Testing the Demographic Theory of Attitude Change: Secular Trends in Attitudes Among U.S. Householders, 1972-1996*

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This paper tests Stinchcombeþs theory of þDemographic Explanationsþ using 39 demographics and 47 attitude items in the NORC General Social Survey 1972-1996. The results support the theory in that (1) the appropriate demographic can explain about one third of the change in the typical attitude. (2) results are consistent across a variety of topics. Nevertheless, demographics seldom completely account for any particular trend. I argue that the theory is not as banal as it might seem since (1) its formal requirements are not easy for data to meet (2) the results cross-cuts Age/Period/Cohort approaches and (3) it lays a burden of proof at the feet of more sophisticated approaches.

THE DEMOGRAPHIC THEORY OF CHANGE

It is tempting to interpret a regression slope, b, by saying "When X goes up one unit, Y goes up b units". In cross-sectional data this is at best a pious hope, but with the now plentiful replicating samples such as the GSS (NORC General Social survey), NES (National Election Study), CPS (Current Population Survey), PSID (Panel Study of Income Dynamics) and NELS (National Education Longitudinal Study) it is possible to see whether X and Y do actually move together. Such analyses, surprisingly, are far from routine.

I perused the first 2674 items in the 3579 item 11th edition of the Annotated Bibliography of Papers Using the General Social Survey (Smith, Arnold, and Lancaster 1997). I spotted 296 annotations (11 per cent of 2674) that seemed to deal with change or trends. Of these just 61 (21 per cent of the trend studies, 2 percent of the sample) seemed to deal with an XY relationship, aside from Age/Period/Cohort matters which turned up in 39 studies. Even among the 61, the bulk of the X's were usually vague

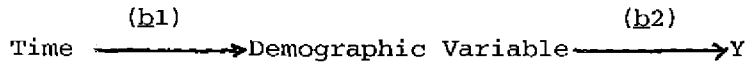
variables such as "international events", "the civil rights movement", and "the media". Surprisingly, more papers (87) dealt with differential rates of change among subgroups (e.g. regional differences in attitude change) than XY relations, one of the few research areas where interactions are more studied than main effects.

The deficit can not be explained by a shortage of Xs or Ys in the GSS, which was designed from the beginning to have a generous supply of both "background items" and "attitude items". The GSS design amounts to an unwitting homage to Arthur Stinchcombe's "Demographic Explanations of Social Phenomena" (Stinchcombe 1968/1987: pp. 60-79). Similar homage turns up in the multitude of reports that routinely tabulate dependent variables against "demographics" such as Age, Sex, Race, Region, and Education. Although rarely treated in textbooks on social change, the demographic theory may well be the single most common research hypothesis in studies of social change.

Exactly what is meant by the "demographic theory"? Stinchcombe (pp. 78-79) summarizes his version as follows:

> The basic structure of demographic explanations, then, is that two different causal processes determine the number of people to whom a causal force is applied and the size of the causal force....Changes in the distribution of kinds of people have a different theoretical meaning from changes in the causal forces applied to those people.

In short:



A classic example would be cohort replacement effects which turn on two distinct processes (1) an increase in a kind of person - those born after a certain date and (2) some causal process that leads the newcomers and old timers to differ persistently on the dependent variable Y.

What do we mean by "demographic" variable? "Kind of people" isn't much help since any measurable variable defines kinds. Stinchcombe (p. 78) invokes the classic notion of causal order:

> ... variables (which)... are relatively permanent characteristics of individuals (..e.g. race) (versus those)... which are relatively ephemeral (.e.g. political preference).

...which is pretty close to the difference between independent and dependent variables (Davis, 1985:10-16), which is pretty close to saying there is nothing at all special about "demographic variables".

But close isn't quite the same as equivalent. The theory has several properties which set it apart from a naive correlation hunt.

First, the theory is limited to the micro level. It operates through individual people and their characteristics, ignoring macro-level variables. Consider unemployment. The demographic theory would hold that when unemployment increases television watching this happens solely because

unemployed people watch more TV and there are more of them. A macro hypothesis would be that as unemployment increases everyone becomes more anxious and both workers and non-workers increasingly seek the solace of the tube.

The `micro principle' has a `one man, one vote' implication - adding N cases to a small group will have no more or less effect that adding them to a large group. This, in turn, implies that the b2 slopes will be linear.

Ia.

Change in Y depends on the absolute increase/decrease in the X proportions which can be modeled with linear statistics.

The distinction is not mere nit picking. Quillian (1996, p. 819), for example, argues that `individual characteristics cannot explain most of the change (in GSS racial attitudes)'. Whether or not his operations actually tap his group level variables is discussable, but his well- received article centers on the distinction.

Viewed in this light the theory of Demographic change is not as innocuous as it might seem. Provided we can agree on what is and isn't a demographic variable, the theory is falsifiable. It is not falsifiable in the naive sense of tested and never failing, rather in the more sophisticated view of King et. al. (1994:101):

> We should always design theories that are vulnerable to falsification (but)...every interesting social science theory has at least one observable implication that

> appears wrong...The process of trying to falsify theories in the social sciences is really one of searching for their bounds of applicability.

Thus, the aim of this paper: using the GSS to search for the bounds of applicability of the demographic theory to trends in attitudes and opinions, operating in the Occamite style of asking how far we can get with the most rudimentary theoretical tools.

DEMOGRAPHIC TRENDS

The dependent variables, attitudes, may be defined as subjective evaluations, judgments that something is good/bad, desirable/undesirable, preferred/rejected. By contrast, a `demographic' may be thought of as a property of the person that is - in theory - verifiable by an outsider. Thus annual income would be a demographic while satisfaction with one's income would be an attitude. Stinchcombe to the contrary not withstanding, I don't think permanence is the key issue. Unemployment is usually transitory though most would consider it a demographic, Party Identification is relatively stable though most would consider it an attitude. What is really at issue seems to be causal direction. Defined this way, demographics are variables causally prior to attitudes since it is unlikely that evaluations can have much influence on an objective fact (Matthew 6:27). In other words, there is nothing especially `demographic' about the demographic theory. Its core lies in assumptions about process not in the substance of the prior variables.

Concept honing aside, common sense led me to choose the following GSS variables because they seem to meet the definition and because they are common arrows in the quiver of conventional sociological research. Table 1 summarizes the ones I chose. (Appendix 1 gives the exact codings). Each was dichotomized and treated as a dummy variable. This is consistent with Principle Ia, gives every item the same metric, and allows a straight forward interpretation of slopes at the prices of wobbly statistical inference[1] and less than chic methodology. Categories were combined, tabulated against Year, and then cut to maximize the net change over the GSS era. For example, in Table 1 Education gives different magnitudes depending on whether it is cut at 13+, 12+ or 9+, with EDUC13 giving the biggest change. Mnemonics appear after variable descriptions, GSS Codebook mnemonics in CAPS, recodes in lower case.

Demographics were regressed on Year and the b coefficients multiplied by 24 to give **DELTA**, the regression estimate of the net (secular) change from 1972 to 1996. Since not all items appeared in both 1972 and 1996 most of the Deltas include minor extrapolations. None, however, are based on fewer than 15 surveys, all are based on 14000 or more cases (21 have N's of 33000 to 35000, 23 have Ns of 26000-3100, 20 have Ns from 20000 to 23000, and 22 have Ns of 14,000 to 21000. (See technical Appendix). Estimates of the plus proportions for 1972 and 1996 appear in Table 1.

I examined the 41 plots for the 39 demographics. None appeared to

be seriously curvilinear, although four are ragged (indicated by ? In the table).Thirty seven appeared to be decently monotonic. Impressionistically, the monotonic trends appeared to be:

Accelerating (A)	10
Linear (L)	24
Decelerating (D)	3

These impressions are noted at the right side of Table 1.

Table 1. *
Linear Trends in Demographic Variables

Group	Variable	Mnemonic	Plus=	Delta=	`72	`96	Plot
Biologicals							
	1) Age (AGE)		30-49	+10.824	33	44	A
	2) Year of birth (COHORT)		1955-1978	+49.562	01	50	L
	3) Race (RACE)		Black	+ 2.030	10	12	?
	4) Sex (SEX)		Female	- 1.450	56	54	?
Parental Background							
	5) Intact family at age 16 (FAMILY16)						
			Intact	- 5.292	78	72	L
	6) Size of Place at Age 16 (RES16)						
			Farm	- 9.566	23	14	L
	7) Mother worked after marriage (MAWORK)						
			Yes	+22.368	47	70	L
	8) Father's Occupational Prestige Score (PAPRES16)						
			Hi=42-82	+11.054	28	39	L
	9) Average School Years of Mother & Father			(Pared)			
			10.0 plus	+26.993	46	73	L
	10 Number of siblings (SIBS)						
			4+	-11.621	52	40	A
Education=Years of Schooling (EDUC)							
	11) 13-20 years completed (EDUC13)			+24.960	27	52	L
	11a) 12-20 years completed (EDUC12)			+21.504	62	83	L
	11b) 9-20 years completed (EDUC9)			+13.690	82	95	A
Family							
	12) Children even born (CHILDS)						
			3 or more	-10.106	40	29	L
	13) Ever divorced (DIVORCE)						
			Yes	+ 4.186	11	15	L
	14) Ever married? (Evmar)						
			Yes	- 6.998	85	78	D
	15) Currently Separated, Divorced or Widowed (Exmar)						
			Yes	+ 9.466	12	21	L
	16) Married, Never Divorced, Never Widowed (Firstmar)						
			Yes	-19.706	63	44	L
	17) Currently Married (Married)						
			Yes	-16.622	74	57	L
	18) Currently Divorced or Separated (Nowsplit)						
			Yes	+ 8.507	05	14	A
	19) Never married (Nevmar)						
			Yes	+6.998	15	22	D
	20) Own children in household (Ownkids)						
			Yes	-12.641	46	33	D

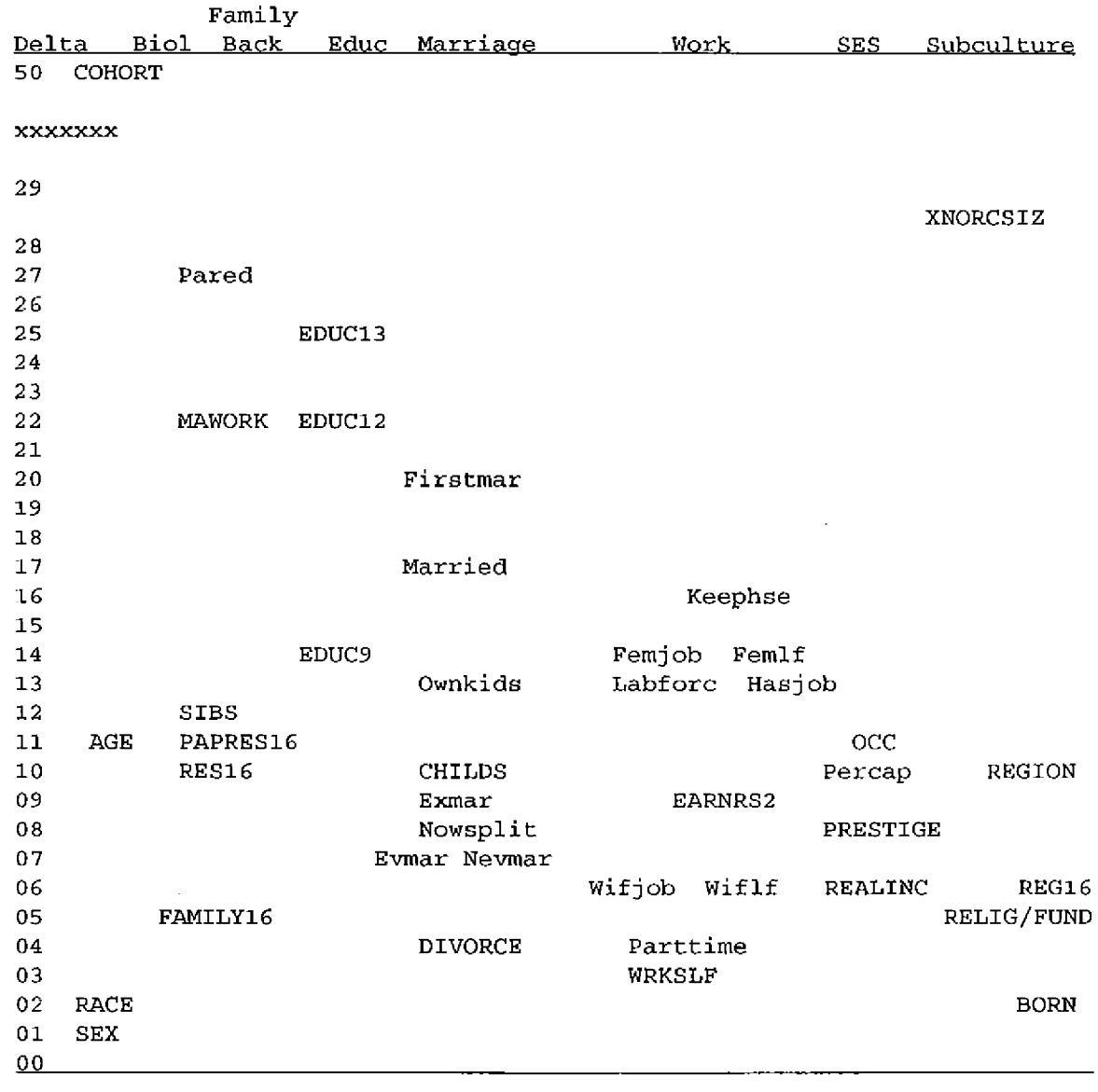
Table 1 (CONTINUED) *
Linear Trends in Demographic Variables

