Cross Pressure Scores:
An Individual-Level Measure of Cumulative Partisan Pressures Arising from Social Group Memberships

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ABSTRACT**:** Early studies of voting behavior hypothesized that the degree to which an individual was "cross-pressured" might affect how she participates in politics. However, attention to this topic waned before returning in recent years, mainly within the narrower confines of social networks analysis. In an effort to encourage broader consideration of the role of cross-pressures in political behavior, we present a new approach to estimating cross-pressures that (1) is individual-specific, (2) reflects the cumulative cross-pressures faced by an individual from her many intersecting social strata and group memberships, irrespective of the mechanism by which those pressures are experienced, and (3) can be estimated using widely-available data in party systems of any size, thus making it easier to study the effect of cross-pressures cross-nationally and over time. We demonstrate that these estimates are robust to many estimation choices, correspond well to existing measures of cross-pressures, and are correlated with patterns of behavior predicted by extant theories.

All statistical analysis was conducted using the Stata and R software packages.

1. Introduction: A New Measure for an Old Concept

Do citizens subject to conflicting political pressures approach politics differently from those who experience reinforcing pressures? Are these "cross-pressured" citizens less likely to participate in politics? While such questions sparked a considerable amount of research in the 1940s and 50s, they have received correspondingly less attention in subsequent decades. Only recently has the topic of cross-pressures found renewed interest from scholars, primarily within the narrower confines of what is now called social network analysis.

While inconsistent empirical findings may be partly to blame for the waning study of the relationship between cross-pressures and political behavior, we believe that the dearth of research is also due to a lack of an effective, flexible, and easily-implemented method for measuring the *overall degree* to which individuals are subject to reinforcing or conflicting pressures. Early approaches to assessing cross-pressures only accounted for two sources of cross-pressures at a time (e.g., examining the intersection of race and union membership, or income and religion), focused on population subgroups rather than individuals, were inappropriate for use in multiparty systems, and did not keep pace with subsequent developments in political methodology. More recent approaches, like using survey data to study political heterogeneity and communication in social networks, offer more precise individual-level measures amenable to multivariate analysis and have much improved our understanding of the mechanisms of social influence. These approaches, however, require specialized data, focus on only one of several mechanisms by which people experience cross-pressures, and face practical limitations on the scope of the social environment that can be measured in this way (e.g., inquiring about three or four discussants rather than the dozens or hundreds of individuals who make up a person's entire social network).

Our goal is to introduce a new individual-level measure of cross-pressures that is flexible enough to use with any number of political parties, simultaneously incorporates any number of salient cleavages, can be calculated using data readily available in almost every political survey, and accounts for the broad range of potential mechanisms by which cross-pressures may be experienced. In doing so, we seek to reinvigorate the analysis of cross-pressures' effects on political behavior by providing scholars with a tool—the *cross-*

pressure score—for analyzing the effects of cross-pressures across a wide array of contexts. For example, do group-based cross-pressures cause voters to make up their minds later in election campaigns and, if so, how does their impact compare to other factors like disinterest in politics, lack of information, and an indecisive personality? Can such cross-pressures explain why some voters do not develop a party identification? Are highly cross-pressured citizens less apt to engage in selective exposure? Are they more easily persuaded by political messages? Cross-pressure scores offer scholars a new way of investigating these and many other questions using multivariate methods, and they can be constructed from any dataset that has good coverage of relevant demographic measures.

As presented here, our measure focuses only on capturing the partisan pressures one may experience as a result of belonging to intersecting social strata or groups (i.e., as defined by factors such as class, age, gender, race, religion, region and so on). This was the original focus of research on cross-pressures and political behavior (Berelson et al. 1954; Lazarsfeld et al. 1944). Although early work sometimes referred to them as "social cross-pressures" because they arose from social group memberships, we avoid that terminology in this paper to minimize confusion, as the same term also has been used to refer specifically to cross-pressures arising through interpersonal contact in social networks (what the early researchers called "personal influence"). The two overlap, but are not identical: pressures arising in one's peer networks do not merely reflect the more abstract social groups to which one belongs, and social group membership generates pressures that are felt in ways other than through communication in social networks. The cross-pressure scores herein are designed to capture the cumulative impact of pressures regardless of mechanism (e.g., interpersonal communication, elite cue-taking, introspection), but only those that arise from one's social strata and group memberships. Our focus also is on pressures with respect to preferred political party, though the approach could be easily adapted for pressures aimed at almost any other target, political or otherwise.

This approach is intended as a complement (rather than an alternative) to contemporary studies which delve into the social and psychological processes underlying the effects of conflicting and reinforcing pressures. While other studies directly measure subjective perceptions of group signals or communication

through social networks, cross-pressure scores serve a different, novel purpose: to estimate for each person the overall or cumulative partisan pressures arising from the myriad social groups to which she belongs. Cross-pressure scores can be readily estimated in political systems with any number of political parties and require only commonly-available data on demographics and partisan preferences. Scholars can therefore use these scores to compare the effect of cross-pressures on political behavior cross-nationally and to study the effect of cross-pressures over time using data sets that were collected long into the past.

We begin by presenting a brief history of the study of cross-pressures (Section 2), before providing a simple framework for categorizing different types of studies of cross-pressures and identifying where our approach fits into this framework (Section 3). We then explain how our measure is calculated (Section 4), and present a series of statistical assessments of the measure's general validity, as well as its specific utility in understanding the effect of cross-pressure on political participation (Section 5). We conclude (Section 6) with a discussion of how cross-pressures scores may be applied in future research.

2. Cross-Pressures: A History

Scholars have long suspected that citizens who are subject to cross-cutting partisan pressures behave differently from citizens who experience reinforcing partisan pressures. In the earliest example of this line of research, Lazarsfeld and colleagues (1944, 56) focus on the effects of "cross-pressures" that stem from "contradictory and opposing influences" on the voting decision, as a result of belonging to groups with conflicting tendencies. For various pairs of factors (e.g., religion and socioeconomic class), researchers contrast the behavior of cross-pressured citizens—those pushed in opposite directions by each characteristic—with the behavior of citizens experiencing reinforcing pressures. In research that continued through the 1950s, cross-pressured citizens were hypothesized and found to make voting decisions later in the campaign, show less interest in the election, have less stable vote intentions, and be less likely to vote (Berelson et al. 1954).

Despite early enthusiasm for the concept, research into the effects of cross-pressures on voting behavior faltered and waned in subsequent decades. This may have been driven in part by the behavioral

revolution in political science, whose advocates rejected what they claimed was social determinism in the accounts by Lazarsfeld and Berelson (Zuckerman 2005a). These scholars embraced the use of national surveys that solicited little information about the social networks that might give rise to interpersonal influence and included little, if any, data about the immediate social environment in which voters were embedded. Landmark behavioral studies, like *The American Voter* (Campbell et al. 1960), still considered the role of cross-pressures and found evidence of their impact on the timing of vote decisions, split-ticket voting, and indifference about the election outcome. But their emphasis was on attitudinal cross-pressures that stemming from competing views of the parties, even if those views were unrelated to social groups.

We suspect that at least two additional factors contributed to this trend. First, scholarly interest may have diminished in part due to doubts raised by subsequent researchers. In particular, efforts to replicate the early findings with new data during the 1960s and 1970s produced inconsistent results, and reanalysis of earlier studies suggested that the impact of cross-pressures may have been confounded with the direct effects of social attributes (Horan 1971; Knoke 1990; see Mutz 2002 for a synopsis). In recent years, though, there has been renewed interest in illuminating the specific mechanisms by which cross-pressures are thought to affect voters. Much of this work has employed data on social networks, using individual estimates of interpersonal pressures to test their effects on voters' opinions and behavior (Huckfeldt and Sprague 1995; La Due Lake and Huckfeldt 1998; McClurg 2006a; Mutz 1998, 2002; Walsh 2003). From another direction, there has been new interest in what one might call "issue cross-pressures" that stem from holding conflicting policy preferences irrespective of their origins (Hillygus and Shields 2008).

Perhaps not surprisingly given the many theoretical directions in which the field has spread, no empirical consensus about the effects of cross-pressures has come about. Some studies have confirmed that cross-pressures decrease participation (Eveland and Hively 2009; McClurg 2006b; Mutz 2002), while others contend that they have no effect or even *increase* it (Jang 2009; Leighley 1990; Nir 2005; Scheufele et al 2006). Crucially, there appears to be little agreement on the proper way to model or even define cross-pressures of each type, hindering comparison between studies.

This brings us to the second possible reason that cross-pressures have been largely excluded from contemporary models of voting behavior. Early approaches to testing the effects of cross-pressures were a poor fit with evolving methodological trends, as initial waves of research were primarily bivariate in nature. Given the multiplicity of factors that could influence voters' party and candidate preferences, these approaches provide a highly constrained look at cross-pressures, and one ill-suited for inclusion in the multivariate estimations that have come to dominate studies of political behavior. [1] The early approaches also do not seem well-suited to assessing cross-pressures in political systems with more than two parties. Thus, in an effort to reinvigorate and broaden study of cross-pressures on behavior, our goal is to generate a measure of cross-pressures that takes a multitude of social group memberships into account, transcends particular mechanisms of influence, can be used in multiparty contexts, and allows cross-pressures to be estimated from data which is widely available.

3. Cross-Pressures: A Conceptual Framework

With the extant literature having touched on so many different facets of cross-pressure (e.g., sources of cross-pressures, effects of cross pressures, pressures with respect to what goal, and the mechanisms by which cross-pressures exert effects), we want to err on the side of caution in being very precise about what it is we mean by cross-pressures. Our focus is on the partisan pressures arising from the social strata or groups to which one belongs. Individuals may feel pushed or attracted to supporting one political party or another on account of their membership in particular social groups.[2] Such pressures may be felt in a number of ways, which we review below. Regardless of whether the pressures manifest in social relations or primarily psychologically, if one's group memberships point in a similar direction politically (e.g., an evangelical non-

[1] Some researchers have attempted to account for cross-pressures in such analyses by using indicators for cross-pressures brought on by specific combinations of demographics (Powell 1976), but this is only feasible for examining a handful of characteristics at a time, and requires substantial a priori assumptions about the cross-pressuredness of various groups.

[2] These groups may be any collection of individuals recognizably defined by a common set of experiences, interests, or goals. With a focus on national politics, we are interested predominantly in larger social groups. These can not only include common demographic groups defined by religion, race, ethnicity, class, education, sex, sexual orientation, region, occupation, age (or generation), but also groups defined by more particular interests or experiences, such as parenthood, marital status, hobby (e.g., hunters, cyclists, gardeners), or possessions (e.g., homeownership, gun owners, stock market investors).

union member in the U.S.), then the individual is more likely to feel reinforcing pressures. If group memberships push her in different directions politically (e.g., an evangelical union member in the U.S.), then she is more likely to experience conflicting pressures. She is cross-pressured. The measure we introduce in the next section is intended to capture the overall level of cross-pressures accumulating across the multitude of groups to which one belongs.

There are many ways by which a person may become aware of or experience such partisan pressures from his intersecting social groups. Pressures may arise purely through *introspection*: someone can sit alone in his home and realize that, as a union member, he is attracted to the Democratic Party but, that as an evangelical, he is attracted to the Republican Party (Campbell et al. 1960). Furthermore, the attraction to a party may be tied directly to the social group (e.g., "Democrats have always looked out for us union guys") or indirectly through the values and issues of the group (e.g., "as an evangelical Christian, I believe in traditional family values and oppose gay marriage; the Republican Party seems to share my concerns").

Alternatively, individuals may experience partisan pressures through *communication with personal contacts*, or what Lazarsfeld and colleagues (1944) called "personal influence." The communication may be explicit, such as a friend advocating on a behalf of a party during a conversation, or implicit, such as noticing a political yard sign in the lawn of a respected colleague. Take again the example of an evangelical union member. He may hear pro-Republican messages from friends at church but pro-Democratic messages from co-workers at the union hall. Moreover, individuals may be responsive to such personal influence in an effort to please others or because they are genuinely persuaded by what they hear. Research in recent years has shed considerable new light on the impact of partisan homogeneity and heterogeneity in voters' social networks (Huckfeldt et al. 2005; Huckfeldt and Sprague 1995; McClurg 2006a, 2006b; Mutz 2002; Walsh 2003; Zuckerman 2005b).

Finally, an individual may become aware of partisan pressures via *cues from group elites* (Converse and Campbell 1968). Such cues may be transmitted in person (e.g., at a public rally) or, perhaps most commonly these days, through the mass media. The "elites" in question may be public figures, formal

organizations, or media personnel (from newspaper editors to television pundits to bloggers).[3] For example, our evangelical union member may hear a national religious leader saying positive things about the Republican candidate, but receive word that the AFL-CIO has endorsed the Democratic candidate.

Our measure, cross-pressure scores, is intended to capture the cumulative partisan pressures stemming from the myriad social groups to which an individual belongs, *irrespective of the mechanism(s) by which those pressures have been experienced.* The goal is constructing a measure that indicates how likely someone like our hypothetical evangelical union member is to be conflicted in his partisan choices on account of his being simultaneously an evangelical Christian, a union member, a man, and so on, no matter whether he feels those pressures through internal psychological processes, social interactions with peers, or cue-taking from elites. Thus, our approach is a complement to, not a substitute for, studies that closely scrutinize one or more micro-level mechanisms underlying social influence. It grows out of the recognition that, in a given time and place, some people's intersecting social identities combine to push them largely in one political direction while others' social identities leave them buffeted by conflicting impulses. By establishing a method for measuring the overall level of cross-pressuredness arising from each person's social identities, this approach enables researchers to study how the accumulation of such reinforcing or conflicting pressures shapes political behavior controlling for other individual and contextual factors.

