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Losing confidence in medicine in an era of medical expansion?

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ABSTRACT

Has the expansion of the medical field inspired more or less confidence in medicine among the American public? This study investigates how confidence in medicine has changed over the past three decades, whether this trend is uniform across social groups and which aspects of medicine are most affected. Data are from repeated cross-sectional U.S. General Social Surveys spanning the years 1973–2008, including the 2002 Doctors and Patients Module and the 1998 Pressing Issues in Health and Medical Care Module. Americans' confidence in medicine has declined continuously over the past three decades, and the extent of this decline did not vary by gender, age group, cohort, or income level. Analysis of differences across socio-demographic groups suggests that confidence in medicine is related to trust in doctors' ethics but different from obedience to doctors' authority. Therefore, the downward trend in confidence in medicine may suggest a decline in public trust in doctors' ethics, but not necessarily a decline in obedience to doctors' authority.

1. Introduction

In the past 50 years, the U.S. has witnessed skyrocketing health care costs, explosive growth in the number of hospitals and health care centers, and a burgeoning medical workforce that has become increasingly specialized. Has the American lay public responded by becoming more or less confident in medicine? Prior studies have found that the percentage of Americans reporting little confidence in medicine has doubled from 4.5% in 1974 to 9.8% in 1994, even though this level of outright distrust in medicine has remained relatively low (Pescosolido et al., 2001; Tai-Seale and Pescosolido, 2003). It remains unclear how the level of high confidence in medicine has changed over time. Is medicine becoming universally distrusted, or is confidence in medicine becoming polarized, with fewer people taking the middle ground rather than one of the extremes? It is also unclear if the decline in confidence in medicine has varied by gender, age group, birth cohort, or levels of income and educational attainment. These questions reveal lingering uncertainty about the extent and implications of falling confidence in medicine.

Furthermore, it is unclear how confidence in medicine may be affected by attitudes towards physicians. A lack of confidence in medicine is related to negative attitudes towards physicians (Pescosolido et al., 2001), but it is unclear whether these negative attitudes are directed at doctors' authority or ethics. Authority refers to doctors' professional expertise and dominance in decisions in medical care. Ethics refers to doctors acting in a patient's best interests rather than driven by their own economic or political interests. Physicians have been the face of institutional medicine for many years, and their authority grew substantially during the "Golden Age of Doctoring," which lasted from the early 20th century to the 1970s (McKinlay and Marceau, 2002). Physicians defined and controlled health and illness to extend their professional dominance and attain cultural authority (Freidson, 1970a,b; Starr, 1982). This period ended with the introduction of managed care and

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the erosion of doctors' authority through deprofessionalization, proletarianization and corporatization (Light and Levine, 1988). Declines in physicians' power may have contributed to declining confidence in medicine over this period. But how? Is it through reducing patients' obedience to physicians' authority or patients' trust in physicians' ethics?

This study seeks to address gaps in the literature on confidence in medicine by investigating how confidence in medicine has changed over the past three decades across different groups; decomposing the public's attitudes towards physicians into two dimensions: authority (obedience to doctors' instructions) and ethics (trusting physicians' standards of practice); and examining the links among confidence in medicine, obedience to doctors' authority and trust in doctors' ethics. The analysis uses data from repeated cross-sectional General Social Surveys (GSS) conducted by the National Opinion Research Center, spanning the years 1973–2008, and including the Doctors and Patients Module of the 2002 GSS and the Pressing Issues in Health and Medical Care Module of the 1998 GSS.

2. Background

2.1. Medical expansion and public confidence in medicine

After World War II, the U.S. has witnessed dramatic expansion in the field of medicine, characterized by increases in spending on medical care, the number of persons in the medical workforce and the number of physicians and specialists. According to Organization for Economic Co-operation and Development (OECD) Health Data 2010, per capita health expenditures in the U.S. increased from $1274 in 1970 to $6437 in 2009 (adjusted by 2000 consumer price index). Meanwhile, health expenditures as a percentage of GDP increased from 5.1% in 1960 to 17.4% in 2009. Employment in the medical workforce has increased from 8.5 medical workers per 1000 persons in 1960 to 42.1 medical workers per 1000 persons in 2006, and health employment as a percentage of total employment increased from 2.3% in 1960 to 8.6% in 2004. The number of physicians increased from 2.1 per 1000 persons in 1993 to 2.4 per 1000 persons in 2006, and the number of specialists increased from 1.3 per 1000 persons in 1993 to 1.5 per 1000 persons in 2006. Despite this dramatic expansion in the medical field, public confidence in medicine has declined in recent decades. The percentage of people reporting little confidence in medicine has doubled from 4.5% in 1974 to 9.8% in 1994 (Pescosolido et al., 2001).

Declining confidence in medicine may be partly attributable to Americans' overall declining confidence in social institutions. Research has found similar or even larger declines in confidence in other major social institutions, including science, education, Congress, the legal system, the military, and organized religion (Pescosolido et al., 2001; Klingemann, 1999; Inglehart, 1999). Therefore, declining confidence in medicine may reflect broader secular declines in confidence in social institutions (Pescosolido and Rubin, 2000). Newton and Norris (2000) studied public confidence in social institutions across 17 democratic countries from the early 1980s to the early 1990s, and found that confidence in social institutions was positively related to social trust at the national level. Higher degrees of social trust can build more effective social and political institutions, improve their performance, which in turn encourages greater public confidence in these institutions. Conversely, declining social trust in the U.S. over the past three decades may have contributed to declining confidence in social institutions (Putnam, 2000; McPherson et al., 2006). Nevertheless, poor performance of social and political institutions may be a more direct cause of declining public confidence than a general erosion of social trust (Newton and Norris, 2000).

Particularly, confidence in medicine is most directly affected by the performance of this institution. Declining confidence in medicine may be related to specific trends in medical institutions, such as the erosion of physicians' power. Pescosolido et al. (2001) found that the lack of confidence in medicine is associated with negative sentiments toward physicians. Negative attitudes towards physicians have become more widely endorsed over time, possibly in response to the penetration of managed care and the changing landscape of health insurance. In the past half-century, physicians have become increasingly specialized as a result of "the burst of new knowledge flowing from the dramatic rise and productivity of biomedical research since World War II, the array of technology deriving from those advances, and a widespread desire among physicians for related expertise" (Barondess, 2000:1300). The field of medicine experienced substantial growth over this period and became a quasi-monopoly, restricting the work that could be done by different types of professionals, and overseeing workers in related professions (Starr, 1982; Pescosolido et al., 2001). Physicians established their dominance by exercising autonomy in their work, controlling others' work, promoting the cultural belief that doctors are healers, and asserting greater power over the institutional practice of medicine (Freidson, 1968, 1970a,b). Physicians parlayed their "claim of valuable and complex knowledge into cultural and legal authority and thence into institutional authority" (Light and Levine, 1988:12; also see Freidson, 1968; Light, 1974). McKinlay and Marceau (2002) called this period the "Golden Age of Doctoring."

