ONLINE APPENDIX FOR:

THE SPREAD OF ALCOHOL CONSUMPTION BEHAVIOR IN A LARGE SOCIAL NETWORK

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Appendix Table 1. Mean Values Shown in Figure 2 of Main Manuscript

		Social Distance						Physical Distance					
		1	*2*	*3*	*4*	*5*	*6*	*1*	*2*	*3*	*4*	*5*	*6*
Drinks Heavily	*Exam 1*	23.9	21.4	6.5	2.0	1.5	0.4	83.4	53.6	13.0	43.1	26.3	31.2
	Exam 2	34.3	28.1	11.3	1.6	-2.2	-3.0	58.8	31.0	10.0	20.3	36.4	30.4
	Exam 3	50.8	29.9	16.5	3.6	-0.2	0.1	76.4	48.5	31.6	51.7	52.0	21.2
	Exam 4	66.9	40.6	17.8	-2.9	1.9	1.0	88.6	77.6	19.0	85.4	35.4	86.5
	Exam 5	100.5	71.2	18.8	-3.4	-4.9	12.6	174.6	47.0	41.3	25.1	63.7	57.2
	Exam 6	116.7	79.1	24.9	0.4	-7.4	3.4	156.3	84.2	75.8	49.1	54.4	42.3
	Exam 7	117.1	84.5	15.0	2.3	4.9	1.0	119.2	102.2	65.7	12.1	39.1	34.7
Abstains	*Exam 1*	30.3	16.0	13.9	1.3	1.1	5.4	142.8	50.7	35.1	4.6	10.7	42.5
	Exam 2	24.0	14.5	6.5	4.0	2.8	0.1	60.9	27.8	22.0	15.3	33.0	-2.6
	Exam 3	29.9	18.9	0.0	3.1	1.8	1.5	67.8	51.0	25.9	34.0	10.4	16.6
	Exam 4	29.5	19.6	6.0	1.5	2.5	3.9	69.2	45.4	20.9	6.3	18.6	6.7
	Exam 5	29.8	20.8	5.1	-3.5	-0.2	1.7	56.7	42.3	27.0	24.4	40.3	12.9
	Exam 6	24.2	19.2	2.7	-1.2	-0.7	2.6	27.4	37.8	12.4	22.2	21.6	2.0
	Exam 7	36.7	30.5	4.0	3.5	2.9	-1.9	54.0	49.6	30.2	30.2	15.3	13.5

This table lists the numerical results displayed in Figure 2 of the manuscript. Note that the value reported is the mean conditional proportion divided by the mean unconditional proportion across all observations

Appendix Table 2. Prospective Influence of Friends and Family on Drinking and Vice Versa

	----------Dependent Variable----------											
	Currently Drinks Heavily			**Currently Abstains**			**Current Number of Friends**			**Current Number of Family**		
	Coef	**S.E.**	***p***	**Coef**	**S.E.**	***p***	**Coef**	**S.E.**	***p***	**Coef**	**S.E.**	***p***
Previously Drank Heavily	2.72	0.05	0.00	-1.40	0.07	0.00	-0.01	0.01	0.27	-0.01	0.01	0.32
Previously Abstained	-2.31	0.13	0.00	2.42	0.05	0.00	0.00	0.01	0.94	0.01	0.01	0.30
Previous Number of Friends	0.01	0.03	0.74	**-0.04**	**0.02**	**0.05**	0.92	0.00	0.00	0.95	0.00	0.00
Previous Number of Family	**-0.02**	**0.01**	**0.02**	**0.01**	**0.01**	**0.05**	0.00	0.00	0.00	-0.03	0.00	0.00
Age	-0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Years of Education	0.02	0.01	0.08	-0.08	0.01	0.00	0.00	0.00	0.68	0.00	0.00	0.03
Female	0.02	0.05	0.67	0.40	0.04	0.00	-0.01	0.00	0.22	0.00	0.01	0.57
Exam 3	-0.10	0.07	0.15	-0.19	0.06	0.00	0.02	0.01	0.01	-0.22	0.01	0.00
Exam 4	-0.21	0.07	0.00	-0.35	0.06	0.00	0.01	0.01	0.38	-0.20	0.01	0.00
Exam 5	-0.16	0.07	0.02	-0.41	0.06	0.00	-0.06	0.01	0.00	-0.22	0.01	0.00
Exam 6	-0.20	0.07	0.01	-0.18	0.06	0.00	-0.04	0.01	0.00	-0.29	0.01	0.00
Exam 7	0.05	0.08	0.56	-0.60	0.06	0.00	-0.03	0.01	0.00	-0.25	0.01	0.00
Constant	-1.96	0.22	0.00	-1.49	0.17	0.00	0.16	0.02	0.00	0.18	0.02	0.00
Deviance	2140			3424			3027			4299		
Null Deviance	3228			5372			19673			269004		
N	23486			23486			23486			23486		

