



Explaining educational influences on attitudes toward homosexual relations [☆]

Julianne Ohlander ^{a,*}, Jeanne Batalova ^b, Judith Treas ^b

^a *Pennsylvania State University, University Park, PA 16802, USA*

^b *University of California, Irvine, USA*

Available online 2 March 2005

Abstract

Despite changing attitudes toward homosexual relations in the United States, college-educated individuals remain less disapproving of homosexual sex than less-educated persons. Using recent General Social Survey data, this study considers three alternative explanations for the established association between schooling and support for same-sex relations. First, education may promote tolerance of homosexual sex by teaching support of nonconformity. Second, schooling may promote greater cognitive sophistication and complex reasoning, thus enabling individuals to better evaluate new ideas. Third, the observed relationship between education and tolerance may be the spurious result of affluence of the parental home. We find that the relation of education and attitudes is not a spurious one. Rather, the liberalizing effect of education on attitudes toward homosexual relations is due, in part, to education's association with support for civil liberties, and in part, to schooling's correlation with cognitive sophistication.

© 2005 Elsevier Inc. All rights reserved.

Keywords: Education; Tolerance; Attitudes; Homosexuality; Civil liberties; Cognitive sophistication; Postmaterialist values

[☆] This research was supported by a NICHD demography training Grant 5 T32 HD07514 and a NICHD institutional support Grant 1 R24 HD41025 from the Pennsylvania State University's Population Research Institute.

* Corresponding author.

E-mail address: julieohlander@yahoo.com (J. Ohlander).

1. Introduction

Americans are more likely than people in other industrialized nations to agree that same-sex sexual relations are always wrong (Widmer et al., 1999). There exists, however, some diversity of opinion in the United States. Individuals with greater levels of education are less disapproving of homosexual relations than are less-educated persons (Glenn and Weaver, 1979; Herek, 1984; Herek and Capitano, 1995; Loftus, 2001; Treas, 2002). This educational differential holds not merely for the United States, but for other Western nations (Scott, 1998). In recent years, Americans, as well as Britons, have voiced growing tolerance of same-sex relations (Scott, 1998; Treas, 2002). This has been a significant development reflecting the liberalizing influence of cohort succession and, even more significantly, an unusual amount of intra-cohort attitude change away from strong disapproval (Treas, 2002). Others have attributed part of the decline in disapproval of homosexual relations to increasing levels of education in US population (Dejowski, 1992; Loftus, 2001). Thus, changing public opinion calls attention to educational differences in permissiveness toward homosexuality. Persons with less schooling moved closer to better-educated Americans in their views during the 1990s, consistent with the classic pattern of innovations diffusing from the top down through the social hierarchy (Treas, 2002). College-educated Americans, however, continue to be less disapproving of same-sex relations than are those without college degrees.

This increasing permissiveness raises profound questions about the source of educational differences in tolerance of homosexuality. Half a century ago, Kinsey considered the positive association between educational level and attitudes toward homosexuality. He concluded, “(W)e are not sure that we yet understand what these differences are” (Kinsey et al., 1948, p. 383). Despite the persistence of these educational differences, there is still a lack of empirical studies that can shed light on these disparities in attitudes.

Using General Social Survey (GSS) data from the recent period of revolutionary change in American attitudes toward homosexuality, we test alternative explanations for the well-documented, positive relationship between education and tolerance of homosexual relations. In particular, we consider whether individuals with more schooling are less disapproving as a result of (1) the greater support for civil liberties that results from education; (2) greater cognitive sophistication that gives the well-educated an advantage in evaluating complex ideas and new information; or (3) a spurious association that arises because family affluence leads both to more schooling and to postmaterialist values supporting sexual expression.

2. Theoretical background

The relationship between education and tolerance for nonconformity is multifaceted. Education is known to change people’s beliefs and values (Astin, 1977; Chickerling, 1970; Feldman and Newcomb, 1969), and these changes are known to be lasting ones (Alwin et al., 1991; Clark, 1962; Funk and Willits, 1987; Golebiowska, 1995; Hyman and Wright, 1979; Hyman et al., 1975; Pascarella and Terenzini, 1991).

Education transmits knowledge and skills, teaching the critical values and norms of the environment, including socially accepted activities (Broudy, 1987; Dreeben, 1968; Feldman, 1969; Waller, 1961[1932]). Education plays a socialization role, encouraging suitable behavior according to the values and norms of the society (Boocock, 1973; Gaasholt and Togeby, 1995; Goslin, 1965; Key, 1961; Moustakas, 1967; Rothstein, 1987). By perpetuating social inequalities, education maintains the status quo (Ballantine, 1989), but education can also promote social change (Yankelovich, 1974) and teach tolerance of heterogeneity through the spread of knowledge. When used as a measure of social class, education is related to tolerance of unconventional behaviors. For example, Dohrenwend and Chin-Shong (1967) reported that the less-educated had greater concerns for conformity and, thus, were less liberal than were the more educated toward nonconformists. These educational differences in attitudes about conformity are even reflected in the socialization goals that people hold for their children. Compared to better-educated parents, less-educated parents are more likely to view obedience as important preparation for adulthood and less likely to endorse thinking for oneself (Alwin, 1990).

2.1. Education and civil liberties

Education may undermine disapproval of homosexuality by increasing tolerance of nonconformists. For example, in his classic study of civil liberties, Stouffer (1955) found that education was positively associated with the willingness to support the right of free speech, even by an unpopular group like the communists. He argued that this was because young people were exposed to different values in the classroom than they learned in the home. Education increases one's capacity to have compassion and tolerance for others who are different (Gaasholt and Togeby, 1995; Inkeles, 1966; Jenson and Engesbak, 1994; Lerner, 1958; Warshay, 1962). Each additional year of college completed is associated with being more supportive of civil liberties (Nunn, 1973; Selvin and Hagstrom, 1960), and attending college may increase the likelihood that one will condemn violations of civil liberties by authorities (Jesilow and Meyer, 2001). This positive relationship between education and support for the civil liberties of various out-groups has persisted over time (Bobo and Licari, 1989; Davis, 1975; Finney, 1974; Gibson and Tedin, 1988; Lawrence, 1976; Nunn, 1973; Nunn et al., 1978; Stouffer, 1955; Williams et al., 1976). Indeed, education even increases tolerance toward groups about which an individual holds negative views.

We would expect greater tolerance of nonconformists, including homosexuals, if education fosters support of civil liberties. One role for education is suggested by the fact that people who are more informed about social issues are not only better able to express their attitudes about an out-group's rights, but are also more likely to discuss a social issue in terms of civil liberties (Chong, 1993). As attitudes are known to be sensitive to the effects of framing (Chong, 1993; Sniderman and Piazza, 1993), posing an issue as a constitutional right influences the evaluation of that group's rights and freedoms (Chong, 1993). For example, a 1985 survey showed that the public supported the rights of people with AIDS when framed as an issue of civil liberties, but favored mandatory AIDS testing in the context of public health concerns (Sniderman et al., 1991).

