

Changes in Support Networks in Late Middle Age: The Extension of Gender and Educational Differences

Claude S. Fischer and Lauren Beresford

Department of Sociology, University of California, Berkeley.

Objectives. This paper tests whether differences by gender and by educational attainment in contact with friends and family and in support expected from friends and family narrow or widen in late middle age.

Methods. The data are drawn from about 4,800 members of the Wisconsin Longitudinal Survey who answered questions about their frequency of contact with social ties and expectations of 3 kinds of help in both 1993, when they were in their early 50s, and again in 2004.

Results. Using lagged dependent variable models, we find that between their 50s and 60s women's network advantages over men and college graduates' network advantages over high school graduates in frequency of social contact widened. The same was roughly true as well for expectations of social support, although here the divergences depended partly on the type of the support: Women gained relative to men in "talk" support and in help from nonkin if ill, but lost ground in financial support. The college-educated gained ground in all sorts of support from nonkin.

Discussion. These results reinforce concern that late middle age is a period when men and the less educated become yet more disadvantaged in social support, making attention to connectedness yet more critical.

Key Words: Education—Gender—Inequality—Middle age—Networks—Social support.

IN the growing literature on personal support networks, one long underdeveloped topic is network change over time (Feld, Sutor, & Hoegh, 2007; Sutor, Wellman, & Morgan, 1997); rates of network disruption, turnover, and replacement; how life events affect networks; and how individual differences in networks develop. Early longitudinal studies (e.g., Bidart & Lavenu, 2005; Morgan, Carder, & Neal, 1997; Sutor & Keeton, 1997; Wellman, Wong, Tindall, & Nazera, 1997) delivered important findings, but they relied on small and usually specialized samples, such as widows, and typically covered only short durations. Now, new studies, with broader samples and often better network measures, some still ongoing, have begun to shed light on general patterns of change (e.g., Bloem, Tilburg, & Thomese, 2008; Cornwell & Laumann, 2013; Guiaux, Tilburg, Broese, & Groenou, 2007; Huisman et al., 2011; Luo, Hawkey, Linda, Waite, & Cacioppo, 2012; Mollenhorst, Volker, & Flap, 2014; Shaw, Krause, Liang, & Bennett, 2007; Terhell, Broese van Groenou, & van Tilburg, 2004; Thomas, 2011). To this work, we add a particular focus: inequalities in network change.

We test the proposition that women, compared to men, and the more educated, compared to the less educated, maintain more personally supportive networks. Drawing on the well-known 1957 high school sample, the Wisconsin Longitudinal Study (WLS) identifies changes in respondents' network contacts and network support over an 11-year span, which respondents experienced those changes, and

what intervening events produced such changes between the respondents' early 50s and early 60s.

Panel studies on egocentric networks find considerable turnover in network membership over even brief periods. Turnover in networks is due in part to methodological reasons (network "sampling" by respondents and unreliability) and in part because of real change: alters come and go; needs rise and fade (e.g., Bignami-Van Assche, 2005; Cornwell & Laumann, 2013; Leik & Chalkley, 1997; Mollenhorst et al., 2014; Morgan et al., 1997; van Duijn, van Busschbach, & Snijders, 1999; for an overview, Sutor et al., 1997). Yet, researchers find considerable stability in the overall profile of individuals' networks and social support—for example, in the size of the reported networks, in access to support, and in the proportion of alters who are kin.

Women generally report more and closer ties and giving and getting more social support, especially emotional support, than do men (e.g., Antonucci & Akiyama, 1987; Antonucci, Akiyama, & Takahashi, 2004; Fischer & Olicker, 1983; Hall, 2011; Liebler & Sandefur, 2002; Reis, 1998; Stevens & Tilburg, 2011; Wenger, 1997; an exception: Marsden, 1987). The studies reporting gender differences in social networks over time show mixed results (women better sustain ties: Field & Minkler, 1988; Hatch & Bulcroft, 1992; Stevens & Van Tilburg, 2011; women do not: Matt & Dean, 1993; Shaw et al., 2007). One of the most comprehensive analyses of various kinds of contact and support in a sample of elderly respondents followed over 10 years

finds that the gender gap on some network dimensions narrows (Shaw et al., 2007).

Network studies typically treat education as a control variable, so the advantage that the educated have in social ties—at least, in nonkin ties—and in the expectation of social support are taken for granted (explicit analyses include: Fischer, 1982; Marsden, 1987; Shaw et al., 2007; Stevens & Tilburg, 2011; Willmott, 1987). Some studies show that the educated receive less help because they *need* less help. A few studies of network change incidentally report that the better educated are more likely than the less educated to retain or initiate a network tie (Ikkink & van Tilburg, 1999; Kohli, Hank, & Künemund, 2009; Marin & Hampton, 2013). To our knowledge, only two studies explicitly test the interaction of aging with education. Stevens and van Tilburg (2011, Table 2) find no such interaction effect on the probability that elderly residents of Amsterdam report having a “friend” and Shaw et al. (2007) find only one statistically significant interaction of time with education in 11 tests with data from a 10-year study of the elderly.