Results for regression of principal's alcohol use, number of friends, and number of family members at current exam on previous alcohol use, number of friends, and number of family plus other covariates. Abstention is dichotomous (1=never drinks) as is heavy use (1=more than 1 drink a day for women and more than 2 drinks a day for men). First two models are based on logistic regression and last two are based on linear regression. Models were estimated using a general estimating equation (GEE) with clustering on the principal and an independent working covariance structure. Models with an exchangeable or AR(1) correlation structure yielded poorer fit. Fit statistics show sum of squared deviance between predicted and observed values for the model and a null model with no covariates. The main results (coefficients in bold) show that number of friends is associated with a decrease in future abstention and number of family members is associated with both a decrease in future heavy drinking and an increase in future abstention.

Appendix Table 3. Prospective Influence of Contact Drinking Behavior on Principal Drinking Behavior

	----------Dependent Variable----------								
	Currently Drinks Heavily			Currently Abstains			Currently Drinks Moderately		
	Coef	**S.E.**	***p***	**Coef**	**S.E.**	***p***	**Coef**	**S.E.**	***p***
Previously Drank Heavily	2.711	0.065	0.000	-1.269	0.086	0.000	-1.714	0.056	0.000
Previously Abstained	-2.213	0.149	0.000	2.341	0.056	0.000	-1.877	0.052	0.000
No. of contacts That Drank Heavily	**0.162**	**0.031**	**0.000**	**-0.074**	**0.028**	**0.009**	-0.038	0.024	0.113
No. of contacts That Abstained	**-0.103**	**0.032**	**0.001**	**0.202**	**0.021**	**0.000**	**-0.117**	**0.019**	**0.000**
No. of contacts That Drank Moderately	-0.027	0.021	0.214	**-0.053**	**0.018**	**0.003**	**0.054**	**0.015**	**0.000**
Age	-0.004	0.003	0.191	0.017	0.002	0.000	-0.011	0.002	0.000
Years of Education	-0.016	0.013	0.225	-0.068	0.011	0.000	0.058	0.009	0.000
Female	-0.037	0.058	0.525	0.415	0.048	0.000	-0.288	0.041	0.000
Exam 3	-0.091	0.092	0.320	-0.138	0.082	0.093	0.153	0.067	0.021
Exam 4	-0.264	0.085	0.002	-0.163	0.071	0.022	0.244	0.059	0.000
Exam 5	-0.216	0.085	0.011	-0.308	0.074	0.000	0.325	0.061	0.000
Exam 6	-0.261	0.086	0.003	0.203	0.069	0.003	-0.048	0.059	0.422
Exam 7	0.034	0.088	0.703	-0.317	0.075	0.000	0.230	0.062	0.000
Constant	-1.625	0.315	0.000	-1.732	0.245	0.000	0.855	0.212	0.000
Deviance	1493			2353			3245		
Null Deviance	2253			3552			4087		
N	16365			16365			16365		

