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Please cite the final published version:

Hjortskov, M., Andersen, S. C., & Jakobsen, M. (2018). Encouraging Political Voices of Underrepresented Citizens through Coproduction: Evidence from a Randomized Field Trial. *American Journal of Political Science*, 62(3), 597-609. <https://doi.org/10.1111/ajps.12360>

Publication metadata

Title:	Encouraging Political Voices of Underrepresented Citizens through Coproduction: Evidence from a Randomized Field Trial
Author(s):	Morten Hjortskov, Simon Calmar Andersen, Morten Jakobsen
Journal:	<i>American Journal of Political Science</i> , 62(3), 597-609
DOI/Link:	https://doi.org/10.1111/ajps.12360
Document version:	Accepted manuscript (post-print)

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Title:

Encouraging Political Voices of Underrepresented Citizens through Coproduction.

Evidence from a Randomized Field Trial

[Short title for the running header:]

Encouraging Political Voices

Keywords: Policy Feedback; Voice; Coproduction; Political participation; Field Experiment

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Encouraging Political Voices of Underrepresented Citizens through Coproduction.

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Abstract

Not all citizens' voices are heard with equal strength in the political chorus. Based on studies of policy feedback, we suggest that engaging underrepresented citizens in the production of public services (i.e., making them "coproducers") increases their political voice. We use a field experiment to test the effect of involving ethnic minorities in the education of their children on their propensity to directly voice their preferences with the education policy through government citizen surveys and their tendency to vote in elections. Among these normally underrepresented citizens, coproduction increased their propensity to voice their preferences to politicians through citizen surveys but not their tendency to vote. The effect on voicing in government citizen surveys tends to be larger among nonvoters. The results indicate how policies involving underrepresented citizens can raise the voices of people who would not otherwise be heard.

Replication Materials: Data are legally restricted by Statistics Denmark. Researchers who meet the criteria for access to confidential data may obtain access. Data can be made available upon request via contacting the corresponding author. The code and any other additional materials required to replicate all analyses in this article are available on the American Journal of Political Science Dataverse within the Harvard Dataverse Network, at: <http://dx.doi.org/10.7910/DVN/MZKJDR>

Acknowledgements: This research was supported by KREVI, the former research institute for local government studies. The field trial was run in close collaboration with the City of Aarhus, Department of Children and Youth. We want to express our gratitude to everyone involved for their support and participation. We want to thank seminar participants at the 2014 SPSA conference, 2015 APSA conference, 2015 PMRA conference and Department of Political Science, Aarhus University, for helpful comments. Especially, we want to thank Jason Barabas, Kevin Arceneaux, the editor and anonymous referees for constructive feedback.

Word count: 8,840

I. Introduction

Existing policies feed back into the political system by influencing the political voice of citizens. Different aspects of policy designs have been found to influence citizens' resources and identity and, thereby, their tendency to voice their opinion about policies, elect public officials, and generally participate in the political life of society (Campbell 2012). The democratic implications of this feedback loop are apparent. If existing policies counteract the political voice of some groups, they will not be heard in subsequent rounds of policy-making. This may even reinforce the feedback loop because the preferences and concerns of quiescent citizens may not be taken into account when new policies are designed. Understanding how different policy designs affect the political voice of citizens who are underrepresented in the public chorus is therefore of great importance to democratic legitimacy, and it is an important corrective feedback to the political system (Hirschman 1970; Schlozman *et al.* 2012; see also Moffitt 2014).

In this study, we propose that that one form of involvement – involving citizens in the production of public services as “coproducers” (Ostrom 1996; Parks et al. 1981) – begets another form, namely, enhancing the political voice of minority groups. Research on coproduction was initiated to examine, and has primarily focused on, the productivity of public service provision (e.g., Aligica and Tarko 2013; Ostrom 1996; Parks et al. 1981), while a few scholars have mentioned that it may also produce a positive impact on various forms of citizen involvement in politics, such as explicating opinions about public services and policies, contacting public officials, and voting (Bifulco 2013; Cepiku and Giordano 2013; Levine 1984; Parks et al. 1981; Wilson 1981).

Theoretically, there are several reasons that coproduction may translate into voicing. We argue that coproduction encompasses many of the policy characteristics that have been identified by the policy

feedback literature as effective for increasing the political voice of citizens. Involving citizens in the production moves the policy closer to the citizens and makes the government as service provider more visible to them – two factors (proximity and visibility) that have been suggested to be important for policy feedback effects (Soss and Schram 2007). We also argue that coproduction may influence citizens' political voice through several of the channels that have been found to matter for how public policies affect disadvantaged citizens' participation. First, evaluated in a resource perspective (see Verba, Schlozman, and Brady 1995), involving citizens in service production can increase citizens' knowledge about the government as well as their skills for participation. Second, in a reciprocity perspective (Mettler 2005), coproduction can increase citizens' engagement and motivation for voicing their preferences through a sense of obligation. Third, using a political learning perspective (Ingram and Schneider 1995; Soss 1999), citizens involved in coproduction learn lessons about the citizen-government relation that identifies them as capable and valuable contributors to society. In other words, coproduction constructs them as active actors in the citizen-government relation. We do not test these mechanisms, but taken together, these different perspectives on participation suggest that involving disadvantaged citizens in the production of public services – rather than excluding them from the production process – can encourage their political voice.

To test the effect of engaging citizens in the production of public services, we use a randomized field trial of a coproduction intervention in Denmark. The intervention increased the involvement of ethnic minority parents in the education of their preschool children – a group of citizens generally underrepresented in the public chorus. We examine the effects of coproduction on two kinds of political voice; the first, an unconventional form, and the second, a conventional form: (1) citizens' propensity to directly voice their preferences to politicians through government citizen surveys, and (2) their tendency to vote in elections. Both types of voicing match Verba, Schlozman, and Brady's (1995, 38) definition of

political participation as an “activity that has the intent or effect of influencing government action – either directly by affecting the making or implementation of public policy or indirectly by influencing the selection of people who make those policies.” Investigating both conventional and unconventional forms of participation makes sense in the present context since immigrants seem to react more by using unconventional, low-cost participation such as signing a petition (Just and Anderson 2014; see also Rooij 2012). We test the effect of the coproduction program against a control group and a traditional policy aimed at supporting teachers in preschools.

