Judicial Conflicts and Voting Agreement: Evidence from Interruptions at Oral Argument

Tonja Jacobi  
*Northwestern Pritzker School of Law, t-jacobi@law.northwestern.edu*

Kyle Rozema  
*University of Chicago Law School, kylerozema@uchicago.edu*

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JUDICIAL CONFLICTS AND VOTING AGREEMENT: EVIDENCE FROM INTERRUPTIONS AT ORAL ARGUMENT

TONJA JACOBI & KYLE ROZEMA

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Abstract: This Article asks whether observable conflicts between Supreme Court justices—interruptions between the justices during oral arguments—can predict breakdowns in voting outcomes that occur months later. To answer this question, we built a unique dataset based on the transcripts of Supreme Court oral arguments and justice votes in cases from 1960 to 2015. We find that on average a judicial pair is seven percent less likely to vote together in a case for each interruption that occurs between them in the oral argument for that case. While a conflict between the justices that leads to both interruptions and a breakdown in the voting coalition is one possible explanation of the finding, it is not the only one. An interruption by one justice of another justice could instead just reflect something about the case that renders it more prone to disagreement, such as being legally or politically salient, or something more idiosyncratic about the way the individual interrupting justice views the case. We set out an empirical strategy that isolates the conflict explanation from these and other possible explanations and find that the conflict inherent in interruptions explains over half of the relationship between interruptions and disagreement. These findings suggest that oral arguments are important in shaping judicial decisions—they are not simply a “dog and pony show”—and that there is valuable information about future case outcomes that has not previously been appreciated.

INTRODUCTION

Justice Breyer and the late Justice Scalia had a notoriously contentious relationship. They were ideological opponents and they were methodologi-
cal opposites. Even when they each broke with ideological expectations, they tended to break in opposite directions such that they still did not vote together. Perhaps it is unsurprising, then, that they often interrupted each other during oral arguments. In a major study of justice interruptions at oral arguments published in 2017, Tonja Jacobi and Dylan Schweers found that Justice Breyer interrupted Justice Scalia twice as often as any other justice interrupted another justice, with one exception: Justice Scalia interrupted

1 Justice Scalia was approximately as conservative as Justice Breyer is liberal. Andrew D. Martin & Kevin M. Quinn, Dynamic Ideal Point Estimation via Markov Chain Monte Carlo for the U.S. Supreme Court, 1953–1999, 10 POL. ANALYSIS 134, 146 (2002) [hereinafter Martin & Quinn, Martin-Quinn Scores] (underlying data available at Andrew D. Martin & Kevin M. Quinn, Martin-Quinn Scores, U. MICH., http://mqscores.lsa.umich.edu/measures.php). The most commonly used contemporary measure of judicial ideology puts justices on a scale that historically ranges from a liberal extreme of -7.75 (Justice Douglas in 1975) to the conservative extreme of 4.51 (then-Justice Rehnquist, also in 1975). See Martin & Quinn, Martin-Quinn Scores, supra. Justice Scalia, with an average score of 2.47, was more than one standard deviation (2.14) from the historical average (-0.06); Justice Breyer measures as more moderate but is still significantly liberal, with a score of 1.13, more than half a standard deviation left of center. Id. Calculations are made using data available through the University of California at Berkeley. Id.

2 Justice Scalia was a formalist, and Justice Breyer is a pragmatist. See Joshua Fischman & Tonja Jacobi, The Second Dimension of the Supreme Court, 57 WM. & MARY L. REV. 1671, 1675 (2016) (showing that Justice Scalia and Justice Breyer are far apart not only in their ideology but also in their methodology). Compare ANTONIN SCALIA, A MATTER OF INTERPRETATION: FEDERAL COURTS AND THE LAW 16–18 (1997) (arguing against use of legislative history in statutory interpretation), and ANTONIN SCALIA, ORIGINALISM: A QUARTER-CENTURY OF DEBATE 43–45 (2007) (arguing in favor of an originalist interpretation of the Constitution), with STEPHEN BREYER, ACTIVE LIBERTY: INTERPRETING OUR DEMOCRATIC CONSTITUTION 17–19, 21, 37 (2005) (arguing that enabling democracy should be the guiding theme in interpreting the Constitution and favoring the spirit of the document over any specific provision).