Group	Variable	Mnemonic	Plus=	Delta=	`72	`96	Plot
Work							
	21) Two earners in two-adult households (EARNRS2)						
			Yes	+ 9.194	25	34	L
	22) Female and in Labor Force, not Unemployed (Femjob)						
			Yes	+14.242	21	35	L
	23) Female and in Labor Force (Femlf)						
			Yes	+14.472	21	36	L
	24) In Labor Force, Not Unemployed (Hasjob)						
			Yes	+.12.710	50	63	A
	25) Labor Force Status = Keeping House (Keephse)						
			Yes	-16.435	28	11	L
	26) In the Labor Force (Labforc)						
			Yes	+13.301	58	72	L
	27) Employed part time (Parttime)						
			Yes	+ 3.706	.09	.12	?
	28) Female, Married, in Labor Force, Not Unemployed (Wifjob)						
			Yes	+ 5.606	.14	20	L
	29) Female, Married, in Labor Force (Wiflf)						
			Yes	+ 5.645	14	20	L
	30) Self-employed? (WRKSLF)						
			Yes	+ 3.010	10	13	L
Socioeconomic Status							
	31) Annual family income in 1986 dollars (REALINC)						
			Top 50% = $26,484+	-5.640	53	47	?
	32) Annual family income in 1988 dollars, per capita (Percap)						
			Top 50% = $8636+	+ 9.890	45	55	L
	33) Occupational Group (OCC)						
			Professional, Technical,Managerial	+10.642	21	32	A
	34) Occupational Prestige (PRESTIGE)						
			Top half	+ 7.558	46	53	A
`Subculture'							
	35) Nativity (BORN)						
			Non U.S.	+ 2.443	6	8	A
	36) Region at Age 16 (REG16)						
			West	+ 5.510	10	16	A
	37) Region (REGION)						
			South and West	+10.296	47	57	L
	38) Religious Preference (RELIG+FUND)						
			Moderate Protestant	- 4.900	26	21	L
	39) Size of Place (XNORCSIZ)						
			Suburb & Small city	+28.882	43	72	A

* See text for explanation of entries

Figure 1 displays the deltas from Table 1.

Figure 1.
Deltas in Table 1 by Size and Group

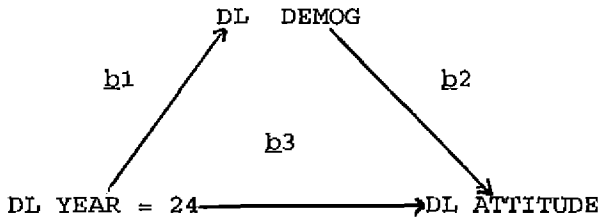


The 39 relationships have a median Delta of 10.0 (quartiles = 6 and 14), giving a typical regression slope of around half a percentage point (0.42) per year. Hardly explosive, but what is important is this magnitude

vis-a- vis change in the dependent attitudes. The 47 dependent attitude dummy variables (Table 6) have a median delta of .068 (about 7 points). This in itself tells us to expect few miracles. Figure 2 shows why, applying conventional path principles to diagrams where the variable levels are amounts of change rather than means. (DL = Delta = total change)

Figure 2.

Causal Model for Demographic change



DL YEAR = 24 Eq. 1

DL DEMOG = b1*24 Eq. 2

DL ATTITUDE = (DL DEMOG*b2)+(24*b3) Eq. 3

If the theory is perfect - if demographic change completely explains attitudinal change:

b3 will equal zero

DL Attitude will equal (DL Demog) * b2

Substituting the two medians, .10 for DEMOG and .068 for attitudes:

b3 = .068/.10 = .68.

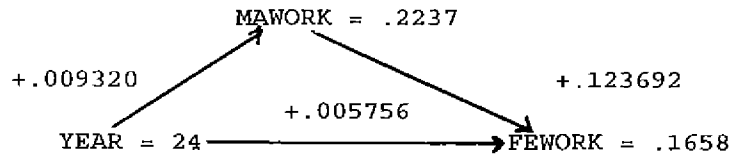
For change in the typical attitude to be explained by change in the typical demographic, the demographic must typically have a .68 coefficient for attitude, net of year, i.e. a 68 point percentage difference for their four-fold table when standardized on year. Cross-sectional percentages differences of .68 are hardly routine in GSS data so it is unlikely that the theory will explain the complete data matrix.

A more realistic example, YEAR/MAWORK/FEWORK, may clarify the principles. Table 1 tells us that during the GSS years MAWORK increased 22.37 points - the percentage reporting their mothers worked for pay after marriage jumping from 47 to 70. At the same time attitudes toward women's employment, FEWORK, increased 16.58 points (Table 6). If the children of working mothers are more favorable towards maternal employment, the demographic change (increase in MAWORK) might explain the attitude change (increase in approval for FEWORK). Table 2 and Figure 3 show the statistical results.

Table 2.
Raw Regressions for YEAR, MAWORK and FEWORK

Run	b
YEAR-> FEWORK	+.006909
YEAR-> MAWORK	+.009320
YEAR,MAWORK-> FEWORK	
YEAR	+.005756
MAWORK	+.123692

Figure 3
Change Graph for Results in Table 2



From which, Delta FEWORK =

From MAWORK = .123692 * .2237 =	.0277
Residual from year = .005756 * 24 =	.1381
	.1658

Of the total change in FEWORK, 16.58 points, 2.77 points came from demographic change in MAWORK and 13.81 points are unexplained. Thus, this demographic process accounts for 17 per cent (.0277/.1658=.1671) of the attitude change. We will reserve judgment on whether this is high or low.

This analysis calls our attention to a second fundamental principle of this approach:

II.

Delta X must be substantially larger than Delta Y for X to have a large impact on change in Y.

Just as the experienced analyst learns to explain small correlations with big ones rather than vice versa, sophisticated analysts of change would be wise to begin with a search for `big causes' rather than `big effects'.

In these GSS data the changers are only slightly more volatile than the changes, which leads us to be guarded in our enthusiasm. Nevertheless, we need not surrender before engaging the data since the theory might work

wonderfully for selected attitudes, might show substantial, though not completely explanatory, effects for many attitudes, or might show large impacts for combinations of demographic variables.

An exegesis of the 39 trends in Table 1 is unlikely to turn up changes unknown to sociologists, but putting all the changes on a common scale can produce more nuanced interpretations of familiar facts.

Turning to the specific items, one, COHORT, stands out. In 1972 only one per cent of GSS respondents were born after 1954, by 1994 their proportion was one half. Currently, the majority of US adults were born at least a decade after the end of World War II and entered adulthood after the first GSS. This produces an outlier delta of 49.56 for COHORT.

By definition COHORT is an almost perfect demographic variable, being both objective and fixed for each person. However, it is notoriously ambiguous. Astrology aside, it has little intrinsic meaning but is usually interpreted vaguely as `generation'. It is also famously confounded with chronological age. Indeed, there is some question as to whether it should be treated as a substantive variable at all. Following Firebaugh (1990, note 7 p. 255) I will treat it a formal variable that reveals the process by which change takes place (`replacement' versus `conversion') not a social force with an intrinsic effect on attitudes. The price, inevitably, will be weaken the statistical case for the theory but Cohort will return as a variable in a path model of change.

Turning to the other biological variables, the delta for COHORT's alter ego, AGE, is a less impressive 10.82. Despite the drum beat of publicity about `aging', during the GSS years the adult population was mostly ='Cohorting' so the age shift was in the early middle ages, 30-49, as shown in Table 3.

Table 3.
Age Distributions (Percents), GSS 94-96 and 72-74

Age	72-74	94-96	Diff.
80+	1.2%	2.6	+1.4
70-79	6.5	6.8	+0.3
60-69	11.9	9.4	-2.5
50-59	17.8	14.3	-3.5
40-49	18.4	21.9	+3.5
30-39	17.1	23.7	+6.6
18-29	27.1	21.2	-5.9
Total	100.0%	99.9%	
N=	(5114)	(5513)	

Table 3 may seem counter-intuitive (e.g. the per cent 60 and older actually declined 0.8 as the slim depression born cohorts headed into seniority) but one should bear in mind (a) the most publicized figures for Aging are long-term projections not recent trends and (b) the relatively thin cohorts too young for GSS eligibility are excluded from the base. Nevertheless, if Age changes moved attitudes, they would be in the direction of those attitudes characteristic of middle aged Americans, whatever they might be.

The other two biological variables, RACE and SEX, show negligible deltas, underlining the proposition that important cross-sectional

variables need not be locomotives of change unless they themselves are changing.

Moving on to Parental Backgrounds, we see relatively large deltas for:

Parental Education (PARED)	+26.99
Mother's employment (MAWORK)	+22.37
Number of siblings (SIBS)	-11.62
Father's Occupational Prestige (PAPRES16)	+11.05
Farm background (RES16)	- 9.57

Increases in schooling and female labor force participation, along with decreases in fertility and rural residence, are perhaps the four most familiar components of long term social change. What we seldom consider, however, is the possible double impact of such changes. Long-term social change not only modifies our current characteristics, it modifies our familial origins somewhat like changing a race by moving the starting line forward. `Modernization' in family background will turn out to be one of the most important change variables in the analysis.

There was an especially large (27 point) increase in parental schooling (Pared) which is to say, start-up cultural capital. In 1972 only half (46 percent) of GSS respondent's came from families where the two parents averaged 10 or more years; in 1996 it was 73. The increase in respondent's education is widely known but the increased cultural capital has received less attention (but see Mare 1995, 176-183).

While parental education shows the most striking change, other

aspects of family background also show definite þmodernizationþ. GSS respondents in 1996 grew up in families (1)where fathers had better jobs (Delta PAPRES16 =11.05) and were less likely to live on a farm (Delta RES16 = 9.6) , (2) which had fewer children (Delta SIBS= -11.6) and (3) where the mother was more likely to have worked for pay after marriage (Delta MAWORK = +22.4). Popular discussion of women's labor force participation seems to assume sudden, recent increases from a negligable level the day before yesterday, but the 22 point shift for MAWORK, the fifth largest change in Figure 1, reflects long-term, steady growth.

Next comes respondent's own Education. The GSS years saw a sharp increase in respondents' schooling: in 1972 a quarter of the adults, 27 percent, had some post-secondary schooling. By 1996 it was one half, 52 per cent. By the late 1990s the typical US adult was in the þsome collegeþ category. Comparison with EDUC12 (12 years or more, Delta=21.5) and EDUC9 (9 or more years, Delta=13.7) shows the increase came at the higher levels. Educational trends have a `ratchet' structure not a rightward shift in a normal curve. EDUC9 hit a ceiling around 90 percent for the cohorts born in the early 1930s and EDUC12 hit a ceiling a hair below with the early post World War II cohorts. What happened during the GSS period was an expansion of higher education (community colleges in particular) not primary or secondary. Since PARED reflects the pre-collegiate changes it will be interesting to see whether they push the same dependent variables or whether advanced schooling affects different attitudes than K-12. To the extent the two variables have independent effects (and they do) it is worth

remembering that in the early 70s the typical US adult was a high school þseniorþ (1972 regression estimate of EDUC = 11.2) reared by ninth grade parents (1972 regression estimate of Pared= 8.9). In the late 90s he or she was a þcollege personþ (EDUC=13.3) reared by high school seniors. (1996 regression estimate of Pared = 11.2). The parents of the 1996 sample were as well educated as 1972 adults.

The six marriage indices have a common theme - declining nuptuality. Over the GSS years fewer adults became married (Delta EVMAR= -7.0) and more became `post married' (Deltas for Exmar= +9.5, Nowsplit= +8.5 and DIVORCE= +4.2). Putting them together, the proportion currently in their first marriage, Firstmar, dropped from an estimated 63 percent in 1972 to 44 in 1996, a 19 point decline.

Declining fertility is tapped by two variables (CHILDS and Ownkids) CHILDS is children ever born while Ownkids taps the current household. While the GSS reports children in the household (BABIES, PRETEEN, TEENS) and it reports children ever born (CHILDS), it does not tell us whether the respondent is the parent of the children in the household. Among the youngest adults, quite a few are living with their parents and the household's children are their siblings not their progeny. Indeed, the biggest shift in household composition during the GSS era seems to be a declining proportion of young adults living with their parents. At the opposite end, being the parent of grown up or even elderly children may not have the same attitudinal effects as being responsible for growing

children. Ownkids seeks to get around this problem as a dummy variable where respondents who have one or more CHILDS and who live in a household where the sum of BABIES+PRETEEN+TEENS is one or more are scored 1.0, all others scored zero. Both CHILDS and Ownkids show clear cut declines during the GSS years with Deltas of -10.1 and -12.6.