The contribution of this study is first and foremost to show that involvement of parents in the production of education for their children has a positive impact on the involvement of those parents in subsequent satisfaction surveys conducted by the local authorities on the related topic of service provision. We also show that the effect is strongest for the group that did not vote in the subsequent election, which suggests that involvement in co-production brings citizens into the democratic process who are otherwise uninvolved. While previous research has focused on how coproduction has improved service provision, this research suggests that one form of involvement (coproduction) begets another (voice). The non-existing effect on voting underscores the importance of using different voicing channels if more citizens are to be heard. In the next section, we develop our theoretical reasons for suggesting coproduction as a way of increasing citizens’ political voice.

II. Coproduction and the Political Voice of Citizens

In his famous book, *Exit, Voice and Loyalty*, Hirschman (1970) pointed to citizens’ expression of their preferences and opinions regarding public services as a fundamental way of providing corrective feedback to the political system. This feedback is crucial if the system is to improve services by adapting to the

concerns and preferences of the citizens (Hirschman (1970, 26–29, 1974, 13). In this study, we use the term “political voice” to denote the various ways in which citizens may express their preferences and opinions about public policy, including public services. This encompasses both unconventional forms, such as signing a petition and participating in government citizen surveys and in a demonstration, and conventional forms, such as contacting public officials and voting in elections (Rooij 2012).

The voices of some groups of citizens tend to be systematically underrepresented in the political chorus. Especially, minority groups express their political preferences to a lesser extent, which causes their interests to be underrepresented in the political arenas (Schlozman *et al.* 2012). This is problematic both from the perspective of a democratic ideal of representativeness and from an efficiency perspective because it gives political decision-makers a biased picture of citizens’ perceptions of public services (Rosenstone and Hansen 1993; Verba, Schlozman, and Brady 1995).

We suggest that designing policies in ways that treat minority groups as “coproducers” of the service they receive from the government has the potential to enhance their political voice (in addition to their participation in the service production). The concept of coproduction can be traced back to scholars working on public service provision in the late 1970s and early 1980s (see Parks *et al.* 1981) and has recently experienced a revival through a number of studies addressing the concept, explanations, and effects of coproduction (Aligica and Tarko 2013; Cepiku and Giordano 2013; Marschall 2004). Although the concept has been defined in a number of different ways, the central idea is that “coproduction involves a mixing of the productive efforts of regular and consumer producers that may occur through directly coordinated efforts of the different actors, or indirectly through independent, yet related efforts” (Parks *et al.* 1981, 1002). In other words, the citizens are invited to take part in the production of the service, for example, by doing homework with their children, organizing school activities, helping the police guarding

neighborhoods, doing physical therapy after an operation, or contributing to public infrastructure (Ostrom 1996).

Involvement of citizens in the provision of public services has been argued to hold a number of benefits for the service production as well as the citizens themselves. For example, the contribution of input from users is expected to increase the service quantity and quality (Ostrom 1996; Percy 1984). However, there may be another type of benefit related to coproduction: increased political voice among the coproducing citizens. A few scholars have mentioned the possibility that coproduction may have a positive impact on citizens' involvement in the political system (Cepiku and Giordano 2013; Levine 1984; Marschall 2004; Parks et al. 1981; Wilson 1981), but a clear theoretical argument for the mechanism is still missing and has not been tested empirically.

We argue that coproduction encompasses many of the policy design characteristics that have been found to affect different types of citizen participation and their political voice. We do not test these potential mechanisms but use them to explain why we should expect that involvement in service provision would translate into political participation. Moreover, several of the mechanisms are similar to the channels through which public participation in political decision-making may affect civic skills (as described in, e.g., Fung and Wright 2003; Gastil and Dillard 1999; Nabatchi and Leighninger 2015). Therefore, when outlining the mechanisms between coproduction and political voice below, we point to similar mechanisms in the literature on public participation and deliberative democracy when relevant.

First, coproduction is likely to produce a positive feedback effect on the political voice of the citizens involved in the production process because it increases the visibility and sense of proximity of the provided service. Soss and Schram (2007) argue that both visibility and proximity are relevant for policy feedback effects. Visibility concerns the extent to which a policy is salient to citizens and diverts attention to the

policy among citizens. The more visible policies are, and the more traceable they are to the government as service provider, the more likely they are to produce feedback effects on the political behavior and attitudes of citizens (Pierson 1993). For example, if government benefits come as tax credits, the government does not receive the same attention and acknowledgement as in spending programs (Mettler 2011). In coproduction programs, where government officials and citizens collaborate, government actions and services are, by nature, highly visible to citizens. This is one reason to expect coproduction to enhance the political voice among citizens.

The other dimension of the framework by Soss and Schram (2007) is the proximity of the policies. The more citizens perceive a service as close, familiar, and directly affecting them, the more their political behavior is expected to be affected by it. The foreign policy of warfare is much more proximate to the soldiers (and their families) directly involved in the war than other citizens. The same, we argue, is true for the coproduction of more everyday services such as education, health, or community safety. In her review of the policy feedback research, Campbell (2012) finds support for both of these policy dimensions (proximity and visibility). She also points to policy administration as a factor that influences policy feedback. Policy administration includes how inclusive the policies are, for instance, in terms of involving parents in school work (Soss and Moynihan 2014), which is clearly a coproduction phenomenon. Campbell also points to the duration of the policies or length of citizens' experiences with the policies as relevant to its feedback effects. Both visibility and proximity are factors that have also been argued to facilitate the effects of formalized public participation in decision-making on citizens' subsequent political participation and civic skills (see Fung and Wright 2003).

A second mechanism through which coproduction might affect political voice concerns citizens' knowledge, which is crucial for most types of political participation (Schlozman, Verba, and Brady 2012,

19). Citizens need knowledge about the system through which goods and services are distributed to them in order to express their opinion about that system. When citizens take part in the production of public services, they gain better insight into the way the services are delivered, how public resources are spent and distributed, and how they benefit from the public services. This argument is akin to the notion from the public participation literature that participation in decision-making increases people's knowledge about government affairs and, therefore, their political participation (e.g., Pincock 2012). Such knowledge provides citizens with a better platform for evaluating how the existing way of providing services and distributing goods match their interests. Thus, it provides a better opportunity for citizens to voice their opinions. A similar argument was presented by Wilson (1981, 45), who notes that "Citizen-consumers, then, through a process of coproduction, learn a substantial amount about the type, quality, and level of the service being provided. This knowledge may also be applied by citizens when confronted with policy decisions concerning the service." Hence, we expect that coproducing has a good potential for increasing knowledge and, thereby, the political voice among this group of citizens. At the same time, this suggests that coproduction may have a more direct effect on voicing satisfaction or dissatisfaction with the services people are involved in than on the broader political participation of voting in general elections.