We concentrate on change in two dimensions: at the level of *ties*, contact between respondents and key alters; and, at the level of *networks*, the degree of social support respondents expected to receive. The first tells us about the activity in networks and the second about its value to respondents. In each context, the WLS measures a rich variety of relationships and support. Another distinctive feature of this study is that we look at the correlates of aging among the late-middle-aged, mainly in their 50s. Most of the existing studies are of the elderly, tracking people as they moved into the years of serious physical and mental disability (e.g., Aartsen, Tilburg, Smits, & Knipscheer, 2004; Cornwell & Laumann, 2013). For the most part, we track changes in social support as affected by life experiences and aging prior to severe health events.

We compare the answers of WLS respondents to questions about the frequency of contact with relatives and friends, and to questions that ask whether and from whom they could expect practical and emotional support when they are about 53 and 64 years old. Prior analyses of the data show that the overall, net change was modest (Hauser & Roan, 2006, p. 102), but the attention here is on *whose* networks changed in which ways.

Networks have long been known to affect people’s psychological well-being and physical health (e.g., Berkman, Glass, Brisette, & Seeman, 2000) and loneliness is known to be stressful (e.g., Cacioppo & Patrick, 2009). Research on life crises such as divorce, unemployment, and psychological breakdowns continue to emphasize social ties that could be mobilized for coping (e.g., Jackson, 1998; Perry, 2011; Terhell et al., 2004). It is therefore important to understand whether and how inequalities of midlife carry on, narrow, or expand in later life. Access to a variety of social ties in one’s early 60s, for example, can smooth forthcoming transitions such as retirement, widowhood, and physical decline. In a

recent ethnographic study, Abramson (in press) found that, despite their sharing the common ails of aging, the elderly from higher-class backgrounds were better able to deploy their networks to protect their health than were those of lower standing. The WLS data allow us to assess developments in network access in a large sample as they approach retirement age.

We pose a general question rather than hypotheses: Which sorts of respondents, distinguished by gender and education, exhibit the most change in support networks and in which direction? We postpone discussion of what might explain such effects for later in the paper.

METHOD

Data

The WLS (<http://www.ssc.wisc.edu/wlsresearch/>) began with a random sample of over 10,000 Wisconsin high school graduates in 1957. (Over the years, the study expanded to cover parents, siblings, and spouses, but we focus on the graduates themselves.) The sample is not fully representative of Americans, even those who were teenagers in 1957, but it is “broadly representative of white, non-Hispanic American men and women who . . . completed at least a high school education” in 1957 (Hauser & Roan, 2006, p. 9). This remains an unusually rich sample, especially given the nearly 50-year span it covers. The WLS, using both mail and telephone survey instruments, followed the respondents for decades, attaining a surviving *n* of approximately 8,400 in 1993 and 7,230 in 2004. Analyses of the WLS attrition (our own and by Freese & Branigan, 2012, Table 2) suggest modest changes in the profile of respondents. To the extent that attrition was biased, the 1993–2004 dropouts tended to be less cognitively skilled, educated, and organizationally active than the 1993–2004 continuing set. We address the implications of that small bias in the discussion.

That we have only two points in time here, 1993 and 2004, is a drawback, given problems of statistically distinguishing change from unreliability in two-wave data (Alwin, 2007, Ch. 5; Wiley & Wiley, 1970). To explain the results we get in terms of unreliability rather than substantive change, however, would require assuming systematic test–retest errors correlated with gender and education—a much more unlikely account than the one we offer.

Contact

We compare the 1993 and 2004 responses to questions, asked in mail and phone interviews, about how often the interviewees had contact with their siblings, their friends, and other relatives. (The WLS also asked about contact with a child, but because of a procedural error, the 2004 replication ended up losing approximately 12% of the sample.) (a) The sibling question is: “How often have you had contact either in person, letter, or phone with [selected

Table 1. Descriptive Data 1993 and 2004

	1993			2004		
	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>
Network variables: contact						
Sibling: once a week, plus	0.18	0.38	7,249	0.25	0.43	5,572
Relatives: once a week, plus	0.37	0.48	6,832	0.41	0.49	6,159
Friends: once a week plus	0.43	0.50	6,836	0.41	0.49	6,262
Network variables: support						
A relative who would lend money	0.86	0.34	6,812	0.83	0.38	6,389
A nonrelative who would lend money	0.52	0.50	6,812	0.36	0.48	6,389
A relative who would discuss problem	0.77	0.42	6,812	0.79	0.41	6,375
A nonrelative who would discuss	0.71	0.45	6,812	0.60	0.49	6,375
A relative who would care for if ill	0.86	0.34	6,812	0.87	0.34	6,398
A nonrelative who would care for if ill	0.48	0.50	6,812	0.39	0.49	6,398
Individual traits: time invariant						
Female	0.53	0.50	8,493	0.53	0.50	8,493
More than a high school degree	0.38	1.10	8,492	0.38	1.10	8,492
Number of children	2.73	1.46	7,543	2.73	1.46	7,543
Individual traits: time variant						
Primary residence outside Wisconsin	0.31	0.46	8,493	0.32	0.47	7,034
Married	0.82	0.38	8,491	0.79	0.41	7,347
Lived alone	0.10	0.30	8,493	0.17	0.37	7,034
Events						
Spouse died between 1993 and 2004	0	0	8,493	0.05	0.21	8,493
Parent died between 1993 and 2004	0	0	8,493	0.21	0.41	8,493
Retired between 1993 and 2004	0	0	8,493	0.47	0.50	7,034