After about 1970, however, three alternate and distinct concepts challenged this perspective (Light and Levine, 1988). The profession witnessed: (1) deprofessionalization, which diluted doctors' power in favor of other actors in the medical field, as medical knowledge diffused and consumers revolted (Haug, 1973, 1976; Haug and Lavin, 1981, 1983); (2) proletarianization, which expanded capitalist exploitation and bureaucratic control over the physicians (McKinlay, 1977; McKinlay and Arches, 1986; Roemer, 1986; Chernomas, 1986); and (3) corporatization, which allowed complex corporations to control physicians' work, take away their autonomy and independence, and swallow up much of their work (Goldstein, 1984; Relman, 1985; Starr, 1982). Declines in physicians' power may have altered the doctor–patient relationship and eroded patient trust. Tai-Seale and Pescosolido (2003) found that people who perceived a lack of choice of health providers were more likely

to report lower levels of trust in personal physicians, and had higher levels of concern about the influence of managed care on personal physicians. Declining patient trust could have resulted in a declining public confidence in medicine as a whole, because the public's medical knowledge and views on physicians affect the professional power of medicine (Haug and Lavin, 1983; Haug, 1973; McKinlay and Marceau, 2002).

Other factors may have contributed to Americans' declining confidence in medicine. Although the expansion of the medical field has facilitated medical advances and access to care (Olshansky and Ault, 1986) and has increased individuals' expectations for better health, it may have also increased the risk of being diagnosed with a disease or medical condition. The exposure of the population to more aggressive screening and diagnosis may have led people to report worse subjective health (Zheng, 2011). Zheng (2011) investigated the effects of medical expansion in 30 OECD countries on individual subjective health, and found that healthcare expenditures, health employment density, doctors' density, and the degree of specialization among physicians are negatively correlated with individuals' perceived good health. Fisher et al. (2003a,b) investigated the implications of regional variations in Medicare spending in the United States and found that regions with higher Medicare spending and a specialist-oriented pattern of practice did not provide better quality of care, and did not have higher levels of patient satisfaction with care or patient subjective health. Good individual subjective health is correlated with positive attitudes towards the institution of medicine (Pescosolido et al., 2001; Tai-Seale and Pescosolido, 2003), so medical expansion's negative effect on subjective health may have contributed to public dissatisfaction with the institution of medicine.

Pescosolido et al. (2001) have documented an increase in the proportion of people who have little confidence in medicine between the 1970s and the 1990s. Yet, the trend in the proportion of people who have high confidence in medicine remains uncertain. Moreover, prior studies have not investigated whether every socio-demographic group (defined by age, birth cohort, education, income, gender and race) has experienced the same decline of confidence in medicine. A few studies have examined group differences in negative attitudes toward physicians, which share the same latent dimension with lack of confidence in medicine (Pescosolido et al., 2001). Pescosolido et al. (2001) found that negative attitudes toward physicians have spread more uniformly throughout U.S. communities between 1976 and 1998, whereas men and respondents with higher levels of educational attainment are less inclined to report negative attitudes towards physicians. Haug and Lavin (1983) found that younger people have more negative attitudes toward doctors' authority, but did not determine if this was a consequence of their life course stage or an effect of birth cohort (i.e., increasing negative attitudes towards physicians in more recent birth cohorts). If this were a birth cohort pattern, it would imply even greater challenges to the medical profession in the future. These studies have documented differences in attitudes toward physicians across socio-demographic groups, but no studies have yet investigated group differences in confidence in medicine, or whether overall confidence in medicine has declined similarly in each group over the last three decades. This is the first goal of this study.

2.2. The link between confidence in medicine, obedience to doctors' authority and trust in doctors' ethics

The public's growing medical knowledge and changing attitude towards physicians may affect their confidence in medicine as a whole (Haug and Lavin, 1983; Haug, 1973; McKinlay and Marceau, 2002), as a lack of confidence in medicine shares the same latent dimension with negative attitudes towards physicians (Pescosolido et al., 2001). Public attitudes towards physicians can be decomposed into several dimensions, and it is not clear which dimension has contributed to the declining confidence in medicine. This is the second goal of this study. I decompose attitudes towards physicians into two dimensions: obedience to doctors' authority and trust in doctors' ethics, which correspond to the two components of a profession: authority and ethics. Obedience to doctors' authority refers to the extent to which patients recognize doctors' professional expertise and accept their decisions in medical care. Trust in doctors' ethics refers to the extent to which patients believe doctors act in a patient's best interests (Mechanic, 1996).

There are at least two ways to test whether the declining confidence in medicine over the past several decades has entailed a decline in obedience to doctors' authority or a decline in trust in doctors' ethics. First, we can use exploratory factor analysis to determine whether confidence in medicine belongs to the same latent structure as obedience to doctors' authority or trust in doctors' ethics. Second, we can test whether confidence in medicine exhibits socio-demographic group differences that are similar to those observed for either dimension of attitudes towards physicians (obedience to doctors' authority or trusting in doctors' ethics). We expect opposite patterns in the effects of socioeconomic status (SES) on public attitudes towards physicians' authority and ethics. A similar pattern of socioeconomic status (SES) differences between confidence in medicine and either obedience to doctors' authority or trust in doctors' ethics would indicate which dimension of attitudes toward physicians may have changed concurrently with confidence in medicine.

Three factors may affect the public's obedience to doctors' authority and trust in doctors' ethics: social distance to doctors, relative power, and health literacy. Social distance reflects differences in SES (Simmel, 1971[1908]) and culture (Park, 1923) between actors. The social distance between patients and physicians is greater for patients from lower SES groups because they differ more from physicians in socioeconomic status. Physicians are less responsive to patients from lower SES groups (Schnittker, 2004; Waitzkin, 1985), and these patients are also less able to correctly interpret and understand physicians' treatment decisions (Haug and Lavin, 1983). A greater social distance between patients and their doctors leads to lower trust in physicians' ethics (Schnittker, 2004). Therefore, patients from higher SES groups should have higher levels of trust in physicians' ethics. In addition, patients from higher SES groups have smaller relative power differences with their physicians,

which decreases their obedience to doctors' authority. Higher SES groups also have better health literacy and medical knowledge, further contributing to lower obedience to doctors' authority.

3. Methods

3.1. Data

The data for these analyses come from the National Opinion Research Center's General Social Survey (GSS), a pooled cross-sectional dataset. The GSS is a useful source of data because of the consistency in its questionnaire over the years 1972–2008. Each year, the GSS is administered to a national probability sample of non-institutionalized U.S. residents aged 18 years or older. In total, the pooled GSS data cover 27 waves. The dependent variable, confidence in medicine, was included in every wave except the 1972 and 1985 waves. As a result, the analysis of trends in confidence in medicine is based on 25 waves. In addition to the pooled cross-sectional data, I also use the Doctors and Patients Module, included in the 2002 GSS, and the Pressing Issues in Health and Medical Care Module, included in the 1998 GSS. These two modules collected data on respondents' attitudes toward physicians.

3.2. Measures

3.2.1. Confidence in medicine

Since 1973, the GSS has collected data about public confidence in medicine. Respondents were asked, "As far as the people running [the institution of medicine] are concerned, would you say you have a great deal of confidence, only some confidence, or hardly any confidence at all in them?" In the pooled sample including all 25 waves, about 48% of respondents reported having "a great deal of confidence;" 44% reported having "only some confidence;" and 8% reported having "hardly any confidence" in medicine. The proportion of the population who reported "a great deal of confidence" in medicine has decreased from 54% in 1973 and 62% in 1974 to 39% in 2008.