The third reason why we expect coproduction to affect the political voices concerns citizens' motivation to contribute to the political system. As Schlozman and colleagues (2012, 18) note: "Often the catalyst for the expression of political voice is the motivation to do so." When citizens are invited to coproduce, they are also provided with responsibility. Thus, coproduction entails a shared responsibility of the service provision (Sharp 1980). Accordingly, the sense of being invited as well as responsible is expected to elicit more political voice among users, for instance, by making suggestions about how to

improve services and expressing dissatisfaction when services do not live up to certain standards. This reciprocity effect has been found among veterans who received benefits from the GI Bill (Mettler 2005).

Finally, coproduction may also work by affecting citizens' perceptions of government and their own role in the government-citizen relation, which, in turn, can affect their political voice. Citizens' perception of government is to a large extent formed by their direct contact with local governments and the service provision they encounter (Soss 1999). Their experiences with the responsiveness of street-level bureaucrats translate into general perceptions of the government and their role in regard to public authorities. Their interaction with (local) government may also affect their view of themselves as more or less competent and capable of participating and, thereby, their self-efficacy and political efficacy (Soss 1999; Schneider and Ingram 1993). When citizens are invited to participate in the production of services, governments signal that their input is important and that they make a difference. They "learn" that they have an active role in the political process. Similar arguments and empirical results can be found in the literature on public participation in decision-making. For example, Gastil, Deess, and Weiser (2002) suggest that by formal participation in juries, citizens learn that if their participation and deliberation matter in the jury setting, they may also matter in other settings. Likewise, Gastil and Dillard (1999) find that the National Issues Forums, a platform for deliberation and participation, increase citizens' political efficacy.

These different mechanisms of policy feedback (visibility/proximity, knowledge, motivation, and perceptions of government) are not mutually exclusive. On the contrary, coproduction designs are likely to affect all of them, creating a considerable number of ways in which coproduction is expected to affect the political voice of citizens. Hence, there are several theoretical arguments for the hypothesis of this study:

Hypothesis: Policy designs that involve citizens in the coproduction of public services will increase the political voice of these citizens.

A couple of qualifications are worth noting. First, forms of participation that are more directly linked to the service area involved in the coproduction process may be more directly affected than participation more remotely linked to the service, such as voting in general elections. Second, our hypothesis is formulated with regard to citizens in general and does not distinguish between advantaged or disadvantaged citizens (or citizens who are over- or underrepresented in using voice). This means that the effect is expected to be present among disadvantaged citizens as well as people currently underrepresented in the political chorus. Our empirical test aims to examine exactly this part, that is, whether increased coproduction among underrepresented citizens increases their voice in two different forms: satisfaction with the service they are involved in and voting in general elections.

III. Empirical Design

At least two major challenges must be handled when the causal effect of coproduction on citizens' use of voice is to be tested. The first is the general problem of endogeneity in effect evaluations. In this case, an association in observational data between citizens' participation in coproduction and their expression of their voice is likely to be a reflection of observed and unobserved factors such as their general socio-economic status (education, income) or political knowledge rather than an effect of coproduction on voicing (for empirical support for this concern, see Schlozman, Verba, and Brady 2012). Likewise, there is a risk that citizens who are inclined to use voice are more inclined to sort themselves into coproduction. It is therefore hard to examine such policy feedback effects using observational data. Yet, in her review of the

policy feedback research, Campbell (2012) finds that it is dominated by cross-sectional or retrospective data.

We use a field experiment that exogenously induced coproduction to a group of citizens by randomly assigning them to a government program that included a coproduction element to the existing service delivery, whereas others were randomly assigned to a control group. The experimental design ensures correct counterfactuals by the randomization procedure in which subjects were assigned to treatment and control status by chance.

The second challenge is to obtain suitable measures of different forms of political voice. Voting, which is used in much empirical research on political participation (see, e.g., Green and Gerber 2008), captures the conventional, but indirect, type of voicing opinions about policies, government, and so on. We examine the effects on voting as one form of political voice. However, with regard to citizens' expression of opinion about public services, voting is in some respects a rather "blunt instrument of communication" (Schlozman, Verba, and Brady 2012, 3). People may vote in order to voice their opinions about public services, but a great deal of other reasons may underlie this form of participation. Therefore, we also examine citizens' propensity to directly voice their preferences with the policy through governments' citizen surveys as a more unconventional form of participation (Ekman and Amnå 2012; Just and Anderson 2014; Rooij 2012). The declared intent of such surveys is exactly to inform the making and implementation of public policy; a very direct way to influence government action according to Verba, Schlozman, and Brady's definition of citizen participation in the political system as "activity that has the intent or effect of influencing government action – either directly by affecting the making or implementation of public policy or indirectly by influencing the selection of people who make those policies" (Verba, Schlozman, and Brady 1995, 38).

Citizen surveys are carried out at different levels of government and in different parts of the world. In the school systems of New York City and Boston, the results are used by decisionmakers as performance and accountability indicators and to inform decisions regarding the school system (Boston Public Schools 2015, 2016; City of New York - Department of Education 2017; City of New York - Mayor's Office of Operations 2016). A number of more general citizen surveys about local and state government performance are carried out across the world. These seek to inform decisionmakers in, for example, England, South Africa, the United States, Canada, and Sweden about governmental performance as perceived by the citizens (American Customer Satisfaction Index 2016; Communities and Local Government 2009; Institute for Citizen-Centred Service 2014; National Research Center 2013; Statistics South Africa 2015a, 2015b, Statistics Sweden 2017a, 2017b. See also Van Ryzin and Immerwahr 2007; Miller, Kobayashi, and Hayden 2009).

Research has shown that not only is it the intent of such surveys to inform the making and implementation of public policies; they are actually used by decision makers directly, or indirectly through the media, to inform their decisions (Druckman and Jacobs 2006; Page and Shapiro 1983; Paletz et al. 1980; Verba 1996). In Denmark, one estimate says that 72 percent of the local governments carried out a citizen satisfaction survey in 2007 (KL 2008, 8). An estimate from the US says that more than half of the larger local governments had issued a citizen survey in 2006/2007, and a substantial share of the managers in these local governments report using the results from the surveys to guide policy decisions (78 %), set strategic goals (64 %), evaluate programs, and allocate resources (44 %) (Miller, Kobayashi, and Hayden 2009, ix-x). Even if such self-reported measures may be prone to social desirability bias, they do suggest that very many local governments perceive citizen surveys to be of importance.

