Responsibility Attribution for Collective Decision Makers

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We argue that individuals use responsibility attribution heuristics that apply to collective decisions made, for example, by families, teams within firms, boards in international organizations, or coalition governments. We conduct laboratory and online experiments to tease out the heuristics subjects use in their responsibility attribution for collective decision makers. The lab experiments comprise a collective dictator game in which decision makers have weighted votes and recipients can punish individual decision makers. Our results show that recipients punish unfair allocations and mainly target the decision maker with proposal power and with the largest vote share. We find weak evidence that decision makers with veto power are targeted or that recipients punish proportional to vote share. The online experiment demonstrates that subjects indeed believe that the decision maker with proposal power has the most influence on the collective decision outcome. We discuss the implications of our findings for theories of vote choice.

The act of attributing responsibility is pervasive in social, economic, and political life. Thus, it is not surprising that it has attracted considerable attention from social psychologists and cognitive scientists (Gerstenberg, Speekenbrink, and Cheung 2011; Ross and Nisbett 1991; Weiner 1995), economists (Barro 1973; Besley 2006; Charness 2000), and political scientists (Ferejohn 1986; Iyengar 1991; Kiewiet 1983). Little of this scholarship, however, has focused on responsibility attribution for collective decisions, favoring instead questions in which the target of responsibility attribution is a single, or unified, actor (e.g., a firm, a political party, a presidential candidate, or an individual).

There is a subset of responsibility attribution decisions that have received little scholarly attention–specifically, situations in which outcomes are the result of collective decisions reached by a vote among the decision makers. These situations can have formally defined features of decision making, which is the case for boards of directors, remuneration committees, or coalition cabinets, for example. But they can also be more informal features of collective decision-making processes in which, for example, the voting rules are not formally defined but rather are informally recognized according to the role decisionmakers occupy in a decision-making entity (e.g., families, teams within firms).

In this article, we begin to address this deficit by exploring responsibility attribution in situations in which outcomes are the result of collective decisions reached by a weighted vote among decision makers, but where the influence of any particular decision maker may be ambiguous. This ambiguity could result because parts of

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the decision-making process are not observed or because the decision-making process itself is only vaguely defined. But, whatever the source of ambiguity, the challenge individuals face in such situations is to determine how to assign responsibility to the individual members of the collective decision-making body.

Which family member had the most influence on deciding where to go for our summer vacation? Who among the members of the company's remuneration committee should get most of the blame for our miserly salary increase? In response to the government's poor handling of the economy, how should voters apportion blame to the individual political parties making up the coalition government? This essay is concerned with explaining how individuals distribute responsibility among members of a collective decision-making entity, who differ in the influence they can have on the outcome of the collective decision.

Since individuals frequently make responsibility attribution decisions in general, and decisions about distributing responsibility among member of a collective decision-making entity in particular (Messick, Moore, and Bazerman 1997), our conjecture is that they have developed heuristics that facilitate their decision making.[1] In this article, we implement a set of three different laboratory and survey experiments designed to identify the specific heuristics that individuals use to attribute responsibility for collective decisions.

In what follows, we motivate the experimental designs and then present the results from each of these experiments in turn. Having identified the heuristics that shape responsibility attribution for collective decisions in an abstract setting of weighted majority rule games, we then apply our insights to one important substantive question in political science: How do voters in coalitional democracies distribute attributions of policymaking responsibility among the parties in a coalitional executive?

Design Principles for the Experiments

The design of our three experiments had two goals: First, we wanted a collective decision-making structure that builds on the simple and well-understood experimental games that have been developed by behavioral economists and political scientists (e.g., ultimatum, dictator, and trust games). In this way, we could rely on the rich results from that literature. Second, we wanted to use these simple games to explore how individuals assign responsibility for collective decisions in situations that approximate the kind of complicated, obscure, and cognitively demanding environments individuals face in real social and political life. Our intuition is that it is in exactly these kinds of complex situations that individuals will use cognitive shortcuts, including simple heuristics.

Our first goal was served by adapting the classic dictator game with second-party punishment. For our first two experiments, we design a collective dictator game with punishment. A collective decision-making body allocates shares of an endowment among its members and a set of recipients. As in all traditional dictator games, recipients cannot reject the allocation, but in our experiment, they do have an opportunity to punish the members of the collective after seeing the allocation.

The advantage of working in the well-understood framework of the dictator game with punishment is that certain empirical regularities from this literature are quite likely to carry over to our situation. As we will see, there is nothing about the relationship between decision maker allocations and total levels of punishment (as opposed to the distribution of punishments) in our game that differs fundamentally from the usual unitary dictator game with punishment. Consequently, we have every reason to expect that, with respect to levels of punishment, recipients and decision makers will behave just as they do in traditional other-regarding games with punishment: That is, recipients will tend to punish selfish offers but not punish if offers are sufficiently generous, and decision makers will moderate their selfishness in anticipation of punishments (e.g., Dawes et al. 2007; Fehr and Fischbacher 2004; Fehr and Gächter 2000; Güth, Schmittberger, and Schwarze 1982; Henrich et al. 2006).[2]

In order to get any power on the main question of this study (i.e., the distributions of punishments by recipients), we need recipients to engage in frequent (and high levels of) punishment. Accordingly, we calibrate the parameters of the game (especially the total number of

[1] By *heuristics* we mean strategies that "guide information search and modify problem representations to facilitate solutions" (Goldstein and Gigerenzer 2002, 75).

[2] Our expectations regarding the overall punishment of these collective decisions are informed by a well-developed theoretical literature on other-regarding preferences (Bolton and Ockenfels 2000; Falk, Fehr, and Fischbacher 2006; Fehr and Schmidt 1999, 2006; Rabin 1993). Most formal models of other-regarding preferences imply that an unequal distribution of monetary payoffs causes disutility in inequity-averse individuals and conceives punishment as a means these individuals have to alleviate the perceived inequity. However, these models provide less theoretical guidance as to how individuals would distribute their punishment among the decision makers in a decision-making body whose collective decision led to an inequitable outcome.

available punishment points relative to the endowment) to avoid decision maker allocations that are too often generous (thus invoking little punishment and reducing power for our main question of interest).

Our second design goal was to simulate the kinds of complex decision-making environments that individuals face in the real political and social world. We approximate this complexity by making one crucial design decision: Recipient punishments are costless. This choice eliminates any overriding incentives that recipients have to choose one punishment strategy over another and ensures (under a variety of assumptions about the content of player utility functions) that there are a plethora of equilibria to the game. Thus, our recipients are faced with just the sort of complex situation we want; the structure of the game itself gives them little guidance on how to behave (i.e., whether and how much to punish), so they must devise some other way to play. Our intuition is that while they will react to decision maker selfishness and generosity with levels of punishment that are similar to subjects in traditional games, they will distribute these punishments in proportion to their attributions of responsibility over decision makers–attributions we think they make using simple heuristics.

All three of our experiments incorporate treatments that replicate the important features of majority decision-making situations. A key feature of collective decision-making contexts is the distribution of decision maker voting weights (for simplicity, we will typically refer to decision makers as DMs); accordingly, in our experiments, we vary these from relatively equal to unequal voting weights where a single party has a majority vote weight (i.e., veto power). We also vary the voting weight of the proposing decision maker (i.e., agenda setter) and whether or not recipients know the proposing DM's identity. We restrict ourselves to exploring how this finite set of DM attributes informs responsibility attribution. Subjects could rely primarily on positive agenda power, focus on the DMs with the largest voting weight, attribute responsibility according to voting weights, or favor a negative agenda-power heuristic. The experimental approach we adopt allows us to disentangle the effect of, for instance, agenda-setting power versus veto power in a very controlled setting, which is difficult to achieve based on observational data. Only having confirmed the nature of this heuristic reasoning in the lab will we then be prepared to address external validity (Morton and Williams 2010, 253).

In our first experiment, we find that the average amount recipients spend on punishment does not vary substantially across information conditions, whereas a clear pattern emerges where, if identifiable, the proposing DM is punished most for an unfair allocation. Our second experiment further explores the motives behind this agenda setter effect and also varies the outcome of an unfair proposal receiving a no-majority vote. We find that the proposing DM is punished most for an unfair allocation even in conditions where a no-majority vote would result in an equitable distribution of the original amount rather than in a reversion to zero. In our third experiment, we test whether recipients indeed believe that the proposing DM has the most influence on the collective decision outcome. Our results confirm this conjecture.