Increasingly, homosexuality has been linked with civil liberties in public debate. During the period when disapproval of homosexuality showed rapid declines, US news magazines shifted their coverage from the 1980s' concern with AIDS and unsafe sex to the 1990s' focus on the right of gays and lesbians to serve in the military (Bennett, 2000). Homosexuals received legal protection under hate crime legislation that had its origin in rights discourse (Jenness and Grattet, 2001). Domestic partnership laws extended legal rights to same-sex couples (Treas, 2004). Gamble (1997) found homosexual rights initiatives on state and local ballots 43 times between 1977 and 1993. Indeed, the majority of civil rights issues on ballots (60%) involved the rights of homosexuals (Gamble, 1997).

Although most homosexual advocacy organizations portray their issues in terms of civil rights, their opponents typically argue morality (Haider-Markel and Meier, 1996). Anti-gay advocates, however, argue little information is necessary to debate the rightness or wrongness of homosexuality, because everyone can claim to be an expert on morality (Haider-Markel and Meier, 1996). The strong moral condemnation of same-sex relations by poorly educated individuals might be explained by their lack of information about homosexuals, their weaker support for civil liberties, and their confidence in their standing to argue moral issues.

Because the educational levels of the population have increased, we would not be surprised to find an increase in support for the civil liberties of homosexuals. Since the 1970s, Americans have grown more willing to support the rights of homosexuals to give a speech, teach at a college, and write a book kept in the public library (Loftus, 2001; Smith, 1994). The growing support for the civil liberties of homosexuals substantially predates the decline in disapproval of same-sex relations, however (Treas, 2002). Thus, there is nothing to assure that respect for a group's civil liberties will result in immediate acceptance of the group. Loftus (2001), for example, found that individuals interviewed for the GSS distinguished between the morality of homosexuals and the civil liberties of homosexuals. Nonetheless, the increased willingness to extend basic legal protections to homosexuals suggests a fertile ground for attitude change, once homosexuality was framed not as a matter of permissive sexual conduct, but rather in terms of hate crimes, housing discrimination, and other civil rights themes. Thus, we hypothesize that support for civil liberties accounts for the negative association of education and disapproval of same-sex relations.

2.2. Education and cognitive reasoning

A second hypothesis attributes the positive association of education and tolerance of homosexuality to the greater cognitive sophistication of those with more schooling. As John Dewey recognized (1916), education not only teaches fundamental information, but also imparts new ways of interpreting information as well as the motivation and capacity for life-long learning (Hyman et al., 1975). Cognitive skills are improved through the school learning process (Jackman and Muha, 1984; Nunn et al., 1978). Noteworthy are the more liberalizing influences at the higher, postsecondary levels of education (Himmelstein and McRae, 1988).

After an extensive review of prior studies, [Bowen \(1977\)](#) concluded that college had moderately positive effects on verbal skills, intellectual tolerance, and life-long learning, as well as having smaller positive impacts on creativity and rationality. More recently, controlling for background characteristics, a positive association was found between education and a general cognitive skill measure based on quantitative analysis, comprehension of prose passages, and interpretation of documents ([Kerckhoff et al., 2001](#)). A positive association has also been confirmed for years of school completed and vocabulary scores, controlling for parental status, childhood residence, and family size ([Alwin, 1991](#)). The beneficial effect of education on adult verbal ability, however, has declined for recent cohorts ([Weakliem et al., 1995](#)).

[Stouffer \(1955\)](#) credited education's effect on support for civil liberties, in part, to cognitive flexibility, such as the ability to tolerate ambiguities and draw fine distinctions. He found that the less-educated were more prone to rigid categorizations (e.g., classifying people as being either weak or strong). Rigid categorizers, he discovered, were less tolerant of communists. Examining attitudes during the AIDS crisis, [Sniderman et al. \(1991\)](#) also found evidence for the cognitive flexibility of people with more schooling. They concluded that better-educated people had more information and were less homophobic. Their judgments were not mediated by irrational anxieties. Even when the better-educated did hold homophobic attitudes, they were apparently more successful in decoupling their biases from their judgments on the legal protections that should be afforded people with AIDS. In short, their reasoning was more rational, nuanced, and more accepting of ambiguities and inconsistencies.

[Bobo and Licari \(1989\)](#) identified cognitive sophistication as the mediating link between greater education and greater tolerance. Specifically, they reported that those with higher scores on a vocabulary test showed greater support for the civil liberties of members of out-groups, such as communists and homosexuals. They argued that tolerance reflects the quality of the reasoning process, enabling individuals to better evaluate new ideas, and thus promoting acceptance of nonconformity. That is, people acquire "conceptual complexity and sophistication" with higher levels of education ([Bobo and Licari, 1989, p. 290](#)).

Of course, the association of schooling and cognitive ability reflects not only the effects of education on knowledge and reasoning, but also the recruitment and retention of more able students into higher levels of education ([Wolffe, 1980](#)). Even controlling for the effect of childhood IQ on educational attainment, however, education has been shown to have a direct effect on adult IQ which, in turn, serves as the major conduit for educational effects on vocabulary ([Wolffe, 1980](#)). Thus, research establishing the association of education and cognitive sophistication, together with studies linking cognitive reasoning ability to tolerance, lead us to hypothesize that cognitive sophistication accounts for the negative association of education and disapproval of same-sex relations.

2.3. Education and early influences on postmaterialist values

[Inglehart \(1985\)](#) challenges the idea that education profoundly influences attitudes and values. He argues that the association of education and permissive values is a

spurious one, because a childhood in an affluent household leads both to greater educational attainment (Filmer and Pritchett, 1999) and to “postmaterialist” value orientations as an adult (Inglehart, 1985). The positive association of parental background and educational attainment has long been established (Blau and Duncan, 1967; Sewell, 1971; Sewell et al., 1969). This association reflects, in part, the fact that high-income parents are better able and more willing to pay for college (Steelman and Powell, 1991). Holding high expectations for their children’s schooling, parents with high socio-economic status also encourage high educational aspirations in their offspring (Sewell and Shah, 1968). Parental affluence has implications for other attitudes and values as well.

Early experiences in the parental home have lasting effects, because they mold basic personality and fundamental values (Inglehart, 1997). Due to the subjective sense of material security that well-off families can provide, children raised in affluent families grow up to be adults who place greater emphasis on higher-order needs, such as self-expression and quality of lifestyle (Inglehart, 1990, 1997; Maslow, 1954; Sullivan et al., 1982). Embracing this postmaterialist orientation, people are more likely to support social change and to be liberal in their political views, while rejecting traditional notions of family, gender, and sexual roles (Abramson and Inglehart, 1995).

Indeed, Inglehart’s (1990, p.182) research identifies an “inviolability of the family and childbearing” factor based on sexual attitudes regarding abortion, adultery, prostitution, and homosexuality. Liberal sexual attitudes are evidence of postmaterialist values supportive of the gratification of high-order needs. Specifically, postmaterialists are less likely than materialists to believe that homosexuality can never be justified (Inglehart, 1990). If the relationship between greater education and liberal values is the artifact of the income of the parental home, we hypothesize that there will be no association between education and attitudes toward homosexuality, net of family income experienced during a respondent’s youth.