The decision to participate in the surveys may be viewed as a political act in itself by citizens (Brehm 1993, 69; see also Couper, Singer, and Kulka 1998; Harris-Kojetin and Tucker 1999; Knack 2002; Knack and Kropf 1998). However, as in voting, disadvantaged citizens are also underrepresented in government surveys (Goyder 1987; Groves and Couper 2012; Massey and Tourangeau 2012), although participating in such surveys requires less of the citizens' time and resources (Verba 1996).

i. The Treatments

The coproduction field experiment was conducted in the City of Aarhus, Denmark, in April 2009 among parents of children learning Danish as their second language, that is, immigrant parents. Education is an area in which users' input to the production process is known to be of great importance (see, e.g., Ostrom 1996), so it is highly relevant to try to increase disadvantaged parents' contribution to the education of their children. The purpose of the experiment was to examine whether coproduction affected service outcomes, which it did (Jakobsen and Andersen 2013). At the same time, this group of parents is largely underrepresented in providing feedback to the politicians through citizen surveys in this municipality as well as in voting in municipal elections (see Appendix C in the supporting information). The experiment included three experimental conditions: a coproduction treatment, a traditional government treatment targeted at the street-level bureaucrats (the preschool teachers), and a control condition that did not include any intervention. All parents included in the experiment were using a full-day preschool service at the outset. In the coproduction treatment, parents were engaged more actively in the coproduction of their children's education. The specific treatment was a package containing various children's books and a DVD about language development techniques in several languages and an invitation to engage more in the

education of their children. The basic idea was that parents, even if they speak very little Danish, can improve their children's language capabilities by, among other things, reading aloud to them.

The aim of the coproduction suitcases was to help parents overcome constraints on their coproduction of their children's development of Danish language skills. The materials were given to the parents by the teachers at the preschool, and the teachers used the materials in their ongoing communication with the families. The total cost of the program per child was approximately 200 USD, which was negligible compared to the government's expenditures on the full-day preschool service that was provided to all parents in both control and treatment groups. In other words, the intervention was more of a policy design change inviting the parents to become more active coproducers than a substantial increase in the service level.

To minimize the possible Hawthorne effects, the communication to the parents did not focus on the fact that researchers were studying the effects of the intervention. The evaluation of the experiment showed that the coproduction initiative had a substantial positive effect on the bilingual children's language comprehension, and they were less likely to be assigned to special needs classes. These effects were found primarily among children whose mothers had no registered education at all (Jakobsen and Andersen 2013).

When government wishes to improve school performance, they often design interventions targeted at teachers in schools – rather than the parents. To enable comparison of the coproduction initiative with a more traditional government initiative, the experiment therefore also included a street-level bureaucrat intervention (SLB intervention), which was aimed at the preschool teachers. A specialist in second language learning was offering guidance and appreciatory support to the preschool teachers and helped them in their work with developing Danish proficiency among bilingual children. By focusing on the individual children, the intervention is likely to have involved parents in discussions about their child's

development and how to support it. However, increased parent involvement would only be an indirect outcome and therefore less likely to have an effect on their voicing. We compare the coproduction intervention to both a control group and the traditional government intervention to see whether a true coproduction intervention has a better effect on voicing than a traditional government initiative where citizen involvement is only a potential side effect.

ii. Sampling and Randomization

The experimental design is a stratified cluster-randomized trial. Since the original purpose of the trial was to improve the language development of the children with Danish as a second language, an *ex ante* power calculation was carried out using language test scores as intended outcome measure (see Appendix A for details). All preschools within the local government of Aarhus in Denmark that had at least three children with Danish as a second language were recruited. Within each of these selected preschools, all children with Danish as a second language and their families were included. Three variables that were all thought to affect children's language test scores were used for stratification: expected language comprehension of the children based on socioeconomic status (low/medium/high), the extent to which the preschool workers perceive themselves as supported by the local government (low/high), and the share of immigrant children at the preschool (low/high). The three variables were used to divide preschools into 12 strata (blocks). Within each stratum, they were randomly assigned to one of the three experimental conditions. Table 1 provides an overview of the sizes of the two treatments and the control condition. Appendix A in the Supporting Information includes a more detailed description of the sampling of the preschools and parents included in the experiment and the random assignment.

TABLE 1 ABOUT HERE

iii. Two measures of voicing

Voting. The City of Aarhus is governed by a city council that is elected every fourth year. This local government is responsible for a number of services, including primary and lower secondary education, daycare, elder care, road maintenance, and social security administration. All adults (18 years or older) who live in Denmark permanently and either hold a Danish citizenship or have been living in Denmark for at least three years are entitled to vote at the local government elections. An election was held in November 2009, seven months after the experiment was commenced. We are able to merge participants in the experiment with administrative records on whether people voted in the election or not and use this dichotomous voting variable as one measure of voicing.¹

Government citizen survey. Every second year, the City of Aarhus issues a survey in order to invite parents to voice their opinion on the political decisions in general as well as educational services more specifically. The introductory letter to the parents attached to the survey strongly stresses the importance of their opinions to the elected politicians. The survey contains both open- and closed-ended questions. The questions were mostly satisfaction questions, and topics ranged from the number of preschool teachers and the appearance of the buildings to different policies regarding flexibility in the usage of the preschool. An invitation is sent out by mail to parents with children in schools, preschools, and youth clubs with the possibility of filling out the survey online or to request a paper version sent to their address. 96.4 percent of the answers were filled out online, 1.3 percent were on paper. The last 2.3 percent answered in an ensuing

¹ Data from the previous local government election in 2005 do not exist and data from national (parliament) elections cannot be used as pre-treatment measure, since the immigrants that we study here would not be entitled to vote at these elections (only people with citizenship are).

telephone inquiry. The private company conducting the survey were not told about the trial and was therefore also blinded to the treatment assignment. We use participation in the preschool survey that was issued one month after the experiment was commenced as the dependent variable.

Participating in this survey is a direct behavioral measure of citizens spending time on providing corrective feedback to the politicians responsible for the public services. Participation is here defined as completing the full survey but with the possibility of leaving questions unanswered along the way (coded 1, otherwise 0). The particular preschool survey from 2009 contained 40 closed-ended questions and two open-ended questions, which implies that some effort on the part of the citizens is required in order for it to count as having participated. Another indication of the citizens taking the government survey seriously is the fact that the City of Aarhus received a total of 30,210 answers, and there were roughly 23,000 open-ended answers to the two open-ended questions.² Moreover, by examining the records of the city council's budget decisions, including the debate and recommendations by committees, it is clear that the citizen surveys also play an important role for the politicians in the City of Aarhus in deciding where to spend money and launch new initiatives. For instance, a new parent involvement initiative was launched in 2015 because of recent results from the survey (City of Aarhus 2014, 2015). Because the citizen survey is not related to the experiment, no questions or mentioning of the experiment were included in these surveys. Descriptive statistics of both dependent variables can be seen in Appendix B in the supporting information.