It is important to be clear about our measure does not do, as well what it does. First, we have noted already that the measure is not specific with respect to the mechanisms of social influence. Scholars have made considerable progress in studying at least some of those mechanisms with specialized survey instrumentation and experimental methods. Our measure could be easily used in conjunction with such research but is not designed to supplant it. Second, at least as presented here, our measure does not capture partisan pressures from all possible sources, but rather only those arising from social group memberships. Although social networks constitute one means by which group-based pressures are felt, not all pressures arising through social networks reflect one's broader social identity groups. There may be a good deal of

[3] One could expand this categorization to include mass-mediated cues about the majority preferences of the collective social group itself, such as those reported in polls—what Diana Mutz (1998) labels "impersonal influence."

overlap between the partisan pressures arising *from* social group memberships and those arising *through* social networks, but any overlap is far from complete.[4] Likewise, one may experience partisan pressures from cue-giving elites (e.g., the endorsement of a respected military figure) or from introspection about issues and values (e.g., "this party shares my views on the environment, but the other party better represents my foreign policy goals") that are not rooted in one's own social groups memberships. These pressures also are not captured by our measure.

Researchers also could modify or build on our approach to produce related sorts of measures in the future. They may, for example, be able to use this approach to construct measures of cross-pressures arising from issues or from attention to various media sources, regardless of whether those issues or media sources have any links to a person's social groups. Such adaptations may face greater concerns about selection or other forms of endogeneity, when it comes to the link between partisan inclinations and the source of cross-pressures. Within the framework of cross-pressures arising from social groups, researchers could also refine the measure in order to reflect differences in the salience of or importance attached to specific group memberships. In a context where gender issues receive prominent attention, pressures from pertaining to that identity may be felt more strongly. Some individuals may place greater weight on their religious identity than on their occupational identity, for others the reverse is true. With access to specialized data, these factors could be incorporated into the construction of cross-pressures scores. The trade-off is that such specialized data is harder to come by and is often collected for a fairly limited subset of a person's many social group memberships. Finally, it would be very easy to adapt our approach to measure group-based cross-pressures with respect to something other than partisan preference, whether political or non-political. Nonetheless, in light of the original focus of research in this field, our own interests, and the limitations of space, the remainder of this paper focuses on constructing a measure of partisan cross-pressuredness arising from social groups, and it is to this task that we now turn.

[4] One's family members, friends, co-workers, neighbors, and other acquaintances frequently belong to at least some different social groups than oneself. In some cases, a person may have few or no personal contacts with other members of a larger social group to which she belongs.

4. Calculating Cross-pressure Scores

In this section, we introduce a new measure, *cross-pressure scores* (hereafter, "CP scores"). These scores take into account an individual's membership in a wide array of social groups, specifically the extent to which the person's particular demographic profile is likely to generate reinforcing or conflicting influences in terms of partisan preference. The proposition that larger CP scores reflect strong conflicting pressures from social groups rests on an underlying assumption that support for specific political parties has some basis in social group cleavages in the society being investigated. We will say more about this assumption and potential violations of it in the next section.

We calculate CP scores using a four-step process.[5] Step 1 is to estimate the relationship between demographic characteristics and partisan preferences through regression analysis. This analysis is not meant to function as a comprehensive model of preferences, but simply to measure the correlations between preferences and demographics.[6] In other words, it demonstrates across the entire electorate the relationship between membership in each included social group and support for different political parties. This will be the basis for assessing whether an individual's constellation of social group memberships generate reinforcing or conflicting partisan pressures.

For each individual, we then generate predicted probabilities (Step 2) of supporting each party or candidate, using the results obtained in Step 1. The distribution of probabilities, taken together, capture the extent to which an individual's particular demographic profile pushes her toward one reasonably clear partisan preference, suggesting the presence of reinforcing pressures, or leave her torn among two or more options, suggesting conflicting pressures. We can summarize the extent of such cross-pressures by calculating the variance in predicted probabilities across parties for each individual (Step 3): the lower the variance in these predicted probabilities, the more an individual's social-group memberships push her

[5] More detail about each step is provided in the next section, while Figure A1 in the Online Appendix provides a graphical display of the algorithm, and Appendix I describes the precise steps used for each dataset.

[6] Our models of party preferences exclude other common variables such as ideology. At best, these variables would improve the overall fit of the model yet leave the coefficients on demographics unchanged, but more likely the inclusion of such variables would have a detrimental effect. We do not to control for variables such as ideology specifically because group memberships may affect party preferences by way of influencing such attitudinal variables; including these potential mediators would thus obscure rather than clarify the relationships of interest.

equally towards multiple parties, i.e., the more she is cross-pressured.[7] Finally, we rescale this value as needed and reorient it so that higher scores indicate greater cross-pressures, thus producing an individual-specific CP score (Step 4).

These CP scores meet all of the requirements for a new measure of cross-pressures laid out previously: they efficiently estimate the simultaneous influence of any number of social group memberships in a single measure; they can be readily applied not just to two-party systems, but also to multiparty systems; and as the only variables required are demographics and partisan preferences, the measure can be calculated using almost any dataset commonly used to study voter behavior.[8] Satisfying these requirements is necessary for developing a broadly useful measure of cross-pressures, but it is not sufficient on its own. The next critical step is to validate that the measure actually reflects cross-pressures experienced by voters, and does not simply generate noise or serve as a proxy for something else entirely. The remainder of this section addresses these concerns by using data analysis to answer the following questions:

1. *How robust are CP scores to the particular choices involved in estimating them?*
2. *Are CP scores converge in expected ways with other existing approaches to measuring cross-pressures?*
3. *Do CP scores have the effects on voter behavior predicted and (sometimes) shown in the existing literature?*

As we cannot measure an individual's experience of cross-pressures directly, there is no absolute standard by which to compare the accuracy of our or any other method. But, with that caveat, a finding that CP scores

[7] We use the term "variance" herein to refer to the variation in respondents' probabilities of supporting each party, but that term is only used in the general sense. The exact way "variance" is quantified—which may or may not involve the calculation of variance in the statistical sense—is discussed later in the paper.

[8] CP scores arise out of estimates in a predictive model (Step 1). Thus, when using CP scores in subsequent models to explain outcomes, researchers may wish to account as well for the uncertainty in the Step 1 process that generated the scores. For example, in the analyses that follow (e.g., Section 5.3), we checked the results using two different methods of accounting for this uncertainty. In the first, we used bootstrapping methods in the Step 1 estimation to compute a distribution of values rather than a single point estimate. In the second, we used the method proposed by Treier and Jackman (2008) for incorporating measurement error from our estimates into the subsequent standard errors of CP scores. In both cases standard errors increased as one would expect, but in neither case did those changes appreciably alter our confidence in the estimated effects of CP scores. Nonetheless, researchers may wish to take similar steps to check their own analyses, especially when working with small datasets (e.g., several hundred respondents or less).

are robust, that they sensibly parallel with existing measures, and that they affect political behavior in the expected direction would go far in establishing our measure's validity.[9]

5. Validation

To validate our CP scores, we draw on four different data sources. For most tests in the two-party U.S. context, we employ the 2004 National Annenberg Election Study (NAES). We rely on the 2001 Polish National Election Study (PNES) to extend our tests to a multiparty context with many more viable parties than the U.S.[10] For one test which required data from more than two countries, we use data from Wave 2 of the Comparative Study of Electoral Systems (CSES). Finally, in order to assess the correlation between our measure and direct estimates of social cross-pressures, we rely on the 2006 General Social Survey (GSS), which includes data on the partisan makeup of respondents' social networks.

5.1 How Robust are Cross-Pressure Scores to Particular Choices Involved in Estimating Them?

CP scores are fairly straightforward on a conceptual level, but implementing them in a particular dataset requires choices on the part of the analyst. Here, we briefly identify five of these choices, and report on how robust our measure is to various specifications of each. (The precise steps used to calculate CP scores in each dataset are listed in Online Appendix I.)

The first choice is to determine the dependent variable measuring partisan preference to be used in Step 1. Conceptually, this variable should sort respondents based upon their preferred parties or candidates. The two most obvious options, then, are vote choice and self-reported partisanship. For the analyses in this paper, we use vote choice, but a case could be made for either.[11] Ultimately, though, the two will produce

[9] These questions are most similar to the typology of measurement validation procedures proposed by Adcock and Collier (2001), but given that (as we discussed in the introduction) cross-pressure scores are indirect estimates of cross-pressures rather than direct measurements, their framework only partially matches the needs of this analysis.

[10] We performed these tests using data from countries that effectively had two, three, four, five, and six major parties, respectively. Our robustness checks yielded similar conclusions across all party system sizes. Given space constraints, we present here the results from a two-party case (U.S.) and a six-party case (Poland) for maximum contrast. The PNES dataset also contains extensive instrumentation not only on demographic characteristics and party preferences, but also on political engagement and participation (relative to, e.g., the CSES dataset).

[11] In previous versions of this paper, we included a discussion of the trade-offs between using vote choice and partisanship as the dependent variable in the first regression. This material is available from the authors upon request (and could also be added to the online appendices should reviewers so desire).

similar results in most contexts: for example, using NAES data, we find that the resulting scores assigned to US respondents are correlated at 0.90.[12]

A second important choice is which parties to include in the dependent variable in Step 1. While there is a conceptual attractiveness to including all possible options, subsample size will become a concern for parties that receive smaller levels of public support; where the data include few supporters of a specific party, estimation may over-fit results to the unique characteristics of the individuals sampled. Appropriate thresholds, therefore, could depend upon two factors: the number of supporters in the dataset, and the number of supporters in the electorate. This is usually an obvious decision in a case like the United States, where one would almost always limit the Step 1 regression analysis to supporters of the Democratic or Republican parties, but becomes more of an issue in multiparty systems. We therefore examined correlations between CP scores from Poland calculated using the top 4, 5, 6, 7, and 8 parties in the 2001 Polish elections. (Note: The alternative variance calculation methods listed in the table are described later in this section.) As Table 1 demonstrates, CP scores generated from these different analyses are highly correlated—of all the pairings, the correlations between individuals' scores is at worst 0.85 in this data—thus giving us confidence that the measure is fairly robust to how many parties we include in our Step 1 analysis. One diagnostic indicator researchers can use is the presence of a notable discontinuity in the magnitude of correlations as the number of parties changes. In Table 1, all correlations are very high, but the drop-off is somewhat steeper moving from five to four parties. Thus, we would choose to include at least five parties in this case.

- INSERT TABLE 1 ABOUT HERE –

The third choice concerns which demographic variables to include in Step 1 of the CP score algorithm. Our best advice to guide individual analysts in their choices is simple: include all theoretically and contextually appropriate social categories, where "appropriate" means those social groups known to be important for that society and time, especially those with relevance to partisan cleavages. This issue is likely

[12] Using party affiliation to study party strength (for example) is not as problematic as it may seem at first glance—CP scores use overall patterns rather than any individual's party preferences, so do not substantially reflect the individual's actual preference—but avoiding the appearance of potential endogeneity is still preferable if the researcher is indifferent between the two approaches.

to be most acute for researchers comparing surveys across countries or long periods of time, where the availability and relevance of specific measures will vary. Because models are run separately for each country and/or year, varying significance of particular variables is not a problem; these changes will be reflected in the resulting scores, so including occasionally-significant variables is unlikely to create problems in samples of adequate size. The biggest threat to robustness comes not from what is included, but rather from what is omitted: when major social cleavages that are highly relevant to politics are omitted, the reliability of the measure is compromised. We illustrate and address this point further below. As a result, substantive knowledge of the political context (and its social bases) under examination is valuable for avoiding such problems.

In an effort to reduce the risk of omitting a particularly important social cleavage, one could take a fairly inductive approach by including all available variables and letting the data identify which social attributes are relevant to party preferences. There is still some risk because this assumes that the survey collected data on the most politically important social groups, thus even this more inclusive approach is not a complete substitute for contextual knowledge. Moreover, a "kitchen sink" model increases the danger of over-specification and over-fitting the data, especially in small samples or where highly rare categories are included even in larger samples (e.g., vintage stamp collectors, billionaires, coast guard officers). For categorical variables, researchers therefore may wish to adopt some guideline about minimum acceptable size (e.g., 30-50 respondents).

Another related diagnostic for researchers to consider at this first stage is the fit of the specification. On one hand, the Step 1 model contains by design a restricted set of variables (i.e., limited to exogenous social strata and groups) and therefore will at best explain only a modest portion of the variance—at least in any society where votes are not completely socially determined (i.e., where personal policy preferences and other attitudes matter).[13] On the other hand, researchers should be cautious when the regression yields a large number of weakly estimated variables or an extremely poor fit in which little or no variance in party

[13] *The American Voter* (Campbell et al. 1960) effected a revolution in the study of voting behavior by arguing for the need to move beyond an exclusive focus on social groups to consider a wide range of attitudes and other psychological predispositions.

preferences is explained. The former situation will add unnecessary noise to CP scores. The latter situation may indicate either that key social cleavages have been omitted, thereby generating unreliable CP scores, or that party preferences have little basis in social cleavages, rendering CP scores meaningless.[14]

To test and illustrate the implications of variable choice, we compared two approaches in creating CP scores for five countries in the Comparative Study of Electoral Systems dataset: one which uses the "best-available" set of demographics for explaining partisan preferences in each country, and a second which only uses a "core" set of variables that are available across all five surveys. The main difference between these sets was the omission of variables reflecting race, religion, ethnicity, language, and region from the core set. In countries lacking such divisions or where most of these divisions are not salient for party politics (e.g., Great Britain, Poland, and South Korea), we found strong correlations, ranging between 0.84 and 0.93, between CP scores calculated with the core and best available variable sets for each country. But the decision to adopt the core variables approach was more problematic in Israel and the US, because it meant the exclusion of demographics which are obviously highly salient to national politics. The correlation in CP scores based on core and best available variables dropped to 0.46 in the US and 0.58 in Israel. Thus the decision to include or exclude variables should be made with eye toward the best mix of comparability and accuracy.[15]

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[14] If social groups in a particular time and place do not align with parties (cf. Dalton and Wattenberg 2000), this would have several implications: Step 1 regressions would suggest a weak impact of social attributes on party preferences. At Step 2, therefore, the predicted probabilities would converge toward equality across parties, because the model offers little added information to predict how people would vote. This results in lower variance across probabilities and thus higher CP scores. Unlike situations where high CP scores result from strong offsetting group signals, there would be far less differentiation in CP scores across the sample (in theory, converging to a constant) and any such differentiation would be mostly noise. When used to explain some aspect of behavior, this variable—on account of being close to a constant or mostly noise—should have little or no predictive power. One would conclude then that partisan cross-pressures rooted in social groups are playing little role in explaining behavior. In short, one would reach the correct conclusion *for that time and place*, but it would be a mistake to render a broader judgment about the relevance of cross-pressures from such data. How can one tell this situation from one where group-based cross-pressures exist but simply don't have an effect on behavior? At Step 1, researchers should check to see that (1) some social attributes significantly predict party preferences, and (2) that social attributes jointly make a significant contribution to explaining party preferences (e.g., by examining fit statistics such as a joint F-test, R^2, etc.).

