



Politics and the Perceived Boundaries of Science: Activism, Sociology, and Scientific Legitimacy

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Abstract

Research has suggested that public confidence in the scientific community has become politicized, but it is not clear that liberals and conservatives disagree on the more fundamental question of what counts as being scientific. An analysis of General Social Survey data finds that political conservatism is negatively associated with an individual's rating of sociology as being scientific. This association is not found when examining ratings of economics or biology. Education moderates this association, as the gap between liberals' and conservatives' ratings of sociology's scientific-ness is greater among those with more education. Although research has demonstrated that trust in the scientific community has become politicized, these findings demonstrate that the perceived boundaries of science can also be influenced by political ideology.

Keywords

science, sociology, politics, conservatism, liberalism

Although particular scientific claims or types of research face opposition (Baker 2013; Nisbet 2004; Weber and Stern 2011), the public generally views science quite positively as an endeavor and institution (National Science Board 2016). Indeed, science is a powerful source of authority in modern society (Barnes and Edge 1982; Böhme and Stehr 1986). Individuals, organizations, and governments look to scientific evidence and experts for understanding and advice regarding a wide variety of issues (Cash 2001; Lavertu, Walters, and Weimer 2012). Because of this, the dynamics underlying who or what is perceived to be “scientific” are important to understand.

Recent research has suggested that political ideology is playing an increasingly important role in shaping individuals' perceptions of and attitudes toward science. Gauchat (2012:183), for instance, found that political conservatives' confidence in the scientific community has declined in the past few decades. He suggested that this trend is due to conservatives' distaste for “regulatory science” or the actual or perceived increase in links between organized science and government policy.

Although studies such as Gauchat's (2012) show that trust in science has become politicized, it is not clear that perceptions of the scientific community's boundaries are politicized. That is, conservatives could have less confidence in the scientific community than liberals while agreeing with

liberals in their definition of what counts as science. Conservatives could agree with liberals, for example, that biology is scientific, while simultaneously disagreeing in how much they trust the biologist community when it comes to issues of policy or regulation.

The study presented here considers the question of whether political ideology shapes perceptions of what counts as scientific. It examines this question with a particular interest in how political ideology influences perceptions of sociology as a scientific field. This focus is motivated by arguments that sociology's perceived scientific legitimacy, more so than other fields, could be shaped by an individual's political ideology. Research on public attitudes about science has tended to focus on science in the abstract or on specific natural or medical sciences. Comparatively little research has examined public attitudes toward social science. This study, then, expands this focus.

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Science, Social Science, and Public Perceptions

A substantial amount of research has examined the public's perceptions of and attitudes toward science (Allum et al. 2008; Miller 2004; Osborne, Simon, and Collins 2003). This research, however, is often quite vague on the issue of what is included under the banner of science. Many surveys have asked how much confidence individuals have in "science" or "the scientific community." But, as Pion and Lipsey (1981) noted more than 30 years ago, "it is not even clear what the public includes under the label 'science and technology' or which particular sciences they think of (chemistry, physics?)" (p. 314). This limitation has been reiterated in more recent research (Gauchat 2012).

Although it might not be clear what precisely the public imagines when responding to questions about science or scientists in the abstract, it does seem clear that few people are thinking first and foremost about the social sciences (Finson 2002; Mead and Metraux 1957). Indeed, the use of the distinct phrase "social science" itself highlights that such fields are not exactly what most people mean when thinking about "science." Although likely frustrating for some social scientists, it is not surprising that the public equates science so strongly with fields such as physics, chemistry, and biology. For many people, their education equates science with the natural sciences for many years before they are even introduced to the social sciences, assuming such an introduction ever occurs. In a study of children's perceptions of scientists, for example, Schibeci (1986) explained his focus on the natural sciences in the following manner: "Social science and social scientists are not included . . . because it is *school science* [italics added] that is the concern of this paper" (p. 139).

The strong link between popular conceptions of what counts as scientific and fields such as physics, chemistry, and biology would seem to provide protection against those fields' scientific legitimacy being questioned. Although the public might question the behaviors, activities, or motivations of individual physicists, biologists, or chemists, these fields' cachet makes it difficult to question their underlying scientific-ness. The more tenuous scientific status of social science fields within the mind of the general public, however, means that they are likely more susceptible to having their scientific credentials challenged (Lilienfeld 2012). Furthermore, such challenges could take on systematic patterns, such as those that might result from perceptions of a field becoming politicized.

Politics, Activism, and Sociology

What is perceived to be scientific is the result of ongoing boundary work by the scientific community and by competing or overlapping institutions (Gieryn 1983). Science was established, and is maintained today, by distinguishing itself in the minds of the public from engineering, religion, pseudoscience,

and other institutions. Today, science also struggles with identifying and maintaining boundaries with business (Lam 2010) and, of most interest here, politics (Jasanoff 1987; Waterton 2005).

Some fields, though, face a greater challenge than others in creating and maintaining a boundary between itself and politics. Sociology might face the greatest challenge in this regard. Although many social sciences touch on issues that are emotionally and politically charged, American sociology's core is particularly focused on so-called hot-button issues. As current president of the American Sociological Association Michèle Lamont recently noted in a discussion about conservative attacks on professors (Flaherty 2017), "Sociologists are not a unique target for these types of attacks, but we do study topics which people often feel the most passionate about, such as family, religion, and race."

Beyond simply studying issues that appear politically charged, sociology as a field has long struggled with whether it should be a field that simply studies some politically charged issues using scientific methods or whether it should also be engaged in activism surrounding those issues (Burawoy 2005; Homans 1978; Lipset 1994; Smith 2014). Statements advocating for either a sociology-as-science or sociology-as-activism position can be found throughout American sociology's history. On the science side, in his 1929 presidential address for the American Sociological Association (then named the American Sociological Society), William Ogburn (1930) argued that sociology must become

differentiated from methods that more properly belong to activities other than those of science. . . . Sociology as a science is not interested in making the world a better place in which to live, in encouraging beliefs, in spreading information, in dispensing news, in setting forth impressions of life, in leading the multitudes, or in guiding the ship of the state. Science is interested directly in one thing only, to wit, discovering knowledge.