3.2.2. Six attitudes towards physicians

The Doctors and Patients Module of the 2002 GSS measured respondents' attitudes toward physicians and medical care. Six questions were directly related to respondents' attitudes towards physicians: (1) "I prefer that my doctor offers me choices and asks my opinion;" (2) "I prefer to leave decisions about my medical care up to my doctor;" (3) "I prefer to rely on my doctor's knowledge and not try to find out about my condition on my own;" (4) "Do you believe what the doctor just told you (about whether he or she has financial incentives that limit the use of expensive tests)?" (5) "Do you agree with the doctor's decision not to order the MRI at this time?" and (6) "How much would you trust the doctor to put your health above costs?" Responses to the first question were coded as follows: (6) "strongly disagree," (5) "moderately disagree," (4) "slightly disagree," (3) "slightly agree," (2) "moderately agree" and (1) "strongly agree." Responses to the second and third questions were coded as follows: (6) "strongly agree," (5) "moderately agree," (4) "slightly agree," (3) "slightly disagree," (2) "moderately disagree," and (1) "strongly disagree." Responses to the fourth and fifth questions included (3) "yes," (2) "maybe," and (1) "no." Reponses to the sixth question included (5) "completely," (4) "mostly," (3) "somewhat," (2) "a little," and (1) "not at all." Thus, higher values indicated more positive attitudes towards physicians for all six questions.

3.2.3. Twenty attitudes towards physicians

The Pressing Issues in Health and Medical Care Module of the 1998 GSS included 20 questions about attitudes towards physicians, as listed in Table 1. Some questions tapped negative attitudes towards physicians: for example, "I worry that my doctor will put cost considerations above the care I need." Other questions were framed in terms of positive attitudes towards physicians: for example, "I trust my doctor to put my medical needs above all other considerations when treating my medical problems." Responses to these 20 questions were originally coded as follows: (1) "strongly agree," (2) "agree," (3) "uncertain," (4) "disagree," and (5) "strongly disagree." I reverse coded questions as appropriate so that higher values would always indicate more positive attitudes towards physicians.

3.2.4. Socio-demographic variables

I included several socio-demographic variables that have been previously linked to confidence in medicine and attitudes towards physicians as explanatory variables in the analysis. These variables were survey year, birth cohort, age in years, age squared, sex (1 = male, 0 = female), race (1 = White, 0 = all others), education, work status (1 = full or part-time job, 0 = all others), marital status (1 = married, 0 = all others), family income, and self-rated health. Education was measured as years of formal education completed. In the GSS, family income was measured using several income intervals. I calculated the midpoint of each income interval, adjusted these midpoint incomes for inflation using the Consumer Price Index, and divided the inflation-adjusted incomes by 1000. Self-rated health was measured using four categories: (4) "excellent," (3) "good," (2) "fair," and (1) "poor."

Table 1
Descriptive statistics.

Variable	N	Mean	SD	Min	Max
GSS 1973–2008					
Confidence in the institution of medicine: 1 = hardly any confidence at all, 2 = only some confidence, 3 = a great deal of confidence	32,173	2.397	.632	1	3
Cohort: birth cohort	32,173			1880	1985
Year: year of survey	32,173			1973	2008
Age: respondent's age at survey year	32,173	44.634	17.040	18	89
Race: 1 = white, 0 = black or others	32,173	.829	.377	0	1
Sex: 1 = man, 0 = woman	32,173	.449	.497	0	1
Marital status: 1 = married, 0 = unmarried	32,173	.564	.496	0	1
Work status: 1 = employed, 0 = not employed	32,173	.632	.482	0	1
Education: years of education	32,173	12.652	3.143	0	20
Income: inflation adjusted annual family income/1000	32,173	25.106	17.055	.482	87.873
Subjective health: 4 = excellent, 3 = good, 2 = fair, 1 = poor	21,858	3.019	.849	1	4
GSS 2002					
I prefer that my doctor offers me choices and asks my opinion	2683	1.414	0.832	1	6
Leave medical care decision up to doctor	2683	3.502	1.751	1	6
Completely rely on doctor's knowledge	2683	3.248	1.812	1	6
Believe doctors do not have financial incentives that limit the use of expensive tests	2683	2.274	0.888	1	3
Agree with doctor's decision not to order the MRI	2683	2.069	0.949	1	3
Trust doctor to put my health above costs	2683	2.939	1.328	1	5
GSS 1998					
Doctors aren't as thorough as they should be	1129	2.794	1.107	1	5
Doctors always do their best to keep the patient from worrying	1129	3.245	.969	1	5
Sometimes doctors take unnecessary risks in treating their patients	1129	3.078	.996	1	5
Doctors are very careful to check everything when examining their patients	1129	2.881	1.004	1	5
Doctors always treat their patients with respect	1129	3.174	1.065	1	5
I hardly ever see the same doctor when I go for medical care	1129	3.746	1.024	1	5
Doctors always avoid unnecessary patient expenses	1129	2.626	.975	1	5
Doctors cause people to worry a lot because they don't explain medical problems to patients	1129	3.027	1.098	1	5
The medical problems I've had in the past are ignored when I seek care for a new medical problem	1129	3.541	.942	1	5
Doctors never recommend surgery (an operation) unless there is no other way to solve the problem	1129	3.094	1.012	1	5
My doctor is willing to refer me to a specialist when needed	1129	3.955	.681	1	5
I worry that my doctor is being prevented from telling me the full range of options for my treatment	1129	3.444	.999	1	5
I worry that I will be denied the treatment or services I need	1129	3.452	1.031	1	5
I worry that my doctor will put cost considerations above the care I need	1129	3.446	1.028	1	5
I doubt that my doctor really cares about me as a person	1129	3.638	.933	1	5
I trust my doctor's judgments about my medical care	1129	3.848	.768	1	5
I feel my doctor does not do everything s/he should for my medical care	1129	3.557	.953	1	5
I trust my doctor to put my medical needs above all other considerations when treating my medical problems	1129	3.742	.809	1	5
My doctor is a real expert in taking care of medical problems like mine	1129	3.585	.835	1	5
I trust my doctor to tell me if a mistake was made about my treatment	1129	3.464	.997	1	5

3.3. Analysis

I used three analytic methods to answer each of the research questions described above. First, I used ordinal logit cross-classified random effects age-period-cohort models to test for socio-demographic and age-period-cohort effects on the trend of confidence in medicine over the past three decades. Second, I used exploratory factor analysis to identify the latent structure connecting attitudes towards physicians and confidence in medicine. Third, I used linear regression to examine group differences in attitudes towards physicians at two time points: 1998 and 2002. The factor analysis and cross-sectional analysis of group differences were based on the Doctors and Patients Module of the 2002 GSS and the Pressing Issues in Health and Medical Care Module of the 1998 GSS.

Cross-classified random-effects hierarchical age-period-cohort models (CCREM) were developed by Yang and Land (2006, 2008) to disentangle age, period, and cohort effects in pooled cross-sectional data. Conventional linear regression models fit to aggregate population rates or proportions suffer from the model identification problem due to the exact linear dependency among age, period, and cohort variables in such data: by definition, period equals the sum of age and birth cohort (Mason et al., 1973). The CCREM approach recognizes that, in a multi-level survey design, respondents are nested in, and cross-classified simultaneously by, two higher-level social contexts defined by time period and birth cohort. This model does not assume fixed age, period, or cohort effects that are additive, and therefore avoids the identification problem. Consequently, the CCREM approach can statistically characterize the contextual effects of historical time and cohort membership. Specifically, this model estimates fixed effects of age and other individual-level covariates at the first level, and random effects of period and cohort at the second level.