Experiment 1: Responsibility Attribution

Our first experiment was conducted with 96 student and nonstudent participants. Each of the four experimental sessions comprised 20 rounds. In each round, subjects played the collective dictator game with punishment, which had the following characteristics:

(1) Five DMs are chosen at random and are given an endowment in £s that equals the number of participants in the experimental session ($n = 25$ in Sessions 1 and 4, and $n = 23$ in Sessions 2 and 3). The recipients receive no endowment. Moreover, one of four voting weight distributions is randomly chosen, and each DM is randomly assigned a voting weight from this distribution.

(2) One of the DMs is chosen at random to propose an allocation a of the money between the DMs and the recipients in units of £1($a \in 0, 1, 2, \ldots n$). If the proposal is accepted, a and $n - a$ is split equally among the DMs and recipients, respectively. Thus, each DM's payoff at this stage would be $\pi_i = \frac{a}{5}$, and each recipient's payoff $\pi_j = \frac{n-a}{n-5}$. For instance, if the proposing DM proposes to allocate £15 to the DMs and £10 to 20 recipients, each DM's payoff would be $\pi_i =$ £3 and each recipient's payoff would be $\pi_j = 0.5$.

(3) The five DMs cast all their votes for the proposed allocation or all against it. Abstention is not allowed. If the allocation receives at least 51 votes, then it passes. Otherwise, the proposing DM has to propose a different allocation, which is also voted on. No other communication is allowed. If three consecutive proposals fail to obtain 51 votes, the group is disbanded and no one is paid anything (i.e., $\pi_i = \pi_j =$£0).

(4) In case of a successful proposal, each recipient is given 30 "deduction points" and decides independently and at no cost how much to deduct from each DM's payoff. A DM is deducted the average of the deduction points assigned to him or her by all recipients times 0.1. Let p_{ij} be the deduction points assigned by recipient j to DM i. As a result, the final payoff for DM i is $\pi_i = \frac{a}{5} - \frac{0.1}{n-5}\sum_{j=1}^{n-5} p_{ij}$. Continuing from the example above, if 10 recipients assign 15 deduction points to a DM, five assign 10 points and five 0 points, then the DM's payoff is reduced by $1\ [0.1 * (10 * 15 + 5 * 10 + 5 * 0)/20 = 1]$, and his or her final payoff is $\pi_i = 2$.

In each session, there were four voting weight distribution treatments, which we randomized across rounds: (53%, 29%, 10%, 6%, 2%); (48%, 19%, 14%, 11%, 8%); (38%, 21%, 17%, 13%, 11%); (23%, 21%, 20%, 19%, 17%). Except for the first session (see the Information Treatments subsection below), the voting weight distribution was common knowledge in each round. In case of a successful proposal, recipients were also informed of the amounts allocated to the DMs and to the recipients and that this allocation had received a majority of votes; they were not informed of the voting decisions of individual DMs or of the exact number of votes constituting the majority. Moreover, to minimize learning effects, DMs were given no feedback on the amount of their deduction–they only learned their total payoff at the end of the session. If a proposed allocation was unsuccessful, recipients were only informed that the allocation failed to receive a majority of votes.[3]

Behavioral Predictions

Our experimental design is informed by the extensive theoretical and empirical work on decision making in dictator and ultimatum games (e.g., Camerer 2003).[4] Our interest here is in how recipients in the collective dictator game attribute responsibility to the individual DMs responsible for the collective offers. To our knowledge, no experimental evidence has directly addressed this issue. Unlike most other-regarding games, in our rendition, recipients are making two decisions: They decide on how much to punish and also on how to distribute that punishment among the individual DMs. In order to gain insight into the latter decision, which is the focus of this essay, we require high levels of punishment resulting from their first decision. We thus set the parameters of our game to make it likely that DMs' collective offers will be relatively selfish and recipients will punish quite aggressively.

An implicit assumption here is that the recipients' first decision, the magnitude of their punishment, is not conditioned on the fact that the offer is the result of a collective, rather than individual, decision. Similarly, we conjecture that overall punishment is not significantly affected by features of the collective decision-making process. However, we do expect overall punishment to be negatively correlated with the generosity of the collective offer. Our expectations are based on a game-theoretic analysis of a simplified version of the game that subjects played in our experiments. In our analysis, we assume that only one DM i interacts with only one recipient j. We now briefly summarize the results of this analysis. The full analysis, as well as a discussion of how the analysis extends on the multiparty game implemented in our experiment, can be found in Section 1 of the online supporting information.

If we assume exclusively self-regarding actors, our dictator game with punishment has multiple Nash equilibria. In most of these equilibria, the DM keeps all of the allocation, and, since punishment is costless, the recipient is indifferent as to whether and how much to punish the DM; expending punishment points does not affect the recipient's payoff. However, if we assume that actors are minimally inequity averse, then we can identify a unique subgame perfect Nash equilibrium in our game.[5] In this equilibrium, the recipient is made "better off" as a result of reducing the DM's payoff in order to bring it closer to an equitable outcome.

One possible way to formalize inequity aversion is the Fehr-Schmidt model (Fehr and Schmidt 1999, 2006), in which a DM's utility depends on his or her payoff and the payoff of the recipient in the following way: $u_i = \pi_i - \alpha_i \max(\pi_j - \pi_i; 0) - \beta_i \max(\pi_i - \pi_j; 0)$. DM i's payoff

[3]Section 2.1 in the online supporting information contains a detailed description of the procedure and design as well as the instructions given to subjects in Experiment 1.

[4]In most of this literature, the initial offers are made by an individual, whereas in our experiments they are made by a collective decision making group. The few experiments on collective decision-making in other-regarding games typically compare the initial offers of individual decision makers with those of a group. A major result of these experiments is that groups are more rational and selfish than single individuals (Engel 2010). Groups are found to be more selfish in a dictator game than individuals, and the most selfish group member has the strongest influence on group decisions (Luhan, Kocher, and Sutter 2009). Groups are also found to offer less, and accept lower offers, than individuals in ultimatum games (Bornstein and Yaniv 1998).

[5]Subgame perfection is an equilibrium refinement concept in game theory that excludes Nash equilibria in which players' responses to out-of-equilibrium behavior are not utility maximizing.

is denoted by π_i, α_i is the so-called "envy" parameter, and β_i the so-called "guilt" parameter. It is assumed that $\alpha_i \geq 0$, $\alpha_i \geq \beta_i \geq 0$, and $\beta_i < 1$. That is to say, no DM i likes having less than recipient j, no DM i likes having more than recipient j but dislikes having less more than he or she dislikes having more, and DM i's dislike for having more never outweighs his or her utility from having π_i, respectively. The recipient's utility function can be written accordingly by interchanging subscripts.[6]

Assuming weak inequity aversion, by setting $\alpha_{i,j}$ and $\beta_{i,j}$ to 0.01 (or any arbitrarily small value) results in a game with a unique subgame perfect Nash equilibrium. In this equilibrium, (1) the recipient punishes a non-egalitarian allocation with the amount necessary to bring the DM's payoff as close to his own payoff as possible, and (2) the DM maximizes her utility by allocating all for herself (in which case, the recipient expends all his punishment points). This minor adjustment to preferences generates equilibrium behavior on the part of DMs and recipients that we require for the experiment–specifically, the maximum allocation of punishment points by recipients.

The equilibrium behavior of the recipient does not change with variations in α_j and β_j. A DM's behavior, however, is sensitive to variations in β_i, the guilt parameter in her utility function. The DM will choose an egalitarian allocation ($a_i = 5$) for $\beta_i > 0.5$ and will allocate all to DMs ($a_i = 25$) for a $\beta_i < 0.5$. The DM will be indifferent between the two actions if $\beta_i = 0.5$. Under the plausible assumption that subjects are heterogenous in their other-regarding preferences, we are likely to observe both types of behavior in our experiment.[7]

Utility functions that incorporate inequity aversion, such as the Fehr-Schmidt model, help explain the overall punishment behavior of subjects in our collective dictator experiment. But inequity-averse recipients in these models are entirely indifferent as to whom they punish in the group of DMs as long as their punishment reduces inequity. This implies that recipients' punishment will be unaffected by the amount and type of information they are given about the decision-making process and the role assumed by individual DMs.

[6]There are other models of other-regarding preferences that could be used instead of the Fehr-Schmidt model, and which, with all likelihood, would yield qualitatively similar results (e.g., Bolton and Ockenfels 2000; Falk, Fehr, and Fischbacher 2006; Rabin 1993). We use the Fehr-Schmidt model here because it is very tractable in this setup and allows us to give clear intuitions to readers.

[7]In fact, we see considerable out-of-equilibrium behavior from our subjects. About 25% of DMs split the allocation equally with recipients, and only 5% keep all of the allocation. The remainder falls between these two equilibria (see Section 2.2.3 in the online supporting information).