A few decades later, in his *Invitation to Sociology*, Peter Berger (1963) would strike a similar tone, writing,

It is, of course, true that some Boy Scout types have become sociologists. It is also true that a benevolent interest in people could be the biographical starting point for sociological studies . . . [however] Sociology is not a practice, but an *attempt to understand*. . . . As a scientist, the sociologist tries to be objective, to control his personal preferences and prejudices, to perceive clearly rather than to judge normatively. (pp. 2–16)

Of course, for each statement like Ogburn's and Berger's, one can find a contemporary voice arguing that sociology is inherently intertwined with social and political activism. Ogburn's call for divorcing sociology from "making the world a better place to live," for example, came on the heels of work by reformer sociologists like Jane Addams, who saw "scientific sociology, in particular the use of surveys and statistics," as

simply a tool to be used in pursuing the ultimate goal of improving society by overcoming “limiting social conditions” (Evans 2009).

Similarly, it was only a few years after Berger’s vision for sociology was published that Becker (1966) argued that sociologists have to pick “sides” in their work (Gouldner 1968). In their attempt to describe and explain how society works, Becker argued, sociologists have two choices. The first is to present the prevailing narrative of how society works, which is often the narrative that has been constructed by individuals and organizations in power (Becker and Horowitz 1972). Because this narrative is already known, however, this does not provide much of a purpose for sociology. The more innovative alternative is to provide the narrative from the perspective of those without power. Given this dynamic, “good sociology is often radical” in the sense that it challenges those in power (Becker and Horowitz 1972:50). Furthermore,

the posture of radical sociology overlaps considerably with that of a radical politics. Radical sociology also rests on a desire to change society in a way that will increase equality and maximize freedom, and it makes a distinctive contribution to the struggle for change. (Becker and Horowitz 1972:52–53)

The internal debate about sociology’s relationship to science and activism recently resurfaced when, in the personal statement she offered as part of her candidacy for president-elect of the American Sociological Association, Mary Romero wrote,

We cannot shield ourselves with false notions of “objectivity,” but, as previous presidents have emphasized, ASA actively embraces public engagement and scholar-activism. . . . To be relevant and serve our members, ASA must continue to emphasize social justice in sociological inquiry. (American Sociological Association 2017a)

Romero’s statement received criticism from some sociologists and support from others (Büyükokutan 2017; Pardo-Guerra 2017). Among critics, a central concern was whether explicitly eschewing objectivity and calling for activism threatens sociology’s status as (or aspirations to be) a science.¹ An undercurrent to this controversy, however, relates to the actual or would-be goals of sociologists’ activism. That is, activism can cut multiple ways, but Romero’s call for “social justice” implied for many a particular type of activism directed toward particular types of goals, which can be roughly characterized as “liberal” in nature. These goals often seem to be accepted by even critics of the activist

¹Although many critics focused on Romero’s statement, it is worth noting that the statement of the other candidate, Rogelio Sáenz, contained similar sentiments, referring to his “social justice perspective” and stating that “sociology is particularly relevant today as reactionaries such as Donald Trump threaten cherished democratic principles and spawn hatred, racism, sexism, and Islamophobia” (American Sociological Association 2017a).

approach. In other words, although some question whether sociologists *should* be activists, there seems to be little question of what type of activist a sociologist would be (Martin 2016). Indeed, sociology has been called “the most liberal-left field in academe” (Lipset and Ladd 1972:88; see also Klein and Stern 2005).

Because of such perceptions, sociology has been highlighted by conservative thinkers and media as a distinctly liberal and even anticonservative field (e.g., Limbaugh 2016). For instance, a recent article in the *National Review* had the headline (Goodnow 2015), “Will Your Sociology Professors Talk behind Your Back if You’re Conservative? They Just Might.” Even in articles and books that are about the liberalism of academia broadly speaking, sociology is often pointed to as a particularly telling case study (e.g., Setyon 2016; Shields and Dunn 2016).

Expectations

Abbott (1988) argued that jurisdictional conflicts, or disagreements about a profession’s identity, methods, and goals, tend to begin within the profession’s workplaces but then spill over into the general public. Although there clearly is and has been much internal debate concerning sociology’s status as a science, its status a politically active discipline, and the relationship between those two statuses, it is not clear whether this debate has any salience for the general public. That some conservative media outlets and elites have publicly highlighted sociology’s liberalness or activist nature suggests that it is possible that perceptions of sociology’s scientific legitimacy within the general public have become politicized. Specifically, it is possible that political conservatives are more likely to perceive sociology as less scientific than political liberals. This leads to the first hypothesis of this study:

Hypothesis 1: Individuals identifying as political conservatives will rate sociology as less scientific than individuals identifying as political liberals.

Support for this first hypothesis would provide evidence that the perceived boundaries of science, not just trust in the scientific community, are influenced by political ideology. However, support for this first hypothesis by itself would not demonstrate that perceptions of sociology’s scientific-ness are uniquely affected by political ideology. Given this, a second hypothesis must be considered:

Hypothesis 2: Individuals identifying as political conservatives will not differ from political liberals in their rating of other fields’ scientific-ness.