3. Data and methods

To investigate the relationship between education and disapproval of same-sex relations, we use the GSS, the nationally representative, household survey conducted nearly annually by NORC. Our analysis pools data from the 1988–1994 surveys, the survey years that contained items measuring concepts for all the key independent variables. Given the design of the GSS, not all variables are available in all years nor are they available for all respondents in a given year (Davis and Smith, 1992). Due to this design, we omitted cases missing on the dependent variable, attitude toward same-sex relations, as well as on two independent variables (measurements of cognitive sophistication and the precursor to the postmaterialist values). Thus, the effective sample size for our analysis is 2733. Missing data, amounting to no more than 6% for any variable, were not a major concern for this sample. For nonresponses on both dependent and independent variables, we imputed mean values. Comparisons with case-wise deletion showed no substantive differences in results.

The dependent variable is based on an item that reads: “What about sexual relations between two adults of the same sex—do you think it is always wrong, almost

always wrong, wrong only sometimes, or not wrong at all?” Because the overwhelming majority of respondents chose the “always wrong” response, we recode the data into a dummy variable where “always wrong” equals “1” and else “0.”

The independent variables of theoretical interest include education and measures of support for civil liberties, cognitive sophistication, and the precursor to postmaterialist values. *Education* is measured by the highest degree attained (less than high school, high school, associate/junior college, bachelor, and graduate). Emphasizing distinctions at the upper levels of education, this measure takes account of more liberalizing influences at the higher levels of schooling (Himmelstein and McRae, 1988). We treat educational degree as an interval variable after analyses with each value coded as a dummy variable yielded comparable results. Although the “years of schooling completed” variable was also evaluated, there were no differences in the direction or significance level of coefficients.

A summated *civil liberties* scale was constructed from the scores for 12 items on support for the rights of members of various out-groups (communists, racists, militarists, and atheists) to speak in public, teach at a college, or have a book in a public library. The summated scale ranges from “0,” indicating the respondent favored restrictions on all the civil liberties items, to “12,” indicating the respondent supported the rights of nonconformists on all items. The Cronbach’s α for this scale, 0.89, demonstrates a high degree of internal consistency, thus suggesting that all items measure the same concept. Following Bobo and Licari (1989), *cognitive sophistication* is measured by a summated scale of correct answers on a 10-item vocabulary test. A verbal factor is widely recognized to be one important component underpinning general measures of intelligence and cognitive ability (Bowen, 1977; Chan et al., 1997; Eley et al., 2001; Guenole et al., 2003; Hyman et al., 1975; Plomin et al., 2002; Thorndike and Gallup, 1944; Wechsler, 1958, 1981; Wolfe, 1980; Wonderlic, 1983). To measure a formative *precursor of postmaterialist values* (Inglehart, 1985), we consider relative family income, compared to American families in general, when the respondent was 16 (i.e., far below average, below average, average, above average, or far above average). We evaluated other potential mediators in preliminary analyses, such as media exposure (newspapers and television), but these variables were found to be unrelated to education and tolerance.

The analysis incorporates control variables known to be associated with sexual attitudes (Harding, 1988; Laumann et al., 1994; Loftus, 2001; Smith, 1994). Survey year takes account of the secular trend of declining disapproval (Treas, 2002). Gender has been found to be associated with a number of sexual attitudes (Oliver and Hyde, 1993). Because women are more tolerant of homosexuality than are men (Scott, 1998), we include a gender variable, coded “1” for male and “0” for female. Younger people are also more tolerant of homosexuality (Inglehart, 1990; Treas, 2002). Age is included as a control variable after preliminary analyses determined that there was no statistically significant nonlinearity in its relationship with attitudes toward same-sex relations. African-Americans are more disapproving of same-sex relations (Bonilla and Porter, 1990; Lewis, 2003; Smith, 1994) as well as of other controversial social matters (Combs and Welch, 1982; Cook et al., 1992; Secret, 1987; Wilcox, 1990). The GSS distinguishes only white, black and “other” races. As other races made up only

four percent of the sample and resembled whites in their attitudes toward homosexual sex, we recoded the race variable to black equals “1” and nonblack equals “0.” For marital status, we distinguish the widowed and married, as well as the divorced and separated, from the never married, who are known to be more approving of homosexuality (Smith, 1994), in part, because homosexuals are over-represented in this category (Smith, 1991). Religious behavior and affiliation are associated with tolerance (Beatty and Walter, 1984; Jelen, 1982; Lenski, 1963; Nunn et al., 1978; Smidt and Penning, 1982; Stouffer, 1955; Wilcox and Jelen, 1990) and attitudes toward homosexuality (Greenberg and Bystry, 1982; Smith, 1994). In fact, Scott (1998) suggests that religiosity in the US offsets some of the liberalizing effects of education on sexual attitudes. Religiosity is measured by frequency of attendance at religious services. In addition, denominational beliefs influence individual attitudes. Conservative Protestants are less tolerant of homosexuals than are members of other religious groups (Woodberry and Smith, 1998). If a respondent is affiliated with a conservative religious denomination, this person is coded as “1” on the fundamentalism variable and else coded as “0.” Because support for civil liberties is associated with political views (Cohen and Liebman, 1997; Cook et al., 1992; Ellison and Musick, 1993; Guth and Green, 1991; McClosky and Brill, 1983; Stouffer, 1955), we control for liberal-conservative orientation to avoid confounding the relationship with homosexual attitudes. In light of regional differences in sexual attitudes, such as the greater social conservatism of the Southern US (Abrahamson and Carter, 1986; Ellison and Musick, 1993; Jelen, 1982; Laumann et al., 1994; Middleton, 1976; Nunn et al., 1978), we consider dummy variables for the West, North, and Central states in contrast to the omitted region of the South. Because residents in nonmetropolitan areas are also more conservative on sexual issues (Smith, 1994), a dummy variable identifies respondents in rural areas. The descriptive statistics for all variables are provided in Table 1.

Logistic regression is used because the dependent variable, strong disapproval of homosexual sex, is dichotomous. Because we constrain the disapproval variable by 0 and 1 values, the resulting parameter estimates (exponentiated betas) are interpreted as odds ratios (Allison, 1999). These values are reported in the tables. We interpret the results in the text by converting the exponentiated beta into a percentage change in the odds of disapproval per one-unit change in the independent variable. This is done by subtracting one from the coefficient and multiplying the difference by 100 (Pampel, 2000). The models presented, each reflecting the successive addition of independent variables, predict disapproval of homosexual sex and evaluate the different relationships suggested by the theoretical discussion.