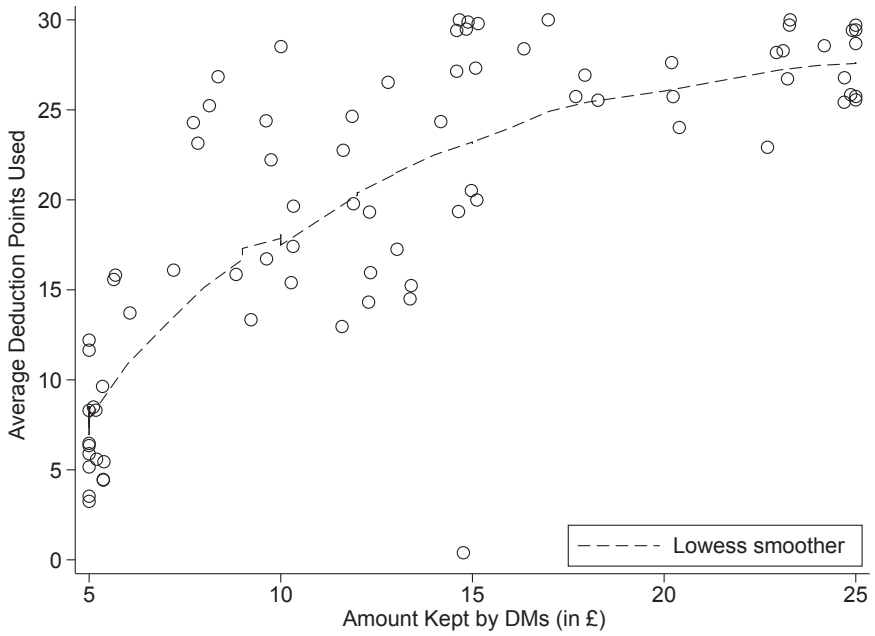
In contrast, we contend that if information about the collective decision making process is communicated, then recipients will use this information to distribute responsibility to individual DMs. In a recent article, Bartling and Fischbacher (2012) suggest that besides inequity aversion and reciprocity, responsibility attribution could be another possible motive for punishment. In addition to responding to the inequity or unkindness of the collective DM allocation, recipients can distribute their punishment points over the individual decision makers in the collective decision making group. Bartling and Fischbacher (2012, 74) suggest a simple measure that attributes "most responsibility to the player whose action had the largest impact on the probability that unfair allocation results."

Our expectation is that individuals have acquired decision-making shortcuts (i.e., heuristics) that facilitate this "distribution of responsibility" task. They do not, for example, calculate the Banzhaf (1965) voting power index for each DM. Rather, individuals use selective, and simplified, information about the decision making process in order to decide how to attribute responsibility across the individual members of a collective decision making body. In the next section, we explore four features of the decision-making process individuals likely employ for attributing responsibility: agenda-setting power, the largest DM; the voting weights of DMs, and veto power.

Results

Punishment Levels. We first examine whether this experimental setup produces behavior that punishes unfair allocation decisions similar to previous experiments with an individual DM. In each round, 18 or 20 recipients evaluated each of the five DMs with respect to the collective allocation decision. This gives a total of 7,600 evaluation decisions (76 recipients $\times$ 5 DMs $\times$ 20 rounds). Figure 1 shows the average deduction points used on punishment (i.e., in total per recipient and round) for the amounts the DMs collectively chose to keep for themselves (across all experimental conditions). The lowest observed amount that DMs keep for themselves is £5 (everyone receives £1), and the maximum amount is £25 (nothing for the recipients). The graph shows that there is a strong positive correlation between the amount kept by DMs and punishment of DMs by recipients. This result is consistent with findings from (single) dictator game experiments with punishment (Bering 2008; Fehr and Fishbacher 2004; Henrich et al. 2006) and confirms our conjecture that recipients respond to an overall collective

FIGURE 1 Average Total Deduction Points Used for Amount Kept by DMs



offer in a fashion similar to what we observe when they receive an offer from a single DM.

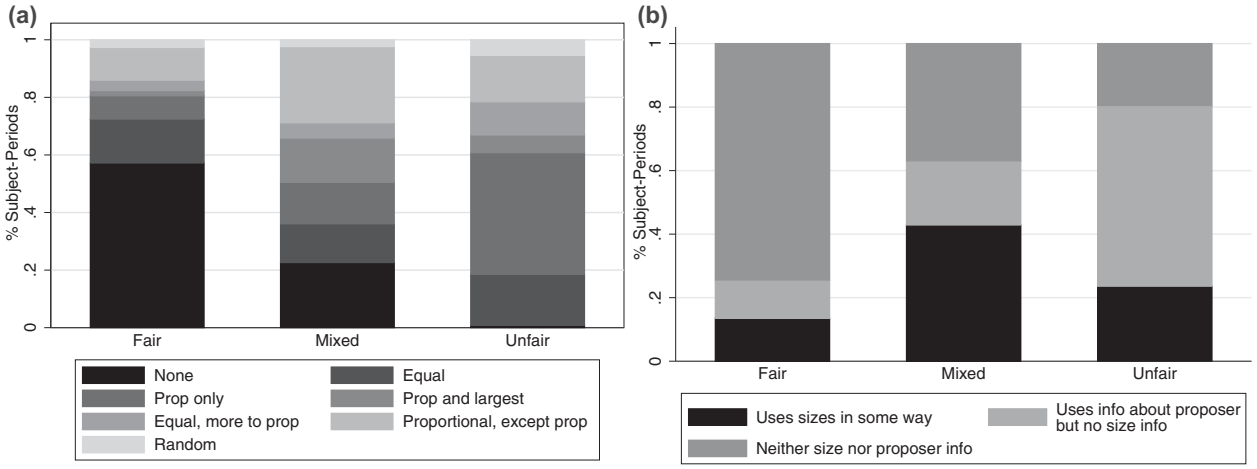
Distribution of Punishment. We now turn to the second type of recipients behavior—the way recipients distribute punishment amongst the individual DMs—to identify the responsibility attribution heuristics they use. Recipients in our experiment appear to use six different heuristics:

- "No punishment": Recipients used no deduction points.
- "Punish all DMs equally": Recipients used deduction points and gave equal shares to all DMs. In the vast majority of cases, they used all 30 of their available points (i.e., 6 points to each DM).
- "Punish only proposer": Recipients only used deduction points on the proposer. In 85% of such cases, they used all (30) of their points on the proposer. In 12% of the cases, the proposer was also the DM with the largest voting weight; in 5% of the cases, the proposer also had a majority of the vote weight.
- "Punish proposer and DM with most weight": Recipients split their deduction points between the proposer and the DM with the largest vote weight (which was not the proposer in these cases). On no other DM were points used.
- "Punish equally, but more to proposer": Recipients used the most points on the proposer, more than on other DMs, on each of whom they used the same amount.
- "Punish proportional to vote weight, except for proposer": Recipients did not fall into any other category and used their deduction points in a way that resulted in a positive relationship with vote weight. However, they used disproportionately more points on the proposer.

Clearly, the punishment heuristics our subjects used heavily emphasized the proposer. Recipients paid much less attention to the relative vote weights of the DMs. Indeed, in only 24% of the cases overall did subjects use a punishment heuristic that depended at all on the vote weights of the DMs, and in about half of these, the only vote weight information that was used was the identity of the largest DM.

Figure 2 consolidates the heuristics above into those with generous or "fair" allocations (1–9 to the DMs), "mixed" allocations (10–14 to the DMs), and selfish or "unfair" allocations (15 or more to the DMs). Figure 2a makes it clear that as allocations become selfish, the majority of subjects appear to blame the proposer, even when this proposer is not the largest DM. Figure 2b summarises the information recipients employ in their punishment decisions. Clearly, as allocations become less fair (i.e., mixed), recipients use more of the available

FIGURE 2 Punishment Heuristics and Fairness



information overall. However, as they become unfair, they focus less on making distinctions about the sizes of all DMs—only about 20% employ this punishment heuristic in the unfair allocation cases. In most unfair cases (80%), recipients focus exclusively on punishing the proposer without considering the sizes of DMs. Finally, we have cases in which some information about DM size is used (proportional allocations and special punishment of the largest parties). But in all these cases, recipients also accounted for the proposer.