Results for logistic regression of principal's current alcohol use on number of friends and family who abstained, drank moderately, and drank heavily in the previous exam, plus other covariates. Abstention is dichotomous (1=never drinks) as is heavy drinking (1=more than 1 drink a day for women and more than 2 drinks a day for men), and moderate drinking (1=those who neither absain nor drink heavily). Models were estimated using a general estimating equation (GEE) with clustering on the principal and an independent working covariance structure. Models with an exchangeable or AR(1) correlation structure yielded poorer fit. Fit statistics show sum of squared deviance between predicted and observed values for the model and a null model with no covariates.[i] The main results (coefficients in bold) show that 1) the number of contacts who drink heavily increases the likelihood the principal will drink heavily and decreases the likelihood the principal will abstain; 2) the number of contacts who abstain decreases the likelihood principal will drink either moderately or heavily, and increases the likelihood principal will abstain; and 3) the number of contacts that drink moderately has no significant effect on drinking heavily but it does decrease the likelihood principal will abstain and increase the likelihood principal drinks moderately.

Additional Statistical Information and Sensitivity Analyses

The models in Appendix Tables 4–7 provide parameter estimates in the form of beta coefficients, whereas the results reported in the text and in Figure 4 of the paper are in the form of risk ratios, which are related to the exponentiated coefficients. The key coefficients are the effect of contact drinking behavior at t+1.

The other regression coefficients have mostly the expected effects, such that, for example, women are less likely to drink than men. As indicated, the models in the foregoing tables include wave fixed effects, which, combined with age at baseline, account for the aging of the population over the 32 years.

We estimated these models on the principal-contact pair types described. The specification for this GEE model is $\text{principal\_drinking}_{t+1} = \text{contact\_drinking}_{t+1} + \text{contact\_drinking}_{t} + \text{principal\_drinking}_{t} + \text{covariates}$, and the independence error structure controls for multiple observations of the same principal. The sample size, *N*, shown in Appendix Tables 3–6 reflect the total number of all such principal-contact pairings, with multiple observations for each tie if it was observed in more than one wave, and allowing for the possibility that a given person can have multiple ties. Hence, for example, there are 10,810 observations of principal-contact sister ties in the network across all exams.

We explored the sensitivity of our results to model specification by conducting numerous other analyses (not shown here) each of which had various strengths and limitations, but none of which yielded substantially different results than those presented here. Although we identified only a single friend for most of the principals, we studied how multiple observations on some principals affected the standard errors of our models. Huber-White sandwich estimates with clustering on the principals yielded very similar standard errors. And we specified models that included a fixed effect for each principal (which drops all observations of principals with a single friend since they have no variation), thus controlling for all time-invariant attributes of the principals, such as their genes.

The Kamada-Kawai algorithm used to prepare the images in Figure 1 in the paper generates a matrix of shortest network path distances from each node to all other nodes in the network and repositions nodes so as to reduce the sum of the difference between the plotted distances and the network distances.[ii]

Effect of Principal Connectedness

A number of studies have suggested the importance of well-connected nodes in networks for spreading processes.[iii] We thus explored the effect of principal's degree on drinking. If well-connected individuals tend to be drinkers (or not), it might affect our results since these individuals by definition affect the dyadic observations of a large number of individuals. We tried adding the number of friendship and family ties for both principal and contact to the statistical models, both alone and as an interaction term with contact's drinking behavior in the current period. We include these covariates in the full

model of principal/friend ties in Appendix Tables 6 and 7 for illustration. The significant association between contact's and principal's drinking status remains significant in each of the extended models shown.

Effect of Geographic Distance between Principal and Contact

In addition to controlling for principal and contact node degree, we were interested in exploring the role of physical distance as a possible factor in the influence of contact on principal. As suggested in related results in the text, physical distance between principal and contact does not appear to influence our results. When we tried adding distance and log of distance between principal and contact, both alone and as an interaction term with contact's drinking in the current period, none of the models we tried yielded significant decreases in the effect of contact's behavior on principal. We include the distance measure in the full model below for illustration.