Taken together, the family variables boil down to two declines: a decline in marriage and a decline in offspring.

Eight of the ten work variables have a common theme - more Americans working for pay. The 16 point drop in keeping house (Delta Keephse= -16.4) is the biggest change but the trend is quite general as can be shown with a tabular analysis of...

T= Time (72-75,76-82,83-86,87-91,93-96)
S= Sex (male, female)
M = Marital status (married, not)
K = Ownkids (no, yes)
Y = Labor Force Participation (no, yes)

...testing the following hierarchical comparisons:

I = no change v. saturated
II = no Y interactions with Time v. saturated
III = all 3 variable Y interactions with Time v. saturated
IVa-f = dropping YT interactions one at a time v. III
V= (TSMK)(SKY)(TY)(MY) v. saturated

...always fitting the exogenous variables (TSMK).

Table 4 gives the results:

Table 4.
Hierarchical Modeling of Time, Sex, Marital status, Ownkids and Labor Force Participation (GSS 72-96)

Model	Fitted	DF	Chi Sq.	BIC* <+10	+10up
I	(TSMK) (Y)	39	4985.3		4577
II	(TSMK) (TY) (SY) (MY) (KY)	32	1177.9		843
III	(TSMK) (TSY) (TMY) (TKY) (SMY) (SKY) (MKY)	17	147.7	-30	
IVa	(TSMK) (TSY) (TMY) (TKY) (SMY) (MKY)	1	720.2		710
IVb	(TSMK) (TSY) (TMY) (TKY) (SMY) (SKY)	1	19.1	9	
IVc	(TSMK) (TSY) (TMY) (SMY) (SKY) (MKY)	4	46.7	5	
IVd	(TSMK) (TMY) (TKY) (SMY) (SKY) (MKY)	4	34.6	-7	
IVe	(TSMK) (TSY) (TMY) (TKY) (SKY) (MKY)	1	0.0	-10	
Ivf					
V	(TSMK) (SKY) (MY) (TY)	31	288.6	-36	

N=35078

The issue is this: if increases in labor force participation were limited to certain groups or showed strong group differentials, these would show up in the interactions involving T (TSY, TMY, TKY). However, none of them show persuasive BICs of 10 or more (Raftery, 1995, Table 6 p. 139).

The successful model (V) says that Labor Force participation is affected by Time (increases across the board), Marital status (married are less likely to be working) and Sex*Kids combinations (children in the household boost male work more than female[2])

As a consequence of these patterns the deltas for Labforc and Hasjob are about the same as those for Femjob and Femlf. On the same theme, note the small deltas for Wifjob and Wiflf. They underline principle IA, absolute change. While work increased impressively among married women, the proportion of the sample currently married decreased. Consequently the

highly publicized increase in `working wives' is not a major trend in Figure 1. The same cross-currents do not apply to keeping house since housekeepers need not be currently married.

At the bottom of the Work column three widely celebrated trends (two earner families, self-employment and part time employment) show relatively small net changes.

In sum the theme in the work column is an across-the-board increase in labor force participation.

Turning to Socio-economic status (second column from the right in Figure 1) the trends are smaller and fail to support the received wisdom of bad news during the GSS years. While policy discussions often imply downgrading of occupations during the GSS years (References to `hamburger flippers seem about as numerous as hamburger flipper themselves) the biggest change in occupational categories is an increase at the top (Census category Professional, Managerial and Technical.) The biggest change in occupational prestige is an eight point increase in above average scores of 40-82 (PRESTIGE= +7.6)[1] Similarly, while real individual and family incomes (REALRINC and REALINC) support pessimist claims with small declines, when family income is viewed per capita (REALINC/HOMPOP) there is an 11 point increase as shrinkage in household size outpaced shrinkage in real incomes.

Contrary to some, American `SES' increased during the GSS years, but contrary to others, the increases were not large enough to make them leading candidates as demographic forces.

The far right hand column of Figure 1 displays net changes in five indicators of `subcultures'. The distribution is dominated by the outlier, XNORCSIZ, Size of Place. Aside from Cohort, this is the largest demographic change in the GSS. Since the original variable is typological and the changes cut across its variables, it is helpful to look at the individual categories, shown in Table 5.

Table 5.
Change 1972-1996 in XNORCSIZ categories (OLS regressions)

In SMSA	Population	Central City	Suburb	Outside
Yes	>250,000	(1) -.064	(3) + .065	(5) -.043
	50K-249K	(2) +.050	(4) + .114	(6) -.022
No	10K-49K	(7) +.016		
	2.5K - 9.9K	(8) -.007		
	<2.5K	(9) +.052		
	Open Country			(10) -.160

The classic ring model helps put things together. We may think of category 1 as the cores of the largest central cities, categories 2-3-4-7-8-9 as the ring of suburbs and satellite cities around the cores and 5-6-10 as the hinterland. Growth, as is well known, was concentrated in the ring while central cities and extremely rural places held their own or shrank. Putting the ring categories **(boldface)** gives the +.29 for XNORCSIZE in Figure 1. If attitude differences line up with this distinction XNORCSIZE

should produce powerful changes. It is possible there is a suburban mentality but equally possible that the typology, which groups rural bumpkins and the slickest of city slickers, is unlikely to generate linear effects on attitudes.

The remaining trends (increasing proportions in the South and West (REGION), increasing proportion reared in the West (REGION16), decreasing proportions of `moderate Protestants' (RELIG/FUND), and increasing proportions foreign born (BORN) are neither large nor surprising.

We have now reviewed trends in 39 demographic variables. It is too early to draw conclusions save this: the variables in Figure 1 show enough change and enough variety in content to yield a fair test of the theory.

ATTITUDE TRENDS

I chose 47 items for dependent variables, giving priority to variety, frequent measurement, and usage as indicated in the GSS bibliography. Neither they nor the GSS questionnaire is a probability sample of any content universe. Nevertheless, the GSS was designed and is operated to reflect broad interests of the sociological community and the original items were selected on the basis of an informal poll of potential users. Table 6 and Figure 4 display the trend (regression) results, with the items divided into seven common sense groups.

Table 6.
Linear Trends in Attitude Variables

Group	Variable	Mnemonic	Plus=	Delta	`72	`96	Plot
Race (whites only)							
1)	Busing for desegregation	(BUSING)	Favor	+20.25	11	31	A
2)	Spending on Blacks	(NATRACE)	Too little	+06.46	22	29	?
3)	Miscegenation laws	(RACMAR)	Oppose	+23.46	61	84	L
4)	Open housing law	(RACOPEN)	Favor	+33.73	33	66	L
5)	Mostly black school	(RACMOST)	Not object	+ 5.74	39	45	L
6)	Residential segregation	(RACSEG)	Oppose	+29.43	31	60	L
Family							
7)	Aged live with children?	(AGED)	Favor	+20.97	49	70	D
8)	Ideal no. of children	(CHLDIDEL)	0-2	+12.90	52	65	L
9)	Ease divorce laws?	(DIVLAW)	Favor	-03.84	50	46	D
10)	Women should stay home	(FEHOME)	Disagree	+24.15	63	87	L
11)	Should married women work?	(FEWORK)	Approve	+16.58	68	85	L
12)	Homosexuality right/wrong	(HOMOSEX)	right	+10.27	11	21	A
13)	Premarital sex right/wrong	(PREMARSX)	right	+14.14	31	45	D
14)	Extramarital sex right/wrong	(XMARSEX)	right	- 9.70	30	20	L
Politics							
15)	Capital punishment	(CAPPUN)	favor	+11.07	69	81	D
16)	How harsh local courts?	(COURTS)	not harsh enough	+ 4.08	84	88	D
17)	Legalize marijuana?	(GRASS)	legalize	- 2.64	23	21	?
18)	Spending on military	(NATARMS)	too little	- 5.99	23	17	?
19)	Spending to fight crime	(NATCRIME)	too little	+ 3.48	69	73	L
20)	Spending on drug addiction	(NATDRUG)	too little	+ .30	63	63	?
21)	Spending on education	(NATEDUC)	too little	+23.72	48	72	L
22)	Spending on welfare	(NATFARE)	too little	- 1.12	20	19	?
23)	Spending on health	(NATHEAL)	too little	+ 8.01	60	68	?
24)	Party identification	(PARTYID)	(Republican&Independent)	+12.98	43	56	L
25)	Political ideology	(POLVIEWS)	conservative	+ 5.98	31	37	D
26)	Federal income tax	(TAX)	too high	- 6.84	69	62	?

Table 6 (CONTINUED).

Linear Trends in Attitude Variables

Group	Variable	Mnemonic	Plus=	Delta	`72	`96	Plot
Work							
27)	Get ahead by hard work or luck/help from others	(GETAHEAD)	hard work	+ 7.65	62	69	L
28)	Prefer in a job: high income	(JOBINC)	top half	+ 7.23	42	50	L
29)	Prefer in a job: meaningful work	(JOBMEAN)	top half	+ .60	49	50	?
30)	Prefer in a job: promotion chances	(JOBPROMO)	top half	- 2.64	55	52	L
31)	Prefer in a job: security	(JOBSEC)	top half	- .04	41	41	?
32)	Continue working if rich	(RICHWORK)	continue	- .75	71	70	?
Free Speech							
33)	Library remove atheist's book?	(LIBATH)	no	+10.65	60	71	A
34)	Library remove communist's book?	(LIBCOM)	no	+11.74	56	68	A
35)	Library remove homosexual's book?	(LIBHOMO)	no	+15.91	54	70	A
36)	Library remove racist's book?	(LIBRAC)	no	+ 5.82	64	70	L
37)	Legalize pornography	(PORNLAW)	yes for adults	+10.37	49	59	L
Religious Orthodoxy							
38)	Strength of religiosity	(RELITEN)	strong	- 2.00	40	38	?
39)	Allow suicide, tired of living	(SUICIDE1)	yes	+26.91	39	65	L
40)	Allow suicide, incurable disease	(SUICIDE4)	yes	+ 4.57	12	16	L
41)	Allow abortion, woman's health	(ABHLTH)	yes	+ .10	90	90	?
42)	Allow abortion, woman unmarried	(ABSINGLE)	yes	- 3.44	47	43	?
Morale							
43)	Are most people fair?	(FAIR)	are fair	- 6.81	62	55	A
44)	Self-rated happiness	(HAPPY)	very happy	- 4.28	36	32	L
45)	Are most people helpful	(HELPFUL)	are helpful	- 4.36	53	49	?
46)	Is life exciting or dull?	(LIFE)	exciting	+ 3.84	44	48	A
47)	Can most people be trusted?	(TRUST)	yes, can	-10.40	46	36	A

Figure 4
Deltas in Table 6 by Size and Group

Delta	Race	Family	Speech	Politics	Religion	Morale	Work
40							
39							
38							
37							
36							
35							
34	RACOPEN						
33							
32							
31							
30							
29	RACSEG						
28							
27							
26					SUICIDE1		
25							
24		FEHOME		NATEDUC			
23	RACMAR						
22							
21		AGED					
20							
19							
18							
17							
16		FEWORK	LIBHOMO				
15							
14		PREMARSX					
13		CHLDIDEL		PARTYID			
12			LIBCOM				
11			LIBATH	CAPPUN			
10	HOMOSEX	XMARSEX	PORNLAW			TRUST	
9							
8				NATHEAL			GETAHEAD
7				TAX		FAIR	JOBINC
6	NATRACE	RACMOST	LIBRAC	NATARMS	POLVIEWS		
5					SUICDE4		
4		DIVLAW		COURTS	HAPPY	HELPFUL	LIFE
3				GRASS	ABSINGLE		JOBPROMO
2				NATCRIME	RELITEN		
1				NATFARE		JOBMEAN	RICHWK
0				NATDRUG	ABHLTH		JOBSEC

Deltas range from 33.7 to 0.0 with a median of 7 and quartiles of 4 and 13. Net change in these attitudes is a bit less than change in the 39 demographics (Median = 10, quartiles = 6 and 14). While Xs do meet the requirement of changing more than Y's, the algebra discussed in connection with Figure 2 dampens our expectations since the demographics would need unrealistically strong associations with the attitudes to be perfect explainers.

Scanning Figure 4 by group:

Work attitudes changed very little and showed no consistent themes.

Morale items changed little but showed a persistent negative direction, e.g. a 4 point decline in `most people are helpful'.

With one exception, religious orthodoxy items (religiosity, abortion, suicide) changed very little. The exception: a strong increase in acceptance of suicide if the person `has an incurable disease'.

Political items ran the gamut. Most were toward the sluggish end but support for Spending on Education, Capital punishment and the Republican party were in the top quarter. (The seeming ideological inconsistency will be addressed later.)

All five Free Speech items were in the middle or top quartiles, each showing a `liberal' direction, validating Stouffer's classic prophecy (1955).

Most family items were in the top quartile documenting the well known acceptance of wives' employment and lower fertility. Some family trends are not well known: while tolerance of homosexuality and premarital sex increased, tolerance of extra-marital sex decreased; easier divorce declined slightly; AGED, endorsement of older parents living with their grownup children, showed a striking increase.