In this paper, the outcome variable measuring confidence in medicine is ordinal (for the sake of simplicity, I refer to it as CONFIDENCE in what follows). Therefore, I used a generalized linear mixed-effects version of CCREM with "hardly any confidence [in medicine]" as the reference group. The interpretation of the model, however, does not require pairwise comparisons between a given level of confidence in medicine and the reference group (Long, 1997). Instead, the model can be interpreted in terms of a change in the odds of reporting greater confidence in medicine associated with a one-unit increase in an explanatory variable.

The model specification is given below:

Level-1 or "Within-Cell" Model[1]:

$$Y_{ijk} = \beta_{0jk} + \beta_1 X_{1\,ijk} + \beta_2 X_{2ijk} + \cdots + \beta_P X_{Pijk} + e_{ijk} \tag{1}$$

Level-2 or "Between-Cell" Model:

$$\beta_{0jk} = \gamma_0 + u_{0j} + v_{0k}, \quad u_{0j} \sim N(0, \tau_u), \quad v_{0k} \sim N(0, \tau_v) \tag{2}$$

$$\beta_{pjk} = \gamma_p + u_{pj} + v_{pk}, \quad p = 1, \ldots, p, \quad u_{pj} \sim N(0, \sigma_u), \quad v_{pk} \sim N(0, \sigma_v) \tag{3}$$

for $i = 1,2,\ldots,n_{jk}$ individuals within cohort j and period k;
$j = 1,\ldots,J$ birth cohorts;
$k = 1,\ldots,K$ time periods (survey years);

where the ith respondent's outcome in each birth cohort j and survey year k, Y_{ijk}, (the ordinal response outcome of CONFIDENCE) is modeled as a function of explanatory variables or covariates $X_{1ijk}, X_{2ijk}, \ldots, X_{Pijk.}$ Continuous covariates are grand mean centered, and the set of covariates includes both linear and higher-order functions of age. The intercept varies by birth cohort and time period.

In this CCREM, β_{0jk} is the intercept, or "cell mean," for respondents in the reference group at the mean age who belong to birth cohort j and were surveyed in year k; $\beta_1, \ldots \beta_p$ are the level-1 fixed effects; e_{ijk} is the individual random effect or cell residual; γ_0 is the expected mean at zero values of all level-1 variables averaged over all periods and cohorts; u_{0j} is the residual random effect of cohort j, or the effect of cohort j averaged over all periods, on β_{0jk}, assumed to be normally distributed with mean 0 and variance τ_u; and v_{0k} is the residual random effect of period k, or the effect of period k averaged over all cohorts, assumed to be normally distributed with mean 0 and variance τ_v. To test whether the effects of level-1 covariates vary by time or birth cohort, Eq. (2) specifies that their coefficients β_{pjk} $(p = 1,\ldots,p)$ have cohort effects u_{pj}, and period effects v_{pk}, whose corresponding random variance components are σ_u and σ_v, respectively. Both the cohort and period random variance components for these coefficients are assumed to have multivariate normal distributions. I estimate this model using SAS PROC GLIMMIX.

4. Results

4.1. Trends in confidence in medicine

Fig. 1 shows trends in confidence in medicine in the United States over the past three decades. The proportion of the population that reports "a great deal of confidence" in medicine has decreased from 54% in 1973 to 39% in 2008. Correspondingly, the proportion of the population that reports "only some confidence" in medicine has increased from 40% in 1973 to 50% in 2008; and the proportion of the population reporting "hardly any confidence" in medicine has increased from 6% in 1973 to 11% in 2008. These period trends are confounded with age and cohort effects, which should be disentangled from the combined trend in order to capture the true change across periods. For this purpose, I estimate ordinal logit cross-classified random-effects age-period-cohort models (CCREMs).

Table 2 presents the estimated unstandardized coefficients from CCREMs applied to the GSS CONFIDENCE data. Model 1 estimates age, period and cohort effects. After adjusting for time period and birth cohort variations, every additional year of age is associated with a 14% $((1 - e^{-.147}) * 100)$ decrease in the odds of having greater CONFIDENCE. But the age effect is curvilinear, and changes direction at older ages. There are many more significant period-specific random-effects coefficients than cohort-specific random-effects coefficients in the "Random Effects" section. Additionally, the estimates of residual variance components at Level 2 (reported in the "Variance Components" section) indicate that period effects are significant but cohort effects are not significant after controlling for the age effect. These findings suggest that changes in confidence in medicine over the past three decades are predominantly a matter of changes across periods rather than changes across cohorts.

Fig. 2a shows predicted probabilities of reporting "a great deal of confidence" in medicine based on Model 1. The predicted probabilities are calculated for each survey year, setting respondents' age at the mean, and averaging over all birth cohorts. The period effects reveal a general downward trend in confidence in medicine over the past three decades. The

[1] Respondents in the repeated cross-section sample surveys are cross-classified by both the time periods of the surveys in which they responded and the birth cohorts to which they belong. Each cell is an intersection of a cohort and a period.

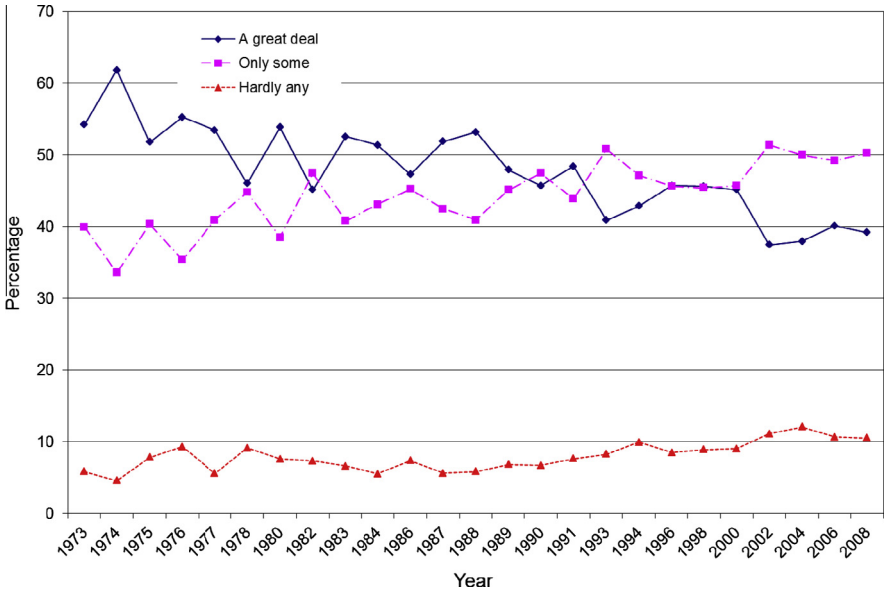

Fig. 1. Trends in confidence in the institution of medicine in the U.S., 1973–2008.

decline in predicted probabilities is similar in shape and magnitude to the trajectory of observed survey responses, as shown in Fig. 1. Fig. 2b shows predicted probabilities calculated for each cohort, setting respondents' age at the mean, and averaging over all time periods. Compared to the substantial downward trend across periods, the trend across cohorts is very flat with some random fluctuations. In other words, confidence in medicine has declined similarly among all birth cohorts, and cohorts are not significantly different from one another in their level of confidence in medicine.