4. Results

4.1. Educational differences in attitudes toward homosexual relations

Moral judgments about homosexuality are sharply influenced by educational attainment. As Fig. 1 demonstrates, the percent strongly disapproving of same-sex relations is twice as great among Americans who did not finish high school as among

Table 1
Descriptive statistics ($n = 2733$)

Variable	Values	Mean	SD
<i>Dependent variable</i>			
What about sexual relations between two adults of the same sex—do you think it is always wrong, almost always wrong, wrong only sometimes, or not wrong at all?	Always wrong = 1, else = 0	0.75	0.43
<i>Independent variables</i>			
Highest degree of education	Less than high school = 0 to graduate school = 4	1.33	1.15
<i>Civil liberties:</i>			
Restrict rights of communists, racists, militarists, atheists to speak in public, teach at a college, and have book in a public library	Supports all restrictions = 0 to opposes all restrictions = 12	7.24	3.87
<i>Cognitive sophistication:</i>			
Number words correct on vocabulary test	None = 0 to all = 10	6.02	2.05
<i>Postmaterialist value precursor:</i>			
Relative income at age 16	Far below average = 1 to far above average = 5	2.82	0.86
<i>Control variables</i>			
Survey year	1988–1994 coded as 0–6	2.60	1.98
Gender	Male = 1, female = 0	0.43	0.49
Age	18–89 years	45.80	17.96
Race	Black = 1, nonblack = 0	0.12	0.32
Marital status	Divorced and separated = 1, else = 0 Never married = 1, else = 0	0.15 0.20	0.36 0.40
Frequency of attending religious services	Never = 0 to more than once a week = 8	3.92	2.68
Fundamentalist denomination	Fundamentalist = 1, moderate or liberal = 0	0.33	0.47
Region of interview	West = 1, other = 0 North = 1, other = 0 Central = 1, other = 0	0.19 0.19 0.26	0.40 0.39 0.44
Political orientation	Extremely liberal = 1 to extremely conservative = 7	4.06	1.34
Place of interview	Rural = 1, suburban and urban = 0	0.13	0.33

those who earned an advanced graduate degree. In the most recent year, 2002, the percent strongly disapproving was 77% for less than high school, 58% for high school graduates, 49% for those with some college, 41% for those finishing college, and 32% for those who went on to graduate degrees. These educational disparities are evident throughout the period.

From time to time, the GSS has asked other questions about attitudes regarding homosexuals. As Table 2 shows, these items also reveal that better-educated Americans are more tolerant than their less-educated counterparts. The educational differences for each item demonstrate a high level of statistical significance. Questions from the 1994 GSS, for example, show that respondents with Bachelor or advanced

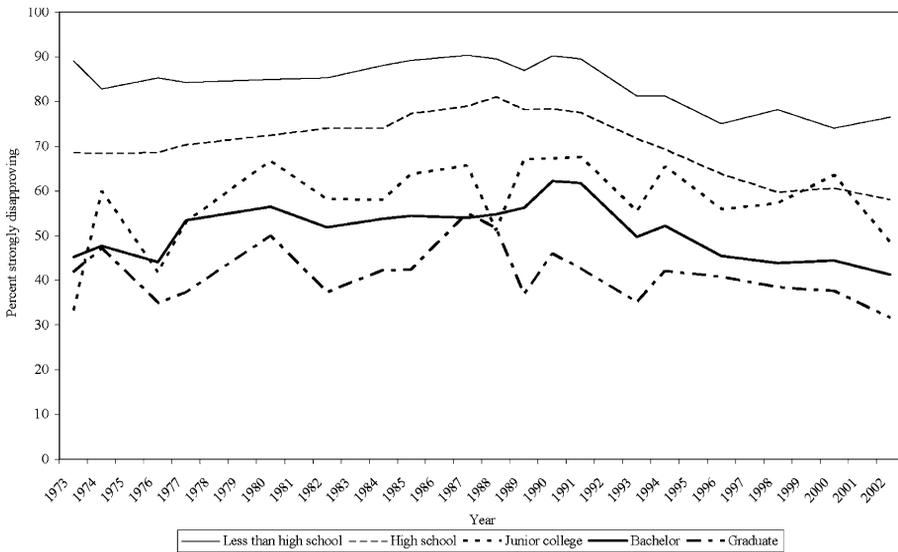


Fig. 1. Educational differences in disapproval of homosexual sex, 1973–2002.

graduate degrees are more likely than people with less schooling to see homosexuality not as a choice, but rather as something that individuals cannot change. Those with more education are also more supportive of extending a host of rights and protections to gays and lesbians. Those with more schooling are more likely to endorse the rights of a homosexual to make a speech, to teach at a college, or to have the public library keep a book he or she wrote in favor of homosexuality. They are less likely to believe that the government “definitely should” have the right to question people about their sexual orientations before giving them a security clearance. In 1988, respondents with more schooling were less likely to strongly disagree with permitting homosexual couples to marry. Although relatively few Americans in 1982 were prepared to exempt homosexuals from the military draft, those who had not finished high school were the most likely to endorse this policy. In short, the positive association of education and tolerance toward homosexuals is very robust, persisting across time and across different attitudinal items.

4.2. Explaining the association between education and disapproval of homosexual relations

Using logistic regression on pooled data from 1988 to 1994, we evaluated three explanations for the persistently positive association between education and disapproval of homosexual sex. Table 3 presents the results. As a first step, we estimated Model 1, the impact of education on disapproval. Each additional educational degree earned decreases the odds of disapproval of same-sex relations by about 39% (calculated, using the coefficient in the table, as $(0.613-1) * 100 = 39\%$). We are interested in whether the magnitude of this education coefficient ($\exp(\beta) = 0.613$) is reduced

Table 2
Attitudes toward homosexuals by educational degree

Question (year)	Highest degree of education					χ^2 <i>p</i> value
	Less than high school	High school	Junior college	Bachelor	Graduate school	
Do you think being homosexual is something people choose to be, or do you think it is something they cannot change? (1994)						
% “choose to be”	53.4	50.9	50.0	43.8	19.6	
<i>n</i>	131	454	38	135	56	.0002
Before giving an individual a secret or top secret clearance, the government should have the right to ask him or her detailed personal questions in the following areas: sexual orientation (1994)						
% “definitely should”	35.5	29.9	30.6	26.2	21.4	
<i>n</i>	217	773	72	252	103	.0089
Suppose an admitted homosexual wanted to make a speech in your community. Should he be allowed to speak, or not? (1994)						
% “not allowed to speak”	36.9	18.5	15.7	8.7	4.4	
<i>n</i>	317	1048	115	322	136	<.0001
Should a homosexual be allowed to teach in a college or university, or not? (1994)						
% “not allowed to teach”	49.1	27.2	17.9	14.6	11.7	
<i>n</i>	318	1045	112	316	137	<.0001
If some people in your community suggested that a book he wrote in favor of homosexuality should be taken out of your public library, would you favor removing this book, or not? (1994)						
% “favor removing this book”	51.1	29.1	25.9	15.7	12.5	
<i>n</i>	315	1044	112	319	135	<.0001
Homosexual couples should have the right to marry one another (1988)						
% “strongly disagree”	54.2	48.6	38.6	35.2	34.6	
<i>n</i>	312	692	57	165	81	<.0001
Should homosexuals be exempted from a military draft? (1982)						
% “yes, exempt”	22.0	16.7	17.1	8.1	14.8	
<i>n</i>	533	892	70	160	69	.0013

significantly with the addition of other variables hypothesized to account for the effect of education.