Effect of Smoking

One possible concern is that drinking behavior is actually a proxy for smoking behavior, which has already been shown to spread from person to person. [iv] We therefore added a variable to the extended models that indicates whether or not the principal currently smokes cigarettes. In spite of this addition, the association in drinking behavior between principal and contact remains significant.

Finally, we also specified models in which each of the foregoing variables (degree and distance) was added singly to the core model, and this did not yield different results.

Appendix Table 4. Association of contact Heavy Drinking and principal Heavy Drinking

	Contact Type								
	Female Friend	Male Friend	Female Contact-Perceived Friend	Wife	Husband	Sister	Brother	Immediate Neighbor	Coworker
Contact Currently Drinks Heavily	1.05	-0.32	0.63	1.34	0.91	0.35	0.33	-0.04	-0.04
	(0.27)	(0.24)	(0.30)	(0.21)	(0.12)	(0.13)	(0.09)	(0.35)	(0.11)
Contact Previously Drank Heavily	-0.32	0.47	-0.24	0.23	0.21	0.21	0.07	-0.44	-0.01
	(0.29)	(0.22)	(0.32)	(0.20)	(0.13)	(0.13)	(0.09)	(0.48)	(0.12)
Principal Previously Drank Heavily	3.38	3.05	3.59	3.16	2.96	2.99	3.01	3.69	3.04
	(0.21)	(0.19)	(0.24)	(0.11)	(0.12)	(0.11)	(0.10)	(0.37)	(0.24)
Wave 3	-0.06	0.06	-0.59	-0.09	-0.13	-0.19	-0.43	-1.37	0.43
	(0.30)	(0.29)	(0.38)	(0.16)	(0.16)	(0.15)	(0.15)	(0.47)	(0.32)
Wave 4	-0.71	0.24	-0.88	-0.17	-0.51	-0.48	-0.68	-1.74	0.30
	(0.29)	(0.25)	(0.38)	(0.15)	(0.16)	(0.13)	(0.14)	(0.48)	(0.32)
Wave 5	-0.15	-0.15	-0.75	-0.18	-0.21	-0.52	-0.56	-0.40	-0.12
	(0.30)	(0.26)	(0.40)	(0.16)	(0.16)	(0.14)	(0.14)	(0.52)	(0.37)
Wave 6	-0.15	-0.47	-0.47	-0.01	-0.46	-0.38	-0.46	-1.56	-0.14
	(0.32)	(0.32)	(0.43)	(0.19)	(0.19)	(0.15)	(0.15)	(0.66)	(0.51)
Wave 7	-0.15	-0.04	-0.59	-0.02	-0.07	-0.30	-0.69	-2.31	0.53
	(0.32)	(0.31)	(0.43)	(0.19)	(0.19)	(0.16)	(0.16)	(0.67)	(0.44)
Principal's Age	-0.01	0.00	-0.01	-0.02	0.00	-0.01	0.00	-0.02	0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.02)	(0.01)
Principal Female	-0.19	0.85	-0.27	---	---	-0.26	-0.23	0.04	-0.56
	(0.24)	(0.22)	(0.33)	---	---	(0.10)	(0.10)	(0.31)	(0.24)
Principal's Years of Education	0.03	-0.04	0.10	-0.05	0.05	0.03	0.03	0.06	0.00
	(0.04)	(0.04)	(0.07)	(0.02)	(0.03)	(0.02)	(0.02)	(0.07)	(0.05)
Constant	-2.59	-2.13	-2.73	-0.72	-3.53	-2.23	-2.59	-1.50	-3.73
	(0.86)	(0.77)	(1.37)	(0.46)	(0.52)	(0.48)	(0.46)	(1.50)	(0.96)
Deviance	152	169	123	478	459	1056	961	77	818
Null Deviance	234	260	205	755	705	1552	1396	120	1216
N	1897	1625	1600	5154	5236	10810	10010	995	8669