In subsequent analyses, we examined whether the coproduction intervention affected the parents' satisfaction with the services, which it did not. Therefore, any effect of coproduction on voicing is not

² This is the overall total of answers from parents to children in preschools, schools, and youth clubs.

attributable to an increase or decrease in satisfaction with the service delivery among the parents in the coproduction condition.

iv. Covariates

Since the treatment is randomly assigned, it should not be strictly necessary to control for other variables. However, including variables can reduce disturbance variability and result in more precise estimates as long as the sample size is large enough (Arceneaux 2005; Green and Vavreck 2008). Data from the experiment, the citizen survey, the election, and the compliance survey were therefore coupled with register data from Statistics Denmark. These rich administrative data are registered on the individual level with a personal ID (the citizen's social security number).

Tables A.1 and A.2 in the Supporting Information report the balance between experimental conditions at the individual level (Table A.1) and among preschools (Table A.1). The tables show that the groups are very similar on all variables. One of the largest relative differences is between the share of highly educated mothers in control (10.4 %) and SLB conditions (5.4 %). However, this is only a difference relating to 10 persons, and no statistically significant differences are present between the control and treatment groups at the 5 percent level. This supports the assumption that the randomization succeeded in creating balanced groups.

v. Statistical model

Since the experiment used in this study is a stratified cluster-randomized trial, the statistical model should be able to handle the clustered design (Arceneaux 2005; Cameron and Miller 2015; Green and Vavreck

2008). Therefore, the main analyses of the policy effect of a coproduction initiative on voicing will be carried out in generalized least squares random effects models, which should be more efficient than OLS estimates in the face of clustering and well suited for use with cluster-randomized experiments because, by design, the random effects associated with each cluster are independent of the assigned treatment (Green and Vavreck 2008).

The basic model is as follows:

$$Y_{ic} = \beta_0 + \beta_1 \text{ASSIGNED}_{ic} + \beta_2 S_{ic} + \beta_3 X_{ic} + v_c + u_{ic} \quad (1)$$

The i subscript identifies the individual (parent) and c the cluster (preshool). The outcome, the participation in the citizen survey or voting, is Y . S_{ic} is a vector of strata indicator variables, X_{ic} is a vector of covariates including socioeconomic and demographic characteristics. We examine models with and without these strata indicators and covariates. The key parameter of interest is the treatment effect β_1 , which, in turn, will be the policy effect (intent-to-treat) of the assignment to the coproduction program. Because the children in this experiment are clustered at the daycare centers, the disturbance part of the model is divided into the individual disturbance, u_{ic} , and the cluster-specific disturbance, v_c . Clustered standard errors are used to take care of possible differences in variation in the clusters.

The intent-to-treat estimate in the basic model combines the effect of the intervention on those who use the coproduction materials (compliers) and those who do not (non-compliers). Since it is most likely not random who actually takes the treatment, this issue can have some influence on the estimation of the specific effect of coproduction on the treated. Two questions about compliance from a compliance survey issued separately can be instrumented by the intent-to-treat assignment variable, which will provide an

estimate of the local average treatment effect (LATE) among the compliers. Appendix D in the supporting information presents a complier analysis.

IV. Results

i. Coproduction and Voicing in Citizen Surveys

We begin by testing whether assignment to the coproduction program increases the willingness to voice in the Citizen Survey compared to the control condition (the intent-to-treat effect in equation 1). Table 2 reports the results.

TABLE 2 ABOUT HERE

Model 1 in Table 2 estimates the simple mean difference between the coproduction, SLB, and the control groups without any additional covariates but still taking the clustered randomization into account. The effect of the coproduction initiative on the citizens' propensity to voice their opinions is estimated to be 0.067. This means that the parents of children in the coproduction initiative are on average 6.7 percentage points more inclined to voice their opinions than parents in the control group.³ The effect estimate is robust to the inclusion of strata indicators in model 2 and other covariates in model 3, which confirms that the experimental groups are fairly balanced. As expected, including the strata indicators reduces the standard errors and thereby the p-value, which makes the effect significant at the 5 percent level.

³ The results are about the same in OLS and logit models, see Appendix F, Table F.2.

The estimate effect of the SLB condition is smaller (0.033) and statistically insignificant at the 5 percent level, as may be expected from a traditional government intervention that only involves parents indirectly. The estimated effect of the SLB treatment decreases a little too when including covariates (0.024 in model 2 and 0.023 in model 3) and is still not significant. The difference between the coproduction and the SLB coefficients is not significant (test not shown).

In sum, there is a policy effect of the coproduction initiative on voicing in the survey. The intent-to-treat estimator is unbiased because of the randomization, so this is what politicians and public managers can expect to be the effect of a similar coproduction intervention among a similar group of citizens. The complier analysis presented in the supporting information, Appendix C, shows that the effect estimate is higher among compliers. But it is measured with much more uncertainty, so the analysis does not warrant any firm conclusion about whether the effect is stronger among compliers.

ii. Coproduction and Voting

The next step is to see if the coproduction initiative has an effect on voting. This is analyzed using the same setup as the previous analyses but with voting in the local government election as the dependent variable.

TABLE 3 ABOUT HERE

Table 3 shows no significant effects of either the coproduction or the SLB intervention on voting in the municipal election in 2009. The effects are very close to zero in model 1. When controlling for various background variables and the stratification groups in model 3, the coefficients are positive for both interventions (0.032 and 0.042), but neither is significant at the 5 percent level. While an insignificant result

is not the same as no effect, the small point estimate supports the interpretation that the coproduction intervention did not affect voting to a great extent. A complier analysis presented in the supporting information, Appendix C, does not indicate an effect on voting among the compliers either.

iii. Voicing Among Non-voters

Last, Table 4 investigates if the effect of the two interventions on participation in the citizen survey is more pronounced among the citizens who vote or do not vote.

TABLE 4 ABOUT HERE

The results in Table 4 show that the effects of the interventions seem to be driven by the citizens who later do not vote. When including strata and covariates in the model, the effects among these citizens is estimated to 0.103 ($p = 0.107$, see model 4) compared to 0.025 (model 2) among those who did vote.