All five racial attitudes (assessed here among whites only) moved in a `tolerant' direction, three strikingly so. Some social scientists have been reluctant to take this at face value, which prompted a very thorough analysis in Schuman et al. (1997).

Having reviewed trends in the Xs and trends in the Ys we turn to the XY relationships.

XY PAIRS

The simplest test of the theory is to examine the relationship of each X and each Y, controlling for Year, i.e. to estimate coefficient b2 in Figure 2. A nonzero value for the coefficient when Delta X is non-zero means that X is contributing to change in Y, though not necessarily by a large amount. Since the b2s are unlikely to be large, I selected all Xs in Table 6 with Deltas of 10 or more, with these exceptions:

> I dropped EDUC9,EDUC12,Femjob, and Hasjob as essentially identical to EDUC13, Femlf, and Labforc.
>
> I added EXMAR (delta=9.466) and PRESTIGE (delta=7.558) for their sociological interest.

This gave X=20 by Y=47 = 940 estimates.

Table 7 summarizes the results in columns from left to right:

> Delta = absolute change in X 1972-96 in percentages(as in Table 1)
>
> Median 100*b = median of X's b2 values over 47 attitudes. Since both X and Y are 0-1 variables, bs are multiplied by 100 to be interpreted as percentage differences.
>
> Median DL*b2 = median over 47 attitudes of the product Delta X * b2. This is the change in Y produced by change in X, as per Figure 2. Rows are arranged in order of magnitude on this item.
>
> Top 4 = number of cases over 47 attitudes in which this X is among the four Xs with the largest absolute values of b3.
>
> Biggest Effects = 4 largest b3s for this X.

For example, Percap (per capita income, row 11)...

changed (increased) 9.890 points from 1972 to 1996

had a 6.4 point percentage difference association with the typical (median) attitude.

contributed 0.636 points to change in the typical (median) attitude

had its strongest effects on ABSINGLE, LIBHOMO, TRUST and LIBATH.

Table 7

Bivariate results summary: Demographic variables

Variable	Delta	Mdn. 100*b	Mdn/ DL*b	Top 4	Biggest Effects
Pared	26.993	8.518	2.299	36	LIBCOM 6.8 LIBATH 6.7 LIBHOMO 6.6 RACMAR 6.6
EDUC13	24.963	7.401	1.848	37	LIBCOM 7.3 LIBRAC 6.8 LIBATH 6.8 RACMAR 6.3
MAWORK	22.368	5.411	1.21	29	RACMAR 3.8 LIBHOMO 3.7 LIBCOM 3.6 LIBATH 3.6
Labforc	13.301	6.557	0.872	6	PORNLAW 2.4 RACMAR 2.1 LIBHOMO 2.0 LIBATH 3.6
Frstmar	19.706	3.875	0.782	20	DIVLAW -3.1 HAPPY 2.8 PREMARSX 2.7 XMARSEX 1.7
Married	16.662	4.595	0.757	13	DIVLAW -2.2 GRASS 1.9 PREMARSX 1.9 XMARSEX 1.7
Keephse	16.435	4.508	0.741	11	PORNLAW 2.3 PREMARSX 2.2 SUICIDE1 2.1 LIBATH 2.1
SIBS	11.621	6.244	0.726	1	LIBCOM 2.0 LIBATH 1.9 LIBHOMO 1.9 RACMAR 1.6
PAPRES16	11.054	6.496	0.718	7	LIBHOMO 2.3 LIBCOM 2.3 LIBATH 2.2 RACMAR 1.9
Percap	9.89	6.431	0.636	1	ABSINGLE 1.6 LIBHOMO 1.6 TRUST 1.5 LIBATH 1.5
RES16	9.666	6.516	0.626	5	LIBHOMO 2.4 LIBATH 2.3 RACMAR 2.3 LIBCOM 2.1
OCC	10.642	5.871	0.625	8	LIBCOM 2.2 JOBMEAN 2.1 TRUST 2.1 LIBHOMO 2.0
CHILDS	10.106	5.063	0.512	1	CHLDIDEL 2.3 PORNLAW 1.4 PREMAR 1.4 SUICIDE1 1.4
Femlf	14.472	3.332	0.481	6	FEHOME 1.7 LIBHOMO 1.5 FEWORK 1.4 RACSEG 1.3
AGE	10.824	4.364	0.472	2	PORNLAW 1.4 RACMAR 1.2 LIBHOMO 1.2 LIBATH 1.1
XNORCSIZ	28.882	1.384	0.4	2	FAIR 1.3 TRUST 1.0 PARTY 0.9 RACMAR 0.8
PRESTIGE	7.558	4.802	0.363	1	JOBMEAN 1.4 LIBCOM 1.3 TRUST 1.3 LIBHOMO 1.1
Ownkids	12.641	2.745	0.347	0	ABSINGLE 0.7 SUICIDE4 0.6 GRASS 0.4 LIFE 0.4
REGION	10.296	2.714	0.297	0	NATARMS 0.6 POLVIEWS 0.4 JOBINC 0.4 NATEDUC 0.3
Exmar	9.466	2.565	0.243	1	DIVLAW -0.7 JOBSEC 0.7 NATFARE 0.4 NATDRUG 0.3
Median	12.1	4.9	0.63		2.2

Drawing on the medians at the bottom of the table, we can say the most changing demographic variable typically...

shifted about 12 points from 1972 to 1996.

showed a five point percentage difference on a typical attitude

consequently contributed a roughly 12 * .05 = 0.6 change in the typical attitude.

In a nutshell:

> The most changeable demographics typically contributed about one half a percentage point to the typical seven point attitude change during the GSS era..

This formulation mingles the weak and strong. Another formulation draws on the column for the strongest of the top four effects. Applying the column median of 2.2, we can say:

> By fishing around in the XY matrix and picking the strongest X for each Y we can account for about one third (2.2/6.84 = .32) of the trend in the typical attitude.

The results in Table 7 illustrate a third technical principle:

> **III.**
> **Substantial contribution to change requires large magnitudes for both Delta X (b1) and b2.**

Table 8 clarifies the point by rearranging the data in Table 7.

Table 8
Data in Table 7 ranked and rearranged

Rank on Median 100*b

Rank on Delta	16-20	11-15	6-10	1-5
1-5	XNORCSIZ *16,12.5*	**Frstmar 5,4**	**MAWORK 3,3**	**PARED 1,2** **EDUC 1,2**
6-10	Femlf **14,9** Ownkid *18,19.5*	**Married 5,5** Keephse 6,6		**Labforc 4,10**
11-15	Region *19,19.5*	AGE 15,12.5	Sibs 8,*15.5* OCC 12,7	PAPRES 9,8
16-20	Exmar *20,15.5*	Prestige 17,*15.5*	Percap 10,*15.5* Childs 13,15.5	RES16 11,11

1st number following mnemonic is rank on Delta.
2d number following mnemonic is rank on Median 1-00*b
BOLD = in ranks 1-5 on either

Mnemonics in bold, the most efficacious demographics (high ranks on b2 or top four) are concentrated in the upper right corner revealing the following to be the most powerful:

PARED
EDUC13
MAWORK
Frstmar
Married
Labforc

More on them later.

XNORCSIZ in the upper left corner is a telling example of Principle III. Figure 1 showed it to be by far the strongest demographic in terms of

Delta X but Table 7 showed it to have the smallest median values of b2 and a middling rank on Top 4. The GSS years saw a massive redistribution of the population into suburbs and middle sized cities, but - since `ringsters' do not have distinctive attitudes, the impact on national attitude trends was small. Actually, the matter is a bit more complex. If one thinks of Size of Place as a three step ordinal variable: rural/ring/central city, a case can be made that attitudinal differences do exist but they are non-monotonic. To test this proposition I created two dummy variables:

Central City (XNORCSIZ=1) v. Ring (XNORCSIZ=2,3,4,7,8,9)
Rural (XNORCSIZ=5,6,10) v. Ring (XNORCSIZ=2,3,4,7,8,9)

and ran each against the 47 attitudes. If (I) Ringsters have distinctive attitudes, the associations should have the same sign. If (II) the relationship is monotonic, the associations should have opposite signs. Proposition II wins: Thirty-three of the 47 pairs show opposite signs and the 47 pairs of coefficient values have an r of -.38. Table 9 shows some of the strongest monotonic relationships with Size of Place.

Table 9
Selected Coefficients for Size of Place and Attitude*

Attitude	+=	Central city V. Ring	Rural V. Ring
PARTYID	Republican	-.118	+.032
PREMARSX	Not wrong	+.118	-.029
RACMAR	Oppose law	+.066	-.081
XMARSEX	Not wrong	+.105	-.041
NATEDUC	Too little	+.087	-.045
LIBHOMO	Not remove	+.056	-.068
NATFARE	Too little	+.103	-.017

* coefficient = raw regression coefficient net of year for two dummy variables.

In general then the relationships between Size of Place and Attitude are

monotonic while change in Size of Place is non-monotonic. Note that dichotomizing XNORCSIZ as Central City v. Other or Rural v. Other would not rescue the finding since it would seriously reduce the magnitude of Delta X.

The results for XNORCSIZ prompt scrutiny of Frstmar since it too may be viewed as a three point ordinal scale, never married/married, never broken/ever broken. To settle the question I ran Single v. Married-Never-Broken and Ever broken v. Married- Never- Broken against the 47 attitudes, controlling year. The two sets of coefficients showed a product moment correlation of +.583. That is, the items which distinguish the single tend to be the same as those which distinguish those who have had a broken marriage. Table 10 shows the 11 items where both contrasts produce a coefficient of five or more in percentage point terms.

Table 10
Attitude items where Marital contrasts equal five or more points and have identical signs

Item		Single v. Firstmar	Ever Broken v. Firstmar
RELITEN	high	-29.0	-9.8
DIVLAW	easier	+17.8	+14.2
PREMARSX	not wrong	+18.5	+10.3
HAPPY	very	-16.4	-12.3
GRASS	legalize	+18.7	+18.7
XMARSEX	not wrong	+15.6	+ 6.0
FAIR	yes	-12.4	- 8.4
TRUST	yes	-10.0	- 9.2
POLVIEWS	conservative	-11.6	- 5.7
HELPFUL	yes	-11.7	- 5.2
NATFARE	Too little	+10.5	+ 5.0

Here, as is commonly reported, the conventionally married tend to be

more conservative and have higher morale when contrasted with the never married and those who have experienced a marital disruption.

Even sturdy medians can be misleading so it is useful to look at these results for the 47 specific attitudes - the main question being whether the conclusions hold across the substantive board or are limited to selected variables of topics. Table 11 displays the data.

Table 11
Bivariate results summary: attitudes

Attitude	Abs Delta	Median AbsB*100	Median AbsEffect	Largest Four
LIBHOMO	15.91	12.921	1.560	EDUC13 6.8 PARED 6.6 MAWORK 3.4 RES16 2.4
FEHOME	24.15	12.101	1.370	PARED 5.4 EDUC13 5.0 MAWORK 3.4 LABFORC 1.9
LIBCOM	11.74	13.641	1.370	EDUC13 7.3 PARED 6.8 MAWORK 3.6 PAPRES 2.3
LIBATH	10.65	13.564	1.320	EDUC13 6.8 PARED 6.7 MAWORK 3.6 RES16 2.3
SUICIDE1	26.91	10.336	1.247	PARED 4.6 EDUC13 3.8 MAWORK 2.6 Keephse 2.1
PREMAR	23.46	11.910	1.216	PARED 6.6 EDUC13 6.3 MAWORK 3.8 RES16 2.3
ABSINGLE	3.44	9.121	1.187	EDUC13 4.8 PARED 4.2 PAPRES 1.8 Keephse 1.7
PORNLAW	10.37	8.358	1.178	PARED 4.6 MAWORK 3.1 EDUC13 2.5 Labforc 2.4
FEWORK	16.37	8.921	1.117	PARED 4.2 EDUC13 3.9 MAWORK 2.8 LABFORC 1.6
TRUST	10.40	7.769	1.050	EDUC13 4.8 PARED 2.9 OCC 2.1 Frstmar 1.9
XMARSEX	9.70	9.126	1.039	EDUC13 3.4 PARED 3.0 MAWORK 2.3 Frstmar 1.9
PREMARSX	14.14	7.804	1.028	PARED 3.7 MAWORK 3.3 Frstmar2.7 Keephse 2.2
LIBRAC	5.82	10.421	1.011	EDUC13 5.3 PARED 4.5 MAWORK 2.7 OCC 1.8
RACSEG	29.43	9.088	0.976	PARED 5.5 EDUC13 5.4 MAWORK 3.1 PAPRES 1.8
HOMOSEX	10.27	7.042	0.950	EDUC13 3.5 PARED 3.1 MAWORK 1.6 Frstmar 1.2
JOBSEC	4.32	7.437	0.950	EDUC13 4.6 PARED 3.7 MAWORK 1.7 OCC 1.7
GRASS	2.64	7.682	0.948	PARED 3.5 EDUC13 2.5 MAWORK 2.2 Frstmar 2.1
JOBMEAN	0.60	5.472	0.907	EDUC13 5.1 PARED 3.1 OCC 2.1 PRESTIGE 1.4
LIFE	3.84	6.145	0.830	EDUC13 5.2 PARED 3.7 KEEPHSE 2.0 OCC 1.7
CHLDIDEL	12.90	6.097	0.826	CHILDS 2.3 PARED 2.3 MAWORK 1.8 SIBS 1.6
DIVLAW	3.84	6.971	0.785	Frstmar 3.1 PARED 2.4 MAWORK 2.3 Married 2.2
RACOPEN	33.73	5.823	0.763	PARED 3.2 EDUC13 2.6 MAWORK 2.3 RES16 1.3
FAIR	6.81	5.423	0.732	EDUC13 3.1 Frstmar 2.0 PARED 1.9 OCC 1.6
PARTYID	12.98	3.958	0.640	PARED 2.9 EDUC13 1.8 PAPRES 1.2 Frstmar 1.0
AGED	20.97	3.524	0.606	Married 1.4 FRSTMAR 1.2 MAWORK 1.2 Labforc 1.0
NATEDUC	23.72	4.104	0.598	EDUC13 2.1 MAWORK 2.0 PARED 1.8 Femlf 1.1
RELITEN	2.00	5.320	0.582	PARED 2.4 Keephse 1.8 Frstmar 1.7 MAWORK 1.6
HELPFUL	4.36	5.045	0.575	EDUC13 2.5 Frstmar 1.6 OCC 1.4 PARED 1.4
NATFARE	2.00	3.392	0.525	Married 1.4 Frstmar 1.4 Percap 1.1 EDUC13 0.9
HAPPY	4.28	3.555	0.503	Married 2.9 Frstmar 2.8 Exmar 1.5 MAWORK 1.0

