

# example: network study of corporate law firm

☑ joint entropies of dyad variables

```
J <- joint_entropy(dat, dec = 3)
J$matrix # matrix of joint entropies
J$freq # table of joint entropy frequencies
```

##	status	gender	office	years	age	practice	lawschool	cowork	advice	friend
## status	1.49	0.17	0.09	0.79	0.38	0.00	0.08	0.02	0.05	0.05
## gender	NA	1.55	0.03	0.28	0.07	0.00	0.06	0.00	0.01	0.01
## office	NA	NA	2.24	0.08	0.14	0.05	0.13	0.06	0.10	0.08
## years	NA	NA	NA	2.67	0.61	0.05	0.20	0.02	0.05	0.07
## age	NA	NA	NA	NA	2.80	0.02	0.41	0.01	0.02	0.05
## practice	NA	NA	NA	NA	NA	1.96	0.04	0.05	0.08	0.01
## lawschool	NA	NA	NA	NA	NA	NA	2.95	0.00	0.01	0.02
## cowork	NA	NA	NA	NA	NA	NA	NA	0.62	0.18	0.04
## advice	NA	NA	NA	NA	NA	NA	NA	NA	1.25	0.18
## friend	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.88

strongest  
dependence

##	j	#(J = j)	#(J >= j)
## 1	0.79	1	1
## 2	0.61	1	2
## 3	0.41	1	3
## 4	0.38	1	4
## 5	0.28	1	5
## 6	0.2	1	6
## 7	0.18	2	8
## 8	0.17	1	9
## 9	0.14	1	10
## 10	0.13	1	11
## 11	0.1	1	12
## 12	0.09	1	13
## 13	0.08	4	17
## 14	0.07	2	19
## 15	0.06	2	21
## 16	0.05	7	28
## 17	0.04	2	30
## 18	0.03	1	31
## 19	0.02	5	36
## 20	0.01	5	41
## 21	0	4	45

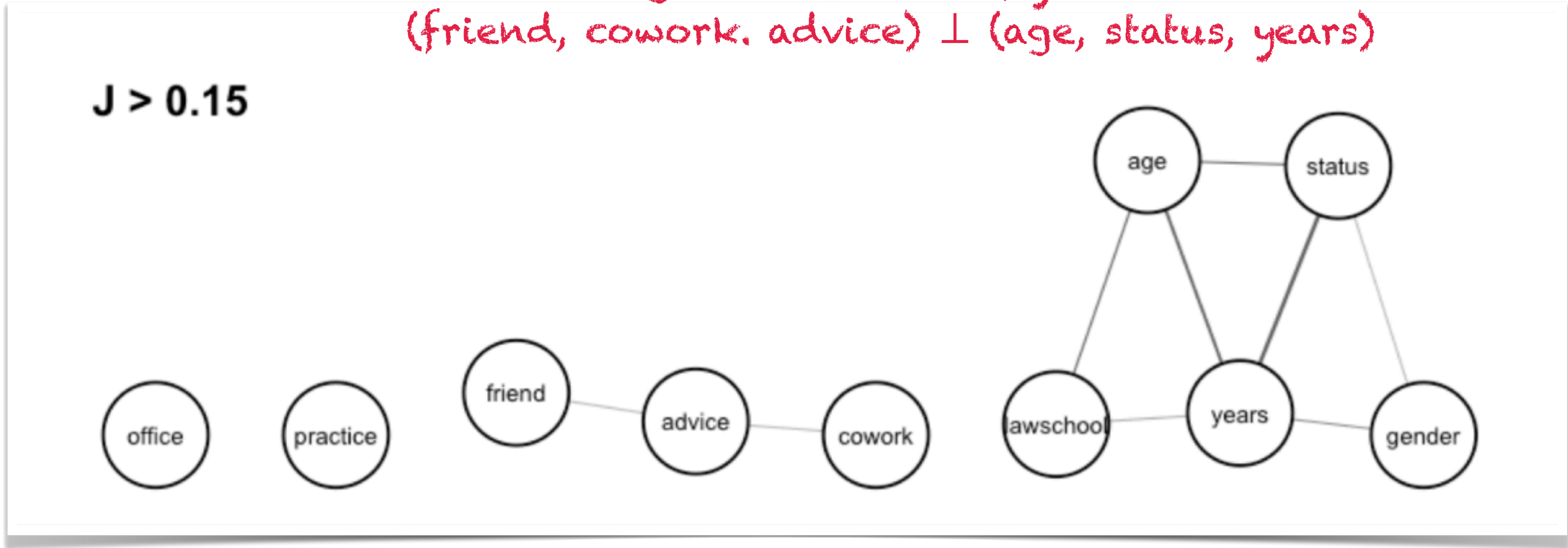
independence

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✓ association graph of dyad variables with  $J > 0.15$

```
library(ggraph)
assoc_graph(dat, cutoff = 0)
```

example of structural models of interest:  
friend  $\perp$  cowork | advice  
gender  $\perp$  status | years  
(friend, cowork, advice)  $\perp$  (age, status, years)



##	j	#{J = j}	#{J >= j}
## 1	0.79	1	1
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## 3	0.41	1	3
## 4	0.38	1	4
## 5	0.28	1	5
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- ✓ associations between components and cliques
- ✓ comparisons and tests of tentative dependence structures