Model 2 in Table 2 adds controls for individual socio-demographic characteristics: sex, race, marital status, education, income, and work status. Only the coefficients for sex and income are statistically significant. Men's odds of greater CONFIDENCE are about 10% higher than women's $((e^{.092} - 1) * 100)$. Every $1000 increase in family income is associated with a 0.3% $((e^{.003} - 1) * 100)$ increase in the odds of greater CONFIDENCE. Model 3 tests whether the effects of age, sex and income vary significantly over time. The residual variance components of these effects are not significant, suggesting that confidence in medicine has declined at a similar rate across age groups, sexes and income levels. Model 4 adds subjective health, treating it as a continuous variable for ease of interpretation. A one-unit increase in subjective health increases the odds of reporting greater CONFIDENCE by 11% $((e^{.108} - 1) * 100)$.

4.2. The link between confidence in medicine and attitudes toward physicians

Since 1973, the GSS has included a question about confidence in the institution of medicine, but it is unclear which aspects of medicine this question refers to, or how answers to this question reflect respondents' attitudes towards physicians' authority or ethics. Using additional questions included in the 2002 and 1998 GSS, I conducted exploratory factor analysis to investigate whether confidence in medicine belongs to the same latent structure as attitudes towards physicians.

Table 3 shows results from an exploratory factor analysis of six attitudes towards physicians and CONFIDENCE, using data from the 2002 GSS. These results identify two latent factors determining attitudes towards physicians. Factor 1 represents trust in doctors' ethics, whereas Factor 2 represents obedience to doctors' authority. Three of the attitude questions are loaded predominantly on Factor 1, and therefore belong to the same latent structure: Believing that doctors do not have financial incentives that limit the use of expensive tests; agreeing with a doctor's decision not to order an MRI; and trusting the doctor to put one's health above costs. Two of the attitude questions are loaded predominantly on Factor 2: Leaving medical care decisions up to the doctor; and completely relying on the doctor's knowledge. One of the attitude questions, "I prefer that my doctor offers me choices and asks my opinion," has 78% of its variance unexplained by either factor, though it is more loaded on Factor 2 than on Factor 1. Similarly, CONFIDENCE does not load substantially on either factor, and 93% of the variance in this variable remains unexplained. These findings demonstrate two latent structures defining attitudes towards physicians, but show that confidence in medicine does not belong to either latent structure.

Table 4 shows results from an exploratory factor analysis of 20 attitudes towards physicians and CONFIDENCE based on the 1998 GSS. Bolded variables have cross-loadings on several factors or are not substantially loaded on any factor, indicating that they should be removed from further factor analysis. CONFIDENCE loads on Factor 4, but this factor does not substantially explain any attitude towards physicians, except "I hardly ever see the same doctor when I go for medical care." The latter variable also has cross-loadings on Factors 1 and 2. Therefore, CONFIDENCE does not belong to the same latent

Table 2
Unstandardized coefficients from ordinal logit cross-classified random effects age-period-cohort models of confidence in the institution of medicine, GSS 1973–2008.

Fixed effects	Model 1	Model 2	Model 3	Model 4[b]
Intercept[a]	−.234***	−.542***	−.407***	−.628***
Age	−.147***	−.148***	−.152***	−.123***
Age^2	.047***	.055***	.054***	.049***
Male		.092***	.097***	.064*
White		.038		
Married		.044		
Education		.007		
Income/1000		.003***	.004***	.003**
Employed		.024		
Self-Reported Health				.108***
Random Effects				
Cohort				
1880	−.095	−.093	−.097	−.104
1905	−.021	−.009	−.012	−.019
1910	.013	.024	.024	.028
1915	.106*	.110*	.115*	.133*
1920	.063	.067	.071	.060
1925	.072	.069	.074	.090
1930	.026	.019	.021	.006
1935	.106*	.100*	.104*	.077
1940	−.019	−.030	−.029	−.040
1945	−.040	−.054	.052	−.041
1950	−.035	−.045	−.043	−.022
1955	−.085*	−.091*	−.092*	−.084
1960	.005	.002	.000	−.022
1965	−.033	−.033	−.041	−.026
1970	−.065	−.060	−.070	−.029
1975	−.048	−.040	−.050	−.020
1980	.015	.027	.031	−.010
1985	.034	.038	.047	.022
Period				
1973	.266***	.261***	.286***	.231**
1974	.522***	.515***	.540***	.475***
1975	.094	.096	.127	.062
1976	.220**	.226**	.236**	.192**
1977	.179*	.171*	.196*	.135
1978	−.091	−.095	−.087	
1980	.209**	.205**	.213**	.168*
1982	−.034	−.010	−.006	−.052
1983	.191**	.197**	.171*	
1984	.167*	.174*	.167	.133
1986	−.011	−.005	−.011	
1987	.225***	.240***	.254**	.193**
1988	.182*	.187*	.170	.176
1989	−.028	−.028	−.026	−.005
1990	.030	.033	.049	−.014
1991	.009	.016	.021	.101
1993	−.237**	−.240**	−.231**	−.108
1994	−.217***	−.216**	−.213**	−.198**
1996	−.062	−.062	−.066	−.062
1998	−.055	−.058	−.109	−.102
2000	−.113	−.119	−.130	−.175*
2002	−.359***	−.366***	−.379***	−.251**
2004	−.449***	−.464***	−.480***	−.340***
2006	−.258***	−.267***	−.270***	−.196*
2008	−.380***	−.393***	−.422***	−.365***
Variance components				
Period effect				
Intercept	.057**	.059**	.065**	.048**
Age effect			.001	
Sex effect			.004	
Income effect			.000	
Cohort effect				
Intercept	.006	.006	.007	.006

Table 2 (*continued*)

Fixed effects	Model 1	Model 2	Model 3	Model 4[b]
Model Fit				
Pseudo-BIC	251716.6	251825.8	251783.9	172190.7
−2 Res Log Pseudo-Likelihood	251654.3	251701.2	251669.7	172100.8

[a] Intercept of having "a great deal of confidence" as compared to other levels of confidence ("only some confidence" and "hardly any confidence").
[b] Three waves (1978, 1983, and 1986) are dropped in Model 4 because subjective health was not included in these waves.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