Table 11 (Continued)
Bivariate results summary: attitudes

Attitude	Abs Delta	Median AbsB*100	Median AbsEffect	Largest Four							
SUICIDE1	4.57	4.166	0.446	EDUC13	1.8	PARED	1.4	Frstmar	0.9	Married	0.7
CAPPUN	11.07	2.328	0.437	Married	1.5	Frstmar	1.1	Femlf	0.8	EDUC13	0.7
POLVIEWS	5.98	4.313	0.431	Frstmar	1.6	Married	1.5	EDUC13	1.4	MAWORK	1.0
NATDRUG	0.30	3.236	0.385	PARED	1.7	EDUC13	1.7	Keephse	0.7	PAPRES	0.6
RICHWORK	7.46	3.653	0.372	EDUC13	2.2	PARED	2.1	MAWORK	1.6	Femlf	0.9
JOBINC	7.65	2.538	0.360	OCC	1.8	EDUC13	1.7	Labforc	1.0	XNORC	0.8
NATRACE	6.46	3.269	0.355	EDUC	1.6	PARED	1.4	MAWORK	1.1	Married	1.1
ABHEALTH	0.10	3.267	0.347	PARED	1.4	EDUC13	1.1	MAWORK	0.8	Keephse	0.6
BUSING	20.25	2.179	0.290	Married	1.6	Frstmar	1.4	PARED	0.6	XNORC	0.6
NATARMS	5.99	2.821	0.282	EDUC13	1.4	PARED	1.3	MAWORK	0.7	Married	0.6
RACMOST	5.74	2.140	0.269	EDUC13	1.1	Married	0.9	Keephse	0.9	Frstmar	0.7
TAX	6.84	1.796	0.264	Femlf	1.2	Labforc	1.1	Married	0.7	AGE	0.7
NATHEAL	8.01	1.563	0.258	MAWORK	1.1	RES16	0.9	Femlf	0.8	AGE	0.5
NATCRIME	3.48	1,649	0.232	EDUC13	0.9	PARED	0.7	Keephse	0.6	Femlf	0.5
GETAHEAD	7.65	1.716	0.220	EDUC13	1.1	Keephse	0.7	Frstmar	0.4	PAPRES	0.4
JOBPROMO	2.64	1.638	0.219	Labforc	1.0	Keephse	0.7	XNORC	0.6	MAWORK	0.5
COURTS	4.08	1.378	0.171	Married	0.9	Frstmar	0.9	PARED	0.8	EDUC13	0.8
Median	6.84	5.32	0.640		2.9						

The table tells us:

All the attitudes average at least one point associations with the demographics, half (25/47=.53) average five points and fifteen per cent (7/47=14.9) average ten points or more.

Roughly a third (13/47=.28) of the attitudes have average demographic effects of 1.0 or more, a third (17/47=.36) average between .50 and .99, and one third (17/47) average less than .50.

The strongest single effect is a 7.3 point contribution to increased tolerance of Communist books (LIBCOM) coming from the increase in Educational attainment (EDUC13).

Using only the single strongest X for each attitude, we would typically find a 3 point (2.9) demographic contribution to change.

Table 12 gives a third perspective, looking at X and Y simultaneously.with attitudes collected by topic.

Table 12
Effects (Top4 and Median AbsEffect) by Topic and Demographic Variable

F items	6	12	6	5	5	8	5		
Mdn Effect	.366	.408	.559	.582	.732	.989	1.320		Mdn
	Occ	Politics	Race	Religion	Morale	Family	Speech	Total	Effect
Pared	3	7	6	5	4	7	5	37	2.3
EDUC13	5	10	5	4	4	4	5	37	1.8
MAWORK	3	5	4	3	1	8	5	29	1.2
Frstmar	1	6	2	2	4	5	0	20	0.8
Married	0	6	3	1	1	2	0	13	0.8
Keephse	2	2	1	4	1	1	0	11	0.7
OCC	3	0	0	0	4	0	1	8	0.6
Labforc	2	1	0	0	0	3	1	7	0.9
PAPRES16	1	2	1	1	0	0	1	6	0.7
Feml f	1	5	0	0	0	0	0	6	0.5
RES16	0	1	2	0	0	0	2	5	0.6
AGE	0	2	0	0	0	0	0	2	0.5
XNORCSIZ	2	0	0	0	0	0	0	2	0.4
SIBS	0	0	0	0	0	1	0	1	0.7
Percap	0	1	0	0	0	0	0	1	0.6
CHILDS	0	0	0	0	0	1	0	1	0.5
PRESTIGE	1	0	0	0	0	0	0	1	0.4
Exmar	0	0	0	0	1	0	0	1	0.2
Ownkids	0	0	0	0	0	0	0	0	0.3
REGION	0	0	0	0	0	0	0	0	0.3
Total	24	48	24	20	20	32	20	188	

My impression: while the entries spread fairly evenly across the columns, the row numbers are concentrated toward the top. I interpret this as good news for proponents of the theory: demographic change in attitudes is concentrated in a few demographics but effective across a wide spectrum of variables.

I'd claim that Tables 7 and 12 make a prima facie case for the theory in that one can find a nontrivial demographic component in almost all of the 47 attitude changes in the analysis. As usual, however, multi-variate analysis is required as spurious relationships may lead to unwarranted over-optimism and suppressor variables to unwarranted pessimism.

MULTIVARIATE ANALYSIS

Forty-seven regressions with 39 independent variables are unlikely to generate simple conclusions and quite likely to capitalize on sampling variation. Instead, it seems most useful to boil things down to a small causal model that can capture the main themes. The recursive model comprises:

YEAR
Pared
MAWORK
EDUC13
Nfrstmar (Frstmar reversed)
Labforc
Attitude

YEAR is `open', the others are all dummy variables as explained above, giving them a common and comprehensible metric. The demographics are those in bold face in Table 8, i.e. the most powerful and pervasive of the twenty. I dropped MARRIED since it overlaps considerably with Frstmar and seems slightly less powerful.

Table 13 gives the raw and standardized path coefficients for YEAR and the Demographics. Bivariate results appear in Appendix 2.

Table 13
Path Coefficients for Year and Demographics (standardized=beta\raw=b)

	Year	Pared	MAWORK	EDUC13	NFrstmar	Labforc
YEAR		.0112	.0065	.0066	.0074	.0022
Pared	.1734		.2535	.2966	.0669	.0083
MAWORK	.0993	.2525		.0538	.0581	.1123
EDUC13	.1018	.2983	.0543		-.0499	.1303
Nfrstmar	.1129	.0658	.0574	-.0488		-.0067
Labforc	.0350	.0908	.1159	.1332	-.0070	

Ns range from 22,652 to 35,246

Save for a small coefficient for EDUC13 and NFRSTMAR (College people are slightly more likely to be in a first marriage) all the coefficients are positive. Thus demographic trends tend to move together. However, none of the coefficients are so large as to suggest the variables are inter-changeable.

For dependent attitudes I created nine simple scales (sums of positive answers) to represent the 47 attitude items. Within each topical area I combined items so that each had a positive item-total correlation and none improved alpha by its removal. In some cases the GSS rotation scheme placed limits on the combinations (For example, since PREMARSX is not in the same rotation as XMARSEX and HOMOSEX there are not enough cases to permit a three item Sex scale.) Table 14 below summarizes.

Table 14
Items in Nine Attitude Scales

Content	Item	Item to Total	Alpha	Maximum N
Family				
	CHLDIDEL	.15		
	DIVLAW	.16		
	FEHOME	.28		
	FEWORK	.24		
			.377	24,692
Religion				
	ABHLTH	.30		
	ABSINGLE	.44		
	SUICIDE1	.49		
	SUICIDE4	.35		
	*RELITEN	.32		
			.616	10,660
Sex				
	HOMOSEX	.22		
	XMARSEX	.22		
			.356	21,654
Free Speech				
	LIBATH	.74		
	LIBCOM	.73		
	LIBHOMO	.67		
	LIBRAC	.66		
			.856	18,127
Race				
	BUSING	.19		
	NATRACE	.23		
	RACMAR	.22		
	RACMOST	.26		
			.409	6,809
Work				
	RICHWORK	.11		
	JOBMEAN	.11		
			.205	11,445
Morale				
	FAIR	.42		
	HAPPY	.22		
	HELPFUL	.40		
	LIFE	.23		
	TRUST	.42		
			.579	8,783
Politics1				
	CAPPUN	.28		
	COURTS	.36		
	PARTYID	.26		
	POLVIEWS	.28		
			.363	25,228
Politics2				
	NATCRIME	.30		
	NATDRUG	.30		
	NATEDUC	.25		
	NATFARE	.17		
	NATHEAL	.29		
			.494	19,849

* direction reversed

The clusters are straight forward except, perhaps, for Politics (broadly defined here). As researchers have observed, a `conservative' trend (PARTYID, POLVIEWS, COURTS, CAPPUN) has occurred along with a `liberal' increase in support for welfare state functions. The Politics1 and Politics2 scales separate these themes. They correlate -.1376.

By psychometric standard the scales, save perhaps for Free Speech, are far from pure. Nevertheless, they will do here as our aim is to fish in plausible ponds not to catch specific fish.

I added the singleton item AGED (`As you know, many older people share a home with their grown children. Do you think this a generally good idea or a bad idea?' + = good idea) It seems unique in the family area since it showed a strong increase (Delta = 20.97) in a `pro-family' theme in an area where most items suggest the reverse.

Since the scales differ in length I will switch from raw to standardized regressions. Since YEAR has a standard deviation of 7.5678, its Delta of 24 years becomes 24/7.5678 = 3.17133 standard deviations. As an arbitrary bench mark I will consider betas less than .05 as `trivial'.Table 15 gives the standardized Deltas for the ten attitudes and their decomposition into portions due to the five demographics and the remaining direct effect:

Table 15
Total Change, Direct Effect of Year, Indirect Effect Through Five Demographics for Ten Attitudes (GSS72-96)

Attitude	Delta*	Direct	Indirect	% Indirect
Free Speech	+.2759	-.0073	+.2832	100**
Religion	+.2306	+.0219	+.2087	91
Race	+.4570	+.2734	+.1836	40
Family	+.9498	+.7281	+.2217	23
AGED	+.4269	+.3580	+.0688	16
Politics II	+.2588	+.2518	+.0070	3
Politics I	+.2654	+.2753	-.0098	0**
Sex	+.0114	-.2242	+.2356	?
Work	+.0704	-.0726	+.1430	?
Morale	-.1862	-.2518	+.0656	?
Median (abs)	.2621	.2518	.1633	

Bold = `trivial'
* in standard deviations
** treating trivial negative coefficients as zero

Standardized Deltas range from almost one standard deviation (Family) to almost none (Sex) in an order consistent with the results in Figure 4. The second and third columns decompose Delta into 1) the direct effect of year net of the five demographics and 2) the indirect effect explained by the demographics. A rough test of the theory is given by the percent indirect in the right hand column. If the theory `were perfect' 100 per cent of each delta would be indirect. Two cases, Free Speech and Religion meet the test: demographic changes explain the attitude changes. Three cases, Race, Family, and AGED are middling, with 16 to 40 per cent of the changes explained. Two, Politics1 and Politics2 are flat failures. Hardly any of the linear trend toward conservativism (Politics1) and government activism (Politics2) can be explained by the five best demographics. Three cases, Sex, Work, and Morale, have suppressor variables where the demographic and residual forces operate in

opposite directions so percentage explained is not applicable. Since the magnitudes of the indirect effects for the suppressors are about as big as the others, I think it is fair to say Table 15 shows at least relative success - demographic changes have a definite impact - in eight out of ten cases, which, if not exactly representative, cover a broad swath of sociological interests.