Coefficients and standard errors in parenthesis for logistic regression of principal drinking (1=drinks, 0=doesn't drink) on covariates shown in first column. Observations for each model are restricted by type of relationship (*e.g.*, the leftmost model includes only observations in which the principal named the contact as a "friend" in the previous and current period). Models were estimated using a general estimating equation with clustering on the principal and an independent working covariance structure. Models with an exchangeable or AR(1) correlation structure yielded poorer fit. Fit statistics show sum of squared deviance between predicted and observed values for the model and a null model with no covariates.[1]

Appendix Table 5. Association of Contact Abstention and Principal Abstention

	Contact Type								
	Female Friend	Male Friend	Female Contact-Perceived Friend	Wife	Husband	Sister	Brother	Immediate Neighbor	Coworker
Contact Currently Abstains	0.53	0.46	0.67	0.72	0.71	0.34	0.48	0.25	0.09
	(0.14)	(0.18)	(0.16)	(0.10)	(0.10)	(0.06)	(0.08)	(0.19)	(0.08)
Contact Previously Abstained	0.04	0.03	-0.32	0.56	0.44	0.03	0.02	0.10	-0.12
	(0.15)	(0.20)	(0.16)	(0.10)	(0.11)	(0.06)	(0.08)	(0.21)	(0.08)
Principal Previously Abstained	2.49	2.75	2.48	3.01	2.16	2.43	2.50	2.05	2.81
	(0.15)	(0.20)	(0.19)	(0.12)	(0.09)	(0.09)	(0.09)	(0.28)	(0.21)
Wave 3	-0.27	-0.59	-0.40	-0.57	-0.18	-0.23	0.03	-0.04	-0.35
	(0.23)	(0.26)	(0.32)	(0.16)	(0.12)	(0.13)	(0.14)	(0.36)	(0.27)
Wave 4	-0.43	-0.50	-0.45	-0.48	-0.40	-0.27	-0.01	0.05	-0.50
	(0.22)	(0.23)	(0.26)	(0.14)	(0.12)	(0.12)	(0.12)	(0.32)	(0.25)
Wave 5	-0.79	-0.31	-0.66	-0.76	-0.42	-0.27	-0.17	0.17	-0.31
	(0.23)	(0.24)	(0.29)	(0.15)	(0.13)	(0.11)	(0.13)	(0.34)	(0.31)
Wave 6	-0.10	-0.15	-0.24	-0.57	0.05	0.17	0.42	0.51	-0.36
	(0.23)	(0.28)	(0.27)	(0.15)	(0.13)	(0.12)	(0.13)	(0.40)	(0.35)
Wave 7	-0.73	-0.64	-0.67	-1.03	-0.60	-0.45	-0.25	-0.16	-0.88
	(0.25)	(0.28)	(0.30)	(0.17)	(0.15)	(0.14)	(0.14)	(0.36)	(0.39)
Principal's Age	0.01	0.01	0.01	0.03	0.01	0.02	0.01	0.03	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
Principal Female	0.21	-0.21	0.32	---	---	0.45	0.48	0.65	0.28
	(0.19)	(0.22)	(0.25)	---	---	(0.08)	(0.08)	(0.22)	(0.20)
Principal's Years of Education	-0.11	-0.08	-0.06	-0.03	-0.08	-0.10	-0.10	-0.06	-0.02
	(0.03)	(0.03)	(0.04)	(0.02)	(0.02)	(0.02)	(0.02)	(0.06)	(0.05)
Constant	-0.87	-1.45	-1.53	-3.10	-0.61	-1.33	-1.15	-2.53	-1.35
	(0.64)	(0.65)	(0.87)	(0.42)	(0.37)	(0.39)	(0.37)	(1.09)	(1.11)
Deviance	307	206	265	602	868	1648	1517	162	1248
Null Deviance	438	292	370	1017	1218	2362	2212	223	1786
N	1897	1625	1600	5154	5236	10810	10010	995	8669