Data and Measurement

The data for this study come from the General Social Survey (GSS) (Smith et al. 2017). Although the GSS has been fielded

annually or biennially since 1972, only the 2006 and 2012 editions are used for this study, as it is only in these years that the questions representing the outcome measures were asked. Primarily funded by the National Science Foundation, the GSS uses in-home interviews lasting about 90 minutes to gather data from a probability sample of U.S. adults.² In 2006 the response rate was 71.2 percent, while it was 71.4 percent in 2012. Weights are used in the analyses below that account for the sample structure of the GSS as well as non-response patterns.³

Outcome Measures

In the 2006 and 2012 editions of the GSS a series of items were included that asked respondents, “How scientific are each of the following fields? If you have not heard of a particular field, just say you haven’t heard of it”⁴ Respondents were asked to rate eight fields: sociology, physics, history, accounting, biology, economics, medicine, and engineering. Possible responses were (1) “very scientific,” (2) “pretty scientific,” (3) “not too scientific,” and (4) “not scientific at all.” These responses are reverse-coded in the analysis below so that higher scores represent more scientific ratings. Given the present study’s interest in the field of sociology, the item representing respondents’ ratings of this field’s scientific-ness serves as the central outcome to examine hypothesis 1.

Other fields’ ratings and their respective associations with political ideology must also be examined to assess hypothesis 2. History and accounting are not typically included in the boundaries of either natural or social science, so they would not seem to be good contrasts. Medicine and engineering clearly do have some connections to the sciences, but both are also more applied in nature and are therefore also not ideal. This leaves physics, biology, and economics as potential items representing basic social science and natural science fields.

Economics is included for the purpose of assessing hypothesis 2, as it is the only other social science field in the items. Gross (2013) found that there is a higher proportion of conservatives among economics professors than among sociology professors. Furthermore, he found that economics professors are more unified in perceiving and presenting their research as objective and distinct from politics. We might expect, then, that political ideology will be less associated

with the public’s ratings of economics’ scientific-ness compared with sociology.

Biology is also included in the analysis for the purpose of providing a comparison with the natural sciences. It is chosen rather than physics because there would seem to be greater potential for political ideology to shape perceptions of biology than physics. The biological sciences are often the center of moral-political debates about issues such as public school teaching standards and stem cell research. On the other hand, these controversies are often grounded in religious identities (Evans 2013), so it is possible that, net of religion, political ideology will not be associated with the general public’s ratings of biology’s scientific-ness.

A Note on Respondent Awareness of Fields. As indicated in the question wording for these outcome measures, respondents could volunteer that they had not heard of a particular field. The analysis here excludes individuals who say that they are not aware of a field. However, there is a natural concern that some individuals who are not familiar with a field might have provided a rating as a way to avoid admitting that they did not know something. This might be particularly problematic for sociology, given its relatively weak presence in the lower tiers of the educational system. Indeed, 8 percent of GSS respondents state that they have not heard of sociology, which compares with 1 percent for economics and 0.5 percent for biology.

Research has suggested that individuals with lower education are more hesitant to admit ignorance and, as a result, more likely to provide an uninformed response. However, this response is not necessarily random, as individuals will attempt to interpret the question and answer on the basis of general attitudes (Schuman and Presser 1980). What might be the implications of all of this for the present study?

One possibility is that more educated political conservatives will be familiar with sociology’s actual or alleged nature as a field focused on liberal activism. Given this, these educated conservatives might be rate sociology as less scientific. Political conservatives who are less educated, however, may not be as familiar with sociology. They might infer, however, on the basis of the survey question’s wording and the scientific-sounding nature of the word “sociology,” that the field must be fairly scientific. In other words, we might expect that education will moderate the association between political conservatism and perceptions of sociology’s scientific legitimacy. This is a possibility that is considered in the analysis presented later.

Primary Predictor

As stated in the hypotheses, the main interest in this study is to assess how political ideology shapes perceptions of the boundaries of science, particularly in relation to sociology’s status as a science. Political ideology is measured here with a question asking GSS respondents,

²In 2008, the GSS began conducting a small number (~10%) of interviews over the phone.

³The specific weight is called WTSSNR in the GSS codebook.

⁴In both 2006 and 2012, these items were included on only some of the ballots, with fewer respondents receiving the items in 2012. Furthermore, the 2006 GSS had more than twice as large an overall sample as the 2012 edition (4,510 vs. 1,974). As a result, there are more cases in the analysis for 2006 than 2012 (see Table 1).

We hear a lot of talk these days about liberals and conservatives. I'm going to show you a seven-point scale on which the political views that people might hold are arranged from extremely liberal—point 1—to extremely conservative—point 7. Where would you place yourself on this scale?

Controls

A number of other measures that could be associated with political ideology or respondents' perceptions of scientific fields are included as controls. To separate respondents' perceptions of fields' scientific-ness from their overall confidence in the scientific community, a measure is included from a question asking respondents,

I am going to name some institutions in this country. As far as the people running these institutions are concerned, would you say you have a great deal of confidence, only some confidence, or hardly any confidence at all in them? . . . Scientific community.

Possible responses were (1) "a great deal," (2) "only some," and (3) "hardly any." These responses are reverse-coded so that higher values represent more confidence in the scientific community.

Also included is a measure to assess respondents' general knowledge of science. This consists of a summed scale of correct answers to eight science knowledge questions presented to respondents. These questions began by telling respondents, "Now, I would like to ask you a few short questions like those you might see on a television game show." Seven true-false items offering the following statements were included in the measure: "Electrons are smaller than atoms," "Antibiotics kill viruses as well as bacteria," "The center of the Earth is very hot," "All radioactivity is man-made," "It is the father's gene that decides whether the baby is a boy or a girl," "Lasers work by focusing sound waves," and "The continents on which we live have been moving their locations for millions of years and will continue to move in the future." An eighth item asked, "Now, does the Earth go around the Sun, or does the Sun go around the Earth?"⁵

The GSS also includes a measure meant to assess respondents' understanding of what it means for something to be "scientific." This question asked,

When you read news stories, you see certain sets of words and terms. We are interested in how many people recognize certain kinds of terms. First, some articles refer to the results of a scientific study. When you read or hear the term scientific study, do you have a clear understanding of what it means, a general sense of what it means, or little understanding of what it means?