Multivariate Model. Figure 2 quite compellingly suggests that responsibility attribution is focused on DMs with proposal power rather than on the voting weights of DMs. Accordingly, we estimate a series of statistical models in which we model how much recipients punished DMs with different characteristics, while controlling for the total amount the DMs kept for themselves.[8] We include a full set of indicator variables for DMs' voting weights and a dummy variable for whether the particular DM was the proposer. Note that the indicator for the largest DM heuristic will be the indicator for the largest voting weight in each distribution (i.e., 23, 38, 48, or 52).

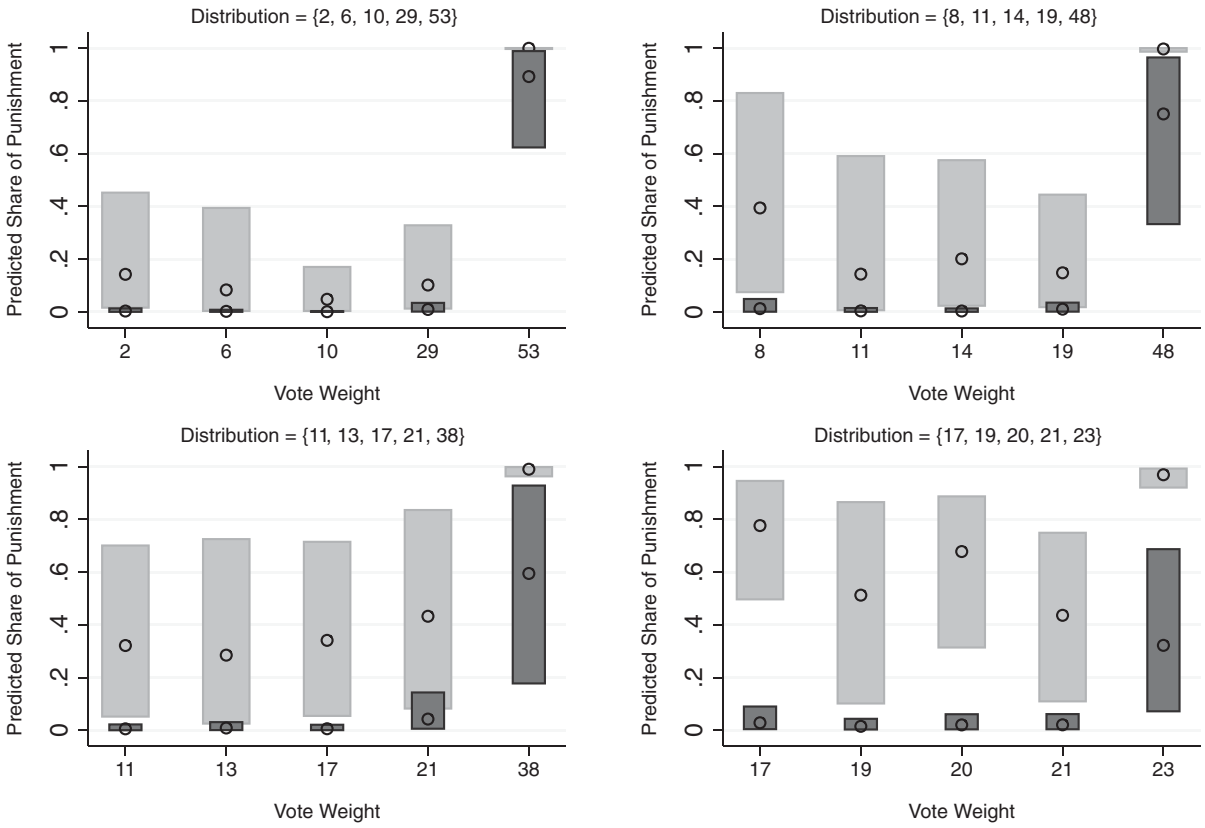
Each row in our data records the number of deduction points (out of 30) that a recipient allocated to a DM in an experimental period. Since there are five DMs in each period, we have five allocations of deduction points from each recipient in each period. In order to identify heuristics about responsibility attribution, we focus on the share of the total deduction points that the recipient allocates to each DM. Such shares will sum to 1 for each recipient who allocated at least 1 deduction point to 1 of the five DMs. Hence, our dependent variable is a five-part composition that gives the share of the total deduction points allocated to each DM by a recipient. We follow Atchison's (1986) recommendations in estimating this as compositional data (see Section 2.2.1 in the online supporting information for estimation details).

Figure 3 gives a substantive picture of the results for a case in which the DMs' collective choice was to keep £20 for themselves and a recipient's total punishment was 30 points.[9] The circles with the light gray confidence bands indicate the estimated share of punishment allocated to proposing DMs with the corresponding voting weight on the x-axis. The circles with the dark confidence bands are estimates of the average punishment allocated to nonproposing DMs (these are averaged over different proposer treatments for this distribution). For example, in the upper-left distribution (2, 6, 10, 29, 53), when the DM with a weight of 2 is the proposer, recipients allocate about 20% of their deduction points to this DM. This compares to the circle at essentially zero, which is the average estimated share of deduction points allocated to

[8]We have also run models without this control, which would be an appropriate specification if the DM's allocation is a "collider" variable in the causal link between our treatments and punishment decisions. The results, however, do not change appreciably for this specification (see Section 2.2.5 in the online supporting information).

[9]Substantive results calculated at other allocations give the same message; though consistent with the descriptive results reviewed in the last section, the impact of the proposer and largest parties relative to more equal allocations declines as DMs are more generous. In Section 2.2.6 in the supporting information, we provide similar graphs that give the estimates separately for cases in which each other DM was the proposer (e.g., separate estimates for the predicted share of punishment for a DM with vote weight 6 in distribution 1 when each of the other DMs — with weights 2, 10, 29, and 53, respectively, was the proposer).

FIGURE 3 The Impact of Voting Weights and Proposal Powers on Punishment.



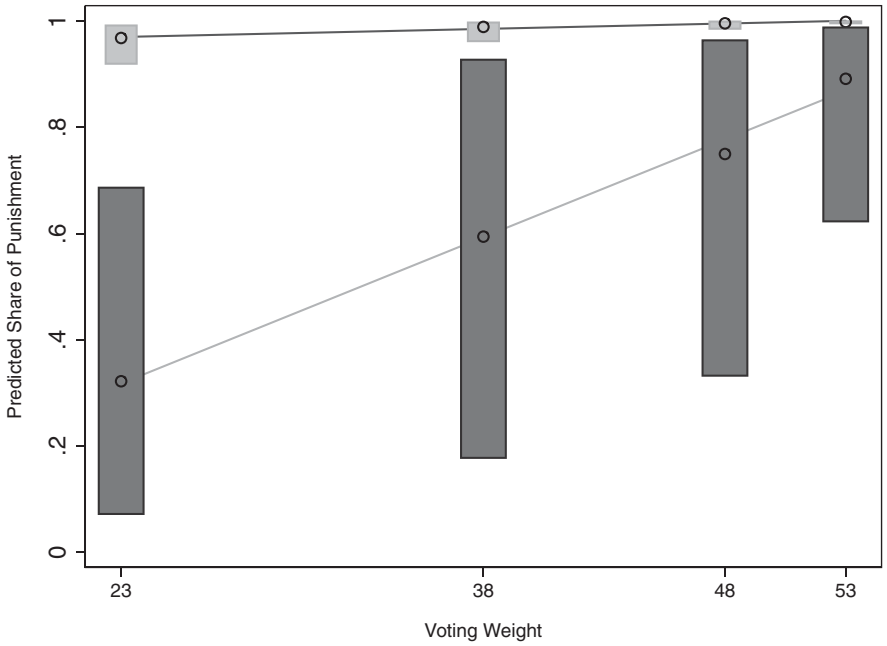
Note: Dark gray bars are estimates for nonproposers, and light gray bars are for proposers. The y-axis is the share of a recipient's total deduction points that was allocated to a DM with the indicated characteristics. The hollow circles are point estimates of predicted punishment shares for a typical recipient (who allocated all 30 of her possible deduction points in a situation in which the DMs kept £20 of the initial endowment). These predicted effects are derived from the estimated compositional model described in Section 2.2.1 and 2.2.4 of the online supporting information).

nonproposing DMs with a weight of 2. Note, moreover, that the estimated deduction points for a DM proposer with vote weight 53 is very similar to that of the average estimated deduction points for nonproposers with this weight—both approach 100%.

There are three results that stand out in Figure 3. First, a proposing DM gets punished more than nonproposing DMs with the same vote weight. Although the simulated 95% confidence bands sometimes overlap, in all cases are the point estimates for proposers and nonproposers with the same vote weight statistically different from one another. Thus, consistent with our analysis of these data in the previous section, subjects use proposal power as an important guide to attributing responsibility to DMs. Secondly, the plurality DM receives more punishment, and punishment increases as the size of the plurality DM increases in size. Finally, the results very clearly show that, other than the plurality effect, voting weight is not used by subjects as a general cue for attributing responsibility. There is no clear pattern between voting weight and punishments that applies across the distributions, or even within individual distributions.

