Rate = 67%)

- Dependent Variable - 10 survey questions measuring teacher attitude about the reform (4-point Likert scale)
- Independent Variables - Years Teaching, Membership on a Faculty Committee, Department Chair, network size, **attitude scores of communicative peers**

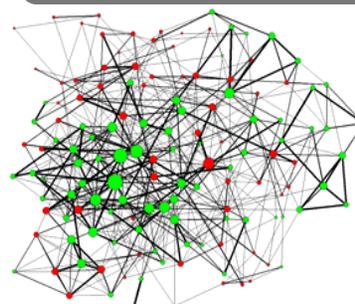
## Attitude Measure Examples

- I am capable of making the changes called for by <reform program>.
- The changes called for by <reform program> are helping or will help my students to reach higher levels of achievement.
- My involvement with <reform program> has exposed me to examples of classroom teaching the program seeks to foster.
- <reform program> provided me with useful ideas and resources for changing my classroom practice.

## Network Question Examples

Network label	Survey question
Classroom Management	To whom, in your school, have you turned to for advice about classroom management during this school year?
Reform	... for advice in using [reform name] during this school year.

## Sociogram



● = Positive Attitude ● = Negative Attitude  
Thicker Lines = More conversation between teachers  
Larger Nodes = Teacher involved in more conversation

## Methods

In addition to the sociogram representation above, social network data can be organized into a sociomatrix  $W$ .

$$W = \begin{bmatrix} 0 & w_{12} & \dots & w_{1n} \\ w_{21} & 0 & \dots & \vdots \\ \vdots & \vdots & \ddots & \vdots \\ w_{n1} & \dots & \dots & 0 \end{bmatrix}$$

$w_{ij}$  indicates the amount of conversation between teachers  $i$  and  $j$ .  $w_{ij}$  can take on a value between 0 and 5 in the current study.

## Methods – continued

$$y_i = \sum_{a=0}^k \beta_a x_{ik} + \rho \sum_{j=1, j \neq i}^n w_{ij} y_j + \varepsilon_i$$

Teacher  $i$ 's attitude score

Teacher  $i$ 's attributes

Attitude scores of communicative peers

Peer Influence indicator

## Results

Regression Results	Attribute Variables		Reform Alters		Total Communication Pressure		Peer Influence	
	RC1	RC2	RC3	RC4	RC5	RC6	RC7	
Intercept	.358** (.136)	.360** (.137)	-.588*** (.151)	-.568*** (.154)	-.545** (.151)			
Years Teaching	.003 (.004)	.003 (.004)	.004 (.004)	.005 (.004)	.005 (.004)			
Member of Faculty Committee	.198* (.082)	.198* (.082)	.179* (.082)	.178* (.082)	.180* (.082)			
Department Chair	-.227 (.139)	-.223 (.139)	-.250 (.148)	-.221 (.141)	-.219 (.141)			
Network Degree (direct)*	.127*** (.022)	.127*** (.022)	.025*** (.005)	.021*** (.006)	.022*** (.006)			
Average Alter Attitude (direct)*	.003 (.042)	.289*** (.049)		.108 (.112)	.111 (.113)			
Degree *				.022* (.011)	.021* (.011)			
Average Alter Attitude (direct)								
Average Indirect Alter Attitude							-.106 (.828)	
R-squared	0.064	0.064	0.172	0.177	0.178			

Note: N = 715 (2 observations were missing the Years Teaching variable)  
Standard Errors in Parentheses  
\*  $p < 0.10$   
\*\*  $p < 0.05$   
\*\*\*  $p < 0.001$   
\* In Hypotheses 1 and 2, Network Degree and Average Alter Attitude refer only to the reform network.  
School-Fixed Effects are not reported to conserve space. In none of the models was there a significant school effect

Parameter estimates can be interpreted as Standard Deviation Units

## Findings

1. Membership on a faculty committee, and "communicative connectedness" (ego-network size) were positively related with attitude towards reform ( $p < .05$  and  $p < .001$  respectively).
2. The impact of communicative alter attitude (in the reform network) was not significantly related to individual attitude scores ( $p = .94$ ).
3. When **all** networks were used as potential pathways, an increase in average alter attitude by one standard deviation was associated with an increase in individual attitude by 0.29 standard deviations, after controlling for all other variables ( $p < .001$ ).
4. The impact of alters' attitudes differs depending on ego-network size. The impact of average alter attitude on an individual reaches statistical significance once that individual has at least three individuals in his/her ego-network ( $p < .05$ ).
5. An individual's attitude is not significantly influenced by the attitudes of those with whom s/he is indirectly connected ( $p = .25$ ).

## Discussion

- Teachers with formal or informal connections (membership on a committee or more network ties) are more likely to have positive attitudes.
- While prevailing norms in a school may be important, direct connections appear to be more important than indirect ones.
- While peer pressure becomes a factor in attitude formation once a teacher has three communication partners, more partners means more pressure to conform.
- A small but well-connected clique of individuals can influence teachers' attitudes toward (and potentially implementation of) a reform through communication.

## References

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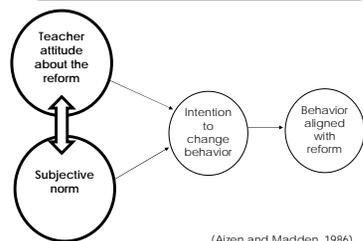
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## Introduction

- School reform seeks to change teacher practice.
- Change in teacher attitude is a necessary precursor to change in practice (Supovitz & Turner, 2000; Frank and Fahrbach, 1999).
- Teacher attitude is related to the subjective norms in the environment (Ajzen & Madden, 1986). Through interaction, teachers pick up signals and form attitudes that influence their decision to enact reform practices.
- **We are interested in testing the theory that teachers' attitudes are related to the attitudes of their peers in the school.**

## Theoretical Framework



(Ajzen and Madden, 1986)