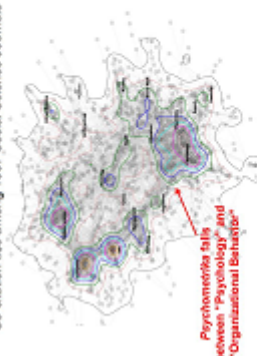


## Introduction

The success of a research paper may be measured by the number of times it is cited by other articles. In this project, I collected all citations to all papers published in the journal *Psychometrika* from years 1986 to 2006 in order to investigate whether "successful" articles have certain characteristics that distinguish them from other articles. Results from generalized linear modeling and social network analysis are presented.

## Big Picture

Co-citation ties among 1657 Social Science Journals



James Moody, Associate Professor, Duke University, Department of Sociology [http://www.soc.duke.edu/~jmoody/774class\\_citad2](http://www.soc.duke.edu/~jmoody/774class_citad2)

## Social Network of Psychometrika



## Original Data of Articles in Excel



Data come from the online database "Web of Science": <http://portal.isiknowledge.com>

## What Makes Published Research Papers Popular?

### Investigating Psychometrika Articles Published from 1986 to 2006

Akiko Takeda

## Poisson Regression Analyses

"Statistically Significant" Variables in Data with Estimate > 2.0 and P-value < 0.005

•Predictor for the number of citations (Y) for a Psychometrika article:

$$\log(Y) = 0.006197 \text{ XNR} - 0.07902 \text{ XPV} + 159.5$$

where XNR = number of references

XPV = publication year

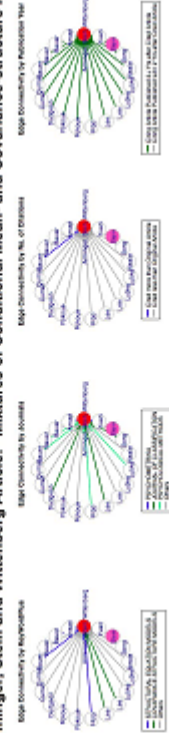
•Ex: Article with 40 references published in 1988 would have:

$$Y = e^{(0.006197 \times 40 - 0.07902 \times 1988 + 159.5)} \approx 14 \text{ citations}$$

•Table at right adds author ("AU") as a factor to this model; the highlighted authors are observed below.

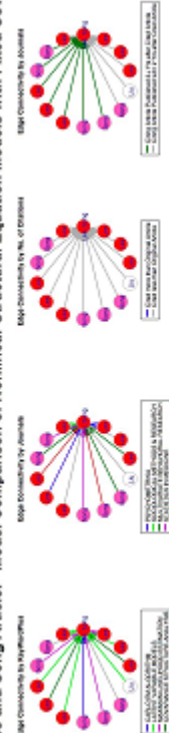
## Social Networks of Some Articles in Psychometrika

1999 Arminger, Stein and Wittenberg Article: "Mixtures of Conditional Mean- and Covariance-structure Models"



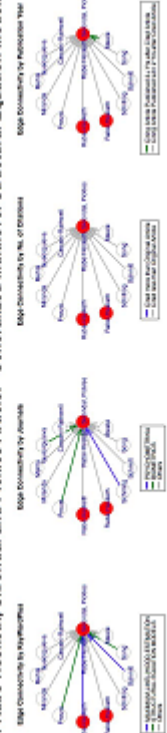
Times Cited: 18

2003 Lee and Song Article: "Model Comparison of Nonlinear Structural Equation Models with Fixed Covariates"



Times Cited: 13

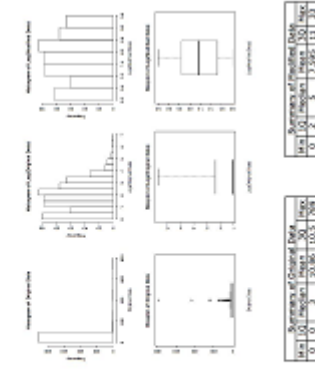
2004 Rabe-Hesketh, Skrondal and Pickles Article: "Generalized Multilevel Structural Equation Modeling"



Times Cited: 11

## Methods

"Normalization" of Poisson Distribution



Removing some notable "outliers"

Year	Volume	Issue	Page	Title	Author	Cited by	Cites
1986	51	1	1	1	1	1	1
1987	52	1	1	1	1	1	1
1988	53	1	1	1	1	1	1
1989	54	1	1	1	1	1	1
1990	55	1	1	1	1	1	1
1991	56	1	1	1	1	1	1
1992	57	1	1	1	1	1	1
1993	58	1	1	1	1	1	1
1994	59	1	1	1	1	1	1
1995	60	1	1	1	1	1	1
1996	61	1	1	1	1	1	1
1997	62	1	1	1	1	1	1
1998	63	1	1	1	1	1	1
1999	64	1	1	1	1	1	1
2000	65	1	1	1	1	1	1
2001	66	1	1	1	1	1	1
2002	67	1	1	1	1	1	1
2003	68	1	1	1	1	1	1
2004	69	1	1	1	1	1	1
2005	70	1	1	1	1	1	1
2006	71	1	1	1	1	1	1

## Future Research

- Use a zero-inflated Poisson regression model to account for a high incidence of articles the don't get cited.
- Build a bigger citation model to include more levels.
- Discover more characteristics that distinguish cited articles from citing articles.

## Acknowledgements

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