Two more subtle results can be discerned in Figure 3. The first is that there appears to be an interaction effect between proposal status and DM size. Specifically, we see that when both the plurality signal and proposal power signal point to the same DM, subjects almost universally punish only this DM (with a predicted share of punishment almost at 100% even in the most egalitarian distribution of vote weights). Finally, our estimates do not suggest that subjects gave any special weight to the fact that in the first distribution the plurality DM could veto any proposal. To see this more clearly, Figure 4 gives the same estimates as in Figure 3 but only for the plurality DM in each distribution. The lower fitted line captures estimated punishment shares that are solely accounted for by the plurality size effect.

FIGURE 4 The Impact of Voting Weights and Proposal Powers on Punishment.



Note: Dark gray bars are estimates for nonproposers, and light gray bars are for proposers. See the note to Figure 3 for more details.

Examining the estimates in this way, one can immediately see that recipients, while they did punish larger plurality DMs more than smaller plurality DMs, did not give an additional increment of punishment to (plurality) DMs having veto power. If this were the case, then the estimated punishment for the veto DM (53 voting weight) would have been significantly above the plurality effect fitted line. Had recipients been employing a veto power heuristic, one might have expected them to only punish this DM, even when she did not have proposal power. However, given the point estimate and confidence band, this is clearly not the case (deduction point shares are about 85% when the DM does not have proposal power, which is significantly lower than the essentially 100% when the DM has proposal power). Thus, unlike the case of proposal power, subjects seem less able to recognize the special significance of veto power.

Information Treatments. Figure 1, presented earlier, suggests that recipients respond to a collective dictator offer in much the same way they would respond to one from a single dictator. We also conjectured that recipients' overall punishment is not conditioned on information they receive regarding the decision-making process (e.g., DM characteristics). Our view is that recipients respond to the DMs' decision with an overall punishment and then use what information they can glean about the process to apportion responsibility. An alternative perspective is that overall punishment is the sum of recipients' punishment decisions for each individual DM and may therefore depend on the possibility to attribute responsibility to individual DMs. This perspective implies that information about the decision-making process determines the overall level of punishment—limited information should reduce overall punishment. We can test this conjecture with our experimental data.

In addition to the full-information treatment that we referred to in the last two sections, we implemented two additional information treatments in our experiment. In the no-information treatment, subjects knew neither the DMs' voting weights nor which one of the DMs was the proposer; in the semi-information treatment, subjects knew the DMs' voting weights but not which of the DMs was the proposer (see Section 2.1 in the supporting information for details). In order to test whether overall punishment varied depending on the amount of information provided to recipients, we regress the total number of deduction points used by a recipient

in one round on indicator variables for each information treatment.[10]

There is at best weak evidence that levels of punishment are conditioned by the information context. The coefficient estimates are 26.7, 27.1, and 29.2 for the no-information, semi-information, and full-information, treatments, respectively. Hence, while the order of the effects suggest, that punishment is higher in environments with more information, the pairwise differences between coefficients are insignificant (at the 5% level for two-sided tests).

This result provides an interesting insight into responsibility attribution for policy decisions made by multiparty governing coalitions. There are claims that multiparty governing coalitions (i.e., the information context) make it more difficult for voters to assess responsibility for policy decisions, and hence, there is an attenuation of overall responsibility attribution (Powell and Whitten 1993). Our information treatment results suggest that there is a tendency for overall punishment to decrease as the amount of information about the decision-making process decreases, but in our case, this decrease is substantially insignificant.

Discussion

Our first experiment was designed to (1) determine how recipients' overall punishment is related to an offer from a collective decision-making body and (2) understand the heuristics employed to distribute responsibility among individual DMs. In the case of the first point, we find that the responses of our recipients to a collective dictator game offer is similar to the responses to an offer from a single dictator game. Moreover, varying information about the decision-making process, in particular about the DMs in a collective decision-making game, has very little effect on overall punishment.

With respect to the second point, we assess the importance of four responsibility attribution heuristics: the relative weights of the DMs, the plurality DM, the DM with veto power over a decision, and the agenda-setting DM. Rather surprisingly, with the exception of punishment for the plurality DM, this experiment provides little support for the notion that individuals apportion responsibility for collective decisions according to the voting weights of the DMs. The results are also surprising in that the subjects exhibited a clear tendency to hold the agenda setter accountable. Less surprising, but very prevalent, is the tendency for subjects to punish the plurality DM; as the plurality DM's vote gets larger, this punishment increases in a very linear fashion. Indeed, given this linear trend, it is not clear that there is a "bonus" for being above a majority threshold (i.e., a veto player) that comes *in addition* to being the largest DM. Overall, it seems that subjects are looking for clear cues like proposal power and plurality weights. When they find these cues, they use them while ignoring other information. When they do not find any cues—or find limited cues—there is a very modest decline in overall punishment levels, and, as one would expect, punishment is randomly allocated to DMs.

One is tempted to conclude from this that subjects in our experiment believe that proposal power and plurality status confer significant influence on collective decisions, whereas vote weight and veto power are less reliable indicators of policy influence. But this is not necessarily the case. There are two alternative explanations that we believe deserve careful attention. First, given the setup of our game, it is possible that higher-level reasoning will lead recipients to punish mainly the proposer; second, recipients' focus on the proposer may be due to reasons other than our hypothesized one—for example, the proposer could be a focal point for the recipients' expression of anger rather than a deliberately chosen target of responsibility attribution. Our next two experiments address these issues.

Experiment 2: Reasoning about Strategic Proposal Power

In contrast to our conclusion that subjects are using a proposal heuristic, it is possible that they are instead undertaking a more sophisticated calculation that results in the same behavior (i.e., focusing punishment on the proposer). Specifically, it could be that recipients understand that the proposing DM in our game is a policy dictator. That is, the proposer can propose her ideal allocation because in the third round of voting, this allocation will be preferred to the reversion outcome, which is zero for each DM. Hence, punishing the proposer may not reflect the operation of a heuristic, but a more sophisticated level of reasoning in the game. We test this possibility with an additional lab experiment. In this experiment, we implement a treatment in which the reversion point of the DM bargaining game is no longer zero, but rather an equitable allocation (safe condition). Thus, in this treatment, the proposer cannot leverage the "reversion to zero" outcome

[10]Note that in the no-information treatment, DMs kept either £20 or £25; accordingly, the regression we run compares punishment levels across information treatments for amounts kept by DMs of £20 or more.

in order to ensure her preferred allocation wins a majority vote. In contrast, for nontreated rounds, we continue to have a defeated proposal result in zero payoffs (loss condition). If the recipients' punishment behavior reflects reasoning about the leverage that the reversion to zero outcome gives the proposer, then proposers should receive fewer deduction points in the safe treatment than in the loss treatment.

Procedure and Design

Twenty-four subjects participated in our second experiment, in which we varied three factors across 20 rounds. As in the previous experiment, we varied the vote distribution randomly assigned to the five DMs, as well as the identity of the proposing DM, in each round. Unlike in our first experiment, the proposer faced a binary decision. The proposer could choose between Allocation I, where both DMs and recipients receive £1 each, and Allocation II, where DMs receive £3 each and recipients receive £0.50 each. If the proposer chose Allocation I, Allocation I was implemented (Outcome 1). If Allocation II was proposed, it was voted on, and if it received at least 51 votes, then it passed (Outcome 2). The third factor varied the outcome if Allocation II did not receive a majority vote (Outcome 3). In some rounds, if Allocation II received fewer than 51 votes, Allocation I was implemented (safe condition); in other rounds, no one was paid anything (loss condition). It was announced in each round what Outcome 3 could be. In this case, we used the "Strategy Method" to maximize the number of observations. Specifically, in each round, the 19 recipients were presented with the three possible outcomes on their screens and were asked to enter the amount of deduction points they wanted to use on each of the five DMs for each of the three outcomes. For each of the outcomes, they had 30 deduction points to divide across DMs. This resulted in $19 \times 3 \times 5 = 285$ punishment decisions per round.

Results

We only present a brief summary of the results of this experiment, primarily focusing on the plausibility of the conjecture that recipients expect proposers to exploit their leverage from controlling the proposal in the last round of the game. The results summarized in Figure 5 suggest that this is not the reasoning that motivates recipients' punishment of the proposing DM (PDM). The most informative comparisons in this regard are between punishment targeted at a proposer in the loss condition versus the safe condition. As is clear in every case, the punishments are essentially the same across the safe and loss conditions, regardless of the other parameters of the game.