[15] To illustrate how these decisions affect subsequent analyses using cross-pressure scores, we repeated the analysis conducted in Section 5.3 using scores generated from only a "core" set of demographics (omitting country-specific variables such as race, region, language, religious denomination, and so forth, as described in this section) in the US. These results—presented in Table A4 of the online appendix—are meant for comparison with Table 4 below, and show that the effects of these "core" cross-pressure scores are in the same directions at those of their "best-available"

Once our initial regression (Step 1) is complete and we have predicted probabilities of voting for each party for each individual (Step 2), we still need to turn these probabilities into usable CP scores. We do this by first calculating the variance across predicted probabilities for each individual. If voters are really only deciding between their two most preferred parties, then it is best to calculate CP scores using only the variance across the two largest predicted probabilities of party choice; inclusion of additional probabilities may simply add noise. If, however, voters consider the full range of parties, then we would want to include all of the predicted probabilities in the calculation of her CP score. Ultimately, this is a conceptual question: which parties truly matter to the respondent's decision making process? Fortunately, our analysis of the Polish data shown in Table 2 reveals little difference in the CP scores generated by each of the alternative approaches we tested: calculating variance based on individual's likelihood of voting for his top 2 parties, his top 3, or for all of the parties (what we call "Top-2 Variance", "Top-3 Variance", and "Full Variance", respectively). Thus while this may be an interesting conceptual question, the measure itself appears fairly robust to how the question is answered, so researchers may safely choose a calculation based on the conceptual model of voter decision making they have in mind.

-- INSERT TABLE 2 ABOUT HERE –

The final choice for the researcher involves how to rescale our variance measures to create CP scores. This is not actually a test of the measure's internal validity, as the rescaled measure used will by definition be highly correlated with the un-rescaled version. However, we do want to highlight the procedure we have used in this manuscript, which is to rescale the variances from 0 to 1 then subtract the rescaled values from 1, so that the respondents with the lowest variance (the most cross-pressured, as this indicates the most equal preferences between parties) would have the highest CP scores, thus making the measure more intuitive.

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cousins, but of a moderately-diminished magnitude (up to 50%, in terms of coefficient size). As we would expect, scores generated less precisely are weaker predictors of behavior, but the consistency of this pattern across models demonstrates that our measure is not overly reliant on a particular specification or proxying for one or two especially-important demographics.

5.2. Do Cross-Pressure Scores Converge in Expected Ways with Existing Approaches?

Our next task is to assess the extent to which CP scores converge with what we already know about cleavages in American politics, by comparing our scores with expectations about cross-pressures for pairwise combinations of demographic groups (the approach used in early work on cross-pressures). For citizens who ought to be more cross-pressured—because they are members of groups with conflicting partisan orientations—we should find higher CP scores. We begin with the following assumptions (confirmed by data): evangelicals, rural residents, whites, and Southerners tend to favor the Republican party, while urbanites, the poor, those in union households, and Northeasterners tend to favor the Democratic party. Thus we expect on average to find the following:

1. *Higher CP scores among evangelicals in union households than among evangelicals in non-union households*
2. *Higher CP scores among the rural poor than among the urban poor*
3. *Higher CP scores among Northeastern whites than Southern whites*.

In each case, the former subgroup is assumed to be subject to conflicting pressures, while the latter subgroup experiences reinforcing pressures. Thus our first step is to see whether the CP scores calculated through our method behave as expected in these three stylized cases.[16]

Creating CP scores in the US is very straightforward. We generate CP scores for each respondent in the 2004 NAES using two-party presidential vote intention (for pre-election respondents) or actual vote choice as the initial dependent variable. Only two parties are considered, since no other party's candidate received even 0.5% of the popular vote. This makes our specification simpler; the debate over variation calculation methods is moot, because all would produce equivalent results, and rescaling is also a non-issue. We simply calculate CP scores by taking the absolute difference in predicted vote probabilities and

[16] It is important to note that these expectations about CP scores should be observed *on average* across the subgroups, so there will still be substantial variation between respondents within each subgroup. In other words, while the average rural and poor respondent will have a higher CP score than the average urban and poor respondent, there should also be many rural poor with low CP scores and many urban poor with high scores.

subtracting that number from 1. The Step 1 regression includes a wide array of demographic variables (50 in all), and the majority of these variables are highly statistically significant in predicting vote choice.[17] Their substantive significance varies considerably, however, with the biggest impact coming from racial and religious variables, as students of American politics would expect. The model explains a fair amount of variance for including only social attributes (e.g., Pseudo-$R^2 = 0.16$), and its overall fit is comparable to previous models predicting U.S. presidential votes from social characteristics (cf. Shanks and Miller 1990).

-- INSERT FIGURE 1 ABOUT HERE –

The top half of Figure 1 presents the distribution of CP scores for the entire US population.[18] This serves as a baseline for purposes of comparison. The bottom half of the figure displays the distribution of CP scores across the six subgroups we identified above. The findings are clear: in all three cases, individuals in subgroups expected to be more cross-pressured (evangelical union members, the rural poor, Northeastern whites) show markedly higher CP scores on average than those in the corresponding reference subgroups ($p < .0001$, $t > 20$, in all cases). This effect is particularly dramatic in the case of evangelicals. Evangelicals in non-union households are the least cross-pressured of all six subgroups on average, and the only distribution where the mode is clearly on the left side of the midpoint. Conversely, evangelicals in union households have a higher mean CP score (0.60 vs. 0.51), and the distribution of scores for this subgroup peaks at a very

[17] See Table A1 in the Appendix for results; comparable results for Poland are presented in Table A2. We include gender, age, education, employment status, occupation, income, union membership, race, immigrant (vs. native born), religion, gun ownership, urban residence, and others; the immense sample size of the NAES gives us the luxury of using something closer to a "kitchen sink" approach, employing as broad a range of demographics as possible. Note that Table A2 displays multinomial logit estimates, and therefore one can not judge whether social group membership significantly predicts party preferences from the statistical significance of individual coefficients. If you changed which political party serves as the base reference category, a different set of coefficients may appear as "significant."

[18] For comparison, Figure A2 in the online appendix shows the distribution of CP scores in Poland. There is considerable variation in CP scores, though fewer scores in the lower ranges than observed in the U.S. This is a logical consequence of the larger party system, as few Polish voters will find themselves attracted completely, on account of their social attributes, to one party and not at all attracted to the others. Nonetheless, given the parties on offer in 2001, some Poles found themselves much less cross-pressured than others (e.g., urban residents, infrequent churchgoers, and retirees; all differences $p < .001$). Making specific predictions for pairwise subgroups, as Lazarsfeld and colleagues (1944) did for in the U.S. two-party system and as we do in Table 3, is not as simple where several parties are competing for overlapping constituencies. One may find some cases using particularly strong cleavages to which asymmetric numbers of parties are appealing—e.g., non-religious urban residents were less cross-pressured in the 2001 Polish election than religious urban residents (CP scores = 0.52 and 0.74, respectively, $p < .001$), but generally differences in cross-pressuredness will be more subtle, and finding particularly low levels of pressures is likely to require identifying highly-specific subgroups based on five or six social attributes simultaneously.

high level (between 0.8 and 0.9). Across these six subgroups, we find higher and lower CP scores where we expected to find them, increasing our confidence in the validity of our measure. At the same time, within each subgroup there is still a wide-ranging distribution of individual scores, which demonstrates the value of moving beyond pairwise combinations and looking at the cumulative impact of cross-pressures across a wide range of social group memberships.[19]

Table 3 extends this analysis by presenting summary data on a wider array of subgroups (41 in all). To create this list, we selected five of the most Republican-leaning and Democratic-leaning characteristics (based on the preferences of NAES respondents), and calculated the mean CP scores among respondents belonging to each possible pairwise combination of these ten demographics. We compare the median CP scores for respondents of each combination with an expectation based on the partisan leanings of each demographic.[20] The expectations therefore are derived from the old-fashioned approach of examining pairwise social categories (Lazarsfeld et al. 1944), and we can examine the CP scores to see if they are highest for those subgroups which are expected to be cross-pressured (i.e., the two social characteristics point in different partisan directions). Subgroups are listed in descending level of cross-pressuredness, as indicated by the CP scores.

-- INSERT TABLE 3 ABOUT HERE –

The table shows a very strong correspondence between expected levels of cross-pressures and mean CP scores. At the top of the list with the highest median CP score (.80), are those in gun-owning, non-churchgoing households; as gun-owning favors Republicans and non-church-going favors Democrats, these individuals are expected to be highly cross-pressured. At the other end, evangelical gun-owners are not expected to cross-pressured—both groups favor Republicans—and indeed have a much lower median CP score (0.40). The subgroups in between show a similar pattern. CP scores reflect a continuous scale of cross-

[19] It is worth reiterating that older methods of capturing cross-pressures through the use of dummy variables assume that all people with a particular demographic profile—e.g., Evangelical union members—face the *same* cross pressures. Our method, in contrast, calculates a separate CP score for each individual, reflecting the fact that, for example, the population of Evangelical union members still varies in terms of age, region, gender, and so forth.

[20] Median respondents are presented here rather than subgroup means so that we can provide context by identifying these respondents' locations in the overall distribution of scores.

pressuredness, therefore there is no single cut point at which one becomes "cross-pressured." Looking at the top quartile of (i.e., ten) subgroups in Table 3 and the bottom quartile, one can see that the correspondence with the original pairwise expectations is 100% and 90%, respectively. Any other "crossing over" of expectations for being cross-pressured or not occurs in the middle of the CP score range, as one would expect. Urban evangelicals make up the only subgroup in the table that seems to deviate much from expectations. Under the old approach, we would have expected them to be cross-pressured, but the CP scores suggest they are only moderately so at most. This is because CP scores, by dint of their construction, reflect two things that the old pairwise approach did not: (1) the fact that urban evangelicals also have numerous other social attributes, many more of which may tilt toward a single party; and (2) the partisan pressure from the evangelical identity is considerably stronger than the pressure from living in an urban setting.

We can now examine how well CP scores converge with more recent attempts at measuring the extent to which individuals are experiencing conflicting partisan pressures through specific mechanisms. We would not expect these measures to correlate perfectly or even very strongly with CP scores, as the different sets of measures have distinct purposes. CP scores attempt to capture the extent of pressures rooted in social groups that are experienced through all possible mechanisms, while the other measures are mechanism-specific and not confined to group-based pressures. Moreover, all of these variables are measured with error. CP scores, as constructed here, do not account for the differential importance of particular groups to a person's social identity or to her social network. Meanwhile, as is often the case, the measures of network heterogeneity or disagreement account for only a fraction of a person's interpersonal contacts, and measures of attitudinal conflict account for only a subset of each person's attitudinal considerations. Nonetheless, there ought to be *some* overlap—some positive correspondence—across these various measures about who is more versus less conflicted in their partisan choices.

Let's begin with measures of partisan pressures in social networks. Drawing on data from the 2006 GSS, Figure 2 compares respondents' CP scores with reported cross-pressures in their social networks. In recent research on social networks, two distinct approaches have been used for calculating cross-pressures

arising in these networks. The first, looking at the heterogeneity of political preferences within social networks (Huckfeldt 2004; Nir 2005; Scheufele et al 2006), is presented at the top of the figure. In this figure, heterogeneity (sorted into four categories) reflects the absolute differences between the proportions of Republicans and Democrats among the respondent's reported acquaintances; those with an even balance between the groups are considered to have the most heterogeneous networks. The graph shows the distribution of CP scores among respondents at each level of network heterogeneity. Note that, in these "box and whiskers" plots, the boxes show the 25th, 50th, and 75th percentiles of each distribution, while the whiskers show the extremes.[21]

-- INSERT FIGURE 2 ABOUT HERE –

At each level, respondents' CP scores span most of the range of possible scores. This demonstrates the imperfect correlation between demographics and social networks: in both homogenous and heterogeneous networks, there are individuals whose demographics push them in opposite directions and individuals whose demographics are reinforcing. But there does appear to be a pattern in these results as well, albeit a modest one. Moving from those in the most homogenous networks to the those in the most heterogeneous, the distributions of CP scores shift markedly upwards. This is most obvious when looking at the lower ends of the distributions: while the respondents in each group with the highest CP scores are at similar levels, looking at the 25th percentiles of each group presents a stark contrast. In substantive terms, once you introduce some disagreement or heterogeneity into a network, CP scores are much less likely to fall in the lower range of the distribution.

In homogenous networks, those with the most reinforcing demographics (and thus lowest CP scores) have *very* reinforcing characteristics—individuals at the 25th percentile of CP scores among the low-heterogeneity group have scores of approximately 0.27, which would place them at the 14th percentile of the overall population in the GSS. By contrast, in the highest heterogeneity group, those at the 25th percentile have CP scores of about 0.45, equivalent to the 28th percentile overall. This means that those respondents

[21] For the simple linear relationship between CP scores and each network measure, see Figure A3 in the online appendix.

who are identified as having low CP scores are more likely to report membership in homogenous social networks, while those with higher scores tend to have more heterogeneous networks. This is exactly what we would expect if CP scores were reflecting higher cross-pressures in heterogeneous social networks, and so bolsters our argument for the scores' value.

The second common method for estimating social network cross-pressures is to calculate the proportion of an individuals' discussants with whom she conflicts over partisan preferences (Huckfeldt et al 2005; McClurg 2006; Mutz 2002; Mutz and Mondak 2006). The bottom graph in Figure 2 compares the proportion of each *partisan* respondent's acquaintances from the opposing party (which we refer to as the level of *disagreement* in their networks) with their CP scores. The graph is organized similarly to the previous one, with respondents sorted into four levels of disagreement based on the proportion of their acquaintances from the other party, and the relationship in this graph is even stronger. As above, moving from low to high levels of interpersonal cross-pressures (this time in terms of network disagreement), the distribution of CP scores moves distinctly higher. While in this graph, the differences in medians shows a clearer pattern, the most obvious differences are again at the low end of the distribution. Among the lowest disagreement group, those at the 25th percentile of CP scores were assigned scores of approximately 0.15, which is at the 7th percentile of the overall population. At the other end of the spectrum, the 25th percentile of the highest-disagreement group receives scores of 0.48—the 31st percentile of the overall population.