⁵Following past research, two items asking about human evolution and the big bang were not included in this scale, as these have been highlighted as being confounded with other factors, particularly religion (Roos 2014). The items that were included represent so-called uncontested scientific knowledge (Evans 2011).

Respondents who stated that they have a clear or general understanding were then asked to provide an open-ended explanation of their understanding: "In your own words, could you tell me what it means to study something scientifically?" Responses were then coded by the GSS into six categories. The first category represented incorrect responses. The other five represented correct responses: (1) formulation of theories/test hypotheses; (2) doing experiments, control group; (3) rigorous, systematic comparison; (4) measurement; and (5) classification. In the analysis described later, individuals who stated that they had little or no understanding to the original question serve as the comparison category.

Because education is often strongly associated with attitudes about science (Bak 2001), a series of indicators representing respondents' highest educational degree is included. This is measured as (0) less than a high school degree, (1) high school degree, (2) junior college or associate's degree, (3) bachelor's degree, and (4) graduate degree. The less than high school category serves as the reference group in the analysis.

Religion has also been shown to have significant associations with at least some attitudes about science, and religion is also associated with political conservatism (Olson and Green 2006; Smidt and Penning 1982). To account for this a series of indicators representing the religious tradition of the respondent are included in the analysis. These indicators note whether the respondent is (1) evangelical Protestant, (2) mainline Protestant, (3) black Protestant, (4) Catholic, (5), Jewish, (6) other religion, or (7) religiously unaffiliated. These indicators are coded using a common classification of the GSS's religious and denominational affiliation measures (Steenland et al 2000).⁶ In the analysis described later, the unaffiliated category serves as the reference group.

Finally, controls representing respondent sex, age, race, and year of GSS participation are included in the analysis. Men serve as the reference group in the analysis. Age is measured continuously, although the value of 89 represents those 89 and older. Race is measured with three indicators representing (1) white, (2) black, and (3) other race. The white category serves as the reference group. As noted earlier, only two years of GSS data are included in this study, and the 2006 wave serves as the reference category for the 2012 wave.

After excluding cases with missing data on any of the measures, the final analytical sample consists of 1,806 cases.⁷

⁶The actual code used for these religious tradition indicators was accessed from <http://lifewayresearch.com/reltrad/>, which corrects for several errors in the original software code (Stetzer and Burge 2015).
⁷A total of 2,015 cases provided a rating of sociology, excluding those who stated that they had not heard of the field. Of these cases, 4.73 percent are missing on the religious tradition measure, 2.68 percent are missing on the confidence in science measure, 2.03 percent are missing on the political views question, 1.44 percent are missing on the rating of economics measure, 0.40 percent are missing on the biology measure, and 0.35 percent are missing on the age measure. Note that some of these percentages overlap, as cases can be missing on multiple measures.

Table 1. Descriptive Statistics.

	Percentage or Mean	Standard Error
Sociology		
Not scientific at all	8.45%	—
Not too scientific	33.45%	—
Pretty scientific	48.23%	—
Very scientific	9.88%	—
Economics		
Not scientific at all	15.80%	—
Not too scientific	37.63%	—
Pretty scientific	32.82%	—
Very scientific	13.74%	—
Biology		
Not scientific at all	0.71%	—
Not too scientific	2.93%	—
Pretty scientific	23.32%	—
Very scientific	73.05%	—
Political conservatism	4.13	.03
Education	1.77	.03
Confidence in scientific community	2.41	.01
Science knowledge quiz score	5.54	.05
Respondent's understanding of "scientific"		
Not sure/no answer	17.66%	—
Incorrect answer	14.01%	—
Classification	24.54%	—
Measurement	15.13%	—
Systematic comparison	5.70%	—
Experiments with control group	9.41%	—
Forming theories/testing hypotheses	13.55%	—
Age (years)	46.70	.39
Survey year		
2006	80.10%	—
2012	19.90%	—
Race		
White	77.78%	—
Black	12.22%	—
Other	10.00%	—
Sex		
Male	45.95%	—
Female	54.05%	—
Religious Tradition		
Evangelical Protestant	24.28%	—
Mainline Protestant	16.50%	—
Black Protestant	7.04%	—
Catholic	25.74%	—
Jewish	2.53%	—
Other	6.10%	—
None/unaffiliated	17.80%	—

Sources: General Social Survey, 2006 and 2012 ($n = 1,806$).

Results

Descriptive statistics for all measure are shown in Table 1. We see that, probably unsurprisingly, biology is seen as

much more scientific by the general public than either sociology or economics. Just under three quarters of U.S. adults say that biology is very scientific. This compares with about 14 percent rating economics as very scientific and 10 percent rating sociology as very scientific.

Another way to examine these numbers is to combine the pretty scientific and very scientific responses as representing two positive responses and combine the other two responses as more negative responses. If we do this, we see that the public overwhelmingly sees biology as scientific, with 96 percent of respondents falling in the very scientific and pretty scientific categories. On the other hand, respondents are fairly split on the scientific-ness of sociology and economics, as roughly half rate these fields as not scientific at all or not too scientific, while the other half rate these fields as pretty scientific or very scientific (although the sociology ratings lean more on the positive side than economics).

Bivariate Patterns

The primary interest here, though, is not in the overall ratings but how political ideology might shape these ratings. Figure 1 offers an initial look at this issue. This figure shows the unadjusted ratings of the three fields by a condensed political ideology measure. Specifically, the percentage of respondents rating each field as very or pretty scientific is shown by whether the respondent identifies as liberal to any degree, moderate, or conservative to any degree. The error bars represent 95 percent confidence intervals for each percentage.

We see in Figure 1 that perceptions of biology's scientific-ness do not appear associated at all with political ideology. Looking at economics, we see that there appears to be a slight dip in the percentage rating economics as very or pretty scientific among political moderates. However, this does not appear to be significantly different from the ratings given by either political liberals or political conservatives.