When control variables were added in Model 2, the influence of education was virtually unchanged. Controlling for time, gender, age, race, marital status, religiosity,

Table 3

Logistic regression (exponentiated beta) coefficients predicting disapproval of homosexual sex ($n = 2733$)

Independent variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Education (degree)	0.613***	0.600***	0.690***	0.690***	0.594***	0.742***
Controls						
Year		0.900***	0.908***	0.898***	0.899***	0.905***
Male		1.584***	1.718***	1.542***	1.584***	1.672***
Age		1.013***	1.008*	1.017***	1.014***	1.011***
Black		2.027***	1.753**	1.822**	2.056**	1.683**
Divorced/separated		0.681**	0.729*	0.690**	0.680**	0.733**
Never married		0.734*	0.724*	0.732**	0.727**	0.712**
Religious attendance		1.182***	1.162***	1.182***	1.182***	1.164***
Fundamentalist		1.640***	1.510**	1.532***	1.648***	1.462***
Political views		1.483***	1.445***	1.489	1.484***	1.454***
West		0.626**	0.682**	0.654**	0.626**	0.696**
North		0.619***	0.625**	0.640**	0.619**	0.634**
Central		0.803	0.840	0.827	0.803	0.853
Rural		1.960***	1.880***	1.848***	1.971***	1.820***
Civil liberties						
Civil liberties scale			0.854***			0.869***
Cognitive sophistication						
Vocabulary				0.823***		0.873***
Postmaterialist value precursors						
Family income at age 16					1.061	1.094
-2 Log likelihood	2914.3	2474.5	2379.0	2430.3	2473.6	2357.8
DF	1	12	15	15	15	17
Max-rescaled R^2	0.091	0.297	0.314	0.316	0.298	0.347

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

political views, region of the country, and rural residence, each additional educational degree corresponded to a 40% ($\exp(\beta) = 0.600$) decrease in the odds of disapproval. The results for the control variables are consistent with prior studies. Disapproval is negatively associated with survey year. That is, the odds of disapproval decreased by about 10% per year from 1988 to 1994. Individuals living in the West and North, but not the Central region of US, are significantly less disapproving than those in the South. Consistent with prior studies, more disapproving were males, older respondents, blacks, married and widowed persons, those attending religious services more frequently, those affiliated with fundamentalist denominations, those with more conservative political views, and those living in rural areas.

Does greater education promote tolerance of homosexual sex by teaching tolerance or support of nonconformity? The coefficient for the support for civil liberties is strong (Model 3). The more supportive of the civil liberties of nonconformists, the less likely a respondent is to disapprove of homosexual relations. In Model 3, support of the civil liberties of out-groups is associated with the reduction in the odds of

disapproval of homosexual sex by 15% ($\exp(\beta) = 0.854$). A comparison of Models 2 and 3 also shows that controlling for the respondent's support for civil liberties reduces the effect of education on the odds of homosexual disapproval.

Does greater education foster tolerance of homosexual sex by promoting greater cognitive sophistication and complexity of reasoning processes, thus enabling individuals to better evaluate new ideas? The results suggest the answer is yes. The more words correctly identified on the vocabulary test, the less disapproving respondents were of homosexual sex (Model 4). For each additional word correct, there is an 18% decline in the odds of disapproval ($\exp(\beta) = 0.823$). Furthermore, vocabulary explains part of the negative association between education and disapproval. Comparing Models 2 and 4 shows a reduction in the coefficient for education.

Is the observed relationship between education and attitudes only a spurious association? Does an affluent childhood home lead to both greater educational attainment and postmaterialist values sympathetic to homosexuality? Although tolerance of homosexuality has been identified as an indicator of postmaterialist values, Model 5 shows that the association between relative family income at age 16 and disapproval of same-sex relations is low and statistically insignificant at the .05 level. The respondent's relative family income at age 16 does not account for the observed association between education and attitudes toward same-sex relations. Moreover, the inclusion of this variable has little or no effect on the coefficient for education.

Model 6 includes all the variables. Both civil liberties and cognitive sophistication are negatively and significantly associated with disapproval of homosexuality, but family income at age 16 remains statistically insignificant. Even with the inclusion of all variables, education continues to have a strong and significant effect. To infer how the effect of education on tolerance of homosexual sex depends on the magnitude of each of the control variables, we also estimated the effects of interaction terms. The inclusion of the interactions of education with survey year, gender, age, race, divorced or separated status, religiosity, region of the US, and rural residence in separate versions of Model 6 did not change the statistical significance of the main effect coefficients or their direction. Only two interactions were statistically significant, the interaction of education with the never married and with political views. These models are not included in the paper, but are available upon request.

We test for statistically significant differences in the coefficient for education between the different models. The purpose is to learn whether the addition of explanatory variables significantly changes the coefficient for education. Following [Schenker and Gentleman \(2001\)](#), we employ a standard method of testing statistical significance at the 0.05 level. By this method, the addition of the civil liberties scale (comparison of Models 2 and 3), the addition of vocabulary (comparison of Models 2 and 4), and the addition of all three independent variables (comparison of Models 2 and 6) produce statistically significant changes in the education coefficient. This is not surprising, however, as there are noteworthy changes in the magnitude of the exponentiated betas between these models. Also, as expected, the addition of the postmaterialist value precursor (comparison of Models 2 and 5) produces no statistically significant change in the coefficient for education.

5. Discussion

As the heated debate over the legality and morality of gay marriage draws attention once again to divided opinions about same-sex relations, it becomes even more important to understand the sources of tolerance and intolerance, approval and disapproval. This paper has established that educational differences constitute one major divide in American attitudes about homosexual relations. These educational differences are extremely robust. They persist across decades of public opinion surveys. They are evident whether the question concerns the roots of homosexuality, the rights of homosexuals, or the rightness of same-sex sexual relations. The inescapable conclusion is that better-educated Americans are more tolerant of homosexuality than are their less-educated counterparts.

We show that this relation is not an artifact of affluence, as Inglehart (1985) speculated. The association of education and tolerance does not arise merely because material security permits greater educational attainment *and* fosters the postmaterialist values consistent with individual self-expression. Controlling for the perceived affluence of the parental home at age 16 neither eliminates nor reduces the negative effect of schooling on disapproval of same-sex relations. In fact, the parental income variable does not even prove to be a statistically significant influence on attitudes. Thus, the relationship between education and attitudes is not a spurious one although questions remain about how education gives rise to tolerance of homosexuality. We hypothesized that education diminished disapproval of homosexual relations by increasing support for the civil liberties of others, even members of unconventional or unpopular groups. Our measure of support for civil liberties is significantly associated with attitudes toward same-sex relations. Furthermore, including the civil liberties scale in the model results in a noteworthy reduction in education's negative effect on disapproval of homosexual relations. The same may be said for cognitive sophistication. Persons who tested better on vocabulary were significantly less disapproving of homosexuality. Net of other variables, cognitive sophistication also reduced the magnitude of the education effect. Although the reduction resulting from controls for cognitive sophistication is similar to that for civil liberties, the effects of the two variables are not redundant. When both civil liberties and cognitive sophistication are included in the model for disapproval, they are both statistically significant, and their additive effect on reducing the education coefficient is larger than the effect of either variable alone.