In general, those who report high disagreement in their social networks tend to receive the highest CP scores, while those whose acquaintances tend to share their predispositions are more likely assigned low CP scores. Figure 2 demonstrates that our measure corresponds in expected ways with beliefs about the relationship between social networks and cross-pressures. As expected, given differences in what the measures seek to capture, the overlap is modest but in the correct direction.

Our final tests look at how CP scores correspond to measures of attitudinal conflict. The first is a simple measure of attitudinal conflict presented in *The American Voter* (Campbell et al. 1960, p.81), which

takes account of respondents' policy preferences across a range of issues.[22] Using data on 23 distinct policy issues in the 2004 NAES, we coded responses as pro-Democratic, pro-Republican, or neutral, based on whether each policy choice pointed in a clear partisan direction. The numbers of pro-Democratic and pro-Republican preferences from each respondent were tallied and used to calculate the level of conflict across her policy attitudes.[23] The top graph in Figure 3 shows the relationship between CP scores and policy inconsistency across issues (the degree to which a respondent's attitudes push toward *different* parties across issues; cf. Campbell et al. 1960, Nie et al. 1976). The second attitudinal conflict measure is based on more recent work (Hillygus and Shields 2008); it takes account of the number of policy preferences that conflict with a respondent's self-reported party identification (i.e., the degree to which a partisan respondent's attitudes push toward the *opposing* party). The relationship between CP scores and this variant of attitudinal conflict is shown in the bottom graph of Figure 3.[24]

-- INSERT FIGURE 3 ABOUT HERE –

Both graphs show a clear pattern in the predicted direction, and to an even stronger degree than was shown in the previous graphs on interpersonal network cross-pressures. Once again, those subjected to the lowest levels of cross-pressures tend to receive lower CP scores than their highly cross-pressured counterparts, and this time the relationship is evident across all parts of the distribution (rather than being clustered at the lower end). In Figure 3a, the median respondent among the group with the lowest policy inconsistency receives a CP score of 0.51 (33rd percentile in the overall population), while the same respondent in the most inconsistent group earns a score of 0.70 (56th percentile overall). Similarly, in Figure 3a, the median respondent in the lowest inconsistency group has a score of 0.48 (30th percentile overall) while the median in the highest group is at 0.69 (55th percentile overall). Simply put, those who are cross-pressured in terms of their specific policy positions typically receive substantially higher CP scores than less

[22] Readers should not confuse this measure with calculating an issue-based CP score, which we are not estimating here; this measure does not account for the polarization of each issue or its significance to overall party preferences.
[23] Classifications as pro-Democrat, pro-Republican, or neutral made by authors; see Online Appendix 2. These graphs present five categories, instead of the four in the previous graph, because the larger sample size and greater variation in values allows for more precise categorization.
[24] For the simple linear relationship between CP scores and each attitudinal conflict measure, see Figure A4 in the online appendix.

cross-pressured respondents. Much as was seen with the measures of network cross-pressures in the previous figure, CP scores are shown here to be positively-correlated with commonly-used measures of attitudinal cross-pressures in the existing literature. As such, we have even greater confidence that CP scores are capturing the phenomenon they are intended to measure.

5.3 Do Cross-Pressure Scores Show the Expected Effects on Political Behavior?

The final evidence in support of CP scores' validity comes from their application in predicting political engagement and behavior. Our goal is not to present and test full causal models of the outcome variables, but rather is confined to examining whether CP scores are related to each behavior in the way predicted by previous studies.[25] Table 4 highlights the results of ten such models. (Full regression results are presented in Table A3 of the online appendix.) The first three models look at CP scores' effects on three forms of political participation—voter turnout, advocating for a candidate to other voters, and contributing to campaigns—using the post-election wave of the 2004 NAES general election panel. For each of these variables, higher cross-pressures should be linked to lower rates of participation.

—INSERT TABLE 4 ABOUT HERE—

These results clearly live up to that prediction: for all three models of participation, the coefficient on CP scores is negative and highly significant. The margins listed in the subsequent rows provide estimated outcomes if all voters were at the 10th, 50th, and 90th percentiles (from lowest to highest, relative to the overall population) in terms of CP scores, holding all other variables at their actual values. For turnout, the effect of moving from the 10th to the 90th percentiles is a decrease of 3.4 percentage points.[26] This magnitude of this decrease in turnout is modest in some respects, but it is also comes close in size to the much-heralded increases in voter turnout between the 2000 and 2004 or 2004 and 2008 U.S. presidential elections. Advocacy and donations show slightly larger effects from the same manipulation, with decreases of 4.7 and 6.0

[25] The specifications of each model are thus deliberately simple, only accounting for CP scores, the demographics used to create them, and a few other simple controls. We are not particularly concerned with omitted variable bias because, aside from our primary interest in the basic bivariate relationship, CP scores should be exogenous to most other variables typically included in these predictive models.

[26] Given the incredulously high rate of reported turnout in the NAES, however, one might suspect a stronger relationship were turnout measured more accurately and less like a constant.

percentage points, respectively. The change in donation rates is actually a 50% increase (relative to the low baseline for this rare activity) in the likelihood that a low-cross pressured individual will donate relative to high-cross pressured individual.[27]

The next five models examine the impact of CP scores on several measures of political engagement, variables that may in turn influence participation. A variety of studies have both suggested and presented evidence that cross-pressures decrease interest, inhibit discussion, and limit knowledge, while promoting indifference and alienation.[28] As in the previous models, the coefficients for these five variables are all in the predicted direction and highly significant, although the sizes of the estimated effects are admittedly quite modest in some cases. Interest decreases by 0.07 and discussion by 0.09 (roughly 2-3% of the scale length) in the move from the 10^{th} to 90^{th} percentiles of CP scores, while political knowledge decreases by 0.06 (about 1% of the scale length).[29] Indifference and alienation, meanwhile, both increase; the average distance between presidential candidate ratings decreases by 8.3 (out of a possible 100), while the distance between the rating of the preferred candidate and the maximum possible rating (100) increased by 3.6.

These analyses demonstrate that CP scores affect political engagement and political participation in the manner predicted by prior studies of cross-pressures. The magnitude of those effects ranges from very small (e.g., political knowledge) to modest (e.g., turnout) to substantial (e.g., donations and indifference).

The final pair of models turn to the effect of cross-pressures in Poland, looking at both voter turnout and political interest. Given that little extant work offers guidance as to whether cross-pressures should operate in multiparty contexts the same as in the U.S., the results speak less to CP scores' validity and more

[27] To provide additional context for these effect sizes, Table A5 of the online appendix presents comparable estimates for various levels of age, education, and income. We use these three variables because they are widely accepted to be among the most important predictors of participation, and while in most instances the effects of cross-pressure scores are smaller, they are still of a substantial magnitude.

[28] With regard to indifference, the concept of individuals being unable to choose between candidates or parties has actually taken (at least) two forms in the relevant existing literature. In theories of behavior rooted in rational choice, the form of "indifference" used here has been most common, based on the relative evaluations of candidates/parties (with more similar evaluations indicating higher indifference). Among those concerned with social and political psychology, however, "ambivalence" (in which intensity of affect is also taken into account; those with strong but indifferent feelings are more ambivalent than those who are merely apathetic) has received more attention (see Lavine 2001 and Basinger and Lavine 2005). Given that indifference is easier to interpret, more readily quantified, and may be more correlated with participation (Yoo 2010), we focus on that variable.

[29] Knowledge scales assign one point for being able to rate each of Bush, Kerry, Cheney, and Edwards on thermometer scales, and one point each for describing Bush as moderate or conservative and Kerry as moderate or liberal.

to their potential.[30] Nonetheless, these results are intriguing. Despite the much smaller sample size and simpler specifications used in Poland, the effects of CP scores on both turnout and interest are highly significant and in the predicted directions (with CP scores linked to lower turnout and interest). Moreover, the magnitudes are large: going from the 10th to 90th percentiles of CP scores decreases turnout by nearly 20 percentage points and diminishes interest by 11% of the scale length.

6. Conclusion

The purpose of this manuscript has been to introduce a new tool for measuring cross-pressures. The tool is the first of its kind to employ a wide range of social group memberships in order to estimate cross-pressures uniquely for individuals, allowing the data to reveal the links between demographic characteristics and partisan preferences. Additionally, it is flexible enough to fit a range of political and social contexts using data which is widely available. Finally, our method can be applied in cross-national research and to existing datasets, allowing us to study the effects of cross-pressures in a variety of different circumstances.

We subjected this new measure of CP scores to a wide range of analytical tests using data from four sources across five countries. We have found that the measure is robust to a variety of specifications; that it does indeed yield higher CP scores for individuals whom we expect to be more cross-pressured; that it is correlated with many existing measures of cross-pressures; and that it predicts reduced participation as well as hypothesized changes in political engagement. The magnitude of the effects ranges from very small (e.g., on political knowledge) to fairly substantial (e.g., on affective indifference toward candidates and likelihood of making a political donation). All told, these results demonstrate that CP scores can be a useful tool in the study of political behavior.

Our method for constructing CP scores in this paper is intentionally simple, but there is certainly potential for the procedure to be refined. Given that the CP scores generated here do not account for the significance of demographic predictors in the initial party preference regression, there is a risk that high-

[30] There are to date only a small number of studies of cross-pressures outside of the U.S. Among the most prominent, Powell (1976) examines the effects of cross-pressures on rates of partisanship in Austria, while Huckfeldt et al. (2005) look at political disagreement in social networks in three countries during the early 1990s.

magnitude / low-significance coefficients may add noise to the resulting predicted probabilities. In the future, it may make sense to use an iterative procedure for predicting probabilities, using repeated simulations to diminish the impact of highly-uncertain coefficients in particular cases.[31] Another possible innovation would be to make use not only of the values of each probability predicted in Step 2, but also the ordering of these probabilities among parties—in a multiparty system, the identities of the parties between which an individual is most pressured between could show us another dimension of cross-pressures which may prove valuable.

Even with such improvements, however, it is important to recognize certain limits of CP scores. First, they are an estimate of the total potential for cross-pressures stemming from one's social location and group memberships, but they do not necessarily reflect an individual's *subjective* experience of cross-pressures. Though subjective measures of cross-pressures are fraught with their own difficulties (Craig and Martinez 2005), one potential avenue for future research may be in using such measures in conjunction with CP scores to investigate how the *potential* for cross-pressures becomes manifest (or not) in subjective experience. In addition, CP scores are a complement to, not a substitute for, research on micro-level mechanisms of political influence, such as political communication within one's social network or mass-mediated cues from group elites. Finally, even assuming all relevant social attributes are included in the construction of CP scores, the scores—as presented here—do not reflect individual-level heterogeneity in the personal importance and salience of social identities.

With these caveats acknowledged, we continue to believe that the value of CP scores far outweighs their limitations. While researchers have investigated the role of cross-pressures in determining political behavior for more than sixty years, our understanding of cross-pressures' effects has been hindered by inadequate methods and limited data. Early approaches required little data or technical expertise, but their results were as crude as their techniques; recent approaches offer more precision, but focus on specific mechanisms using specialized data. To expand further, studies of cross-pressures will benefit from a third

[31] When we applied this procedure to NAES data, it made a negligible difference in the resulting scores or their relationships to behavior, but with a smaller sample size it may prove more valuable.

option, in which widely-available data can be used to estimate group-based cross-pressures in a multitude of political contexts. The purpose of this paper has been to demonstrate that *such an option now exists*. Using the methods described here, researchers can estimate cross-pressures straightforwardly and effectively, and as such bring renewed attention to the importance of cross-pressures in understanding political behavior.