Notes. *SD* = standard deviation. The values and *ns* reported in this table refer to the actual completed cases. In analyses below, data can only be used for cases in which the respondent had nonmissing values for dependent variables at both time periods.

sibling] during last 12 months?" (variables named rk059ssf and gk059ssf). Respondents offered numbers that the WLS then re-coded into ranges. We dichotomized the responses at once a week or more. (b) The question for friends reads: "How many times, if at all, during the past 4 weeks have you gotten together with friends? We mean like going out together or visiting in each other's homes" (mz023rer and iz023rer). We dichotomized the answers into four or more times in the past 4 weeks (at least once a week) and three or fewer times in the past 4 weeks (less than once a week). (c) Finally, the question about relatives, which we divided the same way, asked: "How many times, if at all, during the past 4 weeks have you gotten together socially with relatives?" (mz024rer and iz024rer). We dichotomized the answers to these questions rather than use the whole range because the probes asked respondents to estimate frequencies without benchmarks and such estimates are prone to great unreliability. Treating these variables as true ratio measures would introduce false precision. We do not claim that dichotomizing these variables improves precision, but it helps us to more meaningfully differentiate those who experienced a lot of contact with alters from those who did not. Although we considered treating these variables as collapsed ordinal categories, as provided in WLS coding, we decided against doing so because that would prevent us from estimating hierarchical within-effects models (fixed effects models) in Stata, which we used as supplementary analysis to replicate the findings reported here.

Support

The WLS asked respondents about three kinds of support: obtaining a loan of money (\$250), talking to someone about a "personal problem," and getting help if sick. For each topic, the survey asked respondents whether they could get assistance from children, siblings, parents, other relatives, or nonrelatives. The [Supplementary Materials](#) present all the questions and coding. Examples include: "Suppose you had to borrow \$250 for a few weeks because of an emergency. Could you ask for help from relatives other than children, parents, or siblings?" and "Suppose you had a personal problem, and you wanted to talk to someone about it. Could you ask a friend, neighbor or co-worker for help or advice?" Unfortunately, as is common in panel and longitudinal surveys (see, e.g., [Fischer, 2011](#)), the questions were subtly modified between 1993 and 2004 (see [Supplementary Materials](#)). For example, only in 2004 did the WLS ask whether the help could be gotten from grandchildren. Nonetheless, the response categories remained the same across waves. Such wording changes may affect the gross time trend, but are unlikely to affect the interaction of t_1-t_2 differences with respondent traits or experiences, as tested here.

[Table 1](#) lists the distributions for the dependent variables and key independent variables. We explored other predictor variables, but narrowed the list to the ones that were measured the same way on both waves and were predictive.

We focus not on the net differences in the distributions of the network measures, which may be, even if statistically significant, a result of aging, period effects, or methods effects, but on *differences among respondents* in network changes.

Models

We employ lagged dependent variable models (LDV, with supplementary analyses using random intercept models and fixed effects models; see Halaby, 2004). In these models the endogenous variable is lagged, but the other explanatory variables are dated contemporaneously with the dependent variable. The LDV model estimates the effects of events on changes in the frequency of contact with alters or on social support. Rather than viewing a social network variable at time t as a linear function of the independent variables, the LDV procedure allows us to model the frequency of contact with alters or amount of social support at time t as a function of the same social network measures at $t-1$ as modified by new information (e.g., divorce, retirement). For example, the frequency of contact with a sibling in 2004 is a function of contact with that same sibling in 1993 as modified by the marital status of the respondent in 2004. LDV models tend to be conservative, delivering coefficients that are closer to zero than do other change models because the estimates now have a different interpretation: the estimated effects of the covariates after controlling for the previous response. LDV models test how much of the change in social networks is due to intervening events rather than past circumstances or behavior. The lagged dependent variable dictates the timing of the effect of x (e.g., divorce) on y (e.g., social support). The LDV model is appropriate for our purposes because it tests the theoretical assumption that the effects of x variables (gender, education, marriage, divorce, widowhood, etc.) persist into the future.

We estimated the following logistic LDV model,

$$Y_{it} = B_0 + \gamma Y_{i,t-1} + B_2 X_i + B_3 S_{it} + \varepsilon_{it}$$

where Y_{it} is a binary social network variable (see discussion of measures above), $Y_{i,t-1}$ is the lag-1 response, X is a set of time invariant variables including sex, educational attainment, and number of children, S is a set of dummies for life transitions variables, and ε_{it} is the error term clustered on the respondent ID. Estimates are interpreted as the effects of covariates on the response after controlling for the previous response. This model tests for dynamic change. (We could have estimated change-score models to control for unobserved heterogeneity. Yet we chose to estimate LDV models because they are more efficient and preserve causal order. Change-score models also conceptualize respondents as having no inertia such that change produces change, while LDV models take respondent's residual effect of habit into account. Because we assume that there is some

stickiness in how people interact with alters across the life course, we selected LDV models rather than change-score models. Also, time-invariant variables like gender cannot be included directly in change-score models and our goal is to directly model the effect that gender, education, and life events have on contact with alters and social support.)