In short, the liberalizing effect of education on attitudes toward homosexual relations is due, in part, to education's association with support for civil liberties and, in part, to schooling's relationship with cognitive sophistication. Although these variables reduce the coefficient for education, they do not fully account for education's liberalizing effect. Greater education depresses disapproval of same-sex relations even when civil liberties, cognitive sophistication, and other variables are controlled. Like Kinsey colleagues (1948), our understanding of educational differences in attitudes toward homosexuality is still uncertain.

To be sure, other variables may mediate the relationship between education and attitudes toward homosexuality. For example, the college-educated may have social

networks or information sources that expose them to new ideas that are not readily available to those with less schooling. In preliminary analyses, we explored the possibility that differences in the frequency of television watching or newspaper reading might distinguish educational groups. Although these relationships were not statistically significant, educational differences in *what* people watch or read may influence their opinions (Hyman et al., 1975). In addition, a 10-item vocabulary score can address only one part of the broader concept of cognitive sophistication (Glenn, 1994). The effect of higher education is more impressive since students in technical fields may have relatively little explicit exposure to civil liberties concepts. A social science major in college is related to students' more liberal attitudes (Feldman and Newcomb, 1969; Guimond, 1999; Guimond and Palmer, 1990). College major, however, was only available for 1994, and we did not include it in the analyses. The quality of the university may also be related to liberal attitudes (Knoke and Isaac, 1976). Were the data available for a fuller analysis, one might ask whether educational effects on attitudes toward homosexuals occur because those with more schooling engage in more rational thinking, that is, thinking logically, objectively, and critically to distinguish factual information from ideology, emotion, or cultural biases (Bowen, 1977). Following Kohn and Schooler (1978), one might explore how education leads to jobs that promote cognitive flexibility. Another potential explanation for the more permissive attitudes toward homosexual relations found among the greater educated is the exposure to more liberal environments afforded by university campuses compared to other US establishments. University students are more likely to have in a positive role someone who is homosexual, such as a professor or a fellow student, compared to those who have not attended college. Unfortunately, a measure of the amount of contact with gays or lesbians is unavailable in the GSS.

Besides dismissing the argument that the education–attitude relationship is the spurious artifact of parental affluence or deprivation, this paper has identified two of the mechanisms by which education operates to promote tolerance of homosexuality. By demonstrating the importance of civil liberties, the paper suggests one source of the recent, revolutionary decline in disapproval of same-sex relations. Our findings underscore the potential efficacy of advocacy efforts that frame homosexuality as a matter of civil rights, rather than sexual morality. Successful policy initiatives to gain civil protections in areas such as employment, housing, and domestic life demonstrate the resonance of this strategy. Particularly when rising educational attainments predispose a larger proportion of the population to appeals based on civil liberties, rights discourse is an effective lever to move public opinion on gay and lesbian issues.

References

- Abrahamson, M., Carter, V.J., 1986. Tolerance, urbanism, and region. *American Sociological Review* 51, 287–294.
- Abramson, P.R., Inglehart, R., 1995. *Value Change in Global Perspective*. Michigan University Press, Ann Arbor, Michigan.
- Allison, P.D., 1999. *Multiple Regression: A Primer*. Pine Forge Press, Thousand Oaks, California.

- Alwin, D., 1990. Cohort replacement and changes in parental socialization values. *Journal of Marriage and the Family* 52, 347–360.
- Alwin, D., 1991. Family of origin and cohort differences in verbal ability. *American Sociological Review* 56, 525–638.
- Alwin, D.F., Cohen, R.L., Newcomb, T.M., 1991. *Political Attitudes over the Life Span: The Bennington Women After 50 Years*. University of Wisconsin Press, Madison, Wisconsin.
- Astin, A.W., 1977. *Four Critical Years*. Jossey-Bass, San Francisco.
- Ballantine, J.H., 1989. *The Sociology of Education: A Systematic Analysis*, second ed. Prentice Hall, Englewood Cliffs, New Jersey.
- Beatty, K., Walter, O., 1984. Religious preference and practice: reevaluating their impact on political tolerance. *Public Opinion Quarterly* 48, 318–329.
- Bennett, L., 2000. Fifty years of prejudice in the media. *Gay & Lesbian Review Worldwide* 7 (2), 30–35.
- Blau, P., Duncan, O.D., 1967. *The American Occupational Structure*. Wiley and Sons, New York.
- Bobo, L., Licari, F.C., 1989. Educational and political tolerance: testing the effects of cognitive sophistication and target group affect. *Public Opinion Quarterly* 53 (3), 285–308.
- Bonilla, L., Porter, J., 1990. A comparison of Latino, Black, and Non-Hispanic White attitudes toward homosexuality. *Hispanic Journal of Behavioral Sciences* 12, 437–452.
- Boocock, S.S., 1973. The school as a social environment for learning: social organization and micro-social process in education. *Sociology of Education* 46 (1), 15–50.
- Bowen, H.R., 1977. *Investment in Learning: The Individual and Social Value of American Higher Education*. Jossey-Bass, San Francisco, California.
- Broudy, H.S., 1987. *Becoming Educated in Contemporary America*. University of Chicago Press, Chicago, Illinois.
- Chan, D., Schmitt, N., DeShon, R.P., Clause, C., Delbridge, K., 1997. Reactions to cognitive ability tests: the relationships between race, test performance, face validity perceptions, and test-taking motivation. *Journal of Applied Psychology* 82, 300–310.
- Chickering, A.W., 1970. Civil liberties and the experience of college. *The Journal of Higher Education* 41 (8), 599–606.
- Chong, D., 1993. How people think, reason, and feel about rights and liberties. *American Journal of Political Science* 37 (3), 867–899.
- Clark, B.R., 1962. *Educating the Expert Society*. Chandler Publishing Company, San Francisco.
- Cohen, S.M., Liebman, C.S., 1997. American Jewish liberalism: unraveling the strands. *Public Opinion Quarterly* 61 (3), 405–430.
- Combs, M.W., Welch, S., 1982. Blacks, whites, and attitudes toward abortion. *Public Opinion Quarterly* 46 (4), 510–520.
- Cook, E.A., Jelen, T.G., Wilcox, C., 1992. *Between Two Absolutes*. Public Opinion and the Politics of Abortion. Westview Press Inc., Boulder, Colorado.
- Davis, J.A., 1975. Communism, conformity, cohorts, and categories: American tolerance in 1954 and 1972–73. *American Journal of Sociology* 81, 491–513.
- Davis, J.A., Smith, T.W., 1992. *The NORC General Social Survey. A User's Guide*. Sage Publications Inc., Newbury Park, California.
- Dejowski, E.F., 1992. Public endorsement of restrictions on three aspects of free expression by homosexuals: socio-demographic and trends analysis 1973–1988. *Journal of Homosexuality* 23 (4), 1–18.
- Dewey, J., 1916. *Democracy and Education: An Introduction to the Philosophy of Education*. Macmillan, New York.
- Dohrenwend, B.P., Chin-Shong, E., 1967. Social status and attitudes toward psychological disorder: the problem of tolerance and deviance. *American Sociological Review* 32 (3), 417–433.
- Dreeben, R., 1968. *On What Is Learned in School*. Addison-Wesley Publishing Company, Reading, Massachusetts.
- Eley, T.C., Dale, P.S., Bishop, D.V., Price, T.S., Plomin, R., 2001. Longitudinal analysis of components of cognitive delay: examining the aetiology of verbal and performance aspects of cognitive delay. *Journal of Educational Psychology* 93, 698–707.
- Ellison, C.G., Musick, M.A., 1993. Southern intolerance: a fundamentalist effect?. *Social Forces* 72 (2), 379–398.