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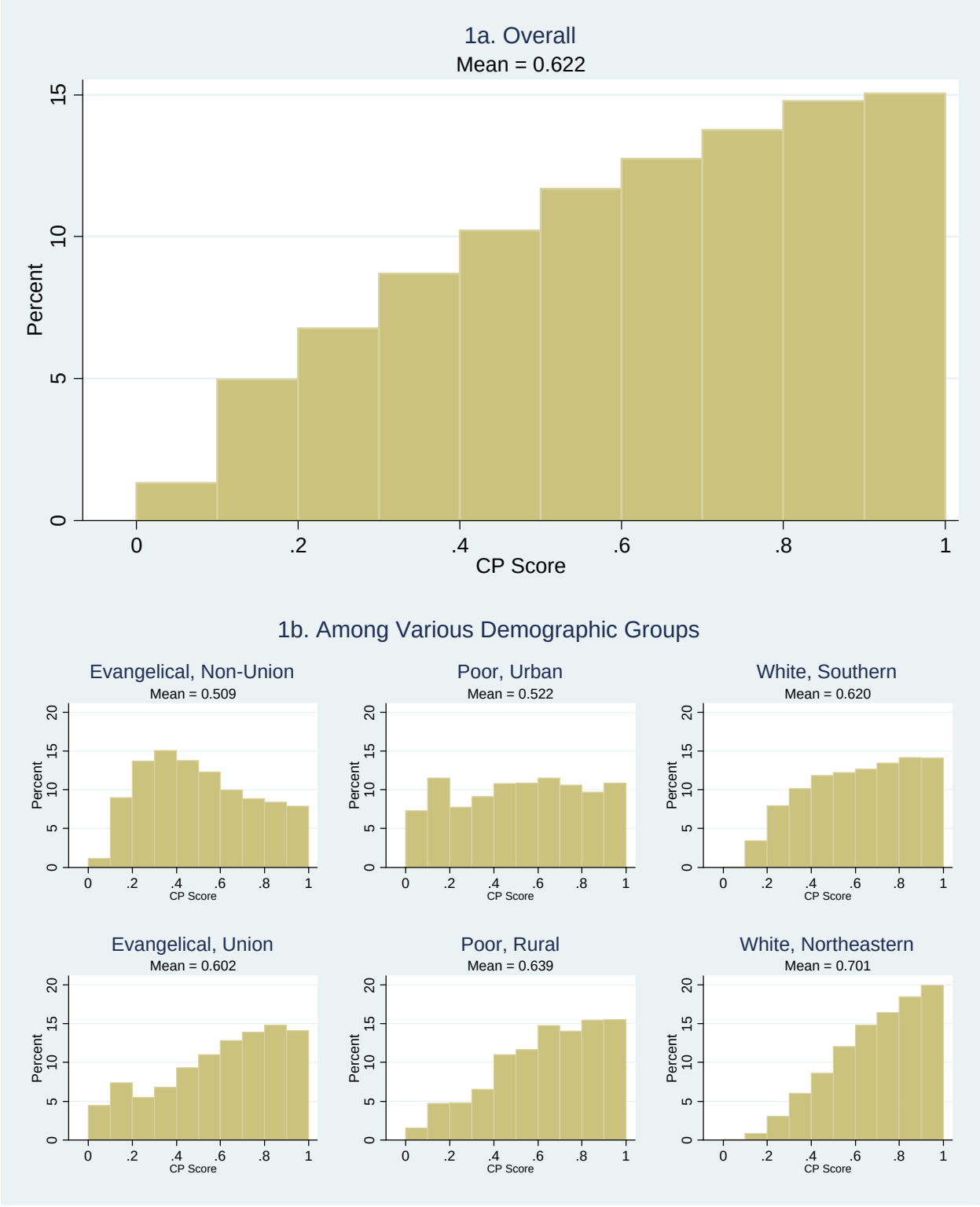
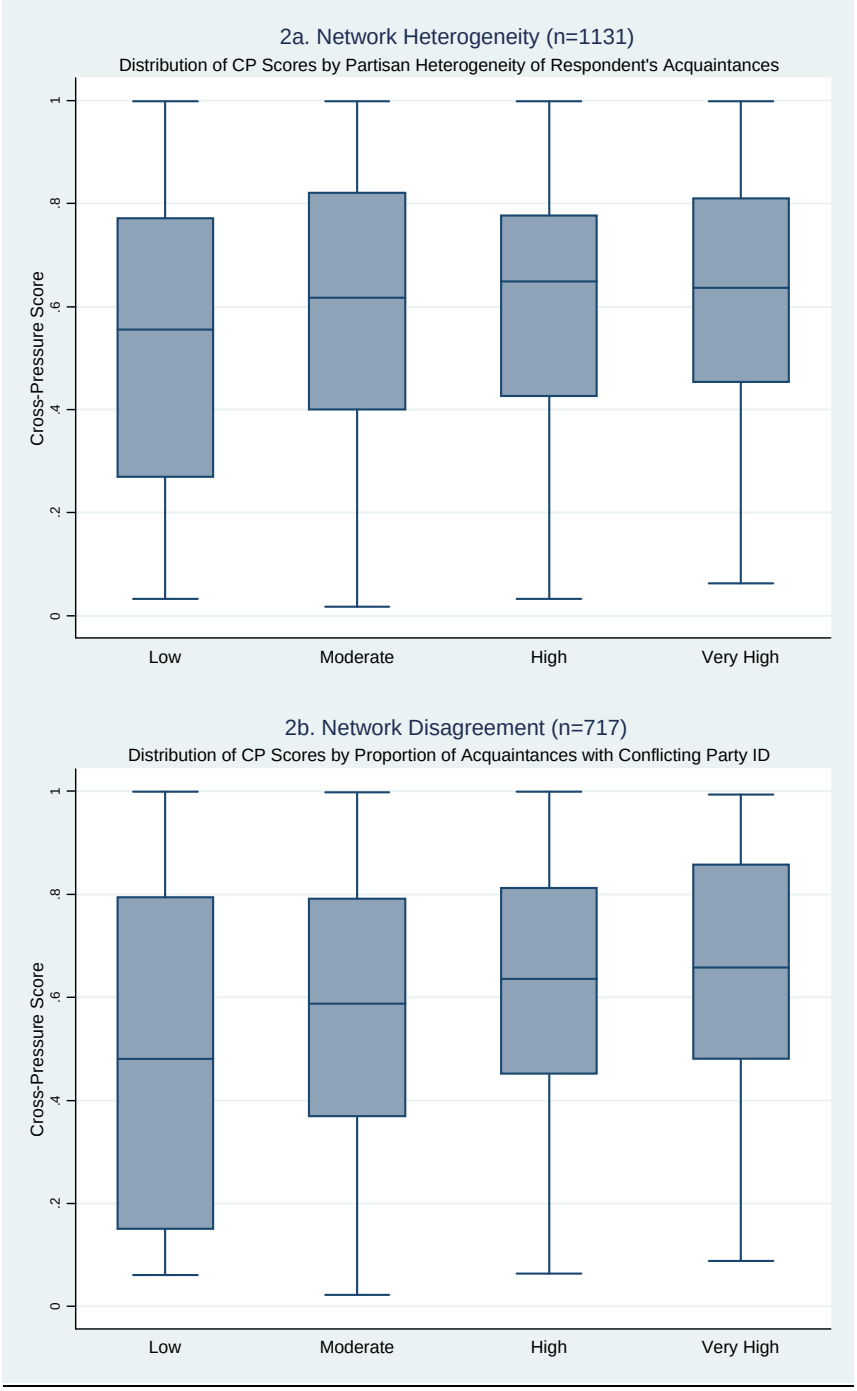
Figure 1: Distribution of Cross-Pressure Scores in the United States



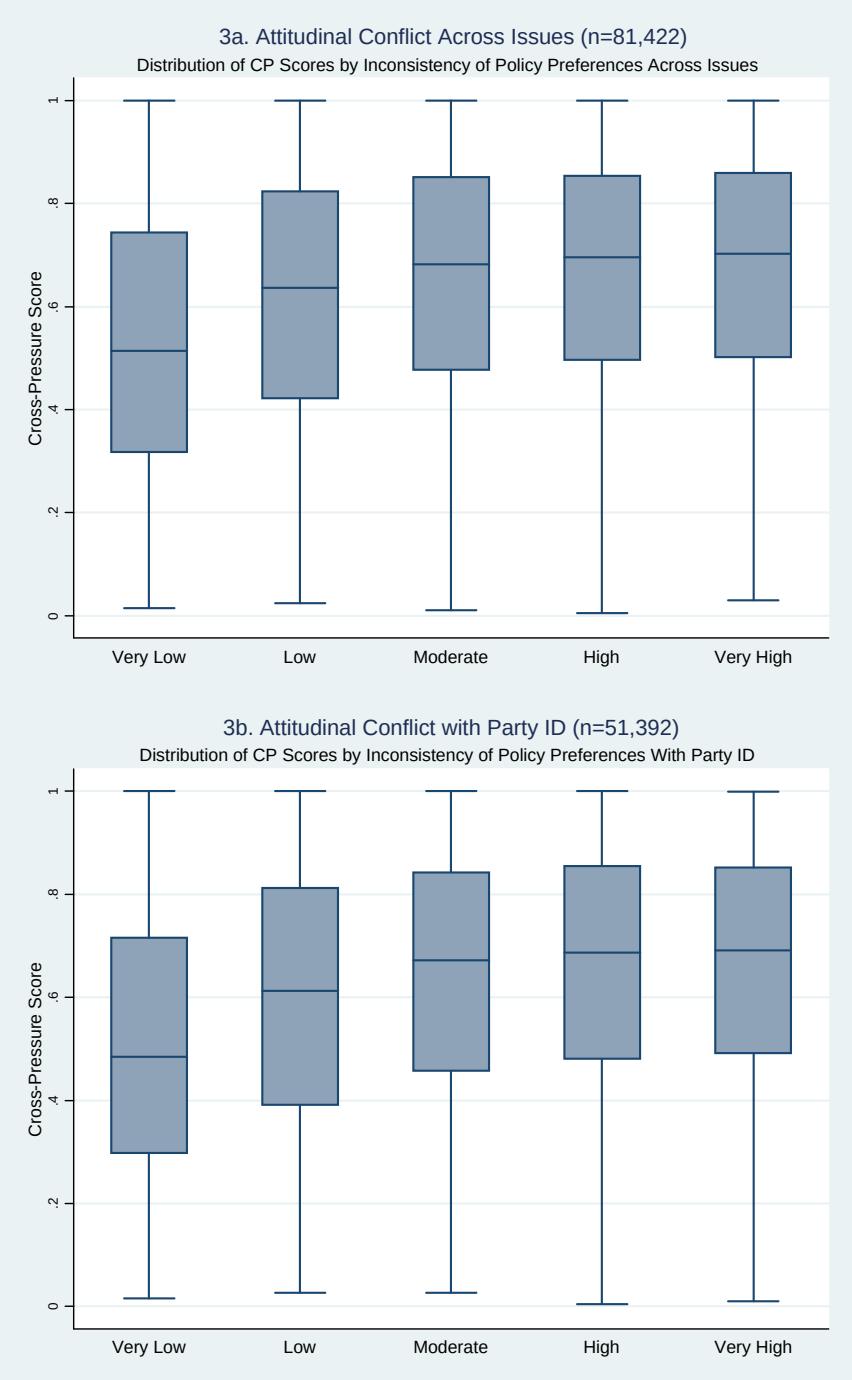
0 = Least cross-pressured, 1 = most cross-pressured. Data from 2004 National Annenberg Election Survey, *n* = 81,422 for overall population.

Figure 2: Cross-Pressure Scores and Social Networks



Data from 2006 General Social Survey. Graphs show the range of CP scores for respondents in each group, indicating the minimum, maximum, and 25th, 50th, and 75th percentiles of each. Respondents were asked about the number of Democrats and Republicans among their acquaintances. Heterogeneity reflects the absolute difference between the sizes of each group in the respondent's social network, with higher heterogeneity indicating a more even balance. Disagreement reflects, for respondents who identify as Democrats or Republicans, the proportion of the respondent's social network which identifies with the opposing party. In each figure, respondents are sorted into quartiles. *Respondents with higher social cross-pressures are shown to have higher average cross-pressure scores.*

Figure 3: Cross-Pressure Scores and Attitudinal Conflict



Data from 2004 National Annenberg Election Survey. Graphs show the range of CP scores for respondents in each group, indicating the minimum, maximum, and 25th, 50th, and 75th percentiles of each. For 28 distinct policy issues, respondents' policy preferences were coded as pro-Democratic, pro-Republican, or neutral. Conflict across issues is highest when respondents hold a large number of non-neutral preferences and these preferences are evenly split between parties, while conflict with party identification is highest when partisan respondents hold a large number of non-neutral preferences and these preferences overwhelmingly favor the opposing party. *Respondents with higher attitudinal conflict are shown to have higher cross-pressure scores on average.*

Table 1: Correlations Between Cross-Pressure Scores Using Different Numbers of Parties in Poland

Full Variance Method

	4 Parties	5 Parties	6 Parties	7 Parties
5 Parties	0.9008			
6 Parties	0.8717	0.9700		
7 Parties	0.8523	0.9426	0.9905	
8 Parties	0.8580	0.9349	0.9805	0.9902

Top-3 Variance Method

	4 Parties	5 Parties	6 Parties	7 Parties
5 Parties	0.9098			
6 Parties	0.8948	0.9822		
7 Parties	0.8902	0.9729	0.9965	
8 Parties	0.8902	0.9697	0.9926	0.9959

Top-2 Variance Method

	4 Parties	5 Parties	6 Parties	7 Parties
5 Parties	0.9363			
6 Parties	0.9179	0.9820		
7 Parties	0.9110	0.9740	0.9961	
8 Parties	0.9094	0.9714	0.9929	0.9970

Data from 2001 Polish National Election Study, $n = 1794$.

Table 2: Correlations Between Cross-Pressure Scores Using Different Variance Calculation Methods in Poland

4 Parties

	Full Variance	Top-3 Variance
Top-3 Variance	0.9788	
Top-2 Variance	0.9166	0.9404

5 Parties

	Full Variance	Top-3 Variance
Top-3 Variance	0.9604	
Top-2 Variance	0.9231	0.9680

6 Parties

	Full Variance	Top-3 Variance
Top-3 Variance	0.9577	
Top-2 Variance	0.9149	0.9693

7 Parties

	Full Variance	Top-3 Variance
Top-3 Variance	0.9525	
Top-2 Variance	0.9089	0.9715

8 Parties

	Full Variance	Top-3 Variance
Top-3 Variance	0.9559	
Top-2 Variance	0.9138	0.9717

Data from 2001 Polish National Election Study, $n = 1794$.