RESULTS

We turn first to our findings on contact with siblings, friends, and relatives and then to respondents' perceptions of support. We do not discuss the year effects in these models given the problems of strict comparability discussed earlier. Also, given the large sample size and the multiple comparisons we are making in these results, we focus our discussion on coefficients significant at $p < .01$ or better (although the table indicates those significant at $p < .05$ as well).

Contact

There are some strikingly consistent and strong results in Table 2. First, other things being equal and holding constant whether respondents were in frequent contact with people in their networks in 1993, women sustained or increased their interaction with siblings, relatives, and friends compared to men in 2004. The logit coefficients shown in Table 2 are respectively, .54 ($p < .001$), .43 ($p < .001$), and .42 ($p < .001$), which translate into odds ratios (ORs)—that is, effect sizes—of 1.71, 1.54, and 1.53.

Second, respondents with at least some college widened their advantage in contact with *friends* compared to the high school graduates. The logit coefficients for education are statistically significant for all three categories of ties, but are noticeably stronger for contact with friends (.28, $p < .001$), representing an OR of 1.32. That is, the odds of frequent contact with friends in 2004 were 32% greater for those with some college or more compared to those with only a high school degree, other things, including their 1993 levels of contact, being equal. The results for siblings and relatives indicate that the more educated at least keep or expand their advantages there, as well.

Although secondary to our interests here, we note several other significant effects in Table 2, largely understood as reflections of demographic or practical factors. Those with more children reported an increase in contact with relatives, which likely reflects the marriages and parenting of their grown children, but reported a decline in sibling contact. Those living alone in 2004 saw kin more often. Those widowed between 1993 and 2004 were much likelier to have frequent contact with siblings and friends than those who did not suffer such a loss. (We speculate that they experienced no jump in contact with relatives more generally because they may have lost touch with in-laws.) Widows' increased sociability is consistent with research literature showing that many expand their social lives once they get past the initial mourning stage (e.g., Donnelly & Hinterlong,

2010; Ertel, Glymour, & Berkman, 2009, p. 77; Ferraro, 1984). Respondents who lost a parent between 1993 and 2004 also lost some contact with relatives. Finally, respondents who retired between 1993 and 2004 reported sustaining or expanding the frequency of seeing friends compared to those who kept working. Connecting this finding with the relevant literature (e.g., Allan & Adams, 1989; Bosse, Aldwin, Levenson, Spiro, & Mroczek, 1993; Mor-Barak, Scharlach, Birba, & Sokolov, 1992; Van Tilburg, 1992, 2003) suggests that the retirees may have lost touch with work associates but, in net, increased contact with friends overall.

Support

Tables 3–5 report the results for the questions asking respondents if there are people with whom they can talk over a personal problem, whom they could ask for help if sick, and whom they might ask for a loan of money. As explained in the Supplementary Materials, we combined

various versions of the questions to differentiate affirmative answers to questions about help from relatives and help from nonrelatives. Also as explained there, subtle variations in wording from 1993 to 2004 make strict comparisons of central tendencies difficult, but our interest is in comparing the effects of gender and education as respondents age.

In general, we once again see the advantages of women and of the better educated as they aged, although there are variations by the kind of help needed and to whom the respondents would turn. Table 3, on finding someone to talk to, shows, first, an expanding female advantage in reporting emotional support from both relatives ($b = .31, p < .001, OR = 1.37$) and nonrelatives ($b = .44, p < .001, OR = 1.56$). Indeed, given two otherwise comparable people who provided similar reports of social support in 1993, a woman was more than two times as likely to claim support from someone in 2004 than a man (data not shown). Second, the educated sustained or widened their advantage in receiving conversational support, but only from nonkin ($b = .47, p < .001, OR = 1.60$).

Table 2. Models of Contact With Network Alters: More Than Once a Week in 2004

	Siblings		Relatives		Friends	
	Coefficient	Odds ratio	Coefficient	Odds ratio	Coefficient	Odds ratio
More than once a week in 1993	2.24***	9.41	.95***	2.58	1.32***	3.76
Female	0.54***	1.71	.43***	1.54	0.42***	1.53
More than a high school degree	0.20*	1.22	.16*	1.17	0.28***	1.32
Number of children (count)	-0.09***	0.91	.11***	1.12	-0.02	0.98
Resided outside Wisconsin in 2004	-0.16	0.85	-.13	0.88	-0.00	1.00
Married in 2004	0.05	1.05	.37*	1.44	0.06	1.06
Lived alone in 2004	0.04	1.04	.49**	1.64	0.32	1.38
Spouse died 1993–2004	0.56***	1.75	-.06	0.94	0.52***	1.69
Parent died 1993–2004	-0.01	0.99	-.24***	0.78	0.07	1.07
Retired 1993–2004	0.13	1.13	.15*	1.17	0.35***	1.42
Constant	-1.90***	0.14	-1.66***	0.19	-1.66***	0.19
<i>n</i>	4,987		4,764		4,843	
Wald test	794.8		361.2		544.5	
Pseudo- <i>R</i> -squared	0.16		0.06		0.09	

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3. Models of Whether Respondent Could Talk With Someone in 2004