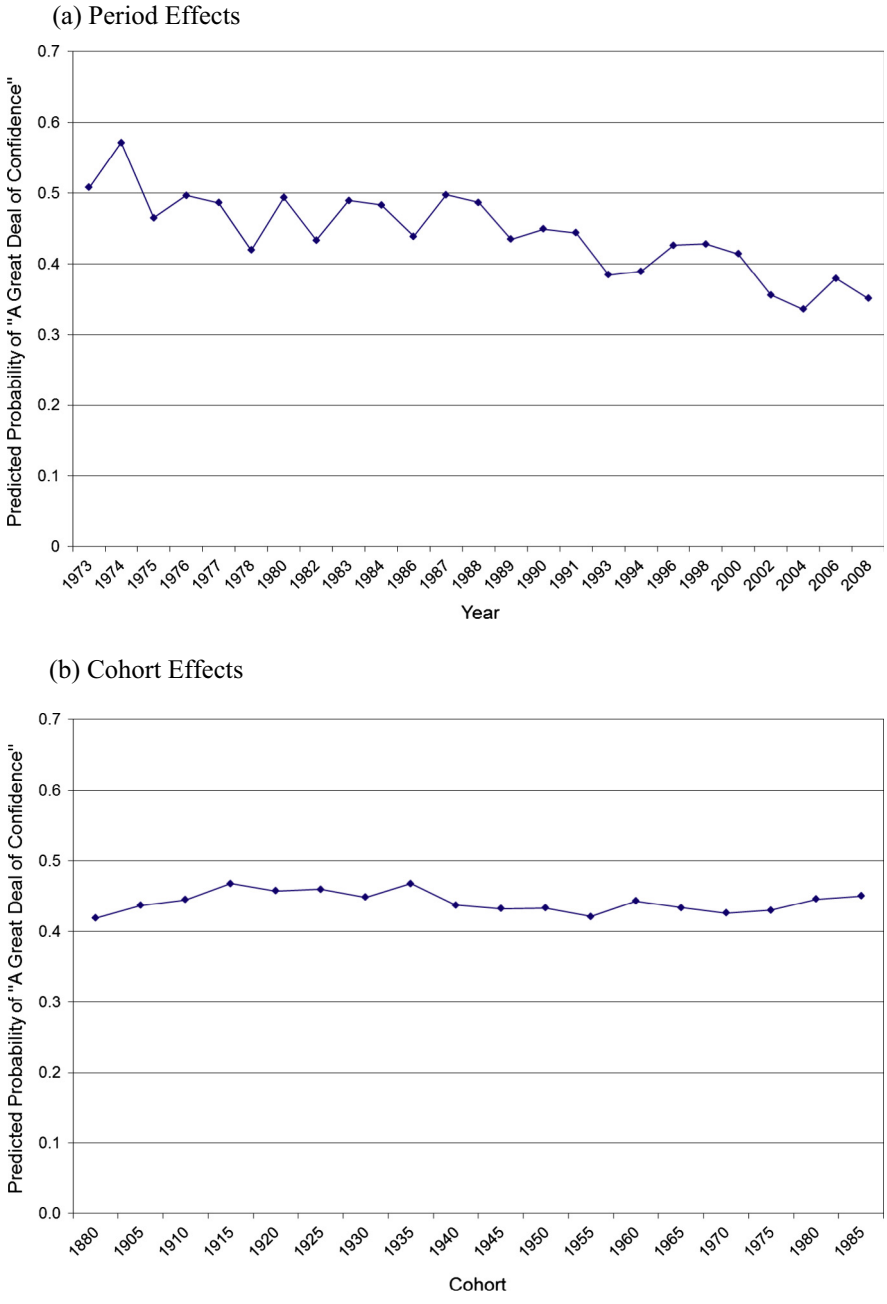

Fig. 2. Period and cohort effects on confidence in the institution of medicine, 1973–2008.

Table 3
Exploratory factor analysis of six attitudes towards physicians and confidence in the institution of medicine, GSS 2002.

Variable	Factor 1	Factor 2	Uniqueness
I prefer that my doctor offers me choices and asks my opinion	−0.0653	0.4671	0.7776
Leave medical care decision up to doctor	0.0398	**0.8292**	0.3108
Completely rely on doctor's knowledge	0.1121	**0.8196**	0.3157
Believe doctors do not have financial incentives that limit the use of expensive tests	**0.8446**	0.0512	0.2840
Agree with doctor's decision not to order the MRI	**0.8826**	0.0308	0.2201
Trust doctor to put my health above costs	**0.8196**	0.0849	0.3210
Confidence in the institution of medicine	0.0656	0.2644	0.9258

Note: Bolded variables have cross-loadings on several factors or are not substantially loaded on any factor, indicating that they should be removed from further factor analysis.

Table 4
Exploratory factor analysis of twenty attitudes towards physicians and confidence in the institution of medicine, GSS 1998.

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Uniqueness
Doctors aren't as thorough as they should be	0.0594	0.517	0.3896	−0.1457	0.5561
Doctors always do their best to keep the patient from worrying	0.232	0.0902	**0.5959**	−0.087	0.5754
Sometimes doctors take unnecessary risks in treating their patients	0.047	0.4593	0.4134	−0.0916	0.6076
Doctors are very careful to check everything when examining their patients	0.1872	0.2546	**0.6758**	0.0492	0.441
Doctors always treat their patients with respect	0.231	0.1277	**0.6597**	−0.1255	0.4793
I hardly ever see the same doctor when I go for medical care	0.3038	0.3687	−0.0233	−0.4476	0.5709
Doctors always avoid unnecessary patient expenses	0.091	0.0206	**0.5371**	0.2377	0.6463
Doctors cause people to worry a lot because they don't explain medical problems to patients	0.0385	0.5389	0.4522	−0.0603	0.4999
The medical problems I've had in the past are ignored when I seek care for a new medical problem	0.2383	**0.5968**	0.1765	−0.0506	0.5534
Doctors never recommend surgery (an operation) unless there is no other way to solve the problem	0.0618	0.0031	**0.6188**	0.2123	0.5682
My doctor is willing to refer me to a specialist when needed	**0.5743**	0.1619	0.069	−0.1618	0.613
I worry that my doctor is being prevented from telling me the full range of options for my treatment	0.3271	**0.6903**	0.0551	0.0409	0.4118
I worry that I will be denied the treatment or services I need	0.2	**0.7452**	0.0117	0.2322	0.3507
I worry that my doctor will put cost considerations above the care I need	0.2946	**0.7278**	0.0165	0.1841	0.3494
I doubt that my doctor really cares about me as a person	**0.6353**	0.2483	0.0687	−0.1692	0.5014
I trust my doctor's judgments about my medical care	**0.7202**	0.1637	0.1981	0.0026	0.4152
I feel my doctor does not do everything s/he should for my medical care	0.5212	0.4505	0.1385	−0.1043	0.4954
I trust my doctor to put my medical needs above all other considerations when treating my medical problems	**0.6869**	0.1669	0.1717	0.277	0.394
My doctor is a real expert in taking care of medical problems like mine	**0.6776**	0.1755	0.2339	0.1538	0.4317
I trust my doctor to tell me if a mistake was made about my treatment	**0.6087**	0.0933	0.2334	0.3165	0.4662
Confidence in the institution of medicine	0.1114	0.1516	0.0705	**0.6274**	0.5661

Note: Bolded variables have cross-loadings on several factors or are not substantially loaded on any factor, indicating that they should be removed from further factor analysis.

structure as the 20 attitudes towards physicians measured in this year, and it cannot be explained by any single attitude towards physicians listed in Table 4.

4.3. Group differences in attitudes toward physicians

A second way to evaluate the interrelation of confidence in medicine, obedience to doctors' authority, and trust in doctors' ethics is to test whether socio-demographic group differences in these three factors follow a common pattern. Confidence in medicine is identified using the CONFIDENCE variable. Obedience to doctors' authority and trust in doctors' ethics are identified using exploratory factor analysis. The questions "I prefer that my doctor offers me choices and asks my opinion," has factor loadings smaller than .5 in Table 3, and is removed from further exploratory factor analysis. Appendix A shows results from a factor analysis on the remaining five attitudes towards physicians in the 2002 GSS. "Leave medical care decision up to doctor" and "completely rely on doctor's knowledge" belong to the same latent structure, obedience to doctors' authority. "Believe doctors do not have financial incentives that limit the use of expensive tests," "agree with doctor's decision not to order the MRI," and "trust doctor to put my health above costs" belong to the same latent structure, trust in doctors' ethics.