The three suppressors in Table 15 prompt us to have a closer look at the signs for each of the five demographics. If they are inconsistent, their trends will tend to cancel each other out and lower the total effect. Table 16 displays the partial regression coefficients (betas) with YEAR controlled.

Table 16
Partial Regression Coefficients (Betas) for Demographics and Attitudes, net of YEAR

Attitude	Pared	MAWORK	EDUC13	Nfrstmar	Labforc
Speech	.1602	.0882	.2435	.0147	.0888
Religion	.0708	.0231	.0072	**-.0006**	.0910
Race	.1055	.0738	.1135	.0529	.0465
Family	.1235	.1103	.1095	.0434	.1094
AGED	.0085	.0366	.0116	.0598	.0642
Politics2	**-.0258**	.0499	**-.0284**	.0330	**-.0021**
Politics1	.0593	**-.0438**	.0315	**-.1068**	.0129
Sex	.0881	.0726	.1709	.1178	.0729
Work	.0770	.0453	.2015	**-.0023**	**-.0653**
Morale	.0710	**-.0322**	.1910	**-.1257**	**-.0246**
Mdn. abs	.0740	.0476	.1115	.0482	.0648
DeltaSD	.5499	.4538	.5115	.3951	.2788
Product	.0407	.0216	.0570	.0190	.0181

The five demographics generally move attitudes in the same direction. Of the fifty coefficients in Table 16, 40 are positive (29 nontrivial) and ten are negative (boldface). Among the negatives only three are nontrivial The outstanding exceptions are:

Nfrstmar and Morale	-.1257
Nfrstmar and Politics1	-.1068
Labforc and Work	-.0653

Americans in first marriages show higher morale and tend to be more politically conservative. While Parental Education, Mother's's employment and Education increase endorsement of intrinsic work values (JOBMEANS, RICHWORK), actual labor force participation decreases it.

Pulling it together in a single number: if one were to take the entries in the table as raw data and subject them to a reliability analysis, the similarity among the correlations would produce an coefficient alpha of .734.

As for size, the median absolute values at the bottom of the table range from .0476 (MAWORK) to .1115 (EDUC13), with all but the later lying between .0476 and .0740. As one would predict from the selection process, the five demographics do not vary enormously in their direct correlations with attitudes. BUT they vary from .2788 to .5499 in their DeltaSDs. Multiplying the two together gives the figures in the bottom row of the table, their typical impact. As Principle 3 guarantees, there is a range, from .0570 for EDUC13 to .0181 for Labforc. Consequently Education, parental and respondent's own, pretty much dominate the effects, as shown in Table 17.

Table 17
Contributions to Change*, Education v. Other Demographics

	Pared+ EDUC13	MAWORK+ Nfrstmar+ Labforc	Total Demographic	% From Education
Speech	.2010	.0523	.2533	79%
Sex	.1244	.0812	.2056	61
Religion	.1142	.0796	.1938	59
Family	.1000	.0608	.1608	58
Work	.1431	.0041	.1472	97
Morale	.1668	-.0258	.1470	?
Race	.0904	.0287	.1191	76
Politics2	-.0412	.0162	-.0250	?
Politics1	.0609	-.0399	.0210	?
AGED	-.0177	.0152	-.0025	?

* coefficients Beta1 * Beta2

In every case the contributions of the two educations outweigh the combined effects of the other three. While eight out of ten numbers in the first column are `nontrivial', this holds for only four cases in the second column.

I suspect this property is general and follows from Principle 3: because the distributions of products skew more than the distribution of sums, the demographic theory predicts quite unequal effects for demographics.

In sum, multi-variate analysis shows (1) In eight of ten attitude areas the five demographics make a substantial contribution to change, although masked in three cases by residual suppressor variables (2) The structure of the model almost guarantees wide variation in the impact of various demographics.

PLUGGING IN COHORTS

Although I have chosen to consider COHORT (Year of birth) as a formal variable not a substantive one - i.e. one which tells us how not why change occurs - adding it to the system provides a more nuanced picture. In particular, it can tell us whether these demographics are the substantive variables needed to interpret þAge/Period/Cohortþ effects so as to escape sterile methodological formalism. As a start Table 18 partitions total change (in SDs) into two parts: COHORT net of YEAR and YEAR net of COHORT (Firebaugh, 1989).

Table 18
Year and Cohort Components in Demographic and Attitude Trends

Demographics				Attitudes			
Variable	Total	Year	Cohort	Variable	Total	Year	Cohort
Pared	.5499	.0381	.5117	Family	.9489	.5949	.3540
EDUC13	.5115	.2987	.2128	Race	.4570	.1487	.3083
MAWORK	.4538	-.0444	.4982	AGED	.4269	.1792	.2477
Nfrstmar	.3951	.2489	.1462	Speech	.2759	-.0225	.2984
Labforc	.2788	-.2150	.4938	Politics1	.2654	.3381	-.0726
				Politics2	.2581	.1690	.0891
				Religion	.2306	.0257	.2049
				Morale*	.1862	.0251	.1611
				Work	.0704	.0098	.0606
				Sex	.0114	-.2394	.2508

Figure 5 presents the same data in graphic form. The vertical axis displays the contribution of YEAR, net of COHORT, i.e. `intra-cohort shift' or `conversion'. The higher the point, the more positive the Year effect. If, in addition, the point lies within the .05 band around .00 the change is totally due to YEAR under the convention that a coefficient of less than .05 is trivial. The horizontal axis similarly displays COHORT or þreplacementþ

effects. The graph is divided into zones such that I=Totally conversion , II=Mostly conversion, partly replacement, III=Mostly replacement, partly conversion, IV=Totally replacement, V=Opposite signs for conversion and replacement, with replacement stronger, VI=Opposite signs, conversion stronger. Solid dots indicate demographics, hollow ones attitudes. Delta in SD units appears after the variable name.

(Figure 5 here)

Zone I is empty. None of the demographic or attitude trends are untouched by at least an element of generational replacement.

In Zones II and III both processes push in the same direction, producing rather strong trends for six variables. In order of magnitude we see: Family +.95, EDUC13 +.51 (combining college entry among the younger cohorts and generational replacement among the older) , Race (attitudes)+.46, AGED +.43, Nfrstmar +.40 (delayed first marriage and erosion of existing first marriages) and Politics2.

Zone IV contains six variables where change is essentially through replacement. Parental characteristics (Pared +.55, MAWORK +.45) are obvious cases, but four attitude trends also fall here: Free Speech +.28, Religion +.23,Morale -.19 and Work +.07.

In Zones V and VI the two processes push trends in opposite directions. For LABFORC the replacement effect of younger workers outweighs intra-cohort retirements for a net change of +.28. For Sex attitudes the positive contribution of replacement is almost balanced by the negative intra-cohort shifts producing a hairline change of +.01. In the opposite corner the strong positive intra-cohort shift for Politics1 is slightly damped by a small negative replacement effect.

The moral of figure 5 may be this: since demographics and attitudes turn up all over the map, the þdemographic theoryþ is not just the substantive face of cohort replacement. A complete analysis requires all four: YEAR, COHORT, Demographics, and Attitudes. In such a complete causal model an attitude is linked to YEAR by 64 paths (mostly of zero magnitude). Thus the results in Table 18 and Figure 5 may be construed as (a) COHORT = sum of the paths from YEAR to Attitude via COHORT (b) YEAR= sum of the paths from YEAR to Attitude not via COHORT. The idea can be extended to give a more elaborate breakdown, short of enumerating 64 paths.

	Via	But not
YEAR only	-	COHORT or any demographic
COHORT only	COHORT	Any demographic
Via Demographic	Any demographic	-

That is, we can decompose change into three portions (1) due to Demographics (2) due to YEAR (intra-cohort conversion) net of COHORT and Demographics and (3) due to COHORT replacement net of YEAR and demographics.

Table 19 displays these decompositions for the ten attitudes.

Table 19
Decomposition of Change (Delta SD) for Ten Attitudes*

Attitude	YEAR only	COHORT only	Via Demographic	Total
Family	+.5683	+.2198	+.1608	+.9489
Race	+.1031	+.2344	+.1191	+.4566
AGED	+.1671	+.2626	-.0025	+.4272
Free Speech	-.0853	+.1075	+.2533	+.2755
Politics1	+.3577	-.1135	+.0210	+.2652
Politics2	+.1684	+.1148	-.0250	+.2582
Religion	-.0190	+.0561	+.1938	+.2309
Morale	-.0511	-.2762	+.1410	-.1863
Work	-.0641	-.0117	+.1472	+.0714
Sex	-.3083	+.1154	+.2056	+.0127

Discrepancies vis a vis Table 18 are due to rounding in summing paths.

Table 18 seems to lack any clear cut pattern, which is probably the main conclusion to be drawn. Figure 6 displays the heterogeneity of the results.

(Figure 6 here)

For half the cases, the three processes are consistent or more exactly not inconsistent, as shown in Figure 6a.

> For Race and Family the Demographics, Replacement and conversion all pushed in the same positive direction.
>
> For AGED and Politics2 (governmental activism) the Demographic effects were trivial but both Replacement and Conversion boosted scores.
>
> For Religion Demographics and Conversion increased scores but the Replacement effect was trivial.
>
> For the other five attitudes inconsistent processes (suppressor variables)turned up, as shown in Figure 6b.
>
> For Politics1, Speech, and Sex the Conversion and Replacement effects had opposite signs - Year inducing Conservativism and Cohort the reverse. For Speech and Sex Demographic effects

reinforced Replacement.

For Work and Morale either Conversion (Work) or Replacement (Morale) showed negative effects working against the positive effect of Demographics.

Plausible and potentially interesting stories can be told about most of these cases but no general theoretical line emerges. Thus: There is little case here that demographic change explains Age/Period/Cohort effects or vice versa. Instead, they seem to complement each other.

CONCLUSIONS

Four positive conclusions have emerged.

First, longitudinal XY analysis of run-of-the-mill survey variables gives plausible results without invoking advanced methodology. Given the many replicated cross-sectional designs available, more such analyses would enhance the causal plausibility of survey analysis while avoiding the `ecological fallacy' issues of conventional time series.

Second, the theory scores more than a few victories. The vast majority of attitudes studied show at least some causal impact from one or more standard demographics. Good results turned up across the full spectrum of attitudes. I'd judge that impact to be on a par with the results of the typical cross-sectional survey analysis.

Third, the theory is not as simplistic as it might seem at first glance.

Principles II and III motivate a new way of thinking about what drives social change. When combined with conversion/replacement analyses it can produce complex and subtle results (occasionally too subtle for easy interpretation).

Fourth, the combination of reasonable payoff and extreme simplicity suggests that more sophisticated approaches to social change such as diffusion (Rogers 1962) or cultural lag (Ogburn 1957) should be required to `beat' demographic theory to justify their additional complexity.

That said, two reservations must be stated.

First, the results here suggest that the theory nibbles widely but seldom gobbles. Of the ten attitude clusters, only two, Free Speech and Religion (theology), approach explanation in the classical sense of driving a bivariate to zero. The obvious competitor would be specific historical events. Page and Shapiro (1992) advance a strong case for such impacts in the political area (where demographic theory does poorly) but attitude analysts from Schwartz (1967) to Schuman et. al.(1997) have remarked on how seldom their regression lines show blips that can be tied to specific events. (The reader will remember that the results reported here treat the linear component in change and have not addressed the question of linearity/non-linearity - though my impressions support Schwartz and the Schuman group.)

Second, the theory has no substantive content. (Neither, of course, does the theory of natural selection. This is probably why so much biological

research is devoted to `just-so stories' of varying plausibility.) This broad umbrella allows quite diverse results to fit the theory but when we draw a blank (e.g. AGED) the theory per se is of no use in telling us where to go next.

It may not be amiss - even in contemporary quantitative sociology - to say something about the substantive results. I'd advance three themes running through the analysis.

First, there is a surprising impact of parental background, net of current Education, Marital Status, and Labor Force participation. This, of course, is consistent with Inglehart's `socialization hypothesis' (Abramson and Inglehart 1995, p. 4) and certain aspects of Easterlin's cohort size theory (Easterlin. 1980, p. 42) - though not necessarily with their financial interpretations. I suspect, however, that sociologists have been so impressed by the classic studies of the achievement process that we have come to assume respondent's education will wash out parental influences of any kind. Combining this variable with the frequent impact of cohort replacement, a surprising amount of contemporary change seems to be a playing out of causal processes begun many decades ago, not the result of TV, short-term economic trends, or slogan-able decades.

Second is the dominance of Education, own and parental. Were it not for the theoretical issues we could limit our demographics to these two and still do pretty well (Table 17). The result is hardly new (see Hyman and Wright,

1979) but it is not inevitable (Nie, et. al. 1996, Stember 1961). As sociological research focuses more and more on `economics' (income, occupation, markets), the relative impacts of Education, Income, and Occupation here warn us to be cautious before abandoning our prior interests.