	Relative		Nonkin	
	Coefficient	Odds ratio	Coefficient	Odds ratio
Could talk with _____ in 1993	1.39***	4.03	1.37***	3.95
Female	0.31***	1.37	0.44***	1.56
More than a high school degree	0.07	1.07	0.47***	1.60
Number of children (count)	0.12***	1.12	-0.05*	0.95
Resided outside Wisconsin in 2004	-0.30***	0.74	0.35***	1.42
Married in 2004	0.39*	1.48	-0.50**	0.61
Lived Alone in 2004	0.17	1.19	-0.18	0.84
Spouse died 1993–2004	0.27	1.31	0.07	1.07
Parent died 1993–2004	-0.13	0.88	0.11	1.11
Retired 1993–2004	0.19*	1.21	-0.18**	0.83
Constant	-0.41	0.67	-0.40	0.67
<i>n</i>	4,876		4,876	
Wald test	387.0		593.4	
Pseudo- <i>R</i> -squared	0.08		0.10	

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 4. Models of Whether Respondent Could Get Help if Sick in 2004

	Relative		Nonkin	
	Coefficient	Odds ratio	Coefficient	Odds ratio
Could get help from _____ in 1993	1.44***	4.24	1.35***	3.84
Female	0.06	1.06	0.21**	1.23
More than a high school degree	0.03	1.03	0.21***	1.24
Number of children (count)	0.32***	1.38	-0.08***	0.92
Resided outside Wisconsin in 2004	-0.54***	0.58	0.31***	1.36
Married in 2004	0.41	1.50	-0.32	0.72
Lived alone in 2004	0.06	1.06	-0.10	0.91
Spouse died 1993–2004	0.27	1.31	-0.24	0.78
Parent died 1993–2004	-0.22*	0.80	0.01	1.00
Retired 1993–2004	0.07	1.08	0.00	1.00
Constant	-0.15	0.86	-0.90***	0.41
<i>n</i>	4,897		4,897	
Wald test	388.9		572.8	
Pseudo- <i>R</i> -squared	0.11		0.10	

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 5. Models of Whether Respondent Could Borrow Money in 2004

	Relative		Nonkin	
	Coefficient	Odds ratio	Coefficient	Odds ratio
Could borrow from _____ in 1993	1.38***	3.96	1.55***	4.73
Female	0.22*	1.24	-0.40***	0.67
More than a high school degree	0.18	1.19	0.27***	1.31
Number of children (count)	0.11***	1.11	-0.08***	0.92
Resided outside Wisconsin in 2004	-0.06	0.94	0.22**	1.25
Married in 2004	0.42*	1.52	-0.45**	0.64
Lived alone in 2004	0.11	1.11	-0.22	0.80
Spouse died 1993–2004	0.12	1.13	0.02	1.02
Parent died 1993–2004	-0.16	0.85	0.02	1.03
Retired 1993–2004	0.00	1.00	-0.14*	0.87
Constant	-0.18	0.84	-0.72***	0.49
<i>n</i>	4,892		4,892	
Wald test	235.8		691.7	
Pseudo- <i>R</i> -squared	0.05		0.13	

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

Beyond these findings, Table 3 shows patterns that largely reflect the practicalities of turning to kin versus nonkin: Respondents with more children and those who were still married in 2004 increasingly turned to relatives and decreasingly to nonrelatives; respondents who retired reported a decrease in access to nonkin for sensitive conversations; while those who had moved out of state showed the reverse trend, toward greater reliance on nonkin. The last result is consistent with research showing that residential mobility leads, not to the absence of ties, but after a period of transition, to a shift from kin to nonkin ties (e.g., Bloem et al., 2008; Fischer et al., 1977; Magdol & Bessel, 2003; Viry, 2012).

Table 4 shows that getting practical help if ill is somewhat different, probably because, unlike discussing personal issues, people turn overwhelmingly to relatives for demanding help. Women sustained or expanded their anticipated help compared to men, but only from nonrelatives ($b = .21$, $p < .001$, OR = 1.23). The same is true for the better educated compared to high school graduates ($b = .21$, $p < .001$, OR = 1.24).

The other noteworthy results in Table 4 indicate that more children meant more help as the years passed and out-of-state movers relied less and less on relatives and more on nonrelatives.

Table 5 displays the results for whether the respondent could ask someone for a loan. This sort of question has the complication that many people would turn first, and perhaps only, to institutions for money (Fischer, 2011, p. 65). Here we find, for the first and only time in our results, a growing disadvantage for women—a 33% drop relative to men in the chances that they could expect a nonrelative to help ($b = -.40$, $p < .001$, OR = .67). (It appears that women widened their advantage in family sources of money, a 24% gain, although the effect is significant at only $p < .05$). The better educated widened their advantage in getting loans from nonrelatives ($b = .27$, $p < .001$, OR = 1.31). Otherwise, the results for children, marriage, and residence show a now familiar pattern of increasing reliance on kin or nonkin depending on practical circumstances.

Stepping back from the details, the data on how WLS respondents' expectations for social support changed between 1993 and 2004 show that, other things being equal, including earlier expectations of support, women either better sustained or even extended the support they could expect compared to men. The gender gap widened in women's favor. The education gap similarly widened, but only for support expected from nonrelatives. These results are robust; they emerged in tests we conducted using other kinds of panel analyses that we do not report here.