Predicted factor scores were obtained from this analysis and then regressed on individual socio-demographic characteristics. The regression coefficients are shown in Table 5. Age is negatively associated with obedience to doctors' authority and trust in doctors' ethics, but the relationship between age and these latent factors is inverted after age 60. There may be two reasons for a positive effect of age on attitudes towards physicians among the elderly. First, the elderly have worse health

Table 5
Unstandardized coefficients from linear regression model of obedience to doctors' authority and trust in doctors' ethics, GSS 2002.

	Authority	Ethics
Intercept	1.543***	−.817***
	(.168)	(.175)
Age	−.047***	−.004
	(.007)	(.007)
Age^2	.001***	.0001*
	(.000)	(.000)
Male	.279***	.040
	(.039)	(.040)
White	−.187***	.257***
	(.049)	(.051)
Married	.034	.076
	(.043)	(.045)
Education	−.053***	.028***
	(.007)	(.007)
Income/1000	−.002	.001
	(.001)	(.001)

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

and more frequent interaction with physicians than younger adults, increasing their dependency on physicians. Second, survival into old age selects for healthier elders, who are more likely to benefit from health care. Compared to women, men are more likely to obey doctors' authority, because, on average, they may have less medical knowledge and health literacy than women. Obedience to doctors' authority is lower among White respondents and respondents who have completed more years of education, but trust in doctors' ethics is higher among these groups. This indicates White respondents and respondents with greater educational attainment are more likely to make their own choices because they feel they have greater knowledge of health, but not because they place less confidence in doctors' ethics. Marital status and income have no significant effects on either obedience to doctors' authority or trust in doctors' ethics.

I use the 1998 GSS data to assess if the findings from the 2002 wave on group differences in attitudes towards physicians can be replicated. Appendix B presents results from an exploratory factor analysis on 15 attitudes towards physicians in the 1998 GSS, excluding variables that have cross-loadings or small loadings on factors, as reported in Table 4. The exploratory factor model, however, is not as satisfactory as that fitted to the 2002 GSS. For many variables, a relatively higher percentage of variance is not explained by the first two latent factors. Here, Factor 1 corresponds to trust in doctors' ethics and Factor 2 corresponds to obedience to doctors' authority.

Predicted factor scores obtained from this analysis are regressed on individual-level socioeconomic characteristics, and the resulting estimates are reported in Table 6. The results are generally consistent with those in Table 5. In addition to

Table 6
Unstandardized coefficients from linear regression model of obedience to doctors' authority and trust in doctors' ethics, GSS 1998.

	Authority	Ethics
Intercept	1.379***	−.871**
	(.275)	(.281)
Age	−.035***	.001
	(.011)	(.011)
Age^2	.0004***	.0001
	(.0001)	(.0001)
Male	.165**	−.080
	(.061)	(.062)
White	−.289***	.010
	(.078)	(.080)
Married	.126	.048
	(.067)	(.068)
Education	−.035**	.030*
	(.012)	(.012)
Income/1000	−.006**	.006***
	(.002)	(.002)

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

the socioeconomic differences discussed earlier, the negative effect of income on obedience to doctors' authority and the positive effect of income on trust in doctors' ethics become significant in this analysis. The similarity in the socioeconomic differences documented in Tables 5 and 6 suggests that the two sets of attitudes towards physicians have similar underlying structures.

The socio-demographic group differences in confidence in medicine and attitudes towards physicians, presented in Tables 2, 5 and 6, indicate that confidence in medicine may be related to trust in doctors' ethics, but is distinct from obedience to doctors' authority. Specifically, socioeconomic status is positively associated with confidence in medicine and trust in doctors' ethics, but is negatively associated with obedience to doctors' authority. Therefore, we cannot claim that obedience to doctors' authority has declined concurrently with the declining confidence in medicine. However, our results imply that trust in doctors' ethics may have declined over this period.

5. Discussion

Over the past several decades, the field of medicine in the United States has undergone a rapid expansion, as evinced by skyrocketing investments in medicine, a growing medical workforce and increasing specialization among doctors. Meanwhile, the Golden Age of Doctoring (McKinlay and Marceau, 2002) has come to an end. Physicians' status and power have been declining since the 1980s, although some scholars maintain that physicians still dominate the field of medicine (Freidson, 1994; Mechanic, 1991). Rather than joining the debate over the dominance of physicians, this study investigates the profession's "consulting status" (Freidson, 1970a) – that is, how the public views physicians.

The overall findings, based on analyses of data from the General Social Survey, are as follows. (1) Americans' confidence in the institution of medicine has continuously declined over the past three decades, after controlling for cohort and age effects. (2) Confidence in medicine has declined at the same rate regardless of gender, age group, birth cohort, or income level, even though, at a given point in time, the elderly, men, respondents in higher income brackets, and respondents with better subjective health tend to have more confidence in the institution of medicine. (3) The lay public's attitudes towards physicians can be decomposed into two dimensions: obedience to doctors' authority and trust in doctors' ethics, which correspond to the two components of a profession: authority and ethics. (4) Higher SES correlates with lower obedience to doctors' authority, but greater trust in doctors' ethics. (5) Confidence in the institution of medicine does not belong to the same latent structure as either obedience to doctors' authority or trust in doctors' ethics, but analyses of differences across socio-demographic groups suggest that confidence in the institution of medicine may be related to trust in doctors' ethics.

Several questions merit further discussion. First, why has confidence in the institution of medicine declined over the past three decades despite the dramatic expansion of the medical field during this period? This may be partly due to the adverse effect of medical expansion on individual self-rated health (Zheng, 2011; Fisher et al., 2003a,b). Several plausible mechanisms may contribute to this adverse effect. First, more diseases are discovered and "created" during the process of medicalization, increasing individuals' risk of being diagnosed with a "new" disease. For example, attention deficit hyperactivity disorder (ADHD), once diagnosed only in children, is now being diagnosed in adults, and a diagnosis of ADHD may negatively affect adults' subjective health. Second, medical expansion encourages aggressive screening, which increases individuals' risk of diagnosis as well as their awareness of illnesses and expectations for health care. People are likely to underrate their health when they have high health expectations that are not met. Martin et al. (2009) found that aging baby boomers were more likely to report poor or fair health than elders in a preceding cohort, despite having a lower mortality rate. Baby boomers' underrating of their own health may be due to higher health expectations as compared to preceding cohorts. Third, medical expansion may increase patients' "sick role expectations" (Parson, 1951) and "stigma" (e.g., Link et al., 1989, 1997) after they encounter the health care system. These three mechanisms represent the potential of medical expansion to exert a negative effect on individuals' subjective health. In turn, subjective health is positively correlated with confidence in the institution of medicine. Thus, medical expansion may have an indirect negative effect on confidence in the institution of medicine, mediated by the adverse effect of medical expansion on individual subjective health.