These results should be interpreted with caution since voting is endogenous to participation in the citizen survey (as mentioned, data from the previous local government election in 2005 unfortunately do not exist). However, since we do not find an average treatment effect on voting, we do not expect the measure of voters and non-voters to be much affected by the treatment. And even if the null average treatment effect conceals heterogeneous effects among the individual citizens, we can still conclude that the coproduction treatment increased participation among citizens that would otherwise not have been heard: If – in the extreme case – the entire increase in voicing through the citizen survey came from people who used to vote but have now stopped doing so because of the treatment, then an equivalent share of citizens who normally would not vote must have begun to vote (because of the null average effect). In this case, people

who would not otherwise have participated, vote. Thus, even in this extreme case, we can still conclude that we hear the voices of citizens that we would not have heard without the treatment.

Again, we find it unlikely that the null effect on voting conceals large movements at the individual level. Without such movements, the results demonstrate that the coproduction intervention increased the survey voice of citizens that would not otherwise have been heard in the political chorus.

V. Conclusion

Using a field experiment including a coproduction initiative, we find a substantial effect on voicing through a citizen survey. We did not observe an effect on voting, but the effect of the coproduction intervention on voicing through the citizen surveys was stronger on citizens who did not vote in the subsequent election. This is an important result because it suggests that by involving citizens in the production of public services, some of those who are otherwise not making their voice heard in elections – in this case, immigrants – will be indulged to give feedback to the politicians in other ways. To raise one's voice is a first condition for the political system to incorporate the attitudes and preferences for this otherwise underrepresented group of citizens.

The political voice of citizens is a fundamental component of a well-functioning democracy. Consequently, it is no surprise that political scientists devote much attention to explanations of why some citizens are less likely to express their political preferences in the political decision making. A growing stream of research on policy feedback has contributed to these explanations by identifying policies, and how policies are designed, as potential causes of, among other things, the political voice of citizens.

Based on the policy feedback literature and insights of research on coproduction, we argue that policies designed to include coproduction may increase the political voice of citizens through various

pathways. The present study does not test these different theoretical mechanisms. Future research should do so. For the design of new coproduction policies, it will be important to know whether coproduction increases political participation because the services provided become more visible to the citizens, because they obtain a better understanding of how services are produced and delivered, because they feel more responsible for the services, or because they change their identity vis-à-vis the government at a more fundamental level. Would it be important to increase the amount of information involved in the initiatives, or would it be more important to emphasize the role and responsibilities of the citizens in these collaborations?

It will be equally important to compare the effect of coproduction on different forms of participation besides voting and citizen surveys. This would give a broader understanding of where to listen for the voices of different groups of people. The initiative tested here was primarily targeted at increasing the quality of the production process, so the increased level of voice may be seen as a positive side effect. Coproduction initiatives more directly targeted at involving citizens in the policy process could be expected to have even greater effects – maybe also on voting. In the present study, voting was measured six months later than the citizen survey participation. Washing-out effects may explain the difference in effects on voting and survey participation. Another explanation may be that coproduction is more likely to engage citizens in forms of political feedback that is more closely linked to the service they are involved in than more general elections. This would be another important issue for future research because, on the one hand, it may suggest some limitations to the political participation effects of policy design interventions such as coproduction. On the other hand, it may point to the importance of establishing alternative channels of political voice that underrepresented groups of citizens can be heard through if they are reluctant to vote in elections.

Existing research on coproduction has focused on its effect on production outcomes. In this study, probably for the first time in a rigorous empirical evaluation, we show that coproduction also has an effect on political participation. The generalizability of these findings to other political contexts, other public service areas, and other target groups remains to be seen, but the substantial effect found in the present case suggests that it would be worthwhile to examine this question in different contexts.

VI. References

- Aligica, Paul Dragos, and Vlad Tarko. 2013. "Co-Production, Polycentricity, and Value Heterogeneity: The Ostroms' Public Choice Institutionalism Revisited." *American Political Science Review* 107(04): 726–741.
- American Customer Satisfaction Index. 2016. "ACSI Federal Government Report 2016 American Customer Satisfaction Index." <http://www.theacsi.org/news-and-resources/customer-satisfaction-reports/reports-2016/acsi-federal-government-report-2016> (Accessed February 3, 2017).
- Arceneaux, Kevin. 2005. "Using cluster randomized field experiments to study voting behavior." *The Annals of the American Academy of Political and Social Science* 601(1): 169–179.
- Bifulco, Lavinia. 2013. "Citizen participation, agency and voice." *European Journal of Social Theory* 16(2): 174–187.
- Boston Public Schools. 2015. "A Stronger BPS, A Stronger Boston - Boston Public Schools Strategic Implementation Plan 2016-2021." <http://www.bostonpublicschools.org/domain/2119> (Accessed February 1, 2017).
- Boston Public Schools. 2016. "School Climate Survey for Parents 2016." <http://www.bostonpublicschools.org/Domain/737> (Accessed February 1, 2017).
- Brehm, John. 1993. *The phantom respondents: Opinion surveys and political representation*. University of Michigan Press.
- Cameron, A. Colin, and Douglas L. Miller. 2015. "A practitioner's guide to cluster-robust inference." *Journal of Human Resources* 50(2): 317–372.
- Campbell, Andrea Louise. 2012. "Policy makes mass politics." *Annual Review of Political Science* 15: 333–351.
- Cepiku, Denita, and Filippo Giordano. 2013. "Co-Production in Developing Countries: Insights from the community health workers experience." *Public Management Review*: 1–24.
- City of Aarhus. 2014. "Budget remarks 2014 - Children and youth (in Danish)." <http://www.aarhus.dk/~media/Dokumenter/Borgmesterens-Afdeling/Budget-og-Regnskab/Budget-2014/Budget-2014-vedtaget/Budgetbemaerkninger/MBU-Bemaerkninger.PDF> (Accessed January 31, 2017).
- City of Aarhus. 2015. "Item 14: Improved well-being, learning and development for all children and young people (in Danish)." <http://www.aarhus.dk/da/politik/Byraadet/Byraadsmoeder/Tidligere-moeder/2016/2016-03-30/Referat-4a43/Styrket-trivsel-laering-og-udvikling-for.aspx> (Accessed January 31, 2017).
- City of New York - Department of Education. 2017. "NYC School Survey - Survey Overview." <http://schools.nyc.gov/Accountability/tools/survey/default.htm> (Accessed January 31, 2017).
- City of New York - Mayor's Office of Operations. 2016. "Mayor's Management Report 2016." <http://www1.nyc.gov/site/operations/performance/mmr.page>.
- Communities and Local Government. 2009. "Place Survey: England - Headline Results 2008 (Revised)." <http://webarchive.nationalarchives.gov.uk/content/20091205001932/http://www.communities.gov.uk/publications/corporate/statistics/placesurvey2008> (Accessed February 3, 2017).
- Couper, Mick P., Eleanor Singer, and Richard A. Kulka. 1998. "Participation in the 1990 Decennial Census. Politics, Privacy, Pressures." *American Politics Research* 26(1): 59–80.
- Druckman, James N., and Lawrence R. Jacobs. 2006. "Lumpers and Splitters The Public Opinion Information that Politicians Collect and Use." *Public Opinion Quarterly* 70(4): 453–476.