Table 3: Vote Differences and Cross-Pressure Scores by Demographic Combination

Demographic Combination	Expectation	Median CP Score	Median CP Percentile	*n*
Gun-owner, Non-churchgoing	Cross-pressured	0.797	69.6	5436
Gun-owner, Union Household	Cross-pressured	0.740	61.8	5628
Military Family, Non-churchgoing	Cross-pressured	0.738	61.4	4358
Southern, Non-churchgoing	Cross-pressured	0.719	58.9	3077
Rural, Non-churchgoing	Cross-pressured	0.713	58.1	2816
Rural, Union Household	Cross-pressured	0.711	57.9	2363
Gun-owner, Highly-educated	Cross-pressured	0.694	55.6	4882
Military Family, Union Household	Cross-pressured	0.687	54.8	4209
Military Family, Highly-educated	Cross-pressured	0.685	54.5	4114
Evangelical, Poor	Cross-pressured	0.668	52.4	6001
Gun-owner, Poor	Cross-pressured	0.667	52.2	3378
Rural, Highly-educated	Cross-pressured	0.665	52.0	2116
Military Family, Poor	Cross-pressured	0.664	51.9	3081
Rural, Poor	Cross-pressured	0.661	51.4	3894
Southern, Highly-educated	Cross-pressured	0.649	50.0	3623
Gun-owner, Urban	Cross-pressured	0.649	49.9	6576
Military Family, Urban	Cross-pressured	0.646	49.6	6270
Evangelical, Union Household	Cross-pressured	0.642	49.0	4122
Rural, Military Family	Not Cross-pressured	0.625	46.7	5839
Southern, Union Household	Cross-pressured	0.622	46.3	2003
Southern, Poor	Cross-pressured	0.612	45.1	3976
Gun-owner, Military Family	Not Cross-pressured	0.597	43.2	13094
Rural, Gun-owner	Not Cross-pressured	0.594	42.9	10232
Southern, Urban	Cross-pressured	0.593	42.7	4986
Highly-educated, Urban	Not Cross-pressured	0.586	41.9	4918
Military Family, Southern	Not Cross-pressured	0.561	38.8	7431
Rural, Southern	Not Cross-pressured	0.553	37.9	6321
Evangelical, Highly-educated	Cross-pressured	0.553	37.9	3494
Non-churchgoing, Urban	Not Cross-pressured	0.542	36.6	4679
Poor, Urban	Not Cross-pressured	0.535	35.8	4210
Union Household, Non-churchgoing	Not Cross-pressured	0.531	35.3	2268
Poor, Non-churchgoing	Not Cross-pressured	0.531	35.3	2606
Evangelical, Urban	Cross-pressured	0.528	35.0	7729
Union Household, Highly-educated	Not Cross-pressured	0.522	34.4	2435
Union Household, Urban	Not Cross-pressured	0.510	33.1	3577
Non-churchgoing, Highly-educated	Not Cross-pressured	0.509	33.0	2818
Gun-owner, Southern	Not Cross-pressured	0.501	32.1	10539
Rural, Evangelical	Not Cross-pressured	0.501	32.1	8602
Evangelical, Military Family	Not Cross-pressured	0.451	26.8	9588
Evangelical, Southern	Not Cross-pressured	0.435	25.1	11494
Gun-owner, Evangelical	Not Cross-pressured	0.402	21.9	13670

To determine the combinations listed in this table, we first tabulated two-party presidential vote shares in 2004 by demographic group among NAES respondents (using vote intention for pre-election respondents), then chose five each of the most heavily Republican-voting and Democratic-voting groups. Our expectations about cross-pressuredness based on the combination of these characteristics (coded "cross-pressured" for combinations of Republican and Democratic demographics, and "not cross-pressured" for pairs which both favor the same party), median cross-pressure scores (with percentiles relative to the overall population), and sample sizes are presented for the 41 combinations which comprised at least 2% of respondents. The correlation between group expectations (1 = cross-pressured, 0 = not) and median CP scores is 0.7659 (n = 41).

Table 4: Applying Cross-Pressure Scores to the Study of Participation

	United States (2004 NAES)								*Poland (2001 PNES)*	
	Voter Turnout	Voter Advocacy	Campaign Donations	Political Interest	Discussion Frequency	Political Knowledge	Indifference	Alienation	Voter Turnout	Political Interest
CP Score Coefficient	-0.74*** (0.22)	-0.31*** (0.11)	-0.72*** (0.17)	-0.10*** (0.02)	-0.13*** (0.02)	-0.08*** (0.03)	12.37*** (0.63)	5.48*** (0.41)	-1.56** (0.78)	-0.67*** (0.29)
Range of Responses	Binary	Binary	Binary	1–4	1–4	0–6	0–100	0–100	Binary	1–5
Observed Freq./Mean	90.1%	46.0%	15.3%	3.09	2.39	4.88	49.3	22.8	58.0%	2.63
Observed SD (non-binary variables only)				0.91	1.03	1.36	31.5	20.0		1.00
Predictive Margins:										
10th CP percentile	91.8%	48.6%	18.8%	3.13	2.44	4.91	44.8	20.8	70.6%	2.92
50th CP percentile	90.0%	45.8%	15.1%	3.09	2.39	4.87	49.6	22.9	58.7%	2.65
90th CP percentile	88.4%	43.9%	12.8%	3.06	2.35	4.85	53.1	24.4	50.9%	2.48
n	8658	10308	9681	62616	80913	61106	73867	73867	1783	1785
Pseudo-R^2 / R^2	0.2574	0.0327	0.1028	0.1655	0.0918	0.5019	0.0842	0.0765	0.1092	0.2075

*** = $p < 0.01$, ** = $p < 0.05$ (one-tailed). Dependent variable for each model listed at column heading. Turnout, advocacy, and donations in the US are taken from the post-election wave of the NAES general election panel, while all other US variables are taken from the NAES rolling cross-section (nearly all responses pre-election). Coefficients are estimated from logit regressions for binary dependent variables, and from ordinary least squares regressions otherwise; robust standard errors are given in parentheses. Predictive margins are the average predicted values of the dependent variable across all respondents with the cross-pressure score variable set at the indicated level. Each model controls for all demographics used to create CP scores, as well as presidential vote margin and dummies for Senate and gubernatorial races for US responses, and interview date for cross-sectional US responses. Using an alternative specification which also controls for party identification, political interest, and ideology does not dramatically change the results (available upon request); we choose to employ the simpler specification because these additional variables could be potential mechanisms through which cross-pressures' effects on behavior are realized. Full model results are contained in Table A3 of the online appendix (attached to manuscript for review purposes).

Online Appendix I: Calculating CP scores

The steps for calculating CP scores using US respondents in the NAES and GSS datasets (two parties) are as follows:

1. Model presidential vote for major-party voters (coded 1 = Kerry, 0 = Bush) as a function of demographics using a binary logit regression (see Table A1 of the online appendix).
2. Use these regression results to predict the probability of voting for Kerry for each respondent, then calculate the probability of voting for Bush (1 – p(vote=Kerry)).
3. Calculate the absolute difference between these probabilities, which ranges from 0 (equal probability of voting for each) to 1 (certain to vote for one candidate).
4. Subtract this difference from 1 so higher values indicate more equal probabilities.

The resulting quantity is the respondent's CP score.

For the CSES and PNES datasets, variations of this procedure are employed as described below:

- *More than two parties, "top-2 variance" method*: Use a multinomial logit regression in step 1 above, with party identification (CSES) or legislative vote choice (PNES) as the dependent variable; use the results to predict probabilities of supporting each party in step 2; across all predicted probabilities, determine the two highest for each respondent and use those in steps 3 and 4.
- *More than two parties, "top-3 variance" method*: Same as previous for steps 1 and 2; in step 3, determine the three highest predicted probabilities for each respondent and take the standard deviation across them; in step 4, scale this quantity from 0 to 1, then subtract it from 1 to generate each respondent's CP score.
- *More than two parties, "full variance" method*: Same as previous for steps 1, 2, and 4; in step 3, take the standard deviation across all parties' predicted probabilities for each respondent.

Online Appendix II: Coding of Issues and Party Preferences

The following table notes the 23 issues used to construct our measure of issue cross-pressures, the corresponding question numbers in the 2004 NAES panel dataset, and the responses which were coded as pro-Democratic and pro-Republican. These issues were chosen to cover a broad spectrum of policy questions, and because they are ones on which the parties are largely polarized and on which the parties' positions are well known. When multiple question numbers are listed below, this indicates variation in the question wording or response choices in the survey over time. As most of these changes were simply changes in response scale (e.g., from "favor/oppose" to "strongly favor/somewhat favor/etc."), the versions were condensed to remove qualifiers. Thus, for example, a response listed below as "favor" may indicate a survey response of "favor", "strongly favor", or "somewhat favor". Not all questions were asked of all respondents.

Issue / Proposal	Question Numbers	Democratic Responses	Republican Responses
Bush economic policies	ccb10	Making economy worse	Making economy better
Make Bush tax cuts permanent	ccb16, 17	Oppose	Favor
Eliminate estate tax	ccb33, 34, 35	Oppose	Favor
Increase Minimum Wage	ccb65	Favor	Oppose
Make unionization easier	ccb71, 72	Favor	Oppose
Subsidized healthcare for children	ccc03, 04	Favor	Oppose
Subsidized healthcare for workers	ccb05, 06	Favor	Oppose
Privatize Social Security	ccc32, 33	Oppose	Favor
School vouchers	ccc39	Oppose	Favor
Education spending	ccc40	More	Less, None
Military spending	ccd03	Less, None	More
Bush handling of Iraq	ccd19	Disapprove	Approve
Troops in Iraq	ccd35	Withdraw	Leave in place
Homeland security spending	ccd57	Less, None	More
Patriot Act	ccd67	Bad for country	Good for country
Banning abortions	cce01	Oppose	Favor
Make abortion more difficult	cce02	Oppose	Favor
Stem cell funding	cce07, 08, 09	Favor	Oppose
Additional stem cells lines	cce14	Favor	Oppose
Gun control	cce31	More	Less, None
Assault weapons ban	cce32, 33, 34	Favor	Oppose
Tort reform	ccg01, 02	Oppose	Favor
Malpractice reform	ccg07	Oppose	Favor

Figure A1: The Cross-Pressure Score Algorithm

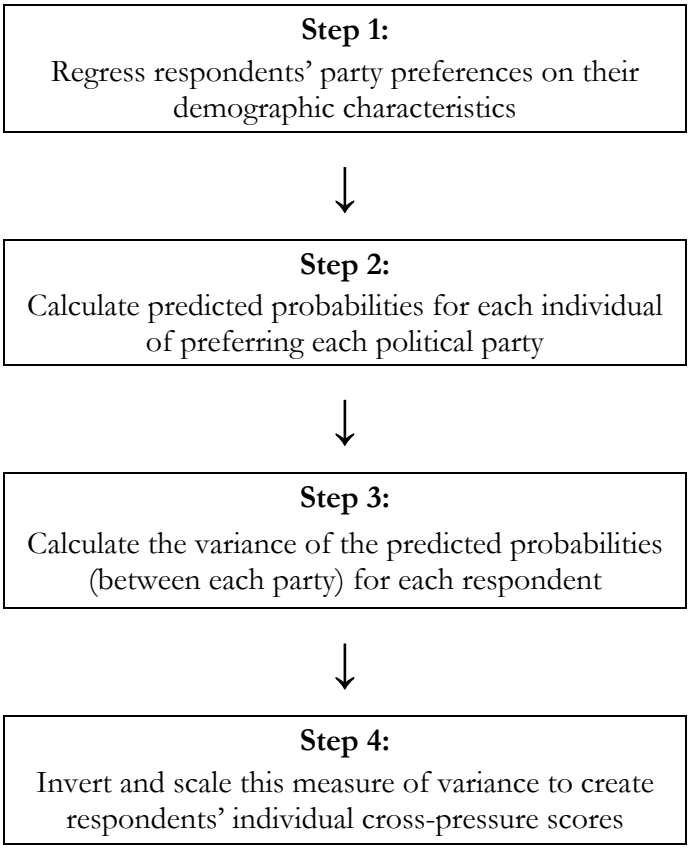
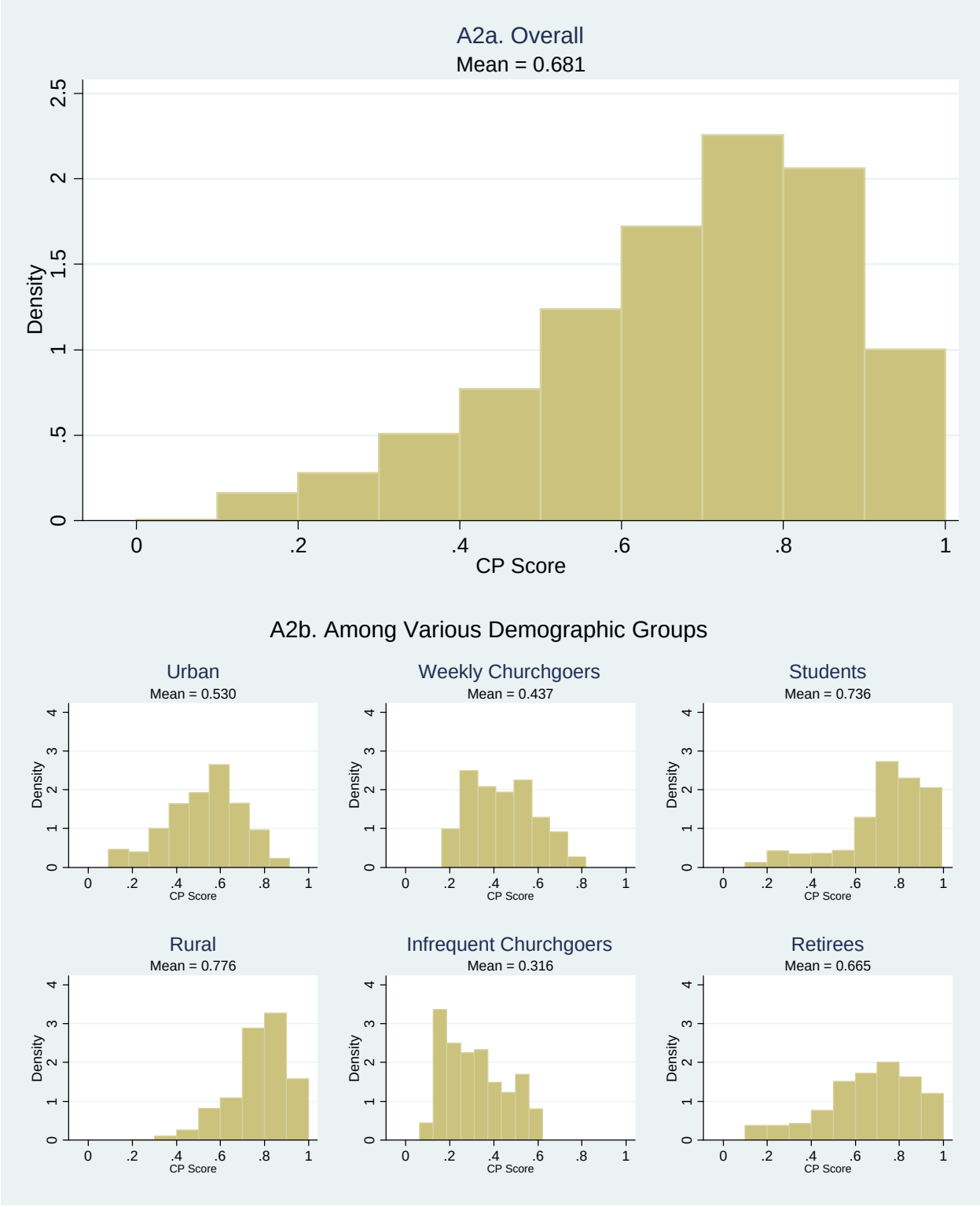
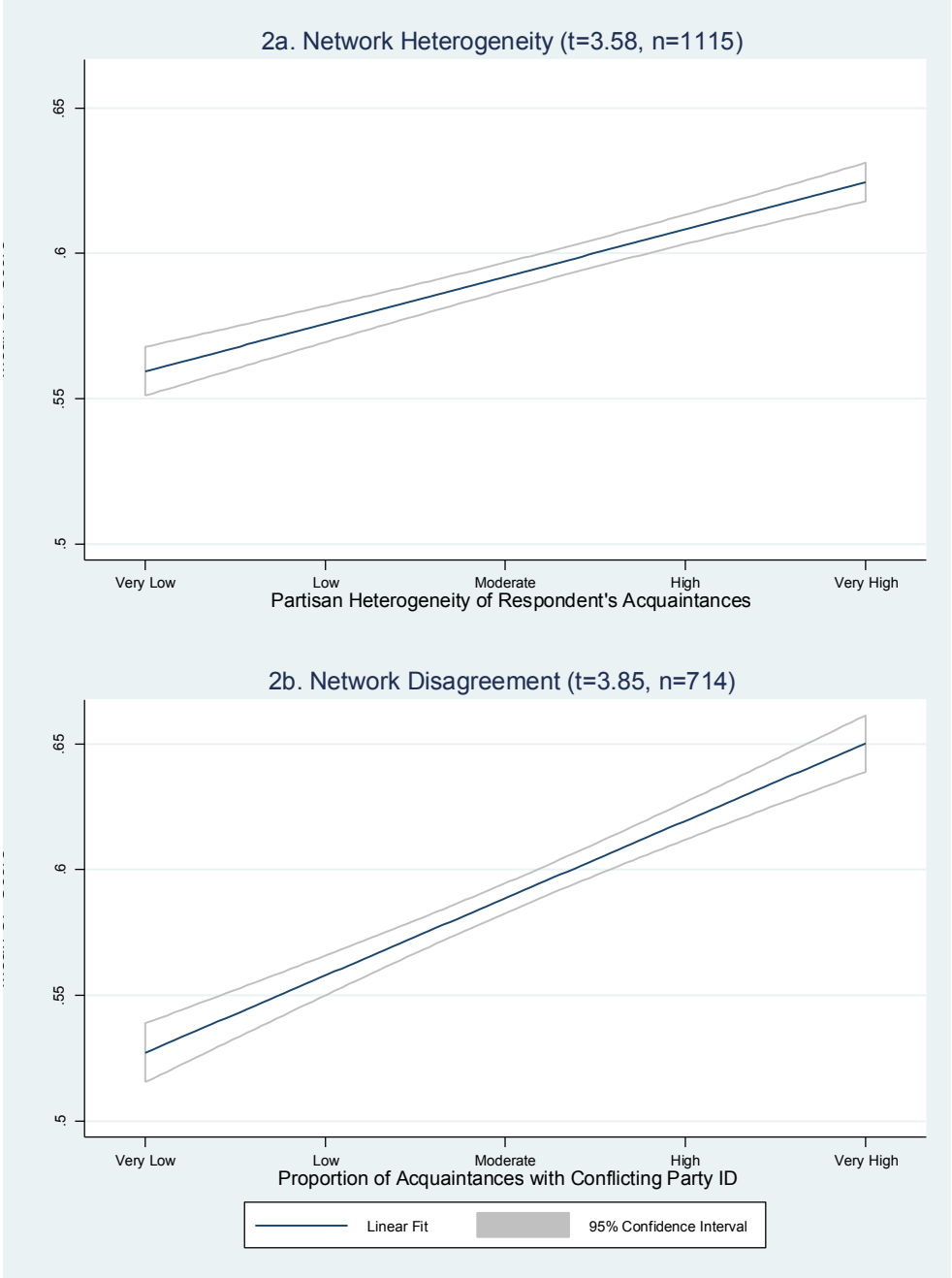