- Feldman, K.A., 1969. Studying the impacts of colleges on students. *Sociology of Education* 42 (3), 207–237.
- Feldman, K.A., Newcomb, T.M., 1969. *The Impact of College on Students*. Jossey-Bass, San Francisco, California.
- Filmer, D., Pritchett, L., 1999. The effect of household wealth on educational attainment: evidence from 35 countries. *Population and Development Review* 25 (1), 85–120.
- Finney, H.C., 1974. Political dimensions of college impact on civil-libertarianism and the integration of political perspective: a longitudinal analysis. *Sociology of Education* 47 (2), 214–250.
- Funk, R.B., Willits, F.K., 1987. College attendance and attitude change: a panel study, 1970–81. *Sociology of Education* 60 (4), 224–231.
- Gaasholt, O., Togeby, L., 1995. Interethnic tolerance, education, and political orientation: evidence from Denmark. *Political Behavior* 17 (3), 265–285.
- Gamble, B.S., 1997. Putting civil rights to a popular vote. *American Journal of Political Science* 41 (1), 245–269.
- Gibson, J.L., Tedin, K.L., 1988. Etiology of intolerance of homosexual politics. *Social Science Quarterly* 69, 587–604.
- Glenn, N.D., 1994. Television watching, newspaper reading, and cohort differences in verbal ability. *Sociology of Education* 67 (3), 216–230.
- Glenn, N.D., Weaver, C.N., 1979. Attitudes toward premarital, extra-marital, and homosexual relations in the United States in the 1970's. *Journal of Sex Research* 15, 108–118.
- Golebiowska, E.A., 1995. Individual value priorities, education, and political tolerance. *Political Behavior* 17 (1), 23–48.
- Goslin, D.A., 1965. *The School in Contemporary Society*. Scott Foresman & Company, Glenview, Illinois.
- Greenberg, D.F., Bystry, M.H., 1982. Christian intolerance of homosexuality. *American Journal of Sociology* 88 (3), 515–548.
- Guenole, N., Englert, P., Taylor, P.J., 2003. Ethnic group differences in cognitive ability test scores within a New Zealand applicant sample. *New Zealand Journal of Psychology* 32 (1), 49–54.
- Guimond, S., 1999. Attitude change during college: normative or informational social influence? *Social Psychology of Education* 2, 237–261.
- Guimond, S., Palmer, D.L., 1990. Type of academic training and causal attributions for social problems. *European Journal of Social Psychology* 20, 61–75.
- Guth, J.L., Green, J.C., 1991. An ideology of rights: support for civil liberties among political activists. *Political Behavior* 13 (4), 321–344.
- Haider-Markel, D.P., Meier, K.J., 1996. The politics of gay and lesbian rights: expanding the scope of the conflict. *The Journal of Politics* 58 (2), 332–349.
- Harding, S., 1988. Trends in permissiveness. In: Jowell, Roger, Witherspoon, Sharon, Brook, Lindsay (Eds.), *British Social Attitudes: The 5th Report*. Gower Publishing Company, Aldershot, England.
- Herek, G.M., 1984. Beyond “homophobia”: a social psychological perspective on attitudes toward lesbians and gay men. *Journal of Homosexuality* 10 (1–2), 1–21.
- Herek, G.M., Capitano, J.P., 1995. Black heterosexuals' attitudes toward lesbians and gay men in the United States. *Journal of Sex Research* 32, 95–105.
- Himmelman, J.L., McRae Jr., J.A., 1988. Social issues and socioeconomic status. *Public Opinion Quarterly* 52 (4), 492–512.
- Hyman, H.H., Wright, C.R., 1979. *Education's Lasting Influence on Values*. University of Chicago Press, Chicago.
- Hyman, H.H., Wright, C.R., Reed, J.S., 1975. *The Enduring Effects of Education*. University of Chicago Press, Chicago, Illinois.
- Inglehart, R., 1985. Aggregate stability and individual-level flux: the level of analysis paradox. *The American Political Science Review* 79, 97–116.
- Inglehart, R., 1990. *Culture Shift in Advanced Industrial Society*. Princeton University Press, Princeton, New Jersey.
- Inglehart, R., 1997. *Modernization and Postmodernization: Cultural, Economic and Political Change in 43 Societies*. Princeton University Press, Princeton, New Jersey.
- Inkeles, A., 1966. The modernization of man. In: Weiner, M. (Ed.), *Modernization*. Basic Books, New York, pp. 138–150.