Third, if there is an overall theme to the change analysis it seems to be that þmodernizationþ is still working its way through the American population. As in the classic formulations of Inkeles (1974) and Kohn (1969) schooling and working for pay loom large in all the analyses and one needs only add the þpostmodernþ decline in conventional marriage to summarize pages and pages of results.

All in all the results here underline Stinchcombeþs claim (p. 79):

> Changes in the distribution of kinds of people have a different theoretical meaning from changes in the causal forces applied to those people. It makes a great deal of difference theoretically whether the birth rate declines because there are fewer women in reproductive ages or because each fertile woman has fewer children per year.

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1.Since the GSS design is `top of the line', statistical inference is clearly warranted. Strict application, though is challenging since (1) the data here are weighted by the variable ADULTS to make them represent households. (2) GSS72-73-74 were not strict probability designs (3) the variables analyzed have design effects from 0.8 to 6.7 (median in Appendix 1 =1.4) (4) we are estimating dozens of coefficients, rather than the single tests of text book theory. (5) dummy variable regression standard errors are fuzzy. Consequently, I did not attempt to place confidence intervals around the estimates. Nevertheless, the sheer magnitude of the N's is reassuring. In Appendix 1 the median N is about 26,000. Discounting it to 18,571 for a typical DEFF of 1.4, we get a typical effective N of 18,571. For that N a bivariate regression coefficient with a true value of zero has a standard error of about .0071, which is to say a given coefficient with a magnitude of .014 would be þstatistically significant at the .05 levelþ. Since all the coefficients taken seriously here are much larger than that and our concern is with the results for groups of coefficients not efficient estimates of specific relationships, I feel we are on safe grounds in taking these results at face value.

2.Among both married and unmarried women, þKidsþ is associated with higher odds for working. The counter-intuitive difference is probably a function of age, the oldest women being non-working women in childless households. When AGE is introduced into these cross-tabulations a number of interactions appear which, however, are not germane to the present trend analysis.

3.Between 1970 and 1980 the U.S. Census shifted its occupational codes. Since GSS prestige scores are based on Census occupational codes, beginning in 1991 the GSS shifted to an updated prestige scale based on the 1989 replication of its prestige measure (Nakao and Treas, 1994). In 1988-89-90 occupations were dual coded. Using the overlap data I estimated þold styleþ prestige scores for 1991-96 from the OLS regression of the two (PRESTIGE= 5.070081 + .834415 PRESTIG80, r=+.775). For the analyses here one would draw virtually the same conclusions by limiting PRESTIGE to the 1972-90 data.

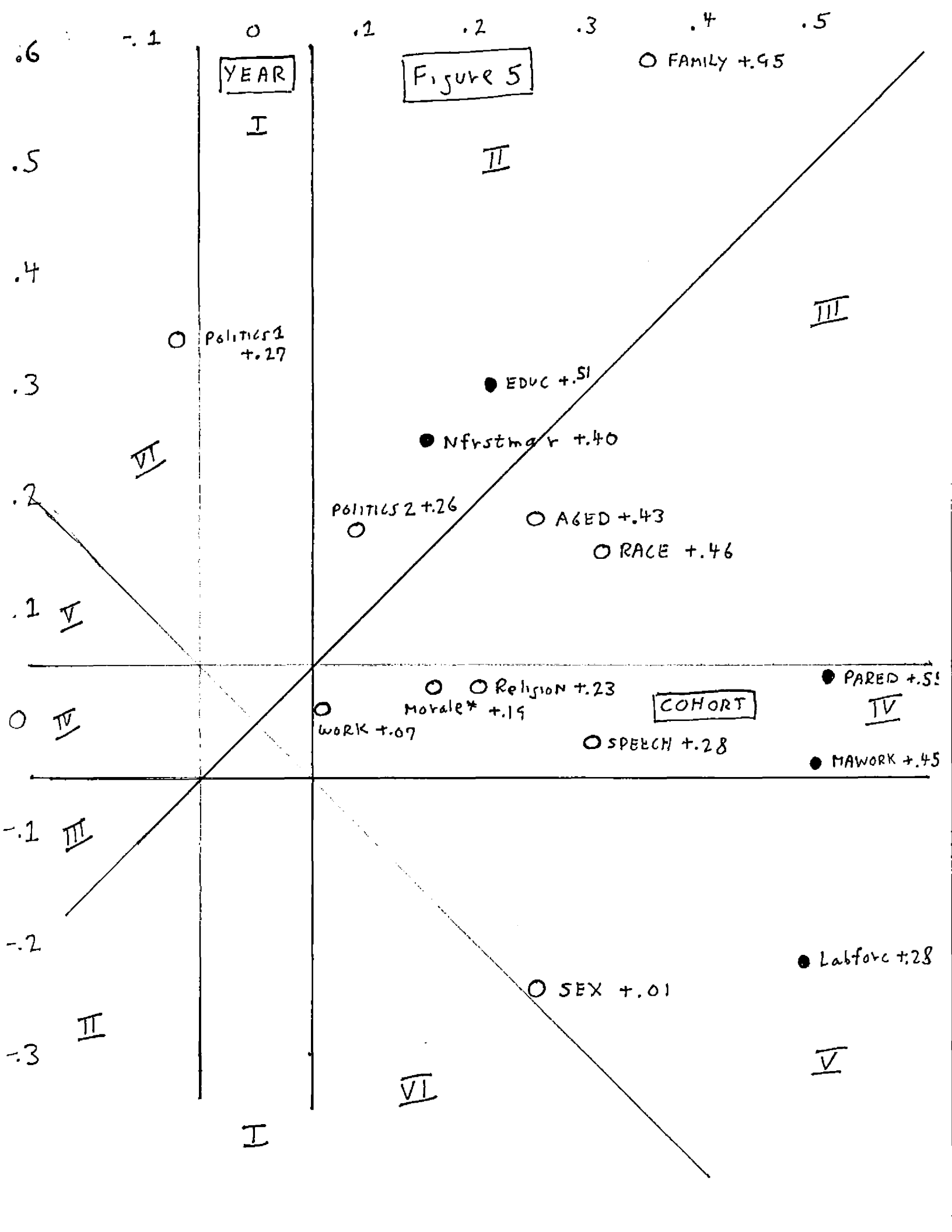
Figure 5
YEAR
COHORT
-.1
0
.1
.2
.3
.4
.5
.6
.5
.4
.3
.2
.1
0
-.1
-.2
-.3
I
II
III
IV
V
VI
FAMILY +.95
Politics1 +.27
EDUC +.51
Nfrstmar +.40
Politics2 +.26
AGED +.43
RACE +.46
Religion +.23
Morale* +.19
WORK +.07
SPEECH +.28
PARED +.51
MAWORK +.45
Labforc +.28
SEX +.01

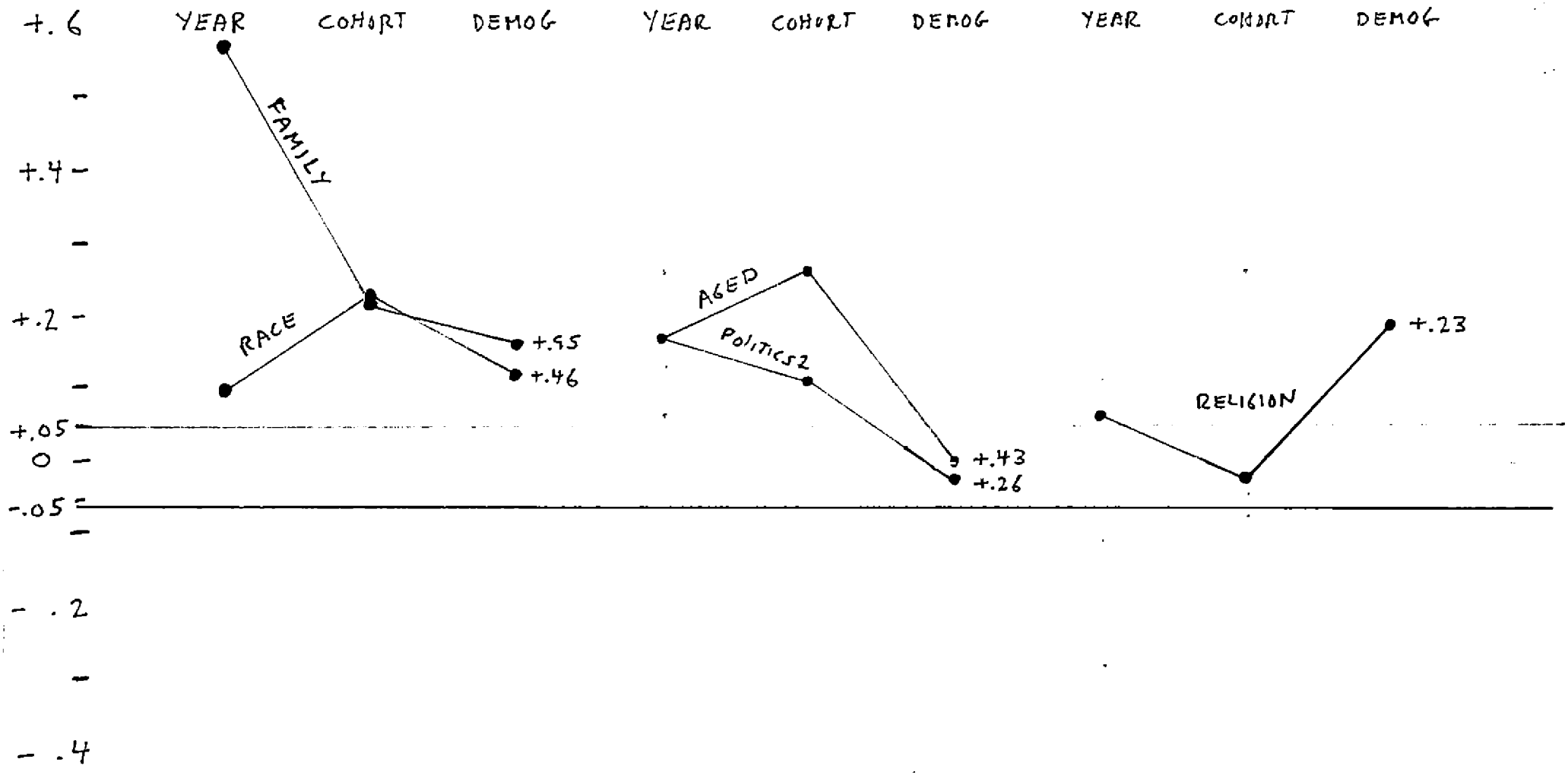
+.6
YEAR
COHORT
DEMOG
YEAR
COHORT
DEMOG
YEAR
COHORT
DEMOG
FAMILY
+.4
RACE
+.2
+.95
+.46
AGED
POLITICS2
+.43
+.26
RELIGION
+.23
+.05
0
-.05
-.2
-.4

Figure 6a

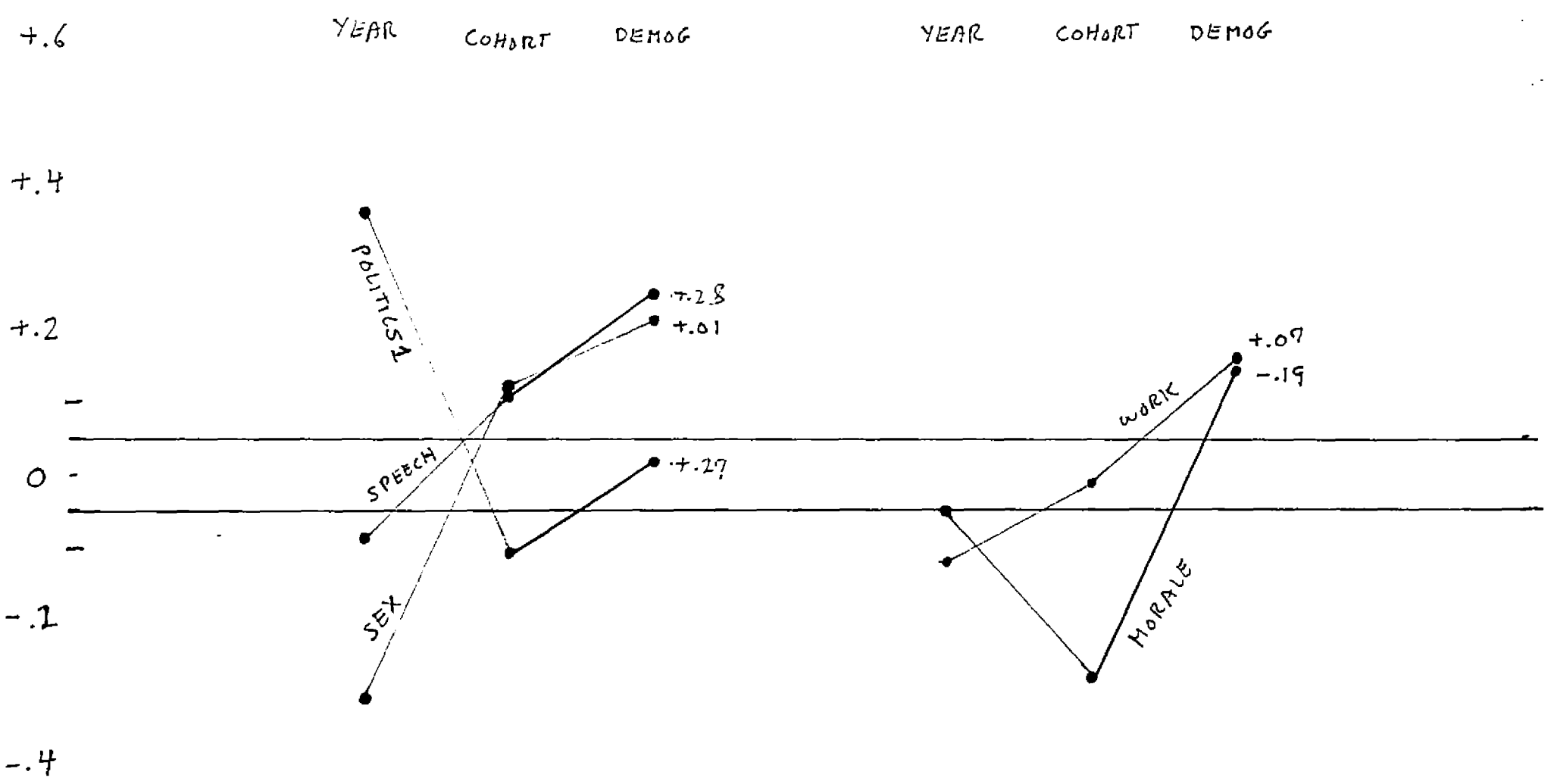
+.6
YEAR
COHORT
DEMOG
YEAR
COHORT
DEMOG
+.4
+.2
0
-.2
-.4
POLITICS
SPEECH
SEX
+.28
+.01
+.27
WORK
MORALE
+.07
-.19