DISCUSSION

The WLS sample reveals that between their 50s and 60s women's advantage over men and college graduates' advantage over high school graduates in frequency of contact with important associates expanded. The same was roughly true for WLS respondents' expectations of social support, although here the divergences depended in part on the nature of the support: Women gained relative to men in "talk" support and in help from nonkin if ill, but lost ground in financial support. The college-educated gained ground in all sorts of support from nonkin.

Before turning to substantive explanations for our findings, we address again the issue of attrition. As noted earlier, less cognitively skilled, less educated, and less organizationally active respondents were most likely to drop out, whether by disappearance or refusal, between 1993 and 2004 (Freese & Branigan, 2012). We can assume that these respondents tended to have smaller networks. This would, other things being equal, *weaken* the observed 2004 association between education and social ties and thus work *against* our findings. (Gender was not associated with attrition.)

Taking the widening of gender and educational differences in social ties as a robust result, how would we explain them? A simple explanation is a version of the Matthew Effect: People who have accumulated ties and practiced social skills over the first 30 years of adulthood are better positioned to sustain or expand ties later. (And, as a reviewer suggested, given homophily, the *associates* of the educated are also likelier to survive and be socially active, see also Feld et al., 2007.) Dynamics particular to the gender and education may also come into play in later life. One account of gender differences (Fischer & Olicker, 1983; also, Moore, 1990) is that, in earlier stages of adult life, particularly for this cohort, men and women typically faced constraints and opportunities—employment, marriage, parenting—that structured their social ties in ways that typically advantaged men. In later life, as these formal roles faded or become less determinative, women's generally greater sociability (whether rooted in biology, childhood, or culture) and the ties they had built outside of work become increasingly determinative and, therefore, gender differences widened.

Educational differences in nonkin ties and support can be similarly parsed into structural and dispositional sources.

Attending college means more opportunities to meet people outside the family. But it is also associated with the resources and social skills (either through selection or through training effects) that empower individuals to form and sustain strong, supportive relationships with nonkin. Presumably, the farther people are from the school experience, the more important the social skills are, especially in the context of changing circumstances. This study reinforces the importance of the sociability that is associated with extended education.

Social scientists often ask whether the inequalities that arise early in life from personality, childhood socialization, and youth experiences extend, diminish, or amplify through the life course (Abramson, *in press*). Here, we see evidence suggesting that the social connections and social skills that women and the educated develop by midlife allow them to sustain or even extend their social lives as they approach their senior years in ways that are harder for men and the less educated to do. Given what we now understand as the net advantages of social support, these findings suggest another way that health and well-being disparities accumulate into older age.

Our findings confirm those few studies, reviewed above, that have reported aging by gender and aging by education effects. The major contradiction is with Shaw et al. (2007) who report some gender convergence and virtually no interaction effects between education and aging. There may be various ways of reconciling the WLS data with those results, in measures and methods, but a perhaps promising one might be the samples. Shaw et al. followed respondents from age 65 and older for 10 years; the WLS data cover aging from roughly 53 to 64. One speculation is that network inequalities do widen through middle age, but then narrow in old age. Examining that possibility will require samples that span much wider age ranges than are available in either study.

SUPPLEMENTARY MATERIAL

Supplementary material can be found at: <http://psychogerontology.oxfordjournals.org/>

FUNDING

This work was supported by National Institute of Child Health and Human Development (5R21HD056581) to the U.C. Berkeley Population Center.

ACKNOWLEDGMENTS

The authors thank Stephen Vaisey for his technical advice. C. S. Fischer planned the study, supervised the data analysis, and largely drafted the paper. L. Beresford planned and conducted the statistical analyses, contributed to the conceptual work, and also contributed to writing the paper.

CORRESPONDENCE

Correspondence should be addressed to Claude S. Fischer, PhD, Department of Sociology, University of California, Berkeley, CA 94720-1980. E-mail: fischer1@berkeley.edu.

REFERENCES

- Aartsen, M. J., Tilburg, T. V., Smits, C. H. M., & Knipscheer, K. C. P. M. (2004). A longitudinal study of the impact of