- Jackman, M.R., Muha, M.J., 1984. Education and intergroup attitudes: moral enlightenment, superficial democratic commitment, or ideological refinement?. *American Sociological Review* 49, 751–769.
- Jelen, T.G., 1982. Sources of political intolerance: the case of the American south. In: Moreland, L.W., Baker, T.A., Steed, R.P. (Eds.), *Contemporary Southern Political Attitudes and Behavior*. Praeger, New York, pp. 73–91.
- Jenness, V., Grattet, R., 2001. *Making Hate a Crime: From Social Movement to Law Enforcement*. Russell Sage Foundation, New York.
- Jenssen, A.T., Engesbak, H., 1994. The many faces of education. Why are people with lower education more hostile towards immigrants than people with higher education?. *Scandinavian Journal of Educational Research* 38, 33–60.
- Jesilow, P., Meyer, J., 2001. The effect of police misconduct on public attitudes: a quasi-experiment. *Journal of Crime and Justice* 24, 109–121.
- Key Jr., V.O., 1961. *Public Opinion and American Democracy*. Alfred A. Knopf, New York.
- Kerckhoff, A.C., Raudenbush, S.W., Glennie, E., 2001. Education, cognitive skill, and labor force outcomes. *Sociology of Education* 74 (1), 1–24.
- Kinsey, A.C., Pomeroy, W.B., Martin, C.E., 1948. *Sexual Behavior in the Human Male*. W.B. Saunders Company, Philadelphia, Pennsylvania.
- Knoke, D., Isaac, L., 1976. Quality of higher education and sociopolitical attitudes. *Social Forces* 54 (3), 524–529.
- Kohn, M.L., Schooler, C., 1978. The reciprocal effects of the substantive complexity of work and intellectual flexibility: a longitudinal assessment. *American Journal of Sociology* 84, 24–52.
- Laumann, E.O., Gagnon, J.H., Michael, R.T., Michaels, S., 1994. *The Social Organization of Sexuality: Sexual Practices in the United States*. The University of Chicago Press, Chicago, Illinois.
- Lawrence, D.G., 1976. Procedural norms and tolerance: a reassessment. *American Political Science Review* 70, 80–100.
- Lenski, G., 1963. *The Religious Factor*. Doubleday, New York.
- Lerner, D., 1958. *The Passing of Traditional Society*. Free Press, New York.
- Lewis, G.B., 2003. Black-white differences in attitudes toward homosexuality and gay rights. *The Public Opinion Quarterly* 67 (1), 59–78.
- Loftus, J., 2001. America's liberalization in attitudes toward homosexuality, 1973 to 1998. *American Sociological Review* 66, 762–782.
- Maslow, A.H., 1954. *Motivation and Personality*. Harper, New York.
- McClosky, H., Brill, A., 1983. *Dimensions of Tolerance*. Russell Sage Foundation, New York.
- Middleton, R., 1976. Regional differences in prejudice. *American Sociological Review* 41, 94–117.
- Moustakas, C., 1967. Creativity and conformity in education. In: Mooney, R., Razik, T. (Eds.), *Explorations in Creativity*. Harper, New York, pp. 173–184.
- Nunn, C.Z., 1973. Support of civil liberties among college students. *Social Problems* 20 (3), 300–310.
- Nunn, C.Z., Crockett, H.J., Williams Jr., A.J., 1978. *Tolerance for Nonconformity*. Jossey-Bass, San Francisco.
- Oliver, M.B., Hyde, J.S., 1993. Gender differences in sexuality: a meta analysis. *Psychological Bulletin* 114, 29–51.
- Pampel, F.C., 2000. *Logistic Regression: A Primer*. Sage Publications Inc., Thousand Oaks, California.
- Pascarella, E.T., Terenzini, P.T., 1991. *How College Affects Students: Findings and Insights from Twenty Years of Research*. Jossey-Bass, San Francisco, California.
- Plomin, R., Price, T.S., Eley, T.C., Dale, P.S., Stevenson, J., 2002. Associations between behaviour problems and verbal and nonverbal cognitive abilities and disabilities in early childhood. *Journal of Child Psychology and Psychiatry and Allied Disciplines* 43 (5), 619–633.
- Rothstein, S.W., 1987. Schooling in mass society. *Urban Education* 22, 267–285.
- Schenker, N., Gentleman, J.F., 2001. On judging the significance of differences by examining the overlap between confidence intervals. *The American Statistician* 55 (3), 182–186.
- Scott, J., 1998. Changing attitudes to sexual morality: a cross-national comparison. *Sociology* 32, 815–845.
- Secret, P.E., 1987. The impact of region on racial differences in attitudes toward legal abortion. *Journal of Black Studies* 17 (3), 347–369.
- Selvin, H.C., Hagstrom, W.O., 1960. Determinants of support of civil liberties. *British Journal of Sociology* 11, 51–73.

- Sewell, W.H., 1971. Inequality of opportunity for higher education. *American Sociological Review* 36, 793–809.
- Sewell, W.H., Haller, A.O., Portes, A., 1969. The early educational and occupational attainment process. *American Sociological Review* 34, 82–92.
- Sewell, W.H., Shah, V.P., 1968. Social class, parental encouragement, and educational aspirations. *American Journal of Sociology* 73, 559–572.
- Smidt, C., Penning, J., 1982. Religious commitment, political conservatism, and political and social tolerance in the United States: a longitudinal analysis. *Sociological Analysis* 43, 231–246.
- Smith, T.W., 1991. Adult sexual behavior in 1989: number of partners, frequency of intercourse and risk of AIDS. *Family Planning Perspectives* 23, 102–107.
- Smith, T.W., 1994. Attitudes toward sexual permissiveness: trends, correlates, and behavioral connections. In: Rossi, A.S. (Ed.), *Sexuality Across the Life Course*. University of Chicago Press, Chicago, Illinois, pp. 63–97.
- Sniderman, P.M., Piazza, T., 1993. *The Scar of Race*. Harvard University Press, Cambridge, Massachusetts.
- Sniderman, P.M., Wolfinger, B.K., Mutz, D.C., Wiley, J.E., 1991. Values under pressure: AIDS and civil liberties. In: Sniderman, P.M., Brody, R.A., Tetlock, P.E. (Eds.), *Reasoning and Choice: Explorations in Political Psychology*. Cambridge University Press, Cambridge, pp. 31–57.
- Steelman, L.C., Powell, B., 1991. Sponsoring the next generation: parental willingness to pay for higher education. *American Journal of Sociology* 96, 1505–1529.
- Stouffer, S.A., 1955. *Communism, Conformity and Civil Liberties*. Doubleday, New York.
- Sullivan, J.L., Piereson, J.E., Marcus, G.E., 1982. *Political Tolerance and American Democracy*. University of Chicago Press, Chicago, Illinois.
- Thorndike, R.L., Gallup, G.H., 1944. Verbal intelligence of the American adult. *Journal of General Psychology* 30, 75–85.
- Treas, J., 2002. How cohorts, education, and ideology shaped a new sexual revolution: American attitudes toward nonmarital sex, 1972–1998. *Sociological Perspectives* 45 (3), 267–283.
- Treas, J., 2004. The family and the sexual revolution. In: Scott, J.L., Treas, J., Richards, M.P.M. (Eds.), *The Blackwell Companion to Sociology of Families*. Blackwell Publishers, Oxford, pp. 397–415.
- Waller, W., 1961[1932]. *The Sociology of Teaching*. Russell & Russell, New York.
- Warshay, L., 1962. Breadth of perspective. In: Rose, A. (Ed.), *Human Behavior and Social Processes*. Houghton Mifflin, Boston, Massachusetts, pp. 148–176.
- Weakliem, D., McQuillan, J., Schauer, T., 1995. Toward meritocracy? Changing social-class differences in intellectual ability. *Sociology of Education* 68, 271–286.
- Wechsler, D., 1958. *The Measurement and Appraisal of Adult Intelligence*, fourth ed. Williams and Wilkins, Baltimore.
- Wechsler, D., 1981. *Wechsler Adult Intelligence Scale—Revised*. Psychological Corporation, San Antonio, Texas.
- Widmer, E.D., Treas, J., Newcomb, R., 1999. Attitudes toward non-marital sex in 24 countries. *Journal of Sex Research* 35, 349–358.
- Wilcox, C., 1990. Race differences in abortion attitudes: some additional evidence. *Public Opinion Quarterly* 54, 248–255.
- Wilcox, C., Jelen, T.G., 1990. Evangelicals and political tolerance. *American Politics Quarterly* 18, 25–46.
- Williams Jr., J.A., Nunn, C.Z., St. Peter, L., 1976. Origins of tolerance: findings from a replication of Stouffer's communism, conformity, and civil liberties. *Social Forces* 55, 394–408.
- Wolffe, L.M., 1980. The enduring effects of education on verbal skills. *Sociology of Education* 53 (2), 104–114.
- Wonderlic, E.F., 1983. *Wonderlic Personnel Test Manual*. Wonderlic and Associates, Northfield, Illinois.
- Woodberry, R.D., Smith, C.S., 1998. Fundamentalism, et al.: conservative protestants in America. *Annual Review of Sociology* 24, 25–56.
- Yankelovich, D., 1974. *The New Morality: A Profile of American Youth in the 70's*. McGraw-Hill, New York.