Figure A2: Distribution of Cross-Pressure Scores in Poland



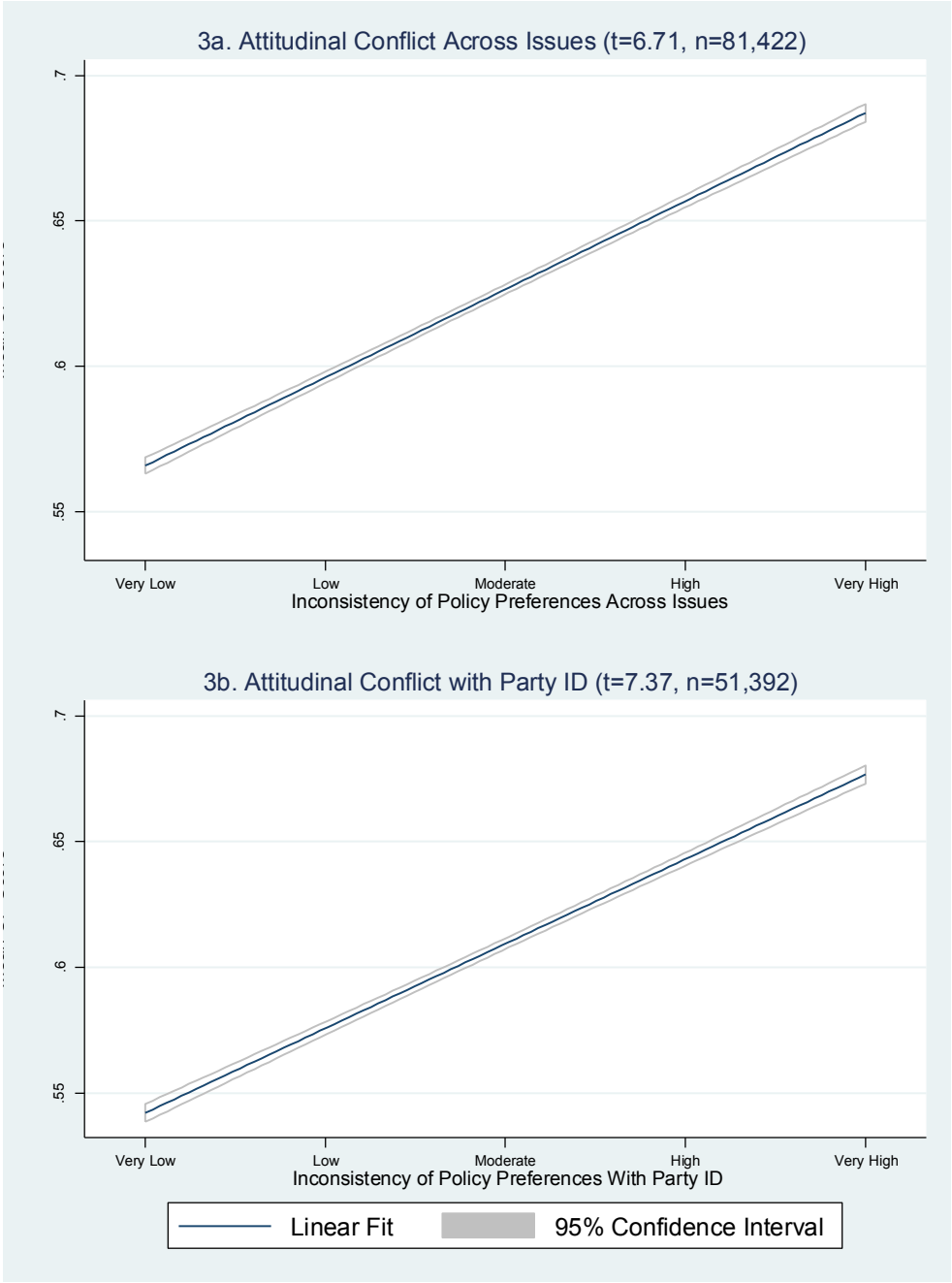
0 = Least cross-pressured, 1 = most cross-pressured. Data from Polish National Election Study, *n* = 1,794 for overall population.

Figure A3: Cross-Pressure Scores and Social Networks



Data from 2006 General Social Survey. Respondents were asked about the number of Democrats and Republicans among their acquaintances. Heterogeneity reflects the absolute difference between the sizes of each group in the respondent's social network, with higher heterogeneity indicating a more even balance. Disagreement reflects, for respondents who identify as Democrats or Republicans, the proportion of the respondent's social network which identifies with the opposing party. In each figure, respondents are sorted into quintiles. *Respondents with higher social cross-pressures are shown to have higher average cross-pressure scores.*

Figure A4: Cross-Pressure Scores and Attitudinal Conflict



Data from 2004 National Annenberg Election Survey. For 28 distinct policy issues, respondents' policy preferences were coded as pro-Democratic, pro-Republican, or neutral. (Because of sample splits and variation in survey design over time, each respondent was asked only about a subset of issues; the remaining preferences, missing at random, were multiply imputed to facilitate comparison across respondents.) Conflict across issues is highest when respondents hold a large number of non-neutral preferences and these preferences are evenly split between parties, while conflict with party idenfication is highest when partisan respondents hold a large number of non-neutral preferences and these preferences overwhelmingly favor the opposing party. *Respondents with higher attitudinal conflict are shown to have higher cross-pressure scores on average.*

Table A1: Results of the Step One Party Preference Regression in the US

	Kerry Vote Preference
Female	0.27*** (0.02)
Age: 18-29	0.03 (0.03)
Age: 30-39	-0.11*** (0.03)
Age: 50-64	0.19*** (0.03)
Age: 65+	0.39*** (0.04)
Education: Less than HS	0.15*** (0.04)
Education: HS Diploma, No College	0.01 (0.02)
Education: 4-year Degree	0.12*** (0.03)
Education: Grad School	0.48*** (0.03)
Income: 1st Quintile	0.42*** (0.03)
Income: 2nd Quintile	0.20*** (0.03)
Income: 4th Quintile	-0.12*** (0.03)
Income: 5th Quintile	-0.26*** (0.03)
Unemployed	0.40*** (0.05)
Student	0.34*** (0.07)
Retired	0.15*** (0.03)
Government Job	0.06** (0.03)
Self-employed	-0.14*** (0.03)
Professional Job	0.13*** (0.02)
Blue-collar Job	0.12*** (0.03)
Union Member	0.61*** (0.03)
Religious Attendance: None	0.23*** (0.03)
Religious Attendance: Low	0.18*** (0.03)
Religious Attendance: High	-0.32*** (0.03)
Religious Attendance: Very High	-0.84*** (0.04)
Catholic	0.08*** (0.02)
Jewish	0.87*** (0.06)
Mormon	-0.85*** (0.08)
Muslim	1.26*** (0.22)
Orthodox Christian	0.26*** (0.11)
Other Religion	0.51*** (0.03)
Atheist	0.62*** (0.06)
Hispanic	0.33*** (0.04)
Asian	0.02 (0.09)
Native American	0.10 (0.10)
Immigrant	0.07** (0.04)
Gun-owner	-0.57*** (0.02)
Gay Friends / Family	0.13*** (0.03)
Military Household	-0.20*** (0.02)
Urban	0.22*** (0.02)
Rural	0.11*** (0.02)
Northeastern State	-0.03 (0.03)
Central / Mountain State	-0.36*** (0.03)
Western State	-0.05* (0.03)
Southern × White	-0.51*** (0.05)
Non-Southern × White	-0.32*** (0.05)
Southern × Non-white	0.08 (0.06)
Black × Evangelical	1.75*** (0.08)
Non-black × Evangelical	-0.64*** (0.02)
Black × Non-Evangelical	1.69*** (0.09)
Constant	-0.07 (0.07)
n	69439
Pseudo-R^2	0.1638
Percent Correctly Predicted	69.25%

*** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.1$ (one-tailed). Dependent variable = reported vote or vote intention for Kerry in 2004, among those who preferred either Kerry or Bush. Cell entries are logit coefficients, with standard errors in parentheses. Data from 2004 National Annenberg Election Survey.

Table A2: Results of the Step One Party Preference Regression in Poland

	AWSP	S	PIS	PSL	PO	LPR
Female	0.16	-0.17	-0.03	-0.20	-0.12	0.45*
	(0.39)	(0.24)	(0.27)	(0.27)	(0.22)	(0.30)
Age	0.07	0.03	0.05	-0.04	-0.04	-0.02
	(0.09)	(0.05)	(0.06)	(0.05)	(0.04)	(0.05)
Age-squared	-0.00	-0.00	-0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Education	0.35	-0.34	0.19	0.25	-0.17	-0.36*
	(0.43)	(0.29)	(0.27)	(0.28)	(0.24)	(0.26)
Education-squared	-0.02	0.01	-0.01	-0.02	0.02	0.03*
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Income	-2.91	-1.06	1.44	0.25	2.87	2.11
	(2.35)	(2.24)	(2.48)	(2.80)	(2.77)	(3.78)
Income-squared	3.62**	0.88	-3.27	-1.18	-2.91	-7.07
	(1.77)	(2.25)	(4.63)	(4.49)	(3.75)	(8.62)
Unemployed	0.49	-0.48	0.34	-0.86*	-0.47	0.16
	(0.75)	(0.44)	(0.48)	(0.58)	(0.49)	(0.55)
Student	0.31	0.07	0.60	-1.01	-0.10	-12.85*
	(1.35)	(0.70)	(0.68)	(0.82)	(0.57)	(0.83)
Retired	0.69*	0.15	0.12	0.30	-0.57*	0.36
	(0.48)	(0.38)	(0.39)	(0.49)	(0.36)	(0.38)
Government Job	-0.24	-0.10	0.07	-0.34	-0.29	-0.24
	(0.42)	(0.28)	(0.29)	(0.31)	(0.26)	(0.35)
Self-employed	0.51	0.64**	1.15**	0.74**	0.44	0.54
	(0.60)	(0.32)	(0.40)	(0.33)	(0.35)	(0.45)
Manager	0.33	-0.12	0.16	-0.48	0.03	-0.39
	(0.43)	(0.31)	(0.30)	(0.39)	(0.27)	(0.37)
Union Member	0.40	-0.35	-1.03**	0.13	-0.40	0.64*
	(0.55)	(0.41)	(0.50)	(0.46)	(0.36)	(0.39)
Religious Attendance	-0.19	1.15**	0.59*	-0.59*	0.38	-0.14
	(0.83)	(0.57)	(0.42)	(0.40)	(0.34)	(0.45)
Attendance-squared	0.08	-0.10**	-0.02	0.08**	-0.01	0.07*
	(0.07)	(0.05)	(0.04)	(0.04)	(0.03)	(0.05)
Urban / Rural Scale	-1.31***	-0.66**	-0.08	-1.60***	-0.21	-0.77**
	(0.51)	(0.36)	(0.35)	(0.39)	(0.31)	(0.42)
Urban / Rural Scale-squared	0.20***	0.07*	0.07*	0.17***	0.07*	0.12**
	(0.07)	(0.06)	(0.05)	(0.06)	(0.05)	(0.06)
Constant	-6.17**	-2.30	-7.20***	2.11	-2.23*	-1.72
	(0.49)	(2.19)	(2.05)	(1.72)	(1.59)	(1.88)
n	950					
Pseudo-R^2	0.1241					

*** = p <0.01, ** = p < 0.05, * = p < 0.1 (one-tailed). Dependent variable = vote in lower-chamber parliamentary election for party listed at column head. Cell entries are multinomial logit coefficients, with standard errors in parentheses; base category is vote for SLD-UP coalition. Data from 2001 Polish National Election Study.