Thus, these results support our earlier conjecture that individuals employ a proposal power heuristic when attributing responsibility for collective outcomes, rather than working through the strategic logic of the particular decision-making situation they face. Of course, it could be (and is likely, in our opinion) that one of the reasons the proposer heuristic is used here is that in many similar situations, it "works" because in those situations proposal power really is valuable. But it would seem, certainly based on the experiment we just described, that individuals employ this proposal power heuristic irrespective of whether or not proposers are especially advantaged in the current situation they face.

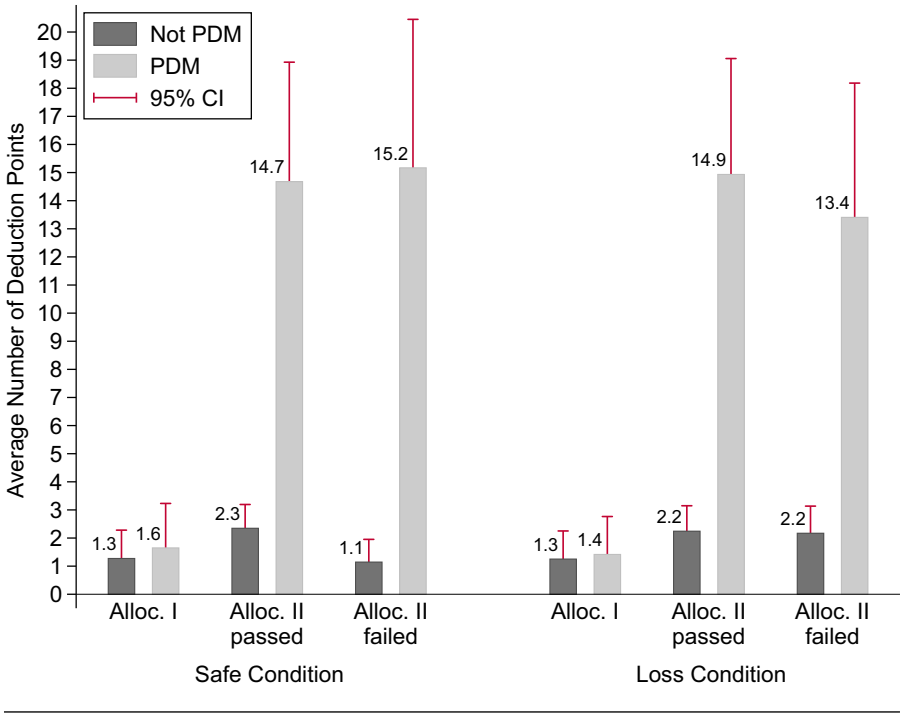
Experiment 3: From Punishment to Decision-Making Influence

Our interpretation of the results given above is that recipients use a proposer heuristic because they think the proposer has the greatest influence on the decision. Punishment may be more of an expression of anger than a rational assessment of responsibility. Emotional psychological models of voting behavior certainly suggest that the expression of anger in vote choice decisions are associated with an ability to focus blame on a specific target (Brader, Groenendyk, and Valentino 2010; Ekman 2003; Huddy, Feldman, and Cassese 2007). Perhaps the subjects who are angrier about unfair allocations seek a focus for that anger rather than trying to assess who actually influenced the policy outcome.[11]

Our third experiment aims to determine whether the proposer-centric punishment identified in the previous experiments results because individuals think that the proposing DM has more influence over the collective decision. The experiment is designed to recover expectations regarding decision-making influence. It does not invoke punishment or reward on the part of subjects. This is an

[11] One can speculate that these two different "mental models"—proposers actually affect policy outcomes versus proposers represent an emotional focal point for blame—can have quite different implications for voter behavior. In the former case, it will be difficult for proposers to escape responsibility for policy outcomes, and this will likely affect their policy proposals. The emotional explanation likely allows for more room to maneuvre on the part of decision makers in the sense that a proposer can attempt to place public attention on other focal points.

FIGURE 5 Average Deduction Points Assigned to Proposing and Nonproposing DM, by Treatments



online survey experiment based on a sample of 1,004 UK respondents.[12]

Procedure and Design

Respondents were asked to guess the outcome of a collective decision that had been decided by the weighted vote of five DMs prior to the survey. Depending on how closely their guess matched the collective decision, they could earn from 0 to 30 SSI points (more accurate guesses paid more).

The outcome of the collective decision was described to the respondents with a picture that illustrated the information (these screen shots are included in Section 3.1 in the online supporting information). Respondents were told that five DMs had been given a total of £30, and the DMs were asked to decide, based on a majority weighted voting rule, how much should be given to two different charities: an animal shelter and a soup kitchen. The decision-making situations differed in three ways. First, in the picture, respondents were shown a one-dimensional space that located each DM's preferred donation amounts for the animal shelter (the balance going to the soup kitchen): £4, £10, £16, £21, £28. Second, the voting weight associated with each of the five DMs was also included in the picture. Three different voting weight distributions were used: [.02, .06, .10, .29, .53]; [.11, .13, .17, .21, .38]; and [.17, .19, .20, .21, .23]. The voting weights in each distribution summed to 1, and they determined how much each DM's vote counted when the donation proposal was voted on. Finally, the picture also indicated which DM was chosen to propose the allocation of the £30.

Each respondent was asked to guess the outcome for three collective decisions taken under the three different distributions of voting weights assigned to the five DMs. Within each distribution, the particular allocation of weights over the five DMs (i.e., over the five ideal points) that a respondent saw was randomized (there were 120 possible assignments of weights to positions). In addition, the identity of the proposer that each respondent saw (for each decision) was randomized (so there are 25 possible assignments of a weight and position combination to a proposer in each decision situation). Given the 1,004 respondents, this results in about 40 respondents

[12]The Internet panel sample was provided by Survey Sampling International (SSI). Their panelists are compensated with SSI points, which are exchanged for money. A complete description of the survey and sample characteristics is available from the authors' website (http://www.raymondduch.com/2014/01/06/responsibility-attribution-for-collective-decision-makers).

per proposer/position combination.[13] For each respondent, for each of the three questions, we calculated the spatial distance between the respondent's guess about the collective decision and the ideal points of each of the five DMs (below, we refer to this variable as distance). This gives us five data points for each respondent for each of the three questions. Taken together, these data points contain information about the respondent's beliefs about the relative influence different DMs (with different seat weights, positions, and agenda powers) had on the collective decision.[14]

The goal of the empirical analysis reported below is to explore which characteristics (or combinations of characteristics) of DMs, condition respondents' beliefs about the outcomes of collective decisions. Building on the results from the lab experiments reported above, we focus on two kinds of characteristics: agenda-setting powers—both positive (proposal) and negative (veto)—and the distribution of voting weights (including which DM has the largest weight as well as other, more extensive, uses of size cues, e.g., proportional influence). The results reported in the following are based on the estimation of three separate regressions (one for each question) of our distance variable on measures of the agenda powers, vote weights, and policy preferences of DMs (see Section 3.3 in the supporting information for details).

Results

Figure 6 summarizes the multivariate results for the survey experiment. The graph presents the distance between respondents' predicted policy outcome and the policy position of the DM with the indicated characteristics. There are three graphs corresponding to each of the three distribution treatments. Each graph presents the distances between the predicted policy outcomes and the DM policy positions for DMs who were proposers (with darker confidence bars) and for those who were nonproposers (with lighter confidence bars). A line has been fitted between these two sets of distances excluding the DM with the most weight.

First, note that none of the slopes of the lines graphed are statistically significant from zero. They are not even close. So working from the top line in the first graph (proposers for Distribution 1) to the bottom line in the third graph (nonproposers of Distribution 3), the p-values for each line are .37, .29, .30, .38, .56, and .87. We have no evidence that the distance between the expected policy and the DM's position becomes smaller as voting weight becomes larger.

Note, moreover, that the distance between the respondent's predicted policy outcome and the policy position of the proposing DM is always smaller than it is for the nonproposing DMs. Additionally, in most cases, the confidence intervals on the predictions do not overlap. Hence, it is not surprising that in the three graphs in Figure 6, the fitted line for the proposer is consistently lower than it is for the nonproposer. Our principal finding from the lab experiment is confirmed: Responsibility attribution is strongly associated with agenda power.