- Ekman, Joakim, and Erik Amnå. 2012. "Political participation and civic engagement: Towards a new typology." *Human Affairs* 22(3): 283–300.
- Fung, Archon, and Erik Olin Wright. 2003. *Deepening Democracy: Institutional Innovations in Empowered Participatory Governance*. London: Verso.
- Gastil, John, E. Pierre Deess, and Phil Weiser. 2002. "Civic Awakening in the Jury Room: A Test of the Connection between Jury Deliberation and Political Participation." *Journal of Politics* 64(2): 585–595.
- Gastil, John, and James P. Dillard. 1999. "The aims, methods, and effects of deliberative civic education through the national issues forums." *Communication Education* 48(3): 179–192.
- Goyder, John. 1987. *The silent minority: Nonrespondents on sample surveys*. Polity Press Cambridge.
- Green, Donald P., and Alan S. Gerber. 2008. *Get out the vote: How to increase voter turnout*. Brookings Institution Press.
- Green, Donald P., and Lynn Vavreck. 2008. "Analysis of Cluster-Randomized Experiments: A Comparison of Alternative Estimation Approaches." *Political Analysis* 16(2): 138–152.
- Groves, Robert M., and Mick P. Couper. 2012. *Nonresponse in Household Interview Surveys*. John Wiley & Sons.
- Harris-Kojetin, Brian, and Clyde Tucker. 1999. "Exploring the relation of economic and political conditions with refusal rates to a government survey." *Journal of Official Statistics* 15(2): 167–184.
- Hirschman, Albert O. 1974. "'Exit, voice, and loyalty': Further reflections and a survey of recent contributions." *Social Science Information* 13(1): 7–26.
- Hirschman, Albert O. 1970. *Exit, voice, and loyalty: Responses to decline in firms, organizations, and states*. Cambridge, MA: Harvard University Press.
- Ingram, Helen, and Anne L. Schneider. 1995. "Social Construction (Continued): Response." *The American Political Science Review* 89(2): 441–446.
- Institute for Citizen-Centred Service. 2014. "Citizens First - Institute for Citizen-Centred Service (ICCS)." <https://iccs-isac.org/research/citizens-first> (Accessed June 28, 2017).
- Jakobsen, Morten, and Simon Calmar Andersen. 2013. "Coproduction and Equity in Public Service Delivery", *Public Administration Review* 73(5): 704–713.
- Just, Aida, and Christopher J. Anderson. 2014. "Opinion Climates and Immigrant Political Action A Cross-National Study of 25 European Democracies." *Comparative Political Studies* 47(7): 935–965.
- KL. 2008. "Brugerundersøgelser med lokal forankring - sådan gør kommunerne." 2008.
- Knack, Stephen. 2002. "Social Capital and the Quality of Government: Evidence from the States." *American Journal of Political Science* 46(4): 772–785.
- Knack, Stephen, and Martha E. Kropf. 1998. "For Shame! The Effect of Community Cooperative Context on the Probability of Voting." *Political Psychology* 19(3): 585–599.
- Levine, Charles H. 1984. "Citizenship and service delivery: The promise of coproduction." *Public Administration Review* 44: 178–189.
- Marschall, Melissa J. 2004. "Citizen participation and the neighborhood context: A new look at the coproduction of local public goods." *Political Research Quarterly* 57(2): 231–244.
- Massey, Douglas S., and Roger Tourangeau. 2012. *The Nonresponse Challenge to Surveys and Statistics*. SAGE.
- Mettler, Suzanne. 2005. *Soldiers to citizens: The GI Bill and the making of the greatest generation*. Oxford University Press.

- Mettler, Suzanne. 2011. *The submerged state: How invisible government policies undermine American democracy*. University of Chicago Press.
- Miller, Thomas I, Michelle Miller Kobayashi, and Shannon Elissa Hayden. 2009. *Citizen Surveys for Local Government*. 3rd ed. International City Management Association.
- Moffitt, Susan L. 2014. *Making Policy Public: Participatory Bureaucracy in American Democracy*. Cambridge ; New York: Cambridge University Press.
- Nabatchi, Tina, and Matt Leighninger. 2015. *Public Participation for 21st Century Democracy*. John Wiley & Sons.
- National Research Center. 2013. "The National Citizen Survey™ Next." *National Research Center*. <http://www.n-r-c.com/survey-products/the-national-citizen-survey/about/> (Accessed February 3, 2017).
- Ostrom, E. 1996. "Crossing the great divide: coproduction, synergy, and development." *World Development* 24(6): 1073–1087.
- Page, Benjamin I., and Robert Y. Shapiro. 1983. "Effects of public opinion on policy." *American political science review* 77(01): 175–190.
- Paletz, David L. et al. 1980. "Polls in the Media: Content, Credibility, and Consequences." *Public Opinion Quarterly* 44(4): 495–513.
- Parks, R. B. et al. 1981. "Consumers as coproducers of public services: some economic and institutional considerations." *Policy Studies Journal* 9(7): 1001–1011.
- Percy, Stephen L. 1984. "Citizen Participation in the Coproduction of Urban Services." *Urban Affairs Review* 19(4): 431–446.
- Pierson, Paul. 1993. "When Effect Becomes Cause: Policy Feedback and Political Change." *World Politics* 45(04): 595–628.
- Pincock H. (2012). Does deliberation make better citizens? In Nabatchi T., Gastil J., Weiksner M., Leighninger M. (Eds.), *Democracy in motion: Evaluating the practice and impact of deliberative civic engagement* (pp. 135-162). New York, NY: Oxford University Press.
- Rooij, Eline A. de. 2012. "Patterns of Immigrant Political Participation: Explaining Differences in Types of Political Participation between Immigrants and the Majority Population in Western Europe." *European Sociological Review* 28(4): 455–481.
- Rosenstone, Steven, and John M. Hansen. 1993. *Mobilization, participation and democracy in America*. New York: Macmillan.
- Schlozman, Kay Lehman, Sidney Verba, and Henry E. Brady. 2012. *The Unheavenly Chorus: Unequal Political Voice and the Broken Promise of American Democracy*. Princeton ; Oxford: Princeton University Press.
- Schneider, Anne, and Helen Ingram. 1993. "Social construction of target populations: Implications for politics and policy." *American political science review* 87(02): 334–347.
- Sharp, Elaine B. 1980. "Toward a new understanding of urban services and citizen participation: the coproduction concept." *The American Review of Public Administration* 14(2): 105–118.
- Soss, Joe. 1999. "Lessons of Welfare: Policy Design, Political Learning, and Political Action." *The American Political Science Review* 93(2): 363–380.
- Soss, Joe, and Donald P. Moynihan. 2014. "Policy Feedback and the Politics of Administration." *Public Administration Review* 74(3): 320–332.