Coefficients and standard errors in parenthesis for logistic regression of principal drinking (1=drinks, 0=does not drink) on covariates shown in first column. Observations for each model are restricted by type of relationship (*e.g.*, the leftmost model includes only observations in which the principal named the contact as a "friend" in the previous and current period and both are males). Models were estimated using a general estimating equation with clustering on the principal and independent working covariance structure. Models with an exchangeable or AR(1) correlation structure yielded poorer fit. Fit statistics show sum of squared deviance between predicted and observed values for the model and a null model with no covariates.[1]

Appendix Table 6: Heavy Drinking Models With Extra Controls

	Female Friends				*Spouses*			
	Coef.	**S.E.**	**Wald**	**p(>W)**	**Coef.**	**S.E.**	**Wald**	**p(>W)**
Contact Currently Drinks Heavily	0.679	0.318	4.541	0.033	1.104	0.124	79.666	0.000
Contact Drank Heavily in Previous Wave	-0.123	0.335	0.135	0.714	0.135	0.132	1.045	0.307
Principal Drank Heavily in Previous Wave	3.241	0.268	146.076	0.000	3.088	0.096	1032.477	0.000
Wave 3	-0.832	0.378	4.845	0.028	-0.043	0.135	0.103	0.749
Wave 4	-1.343	0.355	14.336	0.000	-0.276	0.127	4.708	0.030
Wave 5	-0.417	0.327	1.619	0.203	-0.101	0.136	0.556	0.456
Wave 6	-0.682	0.367	3.445	0.063	-0.135	0.158	0.732	0.392
Wave 7	-0.646	0.383	2.854	0.091	0.130	0.158	0.673	0.412
Principal's Age	-0.005	0.014	0.135	0.713	-0.027	0.013	3.936	0.047
Contact's Age	0.000	0.016	0.001	0.977	0.010	0.013	0.591	0.442
Principal's Gender	-0.129	0.286	0.203	0.652	-0.690	0.121	32.486	0.000
Principal's Education	0.024	0.049	0.236	0.627	-0.037	0.021	3.010	0.083
Contact's Education	-0.014	0.063	0.046	0.830	0.027	0.024	1.232	0.267
Principal's Family Ties	0.003	0.019	0.022	0.882	-0.035	0.014	5.964	0.015
Contact's Family Ties	-0.113	0.040	7.934	0.005	-0.003	0.017	0.032	0.858
Principal's Inward Friendship Ties	0.104	0.141	0.542	0.462	0.077	0.064	1.482	0.223
Contact's Inward Friendship Ties	0.288	0.126	5.242	0.022	-0.114	0.071	2.571	0.109
Principal's Outward Friendship Ties	-0.087	0.205	0.178	0.673	0.007	0.074	0.009	0.926
Contact's Outward Friendship Ties	-0.316	0.188	2.819	0.093	0.066	0.080	0.683	0.409
Geographic Distance Between principal and contact (1000s of miles)	0.557	0.278	4.014	0.045	-0.056	0.285	0.039	0.843
Principal Smokes	0.685	0.209	10.710	0.001	0.355	0.093	14.474	0.000
Constant	-2.101	1.206	3.035	0.082	-1.548	0.504	9.436	0.002
Deviance	109				713			
Null Deviance	169				1129			
N	1401				8062			