Turning to the patterns for sociology, we do see some evidence of an association between political ideology and perceptions of sociology as being scientific. There is a 9 percent gap between liberal and moderate respondents in rating sociology as pretty scientific or very scientific, with the former being more likely to deem sociology scientific (65.45 percent to 56.29 percent). This gap expands slightly to 11 percent when comparing liberals and conservatives (65.45 percent to 54.29 percent). The confidence intervals for the liberal and conservative percentages do not overlap, which indicates that this gap is statistically significant.

Multivariate Analysis

Figure 1 provides initial support for hypothesis 1 and hypothesis 2. However, these findings are before removing the role of other variables. To account for these other variables, Table 2 presents the results of ordered logistic regression models examining the three outcome measures of fields'

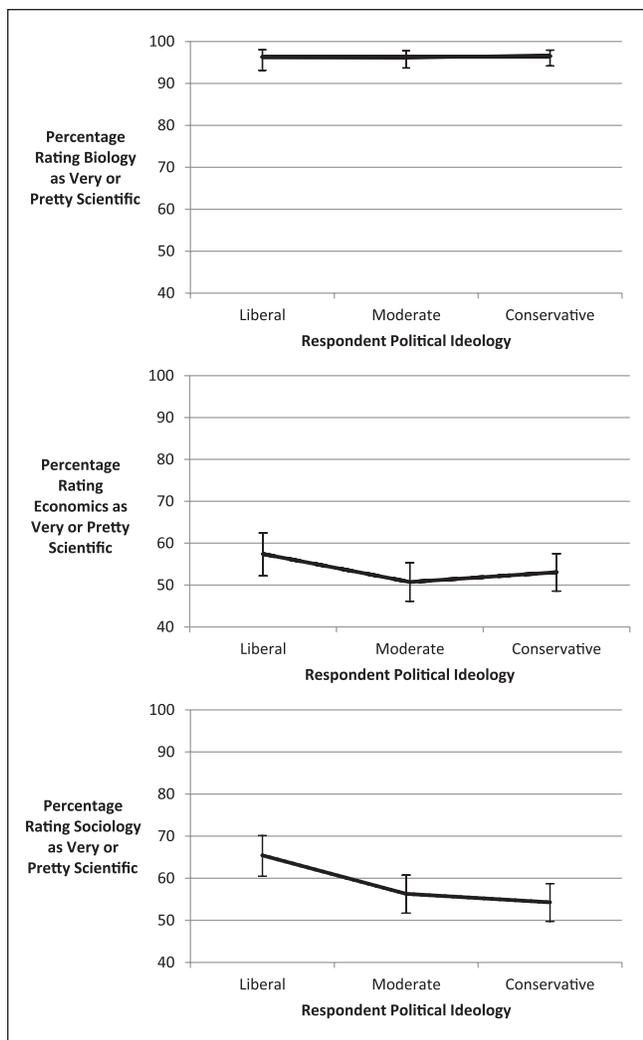


Figure 1. Unadjusted percentages rating biology, economics, and sociology as very scientific or pretty scientific by respondent political ideology (error bars represent 95 percent confidence intervals).

ratings. (Alternative specifications and models are discussed in a later section.)

Looking first at the base models for sociology, economics, and biology, we see that a respondent's political conservatism is negatively associated with his or her rating of sociology as scientific even after accounting for other measures. No significant association is found between political ideology and either the ratings of biology or the ratings of economics. This finding largely confirms the pattern seen in Figure 1 and provides support for both hypothesis 1 and hypothesis 2.

Examining the other measures in the base models, we see that a respondent's education is positively associated with his or her rating of biology's scientific-ness but not with his or her rating of sociology or economics. Confidence in the scientific community is positively associated with perceptions

of sociology and biology as being scientific. Confidence in the scientific community is not significantly associated with perceptions of economics as a science, however, although the coefficient is positive. The scientific knowledge measure is negatively associated with respondents' ratings of sociology as scientific, unrelated to ratings of economics as scientific, and positively related to ratings of biology as scientific. Looking at the indicators representing respondents' understanding of the meaning of a scientific study, we see that, relative to those who said they had little or no understanding, the other response categories do not differ in their ratings of sociology's or economics' scientific-ness. However, relative to individuals saying that they have little or no understanding of what it means for a study to be scientific, those stating that being scientific means classification, measurement, or forming theories and testing hypotheses tend to rate biology as more scientific.

Respondent age is negatively associated with perceptions of sociology as scientific, but not economics.⁸ There are no significant differences for any of the three fields between the two survey years. Similarly, there are no racial differences in any of the fields' ratings. Women do provide higher ratings of economics' scientific-ness than men, but there is no sex difference for sociology or biology.

There are some significant differences across religious traditions for sociology and biology. For the former, Jewish and black Protestant respondents perceive sociology as more scientific than religiously unaffiliated respondents. This could be a function of sociology's focus on issues surrounding race, immigration, inequality, and similar topics of particular salience to Jewish and black Protestant communities. For instance, sociological research and expertise on intermarriage has been seen as particularly important and authoritative among American Jews (Berman 2008). For biology, though, Catholic respondents assign lower ratings of scientific-ness than religiously unaffiliated. This could reflect tensions surrounding issues like evolution, stem cell research, and other religiously infused science controversies (Evans 2013). It is somewhat surprising that the evangelical Protestant indicator is not also significant, although the coefficient is in the expected negative direction and is close to reaching the significance cutoff ($p = .06$). Regardless, these religion-related differences show that it is not only politics that can shape perceptions of the boundaries of science.