- Soss, Joe, and Sanford F. Schram. 2007. "A public transformed? Welfare reform as policy feedback." *American Political Science Review* 101(01): 111–127.
- Statistics South Africa. 2015a. "Citizen Satisfaction Survey in KwaZulu-Natal." <http://www.statssa.gov.za/?p=5596> (Accessed February 2, 2017).
- Statistics South Africa. 2015b. "Hearing the voice of ordinary citizens." <http://www.statssa.gov.za/?p=5582> (Accessed February 2, 2017).
- Statistics Sweden. 2017a. "Medborgarundersökningen - Information in English." *Statistiska Centralbyrån*. http://www.scb.se/sv/_vara-tjanster/insamling-och-undersokning/medborgarundersokningen/medborgarundersokningen---information-in-english/ (Accessed February 3, 2017).
- Statistics Sweden. 2017b. "Våra tjänster - SCB:s medborgarundersökning." *Statistiska Centralbyrån*. http://www.scb.se/sv/_vara-tjanster/insamling-och-undersokning/scbs-medborgarundersokning/ (Accessed February 3, 2017).
- Van Ryzin, Gregg G., and Stephen Immerwahr. 2007. "Importance-performance analysis of citizen satisfaction surveys." *Public Administration* 85(1): 215–226.
- Verba, Sidney. 1996. "The Citizen as Respondent: Sample Surveys and American Democracy Presidential Address, American Political Science Association, 1995." *American Political Science Review* 90(1): 1–7.
- Verba, Sidney, Kay Lehman Schlozman, and Henry E. Brady. 1995. *Voice and equality: civic voluntarism in American politics*. Cambridge, Mass.: Harvard University Press.
- Wilson, Rick K. 1981. "Citizen Coproduction as a Mode of Participation: Conjectures and Models." *Journal of Urban Affairs* 3(4): 37–49.

Tables

Table 1: Number of Participants and Preschools in the Three Experimental Conditions

	Coproduction intervention	SLB intervention	Control	Sum
Number of participants	323	300	258	881
Number of preschools	37	41	34	112

Table 2: Estimated Effects of Coproduction Intervention (Intent-to-Treat) on Voicing in the Citizen Survey

	(1)			(2)			(3)		
	Coeff.	Std. err.	P> z	Coeff.	Std. err.	P> z	Coeff.	Std. err.	P> z
Coproduction Intervention	0.067	(0.040)	(0.095)	0.064	(0.030)	(0.030)	0.068	(0.033)	(0.037)
SLB Intervention	0.033	(0.040)	(0.409)	0.024	(0.035)	(0.491)	0.023	(0.037)	(0.534)
Constant	0.402	(0.026)	(0.000)	0.567	(0.053)	(0.000)	0.407	(0.185)	(0.028)
Strata indicator	NO			YES			YES		
Covariates	NO			NO			YES		
N	871			871			871		

Notes: GLS random effects models. Dependent variable is participation in the Citizen Survey (1 = participated, 0 = did not participate). two-sided significance tests. Preschool clustered standard errors in parentheses. Models 2 and 3 include stratification group fixed effects and model 3 includes other covariates. Full models shown in Appendix E in the supporting information.

Table 3: Estimated Effect of Coproduction Intervention (Intent-to-Treat) on Voting

	(1)			(2)			(3)		
	Coeff.	Std. err.	P> z	Coeff.	Std. err.	P> z	Coeff.	Std. err.	P> z
Coproduction Intervention	-0.001	(0.067)	(0.991)	-0.006	(0.063)	(0.925)	0.032	(0.063)	(0.607)
SLB Intervention	-0.001	(0.057)	(0.990)	-0.015	(0.060)	(0.801)	0.042	(0.052)	(0.420)
Constant	0.416	(0.046)	(0.000)	0.468	(0.105)	(0.000)	0.138	(0.198)	(0.487)
Strata	NO			YES			YES		
Covariates	NO			NO			YES		
N	698			698			698		

Notes: GLS random effects models. Dependent variable is voting (1 = voted, 0 = did not vote) Two-sided significance tests. Daycare institution clustered standard errors in parentheses. Models 2 and 3 include stratification group fixed effects. Full models shown in the supporting information.

Table 4: Effect of Interventions on Voice among Those Who Voted/Did not Vote

	Voted			Did not Vote								
	(1)	(2)	(3)	(4)								
	Coeff.	Std. err.	P>z	Coeff.	Std. err.	P>z	Coeff.	Std. err.	P>z	Coeff.	Std. err.	P>z
Coproduction Intervention	-0.004	(0.077)	(0.961)	0.025	(0.067)	(0.713)	0.075	(0.067)	(0.263)	0.103	(0.064)	(0.107)
SLB Intervention	-0.002	(0.080)	(0.981)	0.011	(0.090)	(0.904)	0.068	(0.054)	(0.204)	0.058	(0.054)	(0.282)
Constant	0.431	(0.065)	(0.000)	0.576	(0.429)	(0.179)	0.358	(0.038)	(0.000)	0.496	(0.339)	(0.143)
Strata and covariates	NO			YES			NO			YES		
N	297			297			401			401		

Notes: GLS random effects models. Dependent variable is participating in Citizen Survey (1 = participated, 0 = did not participate). two-sided significance tests. Preschool clustered standard errors in parentheses. Models 2 and 4 include stratification group fixed effects. Full models shown in Appendix E in the supporting information.