- physical and cognitive decline on the personal network in old age. *Journal of Social and Personal Relationships*, 21, 249–266. doi:10.1177/0265407504041386
- Abramson, C. M. (in press). *The unequal end game*. Cambridge, MA: Harvard University Press.
- Allan, G. A., & Adams, R. G. (1989). Aging and the structure of friendship. In R. G. Adams & R. Blieszne (Eds.), *Older adult friendship: Structure and process* (pp. 45–64). Newbury Park, CA: Sage Publications. doi:10.1002/9780470146316
- Alwin, D. F. (2007). *Margins of error*. New York: Wiley.
- Antonucci, T. C., & Akiyama, H. (1987). Social networks in adult life and a preliminary examination of the convoy model. *Journal of Gerontology*, 42(5), 519–527. doi:10.1093/geronj/42.5.519
- Antonucci, T. C., Akiyama, H., & Takahashi, K. (2004). Attachment and close relationships across the life span. *Attachment & Human Development*, 6, 353–370. doi:10.1080/1461673042000303136
- Berkman, L. F., Glass, T., Brissette, I., & Seeman, T. E. (2000). From social integration to health: Durkheim in the new millennium. *Social Science & Medicine*, 51, 843–857. doi:10.1016/S0277-9536(00)00065-4
- Bidart, C., & Lavenue, D. (2005). Evolutions of personal networks and life events. *Social Networks*, 27, 359–376. doi:10.1016/S0277-9536(00)00065-4
- Bignami-Van Assche, S. (2005). Network stability in longitudinal data: A case study from rural Malawi. *Social Networks*, 27, 231–247. doi:10.1016/j.socnet.2005.02.001
- Bloem, B. A., Tilburg, T. G. V., & Thomeise, F. (2008). Changes in older Dutch adults' role networks after moving. *Personal Relationships*, 15, 465–478. doi:10.1111/j.1475-6811.2008.00210.x
- Bosse, R., Aldwin, C. M., Levenson, M. R., Spiro, A., & Mroczek, D. K. (1993). Change in social support after retirement: Longitudinal findings from the normative aging study. *Journal of Gerontology*, 48, 210–217. doi:10.1093/geronj/48.4.P210
- Cacioppo, J., & Patrick, W. (2009). *Loneliness: Human nature and the need for social connection*. New York, NY: W. W. Norton.
- Cornwell, B., & E. O. Laumann (2013). The health benefits of network growth: New evidence from a national survey of older adults. *Social Science & Medicine*. doi:10.1016/j.socscimed.2013.09.011
- Donnelly, E. A., & Hinterlong, J. E. (2010). Changes in social participation and volunteer activity among recently widowed older adults. *The Gerontologist*, 50, 158–169. doi:10.1093/geront/gnp103
- Ertel, K. A., Glymour, M. M., & Berkman, L. F. (2009). Social networks and health: A life course perspective integrating observational and experimental evidence. *Journal of Social and Personal Relationships*, 26, 73–92. doi:10.1177/0265407509105523
- Feld, S. L., Sutor, J. J., & Hoegh, J. G. (2007). Describing changes in personal networks over time. *Field Methods*, 19, 218–236. doi:10.1177/1525822X06299134
- Ferraro, K. F. (1984). Widowhood and social participation in later life: Isolation or compensation? *Research on Aging*, 6, 451–468. doi:10.1177/0164027584006004001
- Field, D., & Minkler, M. (1988). Continuity and change in social support between young-old and old-old or very-old age. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 43, 100–106. doi:10.1093/geronj/43.4.P100
- Fischer, C. S. (1982). *To dwell among friends: Personal networks in town and city*. Chicago, IL: University of Chicago Press.
- Fischer, C. S. (2011). *Still connected: Family and friends in America since 1970*. New York, NY: Russell Sage.
- Fischer, C. S., Jackson, R. M., Stueve, C. A., Gerson, K., Jones, L. M., & Baldassare, M. (1977). *Networks and places: Social relations in the urban setting*. New York, NY: Free Press.
- Fischer, C. S., & Olicker, S. (1983). A research note on friendship, gender, and the life cycle. *Social Forces*, 62, 124–133. doi:10.1093/sf/62.1.124
- Freese, J., & Branigan, A. (2012). Cognitive skills and survey nonresponse—Evidence from two longitudinal studies in the United States. *EurAmerica*, 42, 221–247.
- Guiaux, M., Tilburg, T. V., Broese, M., & Groenou, V. (2007). Changes in contact and support exchange in personal networks after widowhood. *Personal Relationships*, 14, 457–473. doi:10.1111/j.1475-6811.2007.00165.x
- Halaby, C. N. (2004). Panel models in sociological research: Theory into practice. *Annual Review of Sociology*, 30, 507–544. doi:10.1146/annurev.soc.30.012703.110629
- Hall, J. A. (2011). Sex differences in friendship expectations: A meta-analysis. *Journal of Social and Personal Relationships*, 28, 723–747. doi:10.1177/0265407510386192
- Hatch, L. R., & Bulcroft, K. (1992). Contact with friends in later life: Disentangling the effects of gender and marital status. *Journal of Marriage and the Family*, 54, 222–232. doi:10.2307/353289
- Hauser, R. M., & Roan, C. L. (2006). *The class of 1957 in their mid-60s: A first look*. Madison, WI: Center for Demography and Ecology.
- Huisman, M., J. Poppelaars, van der Horst, M., Beekman, A. T., Brug, J., van Tilburg, T. G., & Deeg, D. J. (2011). Cohort profile: The longitudinal aging study Amsterdam. *International Journal of Epidemiology*, 40, 868–876. doi:10.1093/ije/dyq219
- Ikkink, K. K., & Van Tilburg, T. (1999). Broken ties: Reciprocity and other factors affecting the termination of older adults' relationships. *Social Networks*, 21, 131–146. doi:10.1016/S0378-8733(99)00005-2
- Jackson, P. R. (1988). Personal networks, support mobilization and unemployment. *Psychological Medicine*, 18, 397–404. doi:10.1017/S0033291700007947
- Kohli, M., Hank, K., & Künemund, H. (2009). The social connectedness of older Europeans: Patterns, dynamics and contexts. *Journal of European Social Policy* 19, 327–340. doi:10.1177/1350506809341514
- Leik, R. K., & Chalkley, M. A. 1997. On the stability of network relations under stress. *Social Networks*, 19, 63–74. doi:10.1016/S0378-8733(96)00291-2
- Liebler, C., & Sandefur, G. (2002). Gender differences in the exchange of social support with friends, neighbors, and co-workers at midlife. *Social Science Research*, 31, 364–391. doi:10.1016/S0049-089X(02)00006-6
- Luo, Y., Hawkey, L. C., Linda J., Waite, L. J., & Cacioppo, J. T. 2012. Loneliness, health, and mortality in old age: A national longitudinal study. *Social Science & Medicine*, 74, 907–914. doi:10.1016/j.socscimed.2011.11.028
- Magdol, L., & Bessel, D. R. (2003). Social capital, social currency, and portable assets: The impact of residential mobility on exchanges of social support. *Personal Relationships*, 10, 149–169. doi:10.1111/1475-6811.00043
- Marin, A., & Hampton, K. N. (2013). Why ties are dropped from personal support networks: The role of communication; social support; and personal, network, and relationship characteristics in tie dissolution (Unpublished manuscript). Department of Sociology, University of Toronto.
- Marsden, P. V. (1987). Core discussion networks of Americans. *American Sociological Review*, 52, 122–131. doi:10.2307/2095397
- Matt, G. E., & Dean, A. (1993). Social support from friends and psychological distress among elderly persons: Moderators effects of age. *Journal of Health and Social Behavior*, 34, 187–200. doi:10.2307/2137201
- Mollenhorst, G., Volker, B., & Flap, H. (2014). Changes in personal relationships: How social contexts affect the emergence and discontinuation of relationships. *Social Networks*, 37, 65–80. doi:10.1016/j.socnet.2013.12.003
- Moore, G. (1990). Structural determinants of men's and women's personal networks. *American Sociological Review*, 55, 726–735. doi:10.2307/2095868
- Mor-Barak, M. E., Scharlach, A. E., Birba, L., & Sokolov, J. (1992). Employment, social networks, and health in the retirement years. *International Journal of Aging and Human Development*, 35, 145–159. doi:10.2190/TVEV-FU7E-NE33-TKYC
- Morgan, D., Carder, P., & Neal, M. (1997). Are some relationships more useful than others? The value of similar others in the networks of