As noted earlier, there is reason to believe that education could moderate the association between political ideology and sociology's scientific-ness. If less educated respondents are more likely to assign ratings without much familiarity of sociology and its history or reputation with political activism,

⁸Some studies of public confidence in science have found a curvilinear pattern for age (Gauchat 2012). Models including a squared term for age were examined here, but no such effect was found for these outcomes of fields' rated scientific-ness.

Table 2. Ordered Logistic Regression Models Predicting Respondents' Ratings of Fields' Scientific-ness.

	"How scientific are each of the following fields?"					
	Sociology		Economics		Biology	
	Base Model	Political Conservatism × Education	Base Model	Political Conservatism × Education	Base Model	Political Conservatism × Education
Political conservatism	-.10* (.04)	.03 (.08)	.02 (.04)	.05 (.08)	.04 (.05)	.06 (.09)
Education	.05 (.04)	.34* (.14)	.06 (.04)	.12 (.13)	.12* (.06)	.18 (.17)
Political Conservatism × Education	—	-.07* (.03)	—	-.01 (.03)	—	-.01 (.04)
Confidence in scientific community	.22* (.10)	.22* (.09)	.14 (.10)	.14 (.10)	.46** (.12)	.45** (.12)
Scientific knowledge quiz score	-.08* (.03)	-.08* (.03)	.01 (.03)	.01 (.03)	.16** (.04)	.16** (.04)
Respondent's understanding of "scientific"						
Not sure/no answer (reference)	—	—	—	—	—	—
Incorrect answer	-.14 (.22)	-.13 (.22)	-.09 (.21)	-.09 (.21)	-.25 (.23)	-.25 (.23)
Classification	-.09 (.17)	-.10 (.17)	-.25 (.19)	-.25 (.19)	.39* (.19)	.39* (.19)
Measurement	-.01 (.19)	-.01 (.19)	-.03 (.20)	-.03 (.20)	.48* (.24)	.48* (.24)
Systematic comparison	.27 (.24)	.25 (.24)	.32 (.21)	.32 (.21)	.68 (.37)	.68 (.37)
Experiments with control group	.16 (.21)	.15 (.21)	.20 (.21)	.20 (.21)	.47 (.28)	.47 (.28)
Forming theories/testing hypotheses	.20 (.20)	.20 (.20)	-.05 (.21)	-.05 (.21)	.97** (.28)	.97** (.28)
Age	-.01** (.003)	-.01** (.003)	-.004 (.003)	-.004 (.003)	-.004 (.004)	-.004 (.004)
Survey year						
2006 (reference)	—	—	—	—	—	—
2012	.08 (.13)	.08 (.13)	.18 (.13)	.18 (.13)	-.05 (.16)	-.05 (.16)
Race						
White (reference)	—	—	—	—	—	—
Black	-.41 (.25)	-.39 (.25)	-.24 (.25)	-.24 (.25)	.15 (.26)	.15 (.26)
Other	-.18 (.22)	-.22 (.22)	-.08 (.23)	-.09 (.22)	.26 (.26)	.25 (.26)
Sex						
Male (reference)	—	—	—	—	—	—
Female	.08 (.10)	.07 (.10)	.21* (.10)	.21* (.10)	.12 (.13)	.12 (.13)
Religious tradition						
Evangelical Protestant	.21 (.17)	.24 (.17)	-.06 (.17)	-.06 (.17)	-.40 (.21)	-.40 (.21)
Mainline Protestant	-.12 (.17)	-.09 (.17)	-.20 (.17)	-.20 (.17)	-.35 (.24)	-.35 (.24)
Black Protestant	.77* (.32)	.80* (.32)	.39 (.32)	.40 (.32)	-.24 (.35)	-.23 (.35)
Catholic	.02 (.16)	.05 (.16)	-.05 (.15)	-.05 (.15)	-.45* (.21)	-.45* (.21)
Jewish	.72* (.28)	.72* (.29)	.30 (.43)	.30 (.43)	.21 (.50)	.21 (.50)
Other	.41 (.26)	.42 (.27)	.13 (.27)	.13 (.27)	-.60 (.34)	-.61 (.34)
None/unaffiliated (reference)	—	—	—	—	—	—

Sources: General Social Survey, 2006 and 2012 ($n = 1,806$).

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

then political ideology might not have much of an influence on this group's ratings. More educated respondents, though, might be particularly aware of sociology's history and reputation, leading political ideology to have a stronger influence on this group's ratings. Or, on the other hand, less educated

conservative respondents may simply be responding to media messages about sociology's liberal bias or lack of scientific-ness, while more educated conservative respondents could have more awareness of sociology's methods and might rate it as more scientific.

Given this potential moderating effect, a second model was estimated that included an interaction term between education and political ideology. The results for these models are shown in the second column for each of the three fields in Table 2. Because of the inclusion of the interaction terms, the coefficient for political conservatism represents the association among those with less than a high school degree.

Looking at the results for sociology, we see that among individuals who do not have a high school degree, there is no significant association between political conservatism and perceptions of sociology's scientific-ness. Examining the coefficients for the interaction terms, though, we see that the association for political conservatism becomes negative as a respondent's education increases. The economics and biology models do not, however, find any significant interaction between education and political conservatism on respondent ratings of those fields.

The predicted probabilities of individuals rating sociology as very scientific as a function of education and political ideology were computed to make the interaction effect clearer. These percentages are shown in Figure 2. This is based on the sociology interaction model in Table 2 while holding the other measures are their respective means. As seen in Figure 2, among those with a high school degree, there is no expected significant difference between those identifying as extremely liberal or extremely conservative (9.9 percent to 7.8 percent). On the other hand, there is a 15 percent difference between bachelor degree-holding individuals identifying as extremely liberal and extremely conservative in their predicted probabilities of rating sociology as very scientific (20.0 percent to 5.0 percent).