Alternately, declining confidence in medicine may have resulted from the introduction of managed care and the subsequent end of the Golden Age of Doctoring. Managed care or the bureaucratization (corporatization) of doctoring has eroded the autonomy and independence of physicians (McKinlay and Marceau, 2002). As a result, physicians have gone from being independent practitioners (Starr, 1982) to serving as employees "relying on complex organizations and financial arrangements to carry out their sophisticated work, yet realizing that these institutions intrude on their work, mediate their relations with patients, and potentially injure their credibility with society as a whole" (Light and Levine, 1988:19). Accordingly, patients may question the work and incentives of physicians, and challenge providers when treatment results are not satisfactory (Schlesinger, 2002). These negative attitudes towards physicians may jeopardize patients' confidence in the entire institution of medicine (Pescosolido et al., 2001). The decline in confidence in medicine may have also resulted from broad social changes that go beyond medical expansion, managed care or the evolving role of physicians. Research has found that Americans' overall faith in social institutions (e.g., science, education, and the legal system) has declined over time (Pescosolido et al., 2001; Klingemann, 1999; Inglehart, 1999).

The second question arising from our results is why respondents in lower SES groups are less likely to trust doctors' ethics but report higher obedience to doctors' authority. A patient's low SES implies a greater social distance from physicians. Because of this, physicians are less responsive to low-SES patients (Waitzkin, 1985); low-SES patients are less able to

correctly interpret and understand physicians' treatment decisions (Haug and Lavin, 1983); and low-SES patients place less trust in doctors (Schnittker, 2004). Yet, low-SES groups also experience a relatively large power difference between patients and their physicians, and have lower levels of health literacy and medical knowledge, increasing their obedience to doctors' authority.

Third, has obedience to doctors' authority or trust in doctors' ethics declined over the past three decades? Although the professional power of physicians has declined (Light and Levine, 1988), it remains unclear whether obedience to doctors' authority or trust in doctors' ethics has declined over time due to the lack of repeated measures of these two constructs. Factor analysis suggests that confidence in the institution of medicine does not load on the same factors as obedience to doctors' authority or trust in doctors' ethics. Socio-demographic group differences in these three factors suggest that confidence in the institution of medicine may be related to trust in doctors' ethics but is distinct from obedience to doctors' authority: socioeconomic status has positive effects on CONFIDENCE and trust in doctors' ethics, but a negative effect on obedience to doctors' authority. Therefore, we cannot claim that obedience to doctors' authority has declined; but the findings may imply that the public is less inclined to trust doctors' ethics than before. In fact, "changes in the doctor–patient relationship and the erosion of patient trust" constitute one extrinsic factor in the decline of physicians' power (McKinlay and Marceau, 2002:379).

Fourth, how can increasing utilization of health services be reconciled with decreasing confidence in the institution of medicine? Although public confidence in the institution of medicine has eroded, patients still believe in medicine as a scientific solution to health problems. As some scholars said, "medicalizing institutions do not need to capture the 'hearts and minds' of the lay public as long as they are able to corner the market by controlling access to alternative therapies" (McLeod et al., 2004: 63; also see Conrad, 2000; Pescosolido et al., 2000). Furthermore, these two seemingly contradictory phenomena result from the same social process of medical expansion. The process of medical expansion negatively affects individuals' subjective health (Zheng, 2011), and low subjective health predicts both increased utilization of health care (Andersen and Newman, 1973; DeSalvo et al., 2005; Trump, 2006; Bierman et al., 1999; Miilunpalo et al., 1997; Mutran and Ferraro, 1988) and lower confidence in the institution of medicine (Pescosolido et al., 2001; Tai-Seale and Pescosolido, 2003).

Fifth, does declining public confidence in the institution of medicine augur a deceleration in the expansion of the medical field? The short answer is "no." Confidence in the institution of medicine is not synonymous with confidence in the medical model. Although the public may be dissatisfied with the health services they get, they still believe in medicine as a scientific solution to health and even non-health problems. This ideology is embedded deeply in people's minds, probably due to the absence of an alternative model to deal with these problems. Furthermore, the expansion of the medical field can proceed without complete approval from the lay public. For example, medicalization, or the creation of new medical conditions and diagnoses (McLeod et al., 2004), can take place "even in the face of a skeptical public" (Conrad, 2000:324). More generally, consumers are not the only agents controlling medical expansion. Insurers, pharmaceutical and biotechnology companies, and physicians can advance medical expansion over the criticism and skepticism of the lay public. The balance of powers among these actors, but not the attitudes of the lay public alone, affects the future of medical expansion.

This study investigates Americans' confidence in the institution of medicine over the past three decades, and finds that it has declined significantly over this period. This decline has proceeded at the same rate regardless of gender, age group, cohort, or income level. This study also decomposes attitudes toward physicians into two dimensions, obedience to doctors' authority and trust in doctors' ethics, and finds that socioeconomic status has opposite effects on these two dimensions. Although factor analysis suggests confidence in medicine does not belong to the same latent structure as either obedience to doctors' authority or trust in doctors' ethics, socio-demographic group analyses suggest confidence in medicine may nevertheless be related to trust in doctors' ethics. This suggests that the public may have become less likely to trust doctors' ethics than before. Future research should monitor public attitudes of obedience to doctors' authority and trust in doctors' ethics to enrich our understanding of concurrent trends in public confidence in the institution of medicine.

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Appendix A. Exploratory factor analysis of five attitudes towards physicians, GSS 2002

Variable	Factor 1	Factor 2	Uniqueness
Leave medical care decision up to doctor	0.0575	**0.8705**	0.2389
Completely rely on doctor's knowledge	0.0620	**0.8662**	0.2458
Believe doctors do not have financial incentives that limit the use of expensive tests	**0.8412**	0.0337	0.2912
Agree with doctor's decision not to order the MRI	**0.8806**	0.0064	0.2245
Trust doctor to put my health above costs	**0.8045**	0.1365	0.3341

Bolded numbers indicate which factor the corresponding variable is loaded on.

Appendix B. Exploratory factor analysis of fifteen attitudes towards physicians, GSS 1998

Variable	Factor 1	Factor 2	Uniqueness
Doctors always do their best to keep the patient from worrying	0.1695	**0.6254**	0.5801
Doctors are very careful to check everything when examining their patients	0.2815	**0.6588**	0.4867
Doctors always treat their patients with respect	0.2309	**0.6766**	0.4889
Doctors always avoid unnecessary patient expenses	0.0171	**0.6181**	0.6177
The medical problems I've had in the past are ignored when I seek care for a new medical problem	**0.5639**	0.1339	0.6641
Doctors never recommend surgery (an operation) unless there is no other way to solve the problem	0.0107	**0.6802**	0.5373
My doctor is willing to refer me to a specialist when needed	**0.5424**	0.085	0.6985
I worry that my doctor is being prevented from telling me the full range of options for my treatment	**0.7164**	0.0372	0.4854
I worry that I will be denied the treatment or services I need	**0.7086**	0.0207	0.4974
I worry that my doctor will put cost considerations above the care I need	**0.7367**	0.0051	0.4572
I doubt that my doctor really cares about me as a person	**0.6113**	0.1429	0.6058
I trust my doctor's judgments about my medical care	**0.6339**	0.2871	0.5158
I trust my doctor to put my medical needs above all other considerations when treating my medical problems	**0.6299**	0.2566	0.5374
My doctor is a real expert in taking care of medical problems like mine	**0.6322**	0.2891	0.5168
I trust my doctor to tell me if a mistake was made about my treatment	**0.5411**	0.3342	0.5955

Bolded numbers indicate which factor the corresponding variable is loaded on.

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