Table A3: Applying Cross-Pressure Scores to the Study of Participation (Full Version)

	United States (2004 NAES)								*Poland (2001 PNES)*	
	Voter Turnout	Voter Advocacy	Campaign Donations	Political Interest	Discussion Frequency	Political Knowledge	Indifference	Alienation	Voter Turnout	Political Interest
CP Score	-0.74***	-0.31***	-0.72***	-0.10***	-0.13***	-0.08***	12.37***	5.48***	-1.56**	-0.67***
Female	0.19**	-0.08**	-0.02	-0.22***	-0.02***	-0.17***	-2.62***	-1.31***	-0.33***	-0.42***
Age: 18-29	-0.59***	0.19***	-0.47***	-0.24***	-0.01	-0.06***	1.49***	0.73***		
Age: 30-39	-0.38***	-0.07	-0.09	-0.13***	-0.05***	-0.04***	0.97***	-0.22		
Age: 50-64	0.64***	0.24***	0.60***	0.16***	0.07***	0.03***	-4.00***	-2.02***		
Age: 65+	1.12***	0.06	0.91***	0.32***	0.03*	-0.01	-7.30***	-3.09***		
Age (years)									0.12***	0.04***
Age (years^2)									-0.00***	-0.00***
Education: < HS	-1.44***	-0.42***	-0.48***	-0.41***	-0.32***	-0.53***	1.23**	-1.64***		
Education: HS	-0.66***	-0.24***	-0.31***	-0.19***	-0.18***	-0.18***	0.28	-0.74***		
Education: BA/BS	0.56***	0.18***	0.29***	0.12***	0.09***	0.15***	-0.67**	0.11***		
Education: Grad School	0.54***	0.34***	0.39***	0.20***	0.22***	0.19***	-0.52*	1.13***		
Education (years)									0.40***	0.26***
Education (years^2)									-0.02**	-0.01***
Income: 1st Quintile	-0.96***	-0.17**	-0.82***	-0.14***	-0.14***	-0.29***	2.18***	2.02***		
Income: 2nd Quintile	-0.44***	-0.15***	-0.27***	-0.06***	-0.06***	-0.07***	1.39***	1.14***		
Income: 4th Quintile	-0.08	0.10*	-0.00	0.03***	0.03***	0.03***	-0.92**	-0.48**		
Income: 5th Quintile	0.04	0.08	0.50***	0.07***	0.12***	0.06***	-1.42***	-1.06***		
Income (monthly)									0.76	0.44*
Income (monthly^2)									0.13	-0.03
Unemployed	-0.09	-0.23**	-0.06	-0.02	0.04**	-0.04*	0.00	1.85***	-0.49***	-0.13**
Student	0.23	-0.05	0.14	0.05**	0.11***	0.15***	1.07	1.17**	1.21***	0.16
Retired	0.29*	-0.05	0.25**	0.11***	0.07***	0.04***	-2.69***	-1.07***	0.44***	0.06
Government Job	0.26**	-0.21***	-0.07	0.03***	-0.01	0.03***	0.64**	-0.31*	0.17	0.06
Self-employed	-0.06	0.22***	0.34***	0.10***	0.17***	0.04***	-3.05***	-0.66***	0.29*	0.13**
Professional/Mgmt Job	0.36***	-0.05	0.04	0.01*	0.01	0.04***	0.15	0.56***	0.08	0.15***
Blue-collar Job	-0.22**	-0.15***	-0.11	-0.08***	-0.09***	-0.07***	1.14***	0.72***		
Union Member	0.20*	0.24***	0.13*	0.03***	0.09***	0.00	-0.27	1.44***	-0.01	0.04
Relig. Attend.: None	-0.80***	-0.01	-0.06	-0.08***	-0.05***	-0.03**	-2.76***	1.61***		
Relig. Attend.: Low	-0.51***	0.03	-0.14*	-0.06***	-0.03***	-0.04***	-1.23***	0.73***		
Relig. Attend.: High	0.19	0.06	0.05	0.02**	0.02**	0.00	-2.06***	-1.42***		
Relig. Attend.: V. High	0.16	0.20***	-0.12	-0.01	0.01	-0.00	-4.01***	-2.57***		
Relig. Attend (scale)									-0.08	0.02
Relig. Attend (scale^2)									0.04***	0.00
Catholic	0.16*	-0.06	-0.14**	-0.02**	-0.00	0.00	0.94***	-0.18		
Jewish	0.07	0.02	0.14	0.05**	0.16***	0.06***	-0.89	1.49***		
Mormon	0.24	0.05	-0.55**	-0.02	-0.03	-0.06**	3.31***	-0.28		
Muslim	-1.31***	0.04	-1.25	0.00	0.22***	0.09	-0.23	4.02***		
Orthodox Christian	-0.20	0.16	0.21	-0.01	0.02	0.01	-2.39**	-0.56		
Other Religion	0.02	0.03	0.18*	-0.00	0.06***	-0.01	0.06	2.90***		
Atheist / Agnostic	-0.13	0.20*	-0.18	-0.03	0.02	-0.08***	0.95	3.17***		

Hispanic	-0.10	-0.21**	-0.12	-0.13***	-0.11***	-0.24***	3.30***	-1.15***		
Asian	-0.05	-0.24	0.66**	-0.17***	-0.24***	0.24***	7.22***	0.03		
Native American	-0.81**	0.09	-0.45	-0.08**	-0.03	0.11***	-1.91*	-0.79		
Immigrant	-1.86***	-0.22***	-0.16	-0.08***	0.05***	-0.21***	3.89***	-1.32***		
Gun-owner	0.44***	0.07*	-0.12**	0.03***	0.05***	0.00	-1.25***	-1.19***		
Gay Friends / Family	0.06	0.02	0.01	0.04**	0.06***	0.04***	-0.29	0.48***		
Military Household	0.09	0.07*	0.22***	0.05***	0.13***	0.04***	-1.34***	-0.79***		
Urban	-0.06	0.08*	-0.02	0.03***	0.04***	-0.00	-1.22***	0.15		
Rural	-0.26***	0.01	-0.11*	-0.02***	-0.02**	-0.04***	0.39	0.63***		
Urban (scale)									-0.37*	-0.04
Urban (scale^2)									0.05*	0.01
Northeastern State	-0.04	0.09*	0.09	-0.01*	0.04***	0.02*	-0.43	0.10		
Central/Mountain State	0.14	-0.01	0.03	-0.01	0.03***	0.02	-1.46***	-1.66***		
Western State	0.14	0.06	0.28***	0.00	0.10***	-0.01	-2.06***	-0.20		
Southern × White	0.05	0.21*	-0.16	0.01	0.05**	0.23***	-2.93	-4.14***		
Non-South × White	0.02	0.21**	-0.14	-0.00	-0.02	0.19***	-1.02*	-2.54***		
Southern × Non-white	0.20	0.23**	0.29*	0.01	0.09***	-0.00	-1.81***	-1.45***		
Black × Evangelical	-0.15	-0.23*	-1.00***	-0.09***	-0.14***	-0.09***	4.97***	4.29***		
Non-black × Evang.	-0.30***	0.10**	0.01	-0.01*	-0.02**	-0.02*	-1.45***	-3.00***		
Black × Non-Evang.	-0.34	0.03	-0.74***	-0.09***	-0.13***	-0.02	3.86***	4.16***		
Pres. Vote Margin	-0.14***	-0.06**	-0.07**	0.00	-0.02***	-0.02***	0.43***	0.12*		
Senate Race Dummy	0.05	0.04	-0.10*	-0.02**	-0.02**	-0.01	0.35	0.33**		
Gov. Race Dummy	0.07	0.03	0.25***	-0.01*	-0.02**	0.03**	0.49*	0.84***		
Days to Election (1-15)				-0.002	-0.014***	0.002**	-0.160***	0.045*		
Days (16-30)				-0.006***	-0.003*	-0.005***	0.209***	0.104***		
Days (31-60)				-0.000	-0.004***	-0.005***	0.015	-0.037***		
Days (61-120)				-0.001***	0.000	0.004***	0.070***	0.054***		
Days (121+)				0.001***	-0.000***	-0.010***	0.056***	0.018***		
Constant	3.45***	-0.22	-1.33***	3.38***	2.77***	5.69***	41.95***	19.65***	-3.96***	1.09***
n	8658	10308	9681	62616	80913	61106	73867	73867	1783	1785
Range of Responses	Binary	Binary	Binary	1–4	1–4	0–6	0–100	0–100	Binary	1–5
Predictive Margins:										
10th percentile	91.8%	48.6%	18.8%	3.13	2.44	4.91	44.8	20.8	70.6%	2.92
50th percentile	90.0%	45.8%	15.1%	3.09	2.39	4.87	49.6	22.9	58.7%	2.65
90th percentile	88.4%	43.9%	12.8%	3.06	2.35	4.85	53.1	24.4	50.9%	2.48

*** = p < 0.01, ** = p < 0.05, * = p < 0.1 (one-tailed). Cell entries are regression coefficients (logit for binary responses, OLS otherwise); significance calculated using robust standard errors (available upon request, omitted for brevity). Because the original varable codings and sample sizes differ between the NAES and PNES datasets, certain variables' coefficients (such as those for age and education) are reported in separate rows when their specifications (as used in our models) are substantially different between the two datasets. Dependent variable for each model listed at column heading. See text and caption of Table 4 for additional notes.

Table A4: Applying Cross-Pressure Scores Using "Core" Set of Demographics

	Voter Turnout	Voter Advocacy	Campaign Donations	Political Interest	Discussion Frequency	Political Knowledge	Indifference	Alienation
"Core" CP Score Coefficient	-0.38* (0.27)	-0.27** (0.12)	-0.54*** (0.18)	-0.09*** (0.02)	-0.11*** (0.02)	-0.08*** (0.02)	8.91*** (0.69)	2.98*** (0.44)
Range of Responses	Binary	Binary	Binary	1–4	1–4	0–6	0–100	0–100
Predictive Margins:								
10th percentile	90.7%	47.6%	17.0%	3.11	2.42	4.90	47.0	22.0
50th percentile	90.0%	45.9%	15.1%	3.09	2.39	4.87	49.5	22.8
90th percentile	89.5%	44.7%	13.9%	3.08	2.37	4.86	51.2	23.4
n	8658	10308	9681	62616	80913	61106	73867	73867

*** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.1$ (one-tailed). These models repeat those used in the analysis of participation in the US shown in Table 4, but employ an alternate specification for cross-pressure scores. This specification uses only the set of "core" demographic variables referenced in Section 4.1: gender, age, income, education, urban/rural, employment status, union membership, religious attendance (but not denomination), and military affiliation. (These models do use the full set of demographics as control variables, however, to ensure comparability with Table 4.) As noted in the text, each of these results shows an effect for CP scores which is smaller in magnitude but in the same direction as the comparable effect shown in Table 4. See caption of Table 4 for additional details on the model specifications; full results of these models are available from the authors upon request.

Table A5: Comparing Effect Sizes Across Variables

	Voter Turnout	Voter Advocacy	Campaign Donations	Political Interest	Discussion Frequency	Political Knowledge	Indifference	Alienation
Range of Responses	Binary	Binary	Binary	1–4	1–4	0–6	0–100	0–100
Predictive Margins:								
CP Score: 10th percentile	91.8%	48.6%	18.8%	3.13	2.44	4.91	44.8	22.0
CP Score: 50th percentile	90.0%	45.8%	15.1%	3.09	2.39	4.87	49.6	22.8
CP Score: 90th percentile	88.4%	43.9%	12.8%	3.06	2.35	4.85	53.1	23.4
Age: youngest 20%	83.0%	48.3%	7.7%	2.81	2.37	4.83	52.8	24.6
Age: middle 20%	88.6%	43.8%	11.6%	3.05	2.38	4.89	51.3	23.8
Age: oldest 20%	95.2%	45.3%	23.5%	3.37	2.40	4.88	44.0	20.7
Education: lowest 20%	77.2%	35.9%	9.7%	2.71	2.09	4.37	50.7	21.2
Education: middle 20%	91.4%	45.8%	14.4%	3.12	2.40	4.90	49.4	22.8
Education: highest 20%	94.2%	54.1%	19.4%	3.32	2.63	5.09	48.9	24.0
Income: poorest 20%	84.9%	42.8%	7.9%	2.97	2.26	4.64	51.1	24.4
Income: middle 20%	92.3%	46.6%	15.8%	3.12	2.40	4.93	49.0	22.5
Income: richest 20%	92.8%	49.1%	22.3%	3.19	2.53	4.99	47.6	21.4
n	8658	10308	9681	62616	80913	61106	73867	73867

These results supplement those presented in Table 4, showing the estimated values of the dependent variables across various levels of age, education, and income for each of the forms of participation modeled using US data. For each of these variables, respondents were sorted into quintiles, with the resulting values modeled as categorical variables to allow for non-linear effects. Estimates for the first, third, and fifth quintiles are presented here, to provide some context in which the predictive power of cross-pressure scores can be more readily interpreted. See caption of Table 4 for additional details on the model specifications.