Figure 6b

Appendix 1: GSS codes for dummy variables
(CAPS=GSS mnemonic simple combination, lower case=other recode)

Mnemonic	0=	1=	+ indicates	Years 1st	Last	Total	N Max	DEFF
ABHLTH	2	1	Allow	72	96	20	28,687	2.08
ABSINGLE	2	1	Allow	72	96	20	28,294	1.10
AGE	18-27, 48+	17-89+	Middle	72	96	21	35,246	1.39
AGED	2	1,3	Should	73	96	16	21,008	1.56
BORN	1	2	Foriegn	77	96	16	26,926	2.33
BUSING	2	1	Favor	72	96	17	19,946	1.23
CAPPUN	2	1	Favor	74	96	19	29,908	1.65
CHILDS	0-2	3-8	3 or more	72	96	21	35,222	1.25
CHLDIDEL	3-7	0-2	Fewer	72	96	17	22,665	1.29
COHORT	1883-1954	1955-1978	Newer	72	96	21	35,246	1.39
COURTS	1,3	2	Not harsh enough	72	96	21	31,678	1.64
DIVLAW	2	1,3	Easier	74	96	16	21,686	1.50
DIVORCE	0=inap,2	1	Yes, ever	72	96	21	35,169	1.45
Earnrs2	(See below)		Two earners	75	96	18	32,636	1.72
EDUC13	0-12	13-20	Some college+	73	96	21	35,253	2.58
Evmar	MARITAL=5	=1-4	Not single	72	96	21	35,346	1.44
Exmar	MARITAL=1,5	=2-3-4	Wid, Div, Sep	72	96	21	35,346	1.44
FAIR	1,3	2	Are fair	72	96	17	24,291	1.95
FAMILY16	0,2-8	1	Own mo&fa	73	96	20	35,331	1.19
FEHOME	1	2	Disagree	74	96	15	20,600	1.48
FEWORK	2	1	Approve	72	96	16	21,824	1.54
Femjob	(See below)		Fem employed	75	96	18	28,515	na
FemLF	(See below)		Fem in LF	75	96	18	28,516	na
Firstmar	(See below)		1st marriage	72	96	21	35,346	na
GETAHEAD	2,3		Hard work	73	96	16	22,736	1.24
GRASS	2	1	Legalize	73	96	16	21,851	1.51
HAPPY	2,3	1	Very	73	96	20	33,289	1.16
Hasjob	WRKSTAT=4-8	=1-3	Employed	75	96	18	28,515	1.09
HELPFUL	2,3	1	Are helpful	72	96	15	21,335	1.57
HOMOSEX	1-3	4	Not wrong	73	96	16	22,380	1.86
JOBINC	3-5	1-2	Top half	73	94	15	18,314	1.35
JOBMEAN	2-5	1	Top half	73	94	15	18,315	1.23
JOPBPROMO	3-5	1-2	Top half	73	94	15	18.315	1.06
JOBSEC	4-5	1-3	Top half	73	94	15	18,313	1.34
Keephse	WRKSTAT=1-6,8	=7	Keeping house	75	96	18	28,516	1.09
Labforc	WRKSTAT=1-4	=5-8	In labor force	75	96	18	28,516	1.09

Appendix 1: GSS codes for dummy variables
(CAPS=GSS mnemonic simple combination, lower case=other recode)

				Years				
Mnemonic	0=	1=	+ indicates	1st	Last	Total	N Max	DEFF
LIBATH	1	2	Not remove	72	96	17	24,139	1.40
LIBCOM	1	2	Not remove	72	96	17	23,933	1.53
LIBHOMO	1	2	Not remove	73	96	16	22,264	1.40
LIBRAC	1	2	Not remove	76	96	14	16,308	1.47
LIFE	2,3	1	Exciting	73	96	16	22,689	1.26
Married	MARITAL=2-5	=1	Married	72	96	21	35,346	1.44
MAWORK	2	1	Worked	72	93	18	24,720	0.83
NATARMS	2,3	1	Too little	73	96	20	20,702	1.71
NATCRIME	2,3	1	Too little	73	96	20	22,294	1.05
NATDRUG	2,3	1	Too little	73	96	20	22,052	1.13
NATEDUC	2,3	1	Too little	73	96	20	22,578	1.35
NATFARE	2,3	1	Too little	73	96	20	22,331	1.95
NATHEAL	2,3	1	Too little	73	96	20	22,487	1.35
NATRACE	2,3	1	Too little	73	96	20	18,558	1.80
Nevmar	MARITAL=1-4	5	Single	72	96	21	35,346	1.44
Nowsplit	MARITAL=1,2,5	=3,4	Div, Sep	72	96	21	35,346	1.44
OCC	260-986	001-246	Prof, Mgr	72	90	19	24,707	1.67
Ownkids	(See below)		Yes	72	96	21	35,348	na
PAPRES16	9-41	42-82	Higher	72	90	27	31,532	2.19
Pared	(See below)		More Years	72	96	21	31,532	2.30
Parttime	WRKSTAT=1,3-8	=2	Works part time	75	96	21	28,516	1.09
PARTYID	0-1-2	3-4-5-6	Indep.&Rep.	72	96	21	34,679	1.47
Percap	(See below)		Higher	72	93	19	27,119	3.21
POLVIEWS	1-4	5-7	Conservative	74	96	19	29,608	1.65
PORNLAW	1,3	2	Legal for adults	73	96	16	22,349	1.45
PREMARSX	1-3	4	Not wrong	72	96	16	22,650	1.58
PRESTIGE	(See below)		Top half	72	96	17	32,694	1.86
RACE	1,3	2	Black	73	96	20	33,507	4.04
RACMAR	1	2	Oppose law	72	96	21	22,062	1.30
RACMOST	(See below)		Not object	72	96	16	18,160	1.37
RACOPEN	1	2,3	For open housing	73	96	16	18,815	1.30
RACSEG	1-2-3	4	Dis. Strongly	72	96	17	17,098	1.06
REGION	1-4	5-9	South&west	72	96	21	35,348	4.14
REALINC	391-26,483	26,484-162,607	Top 50%	72	93	19	27,165	3.21
REG16	0,1-7	8-9	West	72	96	21	35,348	4.27
RELIG/FUND	(See below)		Moderate Prot.	72	83	10	15,983	2.75

Appendix 1: GSS codes for dummy variables
(CAPS=GSS mnemonic simple combination, lower case=other recode)

Mnemonic	0=	1=	+ indicates	Years 1st	Last	Total	N Max	DEFF
RELITEN	2-4	1	Strong	74	96	19	30,749	1.16
RES16	1,3 5-6	2	Farm	73	96	20	35,282	1.94
RICHWORK	2	1	Continue	73	96	16	14,579	1.42
SEX	1	2	Female	77	96	15	28,517	0.93
SIBS	0-3	4-68	More	72	96	21	35,256	1.70
SUICIDE1	2	1	Allow	77	96	13	17,294	1.24
SUICIDE4	2	1	Allow	77	96	13	17,575	1.28
TAX	2,3	1	Too high	76	96	14	18,741	1.43
TRUST	2,3	1	Can trust	72	96	17	23,623	1.53
Wifjob	(See below)		Employed wife	75	96	18	28,516	na
WifinLF	(See below)		Wife in Labforc	75	96	18	28,516	na
WRKSLF	2	1	Self-employed	72	96	21	32,702	1.45
XMARSEX	1	2-4	Not "always wrong"	73	96	16	22,650	1.90
ZNORCSIZ	1,5,6,10	2-4,7-9	"Ring"	72	96	21	35,348	6.73

Complex codes

Earnrs2
0= (ADULTS ne 2) or (EARNRS ne 2)
1= ADULTS= 2 and EARNRS= 2

Femjob
0= SEX= 1 or WRKSTAT= 4-8
1= SEX= 2 and WRKSTAT= 1-3

FemLF
0= SEX= 1 or WRKSTAT= 5-8
1= SEX= 2 and WRKSTAT= 1-4

Firstmar
0= MARITAL= 2-5 or DIVORCE= 1 or WIDOWED= 1
1= MARITAL= 1 and DIVORCE= 2 and WIDOWED= 2

Ownkid
0= CHILDS= 0 or BABIES+PRETEEN+TEENS= 0
1= CHILDS>0 AND BABIES+PRETEEN+TEENS>0

Pared (MAEDUC+PAEDUC)/2 [if na on one, Pared= value for other]
0= 0-9.5
1= 10.0-20.0

Precap (REALINC/HOMPOP)

0= <$8636
1= $8636+

PRESTIGE

If YEAR <91 PRESTIGE=PRESTIGE
If YEAR >90 =5.070081+0.834415*PRESTIG80
0= 12-39
1= 40-82

RACMOST

0= RACFEW= 1 or RACHAF= 1 or RACMOST= 1
1= RACMOST= 2

RELIG/FUND

0= RELIG ne 1 or FUND ne 2
1= RELIG= 1 and FUND= 2

Wifjob

0= (SEX= 1) or (MARITAL ne 1) or (WRKSTAT ne 1-3)
1= (SEX= 2) and (MARITAL= 1) and (WRKSTAT= 1-3)

WifLF

0= (SEX= 1) or (MARITAL ne 1) or (WRKSTAT ne 1-4)
1= (SEX= 2) and (MARITAL= 1) and (WRKSTAT= 1-4)

Appendix 2: Bivariate product moment correlations of key variables

Mean	S.D.		YEAR	COH	PAR	MAW	EDU	NFR	LAB
84.0189	7.5678	YEAR							
1940.2195	18.5839	COHORT	0.3947						
0.5955	0.4908	PARED	0.1734	0.4137					
0.5852	0.4927	MAWORK	0.1431	0.3926	0.2697				
0.3912	0.4880	EDUC13	0.1613	0.2072	0.3306	0.1493			
0.4650	0.4988	NFRSTMR	0.1246	0.1477	0.0847	0.0840	-0.0003		
0.6490	0.4773	LABFORC	0.0879	0.3677	0.1716	0.1647	0.1862	0.0147	
0.5922	0.4914	AGED	0.1346	0.2202	0.0579	0.0724	0.0500	0.0786	0.0847
3.0176	1.3098	FAMILY	0.2995	0.3572	0.2517	0.2145	0.2242	0.0933	0.1900f
2.2935	1.5048	MORALE	-0.0587	-0.1318	0.0968	-0.0105	0.1923	-0.1327	0.0090
2.4902	1.0281	POLITICS1	0.0837	-0.0160	0.0661	-0.0175	0.0610	-0.0945	0.0278
2.7789	1.3272	POLITICS2	0.0814	0.0922	-0.0055	0.0525	-0.0171	0.0449	0.0039
1.5421	1.0653	RACE	0.1441	0.2647	0.1904	0.1437	0.1820	0.0794	0.1063
2.5847	1.3670	RELIGION	0.0717	0.1669	0.1873	0.1224	0.1793	0.1169	0.1421
0.4047	0.6224	SEX	0.0036	0.1707	0.1744	0.1337	0.2130	0.1236	0.1273
2.6133	1.5810	SPEECH	0.0870	0.2355	0.2806	0.1833	0.3258	0.0366	0.1762
1.2157	0.7122	WORK	0.0222	0.0496	0.1334	0.0800	0.2155	0.0036	-0.0104