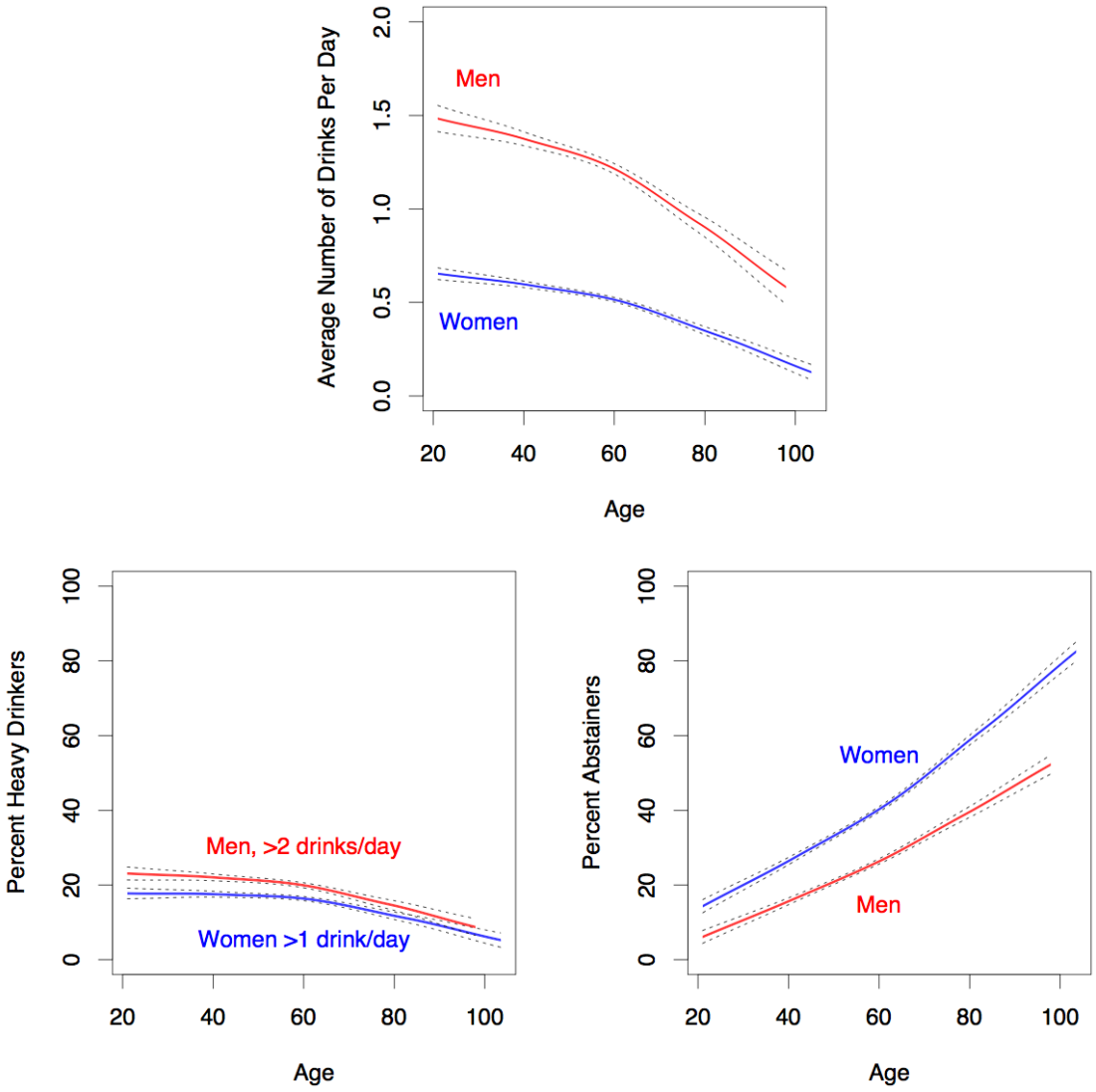
Logistic regression of principal heavy drinking behavior (1=drinks heavily, more than one drink a day for women and more than two drinks a day for men) on covariates shown in first column. Coefficients, standard errors, and results of a Wald test for significance are shown. Observations for this model are restricted to friends named by principals. Models were estimated using a general estimating equation with clustering on the principal and independent covariance structure. Models with an exchangeable or AR(1) correlation structure yielded poorer fit. Models with the natural logarithm of miles did not yield substantively different results. Fit statistics show sum of squared deviance between predicted and observed values for the model and a null model with no covariates.[1]