Alternative Specifications

As with any study like this, there are always alternative models (Young 2009). Several other models were examined to assess the sensitivity of these findings to different specifications. The primary concern was in relation to the treatment of the outcome measures of fields' ratings. As noted above, the models presented in Table 2 use all four categories of the fields' ratings in an ordered logistic analysis. I also examined ordinary least squares models that treated these outcomes as continuous in nature. The results did not differ either in terms of the base finding of political conservatism having a unique negative association with ratings of sociology or the interaction with education.

I also examined binary logistic regression models that combined the "not at all scientific" and "not too scientific" categories (0) and the "pretty scientific" and "very scientific" categories (1). In this analysis, political conservatism remained uniquely negatively associated with ratings of sociology in the base models, but the interaction term in the second model for sociology fell just outside the significance cutoff ($p = .07$). Finally, multinomial logistic models were examined with the modal "pretty scientific" response serving

as the base outcome. These results showed that political conservatism increased the relative risk that an individual would choose the "not too scientific" and the "not at all scientific" responses over the base outcome for sociology, but it did not significantly affect the relative risk of choosing "very scientific" option over the base option of "pretty scientific."

All of these models generally found the same negative association between political conservatism and respondents' perceptions of sociology's scientific-ness. Given this, the ordered logistic models were chosen to present here, as they retain the full variance of responses (compared with a binary logistic models), can be presented relatively clearly and succinctly (compared with a multinomial logistic models), and also come close to the range and nature of the response categories (compared with the ordinary least squares models).

Discussion

The results presented here offer general implications for our understanding of public attitudes about science and more specific implications for sociology as a field. Regarding the broader implications, the analysis shows that the perceived boundaries of science can be subject to politicization. This supplements our understanding of the politicization of public confidence in science (Gauchat 2012). However, the politicization of science's boundaries does not appear to affect all fields equally. Political ideology does not seem to influence an individual's perception of biology or economics as scientific, but it does seem to influence sociology's perceived scientific legitimacy. In the case of biology, its strong status as a core science might immunize itself from having its scientific legitimacy politicized. In the case of economics, it might simply not be subject to the same dynamics underlying the politicization of sociology's scientific legitimacy.

The findings regarding how respondents' understanding of what it means for something to be scientific relate to their perceptions of the three fields also deserve some further thought. Individuals who think of science as the process of classification, measurement, or forming theories and testing hypotheses tend to rate biology as more scientific than those without a clear understanding of what it means for something to be scientific. This is not the case for either sociology or economics, which could suggest that these fields are not seen as engaging in such activities. As noted at the beginning, from an early age individuals are taught that science means certain activities, such as hypothesis testing or classification, but are often only presented these activities only in the context of the natural sciences. This does seem to harm the ability for individuals to perceive or appreciate these activities within the social sciences.

The findings offer some more specific implications regarding sociology as a field. In her analysis of sociology's status within higher education, Huber (1995) noted that "the cost of attracting reformists results from its giving a discipline the appearance, justified or not, of being politically partisan"