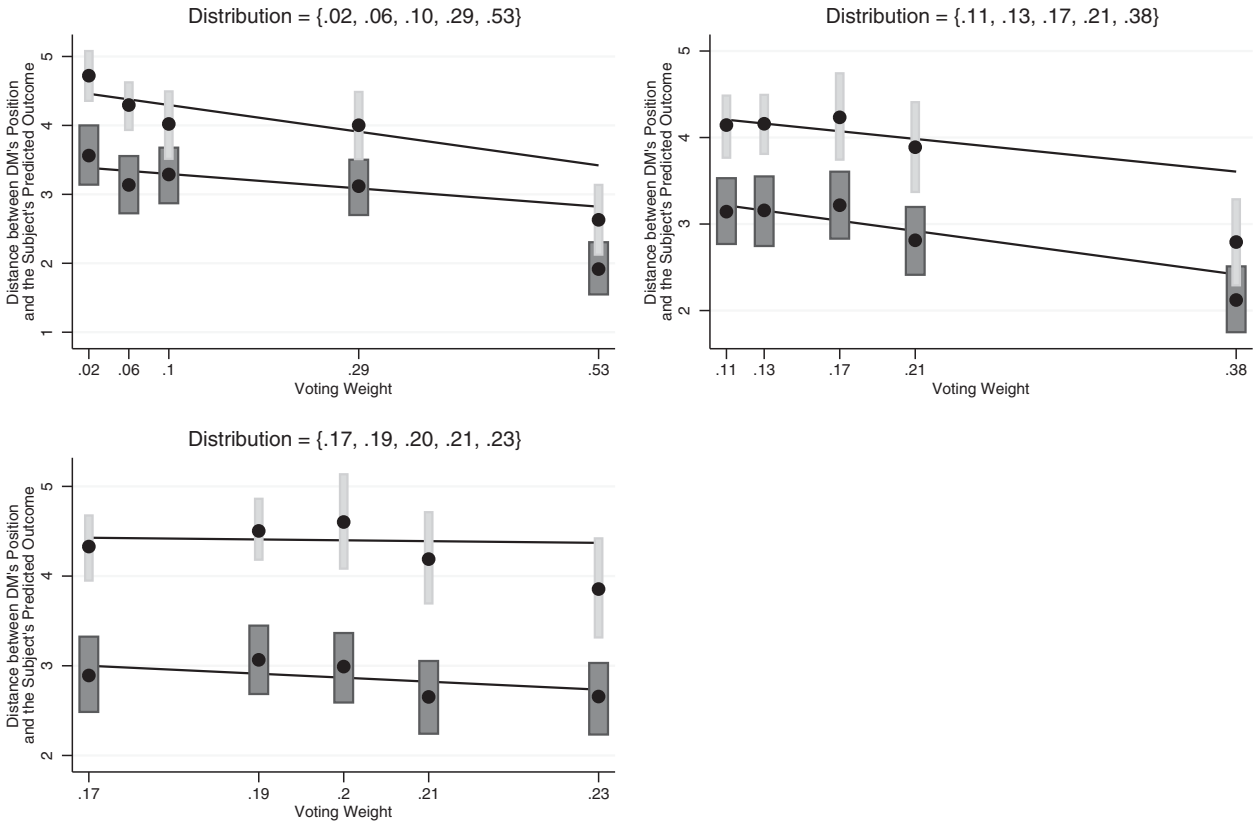
Being the largest DM also sometimes matters, and even more if one is also the proposer. Figure 6 shows the interactions that result from the nonlinear model. The fitted line indicates how much closer the expected policy is to the largest DM than it would be if one projected only a size effect assuming proportional influence. In two cases, the point estimate for the largest DM is below the line. Hence, the largest vote weight heuristic, for which we do have evidence, is quite distinct from a voting weight heuristic, for which there is limited evidence. However, in the most equal case (Distribution 3), the point estimate for the largest DM is not different from the point estimates for the other DMs. In this distribution case, there is no largest DM effect.

Finally, being the veto player does not appear to matter. The point estimates for the majority DM (for both proposing and nonproposing DMs) is not really different from those for the large but nonmajority DM (who has .38 vote weight). Thus, there is no real majority or negative veto effect apparent when one accounts for being the largest.

[13]While there are technically 120 × 5 cells in our design matrix for each decision (i.e., assignments of weights to positions × assignment of proposer) and so a small number of respondents in each cell, this is not consequential for our study since we are only concerned with two aspects of vote weights: (1) whether there is a parametric relationship between weights and how close respondents think the policy will be to a given DM, and (2) whether there is a "largest DM" effect. Since we can examine the first of these by fitting parametric models across cells of this design matrix, the information from a relatively small number of respondents in each cell is easily aggregated to bear on the main questions of interest here.

[14]We do not assume that a respondent who believes the policy outcome will be near the ideal point of a given DM necessarily thinks that the party is influential. It could be, for example, that the respondent believes the policy will end up being in the middle of the policy space, because two relatively influential DMs with opposing and extreme preferences compromise on the policy, leaving it close to a more centrally located but non-influential DM. In the empirical analysis, we attempt to isolate this sort of incidental influence from beliefs about real influence by focusing on how the addition or removal of DM characteristics (like agenda powers) changes respondent beliefs while holding constant the ideological positions of the parties.

FIGURE 6 Predicted Distances between Respondent's Guess and DM Position



Note: Lighter confidence bars are for nonproposers, and darker bars are for proposers. Fitted lines are calculated using only cases other than the DM with the most voting weight. None of the slopes are statistically significant.

Discussion

The lab experiments were designed to recover responsibility attribution heuristics subjects employ to punish individual DMs who take a collective decision that affects them. The online experiment, with a representative sample of the UK population, was designed to test whether the attribution heuristics recovered in the lab experiments result from an assessment of the relative importance of individual DMs for the collective decision. Accordingly, in this online experiment, subjects were asked to anticipate collective decision outcomes under a number of different treatments that varied the characteristics of the DMs. The results confirm the two negative results of the lab experiment that voting weights and negative agenda power are of limited importance for responsibility attribution. The results also confirm the two positive lab experiment findings: Respondents are inclined to attribute responsibility for collective decisions to the DM with agenda power and in some cases to the DM with the largest percentage of votes.

Responsibility Attribution and the Coalition Directed Vote

Our conclusions regarding responsibility attribution for collective decision makers are of political importance because voters in contexts with multiparty governing coalitions face a challenge similar to those of the subjects in our experiments. In order to exercise a coalition-directed vote, they need to attribute responsibility to the parties in the governing coalition or anticipate the administrative responsibility of parties that are likely to form the governing coalition after the election (Duch, May, and Armstrong 2010; Duch and Stevenson 2008). Our experiment captures the important elements of this voting decision.

First, key features of the decision-making context in these lab experiments resemble those characterizing coalition cabinet decision making. Most importantly, each party's portfolio allocations in the cabinet typically reflect their relative seat strength in the legislature. We can think of the number of ministerial portfolios as the

party's voting weight in cabinet decision making. It is widely assumed that some form of portfolio-weighted majority voting is employed for reaching decisions in coalition cabinets. And cabinets have a procedure for bringing forward proposals for a formal or informal vote–our contention is that the public identifies a party as the proposer and that this is typically the prime minister's party. Accordingly, the DMs, or "parties" in our experiment, are randomly assigned the voting weights, one DM is randomly assigned to be the proposer, and the group of DMs take their decisions by majority vote.

Second, coalition-directed voters, like the recipients in our experiment, need to figure out how to attribute responsibility to individual DMs (parties) in a collective decision-making entity (the cabinet). Whereas our recipients had punishment points to distribute, citizens can support or oppose different political parties and can adjust those levels based on observed policy outcomes. Importantly, we think of this level of support or opposition as an unobserved sentiment that individuals hold that might find expression in any number of different activities and behaviors (e.g., voting, political contributions, time devoted to campaigns or party activities, persuading friends and neighbors, or even simply making relevant statements in everyday conversation).

But the behavior of the recipients in our experimental setup does not entirely correspond to the prevailing characterisations of how voters attribute responsibility for multiparty coalition policy outcomes. It is fair to say that most efforts to characterize how voters attribute responsibility to the individual parties in a governing coalition have favored a weighted voting model. This notion that influence over coalition outcomes should reflect the proportion of seats allocated to coalition parties is in line with Gamson's law of proportionality (Gamson 1961, 382) and is widely accepted as the basis for bargaining among coalition partners for portfolio allocations (Browne and Frendreis 1980; Bueno de Mesquita 1979), also because there is evidence to this effect.