- recent widows. *Journal of Social and Personal Relationships*, 14, 745–759. doi:10.1177/0265407597146002
- Perry, B. L. (2011). The labeling paradox: Stigma, the sick role, and social networks in mental illness. *Journal of Health and Social Behavior*, 52, 460–477. doi:10.1177/0022146511408913
- Reis, H. T. (1998). Sex differences in intimacy and related behaviors: Context and process. In D. J. C. K. Dindia (ed.), *Sex differences and similarities in communication* (pp. 203–231). Mahwah, NJ: Erlbaum.
- Shaw, B., Krause, N., Liang, J., & Bennett, J. (2007). Tracking changes in social relations throughout late life. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 62, 90–99. doi:10.1093/geronb/62.2.S90
- Stevens, N. L., & Van Tilburg, T. G. (2011). Cohort differences in having and retaining friends in personal networks in later life. *Journal of Social and Personal Relationships*, 28, 24–43. doi:10.1177/0265407510386191
- Suitor, J. J., & Keeton, S. (1997). Once a friend, always a friend? Effects of homophily on women's support networks across a decade. *Social Networks*, 19, 51–62. doi:10.1016/S0378-8733(96)00290-0
- Suitor, J. J., Wellman, B., & Morgan, D. L. (1997). It's about time: How, why, and when networks change. *Social Networks*, 19, 1–7. doi:10.1016/S0378-8733(96)00287-0
- Terhell, E. L., Broese van Groenou, M. I., & van Tilburg, T. (2004). Network dynamics in the long-term period after divorce. *Journal of Social and Personal Relationships*, 21, 719–738. doi:10.1177/0265407504047833
- Thomas, P. A. (2011). Trajectories of social engagement and limitations in late life. *Journal of Health and Social Behavior*, 52, 430–443. doi:10.1177/0022146511411922
- Van Duijn, M. A. J., van Busschbach, J. T., & Snijders, T. A. B. (1999). Multilevel analysis of personal networks as dependent variables. *Social Networks*, 21, 187–209. doi:10.1016/S0378-8733(99)00009-X
- Van Tilburg, T. G. (1992). Support networks before and after retirement. *Journal of Social and Personal Relationships*, 9, 433–445. doi:10.1177/0265407592093006
- Van Tilburg, T. G. (2003). Consequences of men's retirement for the continuation of work-related personal relationships. *Ageing International*, 28(4), 345–358. doi:10.1007/s12126-003-1008-6
- Viry, G. (2012). Residential mobility and the spatial dispersion of personal networks: Effects on social support. *Social Networks*, 34, 59–72. doi:10.1016/j.socnet.2011.07.003
- Wellman, B., Wong, R. Y.-I., Tindall, D., & Nazera, N. (1997). A decade of network change: Turnover, persistence and stability in personal communities. *Social Networks*, 19, 27–50. doi:10.1016/S0378-8733(96)00289-4
- Wenger, G. C. (1997). Review of findings on support networks of older Europeans. *Journal of Cross Cultural Gerontology*, 12, 1–21. doi:10.1023/A:1006597110040
- Wiley, D. E., & Wiley, J. A. (1970). The estimation of measurement error in panel data. *American Sociological Review*, 35, 112–117.
- Willmott, P. (1987). *Friendship networks and social supports*. London: Policy Studies Institute.