Appendix Table 7: Abstention Models With Extra Controls

	Friends				*Spouses*			
	Coef.	**S.E.**	**Wald**	**p(>W)**	**Coef.**	**S.E.**	**Wald**	**p(>W)**
Contact Currently Abstains	0.545	0.126	18.645	0.000	0.699	0.078	79.657	0.000
Contact Abstained in Previous Wave	-0.091	0.140	0.417	0.518	0.498	0.082	36.911	0.000
Principal Abstained in Previous Wave	2.551	0.137	346.535	0.000	2.553	0.083	936.237	0.000
Wave 3	-0.386	0.206	3.502	0.061	-0.415	0.114	13.181	0.000
Wave 4	-0.415	0.198	4.375	0.036	-0.489	0.104	22.115	0.000
Wave 5	-0.560	0.210	7.151	0.007	-0.653	0.115	32.428	0.000
Wave 6	-0.074	0.221	0.113	0.737	-0.276	0.117	5.533	0.019
Wave 7	-0.711	0.234	9.212	0.002	-0.912	0.131	48.474	0.000
Principal's Age	0.018	0.008	4.882	0.027	0.025	0.011	5.222	0.022
Contact's Age	-0.010	0.008	1.460	0.227	-0.007	0.011	0.413	0.520
Principal's Gender	0.317	0.117	7.370	0.007	0.614	0.085	52.443	0.000
Principal's Education	-0.075	0.027	7.491	0.006	-0.029	0.018	2.545	0.111
Contact's Education	-0.033	0.030	1.274	0.259	-0.053	0.017	9.539	0.002
Principal's Family Ties	0.002	0.014	0.024	0.878	0.025	0.010	5.564	0.018
Contact's Family Ties	0.020	0.017	1.381	0.240	0.031	0.015	4.306	0.038
Principal's Inward Friendship Ties	-0.025	0.073	0.113	0.737	-0.051	0.052	0.972	0.324
Contact's Inward Friendship Ties	-0.018	0.063	0.084	0.772	-0.032	0.053	0.350	0.554
Principal's Outward Friendship Ties	0.089	0.107	0.704	0.401	-0.025	0.063	0.159	0.690
Contact's Outward Friendship Ties	-0.053	0.083	0.401	0.527	0.032	0.063	0.261	0.610
Geographic Distance Between Principal and Contact (1000s of miles)	-0.184	0.233	0.624	0.430	0.140	0.229	0.374	0.541
Principal Smokes	-0.072	0.137	0.277	0.599	-0.129	0.081	2.499	0.114
Constant	-0.786	0.690	1.298	0.255	-1.814	0.401	20.469	0.000
Deviance	385				1120			
Null Deviance	555				1733			
N	2643				8062			

Logistic regression of principal abstention behavior (1=principal does not drink) on covariates shown in first column. Coefficients, standard errors, and results of a Wald test for significance are shown. Observations for this model are restricted to friends named by principals. Models were estimated using a general estimating equation with clustering on the principal and independent covariance structure. Models with an exchangeable or AR(1) correlation structure yielded poorer fit. Models with the natural logarithm of miles did not yield substantively different results. Fit statistics show sum of squared deviance between predicted and observed values for the model and a null model with no covariates.[1]

Appendix Figure 2. Drinking Habits by Age and Gender in the Framingham Heart Study



Supplementary Movie

A movie of the network, generated with SoNIA [v], is available separately. This movie shows the appearance and disappearance of ties among the nodes that form the largest connected subcomponent of the FHS Network across time, as well as changes in drinking behavior. That is, the movie documents the longitudinal change in *both* network topology and in attributes of the constituent individuals (*i.e.*, their alcohol behavior). Only non-genetic ties are shown in this movie (*i.e.*, friends and spouses), and a total of 1,129 individuals appear in it. Births and deaths (indicated by the appearance and disappearance of nodes) and the ties that arise or disappear as a result are shown with daily follow-up and precision; alcohol behavior and friendship and marital ties are captured on the date of examinations. Ties to siblings, co-workers, and immediate neighbors are not shown in this rendition. Node shape indicates gender (round=female, square=male) and tie color denotes relation (purple=friend, green=spouse). Node color indicates drinking behavior (blue=abstain, yellow=moderate, red=heavy) and node size is proportional to the number of drinks per day. The date, in years and days, is shown in the upper left hand corner as time progresses, beginning in 1971.

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