Anderson (1995, 210) finds "that more responsibility in the government results in the economic variables having stronger effects on party support." Duch and Stevenson (2008) argue that the voters condition their economic vote on the distribution of seat shares within cabinet government. Kedar (2009) similarly contends that voters will equate seat share with administrative responsibility for cabinet policy decisions. It is entirely possible, then, that individuals' attributions of responsibility are increasing in the sizes of the parties. However, our experimental results are at odds with this literature. They quite clearly suggest that voters are not likely to attribute responsibility for collective decisions according to the relative voting weights of the individual DMs.

While the experimental results suggest that voters do not calibrate their responsibility attribution according to relative voting weights, they clearly seem to attribute a disproportionate responsibility to the largest party in the coalition cabinet. This conclusion is not inconsistent with other empirical findings. The largest party is the target of disproportionate voter responsibility attribution (Anderson 1995), although this effect is typically characterized as an artifact of the relative voting weight effect discussed above. Our experimental findings suggest that the continuous effect might be overstated in the literature. The experimental treatments allowed us to carefully distinguish between the largest DM effect and the (continuous) effect of DM voting weight, and the evidence is in favour of the former. In our view, empirical models of voter responsibility attribution for parties in governing coalitions should give more attention to distinguishing these two effects. Our intuition is that these efforts would favor the largest party heuristic for responsibility attribution.

The most intriguing positive result from the experiments is that subjects punished disproportionately, irrespective of his or her voting weight, the decision maker with proposal power. We do not pretend to account for the genesis of the proposal power heuristic in this essay; this is clearly a subject for further research. Nevertheless, some candidates suggest themselves. There is strong evidence from experimental psychology that individuals bias to favor omissions over commissions that cause harm (Cushman, Young, and Hauser 2006; Spranca, Minsk, and Baron 1991). These biases might account for the prevalence of a positive as opposed to negative agenda-setting heuristic: People morally accept "passive" actions (i.e., the veto player who simply does not use his veto power) much easier than "active" actions (the proposer's actions). In general, the most "active" action taken by the DMs in our experiment can be associated with the DM with proposal power—the responses by the other DMs are reactions and hence in some sense more "passive." Hence, the proposal power heuristic may be founded on the notion that proposing is the most active of the actions taken by DMs in these collective decision-making situations. Further experimental research will be necessary in order to better understand which of these (or other) perspectives best explain the prevalence of the proposer power heuristic.

With respect to the coalition-directed vote, the implication of this result is that voters will attribute responsibility to the party with proposal power in the governing coalition. In one respect, this is not surprising

since there is a substantial body of literature suggesting that vote outcomes in collective decision-making institutions are strongly shaped by the preferences of the agenda setter (Cox and Magar 1999; Weingast and Marshall 1988). With respect specifically to coalition governance, there is evidence that ministers, because they have agenda power related to their portfolios, strongly influence policy outcomes within coalition governments (Laver and Shepsle 1996). What is novel, though, is that our experiments demonstrate that voters likely attribute responsibility to the party in a coalition with positive agenda power.

In light of our findings, the question regarding whether voters are informed about positive agenda power clearly deserves further exploration. Which cabinet party, if any, is analogous to the proposer in our experiment? An obvious candidate here is the chief executive, or prime ministerial, party in the coalition. A review of the literature on coalition decision making suggests that the prime ministerial party has disproportionate influence on coalition policy outcomes and is quite likely to be viewed by the public as exercising positive agenda power. Moreover, there is some evidence to suggest that a high proportion of voters in Western democracies is better able to identify the name of the prime ministerial party.[15] All of this is simply to point out that there is some limited evidence indicating that in the minds of the voters, positive agenda power is associated with the prime ministerial party.

The challenge is to determine whether this positive agenda power result, identified in the controlled experimental setting, helps us explain responsibility attribution in the general voting population. Two empirical issues are of particular interest: Firstly, are voters who recognize the importance of proposal power more likely to hold policy makers accountable? Second, are those who recognize the importance of proposal power more likely to attribute responsibility to the individual party in the coalition with proposal power? In a follow-up study based on the online survey experiment data, Duch and Stevenson (2013) model the economic vote and establish that it exhibits both of these characteristics.[16] Only those individuals who understood the value of proposal power in the experiment exercised an economic vote (i.e., rewarded or punished the parties based on their evaluation of the economy). Moreover, those who recognized the importance of proposal power focused all of their economic vote on the Conservative Party, the prime ministerial party in the current Conservative Liberal Democrat governing coalition with clear proposal power for economic policy. This finding suggests that the attribution behavior we identify in the lab maps very nicely onto actual voting behavior in the general population and hence strengthens the external validity of our results.[17]

Conclusions

This essay reports the results of three experiments that identify the precise heuristics that individuals employ in allocating responsibility for collective decisions arrived at by majority vote. We accomplish this with novel collective dictator games in which recipients can punish individual decision makers forming the collective dictator. Recipients respond to the collective offer in a fashion very similar to how recipients respond in conventional dictator games, in which the offer comes from a single person. As the collective offer gets worse, punishment rises. Our information treatment results suggest that at best there is a weak but substantially insignificant decrease in overall punishment when the amount of information about the decision-making process decreases. For the most part, these information treatments suggest that the responsibility attribution reflex is one of first responding to the collective decision with an overall punishment (irrespective of the process by which the decision was taken) and then deciding on how to distribute this punishment among the individual DMs (which is sensitive to the decision-making process).

However, our experiments were primarily designed to shed light on how individuals distribute responsibility among individual DMs in a collective decision-making body. We find that the voting weight heuristic is employed with limited frequency, and individuals do not seem

[15]Evidence that voters can easily distinguish prime ministerial parties from their partners comes from the Dutch survey conducted by Fortunato, Lin, and Stevenson (2013). Seventy-five percent of respondents correctly identified the prime ministerial party (from among 10 parties), and almost 60% identified the junior cabinet partner.

[16]That article uses the data from the online experiment described in the previous section. The authors use a random coefficient model to estimate an individual-specific effect of proposal power on responsibility attributions (which was possible because each individual made three attributions of policy responsibility).

[17]Fortunato, Lin, and Stevenson (2013) report evidence from a 2012 Dutch survey that while perceived party size is an important predictor of voters' attributions of responsibility to a party, there is a distinct and large separate effect for being the largest. Moreover, the overwhelmingly largest predictor of responsibility attributions is perceived prime ministerial status. Indeed, the impact of perceived status as a junior partner actually has a negative impact on perceived policymaking responsibility. Further, as we saw in our experimental results, the impact of being perceived as the largest party is secondary to the perception that the party holds the prime ministry.

to favor the heuristic that assigns responsibility to the DM with negative agenda power. On balance, these two heuristics play a minor role in the attribution of individual responsibility for collective decision making. On the other hand, individuals clearly favor agenda power and the largest vote weight as heuristics for attributing responsibility for members of a collective decision-making body. Quite different responsibility attribution experiments produce this same result. Two differently designed laboratory experiments and a third online survey experiment demonstrate that if individuals have the opportunity to hold individual DMs responsible for a group decision, they primarily attribute responsibility to the proposer and the DM with the largest vote weight.

The online experiment also demonstrates that individuals hold proposers responsible because they believe they actually have a disproportionate impact on the outcome (rather than simply constituting a focal point for an individual's anger or enthusiasm). The second laboratory experiment was also designed to determine whether strategic reasoning on the part of recipients explained the decision to focus punishment on the proposing DM. The results indicate this is clearly not the case, again reinforcing our claim that individuals have internalized an agenda-setting heuristics when deciding which DM to punish for a collective decision governed by a majority voting rule.

In sum, the experimental results reported in this essay provide a unique understanding of how individuals hold decision makers responsible for the decisions they make collectively. Examples of such collective decision-making bodies include boards of directors of firms, legislatures, families, and international organizations. We contend that multiparty coalition government is one of these general collective decision-making entities. Accordingly, our experimental results suggest that the party with agenda-setting power in the cabinet along with the party with the largest voting weight will bear much of the responsibility for coalition decisions. Veto players will not be held accountable, and voters will not apportion responsibility according to the voting weights of parties in the coalition.

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Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's website:

List of Supporting Information in the Online Appendix

1) Game Theoretic Analysis.
2) Experiment 1: Experimental Design including subject instructions.
3) Multivariate model details for data from Experiment 1 along with robustness tests.
4) Discussion and model of Decision Makers allocation decisions.
5) Multivariate Results corresponding to Figures 3 and 4 in the main text.
6) Discussion of the causal structure of the treatment effects.
7) Detailed illustrations of the substantive effects graphed in Figure 3 in the main text.
8) Experiment 3 (Internet Experiment): discussion of design and implementation along with screen shots from the experiment.