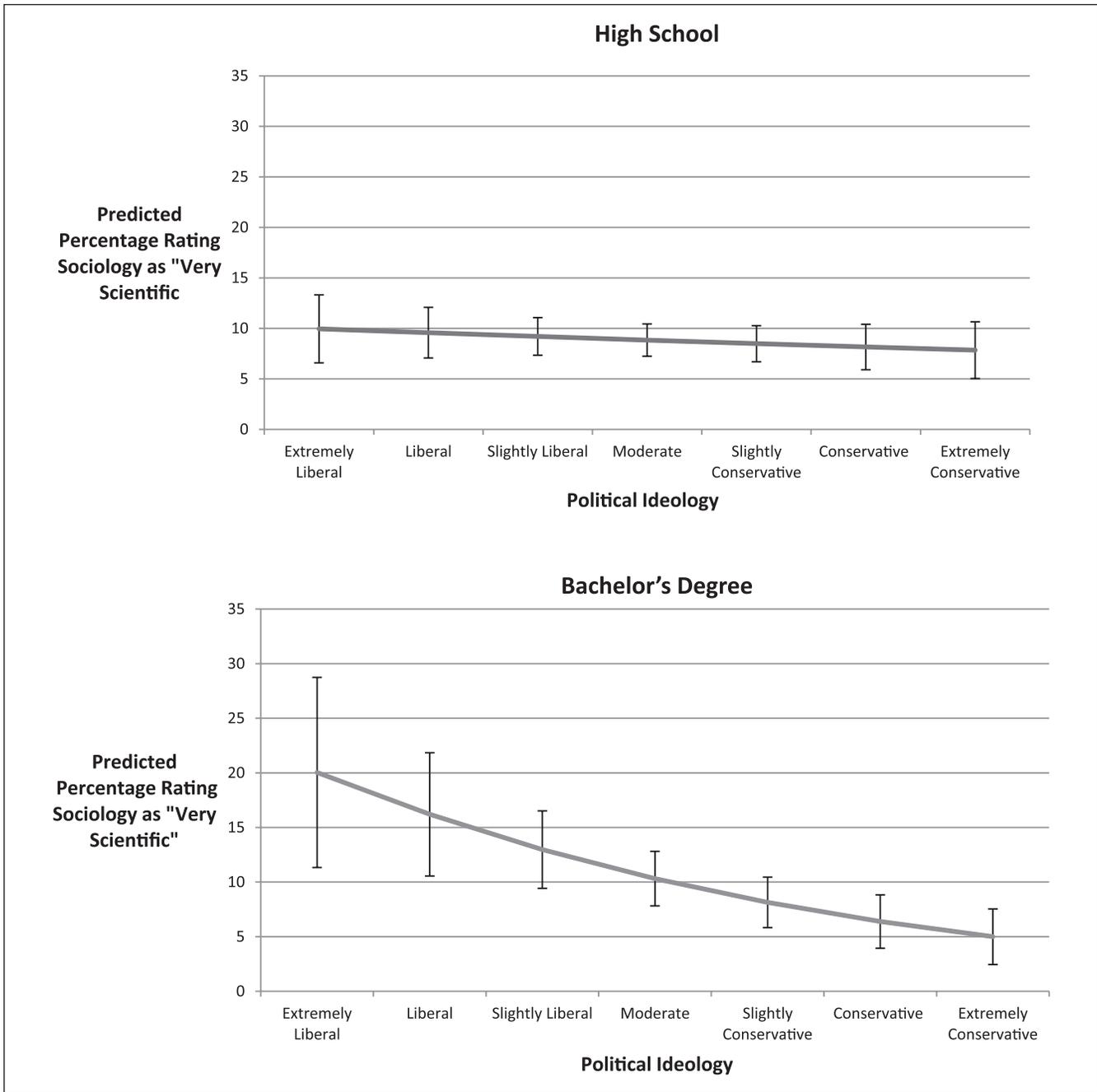


Figure 2. Predicted percentage rating sociology as “very scientific” by education and political ideology (based on analysis in Table 2, all other measures held at respective means; bars represent 95 percent confidence intervals).

(p. 201). Huber was referring primarily to the potential for sociology’s liberal activist image to negatively affect sociology departments’ relationships with university administrators and state legislators. The analysis presented here, though, suggests that this reputation may affect more than faculty positions or salaries. Sociology’s reputation appears to shape perceptions of its scientific legitimacy among the general public, particularly among the educated general public where awareness of sociology’s reputation is greater.

This education finding is particularly noteworthy, as we could have expected just the opposite pattern. That is, we might have thought that less educated conservatives, perhaps because they are simply responding to messages from conservative media, would be the ones who would rate sociology as less scientific. College-educated conservatives, who might have taken at least one sociology class and have more direct knowledge of the field’s research methods, might have been expected (or hoped) to rate the field as

more scientific than their less educated conservative peers. This does not seem to be the case. This education pattern has been seen in other politicized science issues. For example, surveys show that it is more educated conservatives who express more skepticism concerning climate change (Newport and Dugan 2015).

Why does it matter if conservatives perceive sociology as less scientific than liberals? Despite claims of a “crisis” of public confidence in science appearing in both academic and popular writing (e.g., Czerski 2017; Davies and Wolf-Phillips 2006; Millstone and van Zwanenberg 2000), the scientific community continues to receive a tremendous amount of respect from the general public. Indeed, of all the institutions asked about in the GSS, the scientific community is second only to the military in receiving the public’s confidence.⁹ Associated with this confidence is a willingness to defer to scientific authority on issues in which scientific expertise is seen as relevant (Brossard and Nisbet 2007). For sociologists who want the field to be seen and respected as a scientific endeavor, it is likely troubling that the field’s status as a science appears to be politicized within the general public. Sociology’s lack of perceived scientific legitimacy among educated conservatives means that a substantial portion of the general public is less likely to defer to the findings and claims of sociological research.

The problem is actually quite similar for sociologists who want the discipline to be an agent of progressive change or justice. Sociology’s advantage over overtly political organizations or institutions would seem to be its potential to claim scientific authority. That is, the reason that individuals, organizations, or governments might listen to sociologists more than, say, the representatives of a political party, is that sociologists have the potential to be neutral actors who are simply communicating the results of scientific research.

The findings presented here, though, suggest that sociologists would only be able to gain such a rhetorical or authoritative advantage among more liberal and educated audiences. Of course, some might argue that if the field is inherently liberal or should be liberal by choice, then the perceptions of liberal audiences are the only ones that matter. That is, sociology will never be able to persuade conservative audiences, so boosting the field’s scientific legitimacy among liberal audience is the only possible and worthwhile goal. It is unclear, though, whether sociology in this situation actually needs to be seen as scientific to persuade such an audience. Furthermore, it is possible the perceptions of sociology’s scientific legitimacy could be higher even among liberals. In other words, although educated liberals might give higher

ratings than educated conservatives, it is possible that both groups could rate sociology higher.

As with any analysis, the one presented here has its limitations. It is possible that the association between political ideology and ratings of sociology’s scientific-ness is driven by something other than sociology’s reputation as a politically biased discipline. It is not clear what that other mechanism would be, however. Still, to be certain of this inference we would need more in-depth data representing respondents’ reasoning for their ratings. Another limitation comes from the other fields examined beyond sociology. It would have been ideal to have other social science fields for the purposes of comparison, as it is possible that ratings of other fields’ scientific-ness, such as anthropology or political science, would also be associated with raters’ political ideology. Finally, it is also worth pointing out that although sociology’s reputation as a science does appear to be politicized, the bigger issue might simply be the overall low ratings of the field’s scientific legitimacy. As seen in Figure 2, even among the most favorable audience of extremely liberal bachelor’s degree holders, fewer than 25 percent rate sociology as very scientific.

Despite these limitations, the findings presented here do raise important questions and challenges for sociologists and their professional organizations. Does the field want to increase its scientific legitimacy among political conservatives, particularly educated political conservatives? If so, how can this be accomplished? The American Sociological Association (2017b) recently presented a strategy for public engagement and advocacy. The stated goal of this advocacy is to “use sociological findings to inform decision making” and, by doing so, “demonstrate the value of sociology.” The findings here suggest, though, that these efforts might be overlooking the prerequisites for those efforts to succeed (Turner 2005). That is, efforts to inform “timely policy issues” without addressing the discipline’s reputational issues could lead to failure on the policy front while solidifying those reputational perceptions.

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⁹In the 2016 GSS, 42 percent of U.S. adults express “a great deal of confidence” in the scientific community, compared with 53 percent for the military, 36 percent for medicine, 26 percent for education, 20 percent for organized religion, 18 percent for major companies, 14 percent for organized labor, 10 percent for television, 8 percent for the press, and 6 percent for Congress.

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