3 See Fischman & Jacobi, supra note 2, at 1674–75 (showing that cases in which the Court is said to have broken along “‘unusual’ coalitions” actually fit a consistent pattern). Consider, for example, recent landmark Fourth Amendment cases. See e.g., Florida v. Jardines, 569 U.S. 1, 4–6 (2013) (finding that the special protection of the home renders a dog sniff of the curtilage a search requiring probable cause); Maryland v. King, 569 U.S. 435, 465 (2013) (finding that taking and analyzing a cheek swab of a lawfully arrested suspect’s DNA is a reasonable police booking procedure). In Jardines, Justice Breyer joined the conservative Justice Alito’s opinion dissenting from Justice Scalia’s majority opinion, and in King, Justice Scalia dissented, joined by all of the liberal justices, Justices Ginsburg, Sotomayor, and Kagan, except for Justice Breyer, who joined Justice Kennedy’s majority opinion. Jardines, 569 U.S. at 16–26 (Alito, J., dissenting); King, 569 U.S. at 466–82 (Scalia, J., dissenting). The same pattern also arises in Sixth Amendment right to jury trial cases and confrontation clause cases. See Melendez-Diaz v. Massachusetts, 557 U.S. 305, 308, 311 (2009) (prohibiting admission of chemical drug tests without the in-person testimony of the scientist who conducted the test); Giles v. California, 554 U.S. 353, 361–62 (2008) (prohibiting hearsay statements by a murder victim due to unavailability of the witness to testify as a result of defendant’s wrongdoing because the murder was not committed in order to prevent the admission). In Giles, Justice Breyer dissented from Justice Scalia’s majority opinion expanding defendant trial protections. Giles, 554 U.S. at 380–406 (Breyer, J., dissenting). And in Melendez-Diaz, Justice Breyer, Chief Justice Roberts, and Justice Alito joined Justice Kennedy’s opinion dissenting from Justice Scalia’s majority opinion. Melendez-Diaz, 557 U.S. at 330–57 (Kennedy, J., dissenting).
Justice Breyer twice as much as Justice Breyer interrupted him.4 This raises interesting questions: do justices interrupting each other generally signal conflict between the justices? Are other justice-to-justice interruptions predictive of disagreement between the justices in case votes? In this Article, we use novel data on oral arguments and judicial voting from more than half a century to investigate whether the relationship between interruptions during oral arguments and judicial disagreement in the outcomes of cases is confined to the salient example of the Breyer-Scalia feud. We find that it is not; our results suggest that oral arguments are not just a “dog and pony show,” as some have suggested, but rather have significance for future case outcomes.5

There are several explanations for why justices who interrupt each other in a case are less likely to vote together. Our hypothesis is a “conflict” theory: interruptions constitute a type of observable conflict that is systematically associated with disagreement. The conflict theory is consistent with psychology research, which defines interruptions as “deviations from the turn-taking rule that specifies that only one party should talk at the time.”6

While a conflict between justices that leads to both interruptions and a breakdown in voting is one possible explanation of the finding, it is not the only. We set forth an empirical strategy to isolate the conflict explanation from competing explanations. A second “exposure” theory would suggest that justices who speak more in a case might be more exposed to interrupting or being interrupted simply by virtue of taking up more airtime. A third “dissatisfaction” theory would suggest that an interrupting justice is interrupting because he or she is at odds with the rest of the Court about the direction of the oral argument and the anticipated outcome of the case. For example, this may occur if the case is very salient to the individual justice but not necessarily salient to the rest of the Court. A fourth “difficult case” theory would suggest that interruptions are simply reflections of something about the case generally that is common to all justices, and cases with more disagreement are more prone to interruptions. The difference between the

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4 Tonja Jacobi & Dylan Schweers, Justice, Interrupted: The Effect of Gender, Ideology and Seniority at Supreme Court Oral Arguments, 103 VA. L. REV. 1379, 1434 (2017). The 2002 Term was also covered in this analysis. Id. at 1382.


dissatisfaction and difficult case theories is, in the difficult cases, the interruption is not specific to either of the justices involved in the interruption but is simply a response to the nature of the case itself.

Rather than treating the justices as unique actors or as a single institution, we model judicial voting as a set of pairwise coalitions and assess whether interruptions between pairs of justices are associated with breakdowns in the outcomes of the coalitions (voting against each other).\(^7\) Examining agreement and disagreement through the lens of judicial pairs is apt because a case outcome is not simply a product of adding up votes for and against a given ruling: doctrine is a product of opinion writing, and opinion writing is a product of persuasion.\(^8\) Given that the only time that the Supreme Court formally meets as a group to discuss cases other than during oral argument is at its conference session in which each justice casts his or her vote, the canonical persuasive process occurs between pairs of justices, where individual justices send notes to the opinion authors and the authors respond to each justice individually.\(^9\) In this process, case decisions that break with expected outcomes might look more like a result of breakdowns in relationships between justices than solely the result of individual justice behavior. Empirically, this framework allows us to control for differences in agreement between every judicial pair.

We find that on average a judicial pair is seven percent less likely to vote together in a case for each interruption that occurs between the justice-pair in the case at oral argument. This is a substantially and statistically significant relationship and provides important information about future judicial voting to anyone witnessing Supreme Court oral arguments. Furthermore, we find evidence to suggest that the conflict inherent in interruptions explains over half of the relationship between interruptions and disagreement: even after accounting for reasonable proxies for the exposure, dissatisfaction, and difficult case theories of interruptions, we find that the proba-

\(^7\) For discussion of the literature on peer effects, see infra note 80 and accompanying text. Importantly, this framework allows us to control for differences in agreement between each and every coalition pair. See infra note 120 and accompanying text.

\(^8\) Assessing outcomes of individuals as a set of pairwise outcomes between individuals (referred to as paired or dyadic data) is a prevalent way of thinking about social behavior in the networks literature. See, e.g., Marco Battaglini & Eleonara Patacchini, Influencing Connected Legislators 1 (Nat’l Bureau of Econ. Research, Working Paper No. 22739, 2016) (studying how legislators care about the behavior of their friends also in the legislature). It is also a prevalent way of thinking about social behavior in the international trade literature. See, e.g., Adam S. Chilton & Eric A. Posner, Why Countries Sign Bilateral Labor Agreements 36–37 (Coase-Sandor Inst. for Law & Econ., Working Paper No. 807, 2017) (examining what motivates pairs of countries to agree to a bilateral trade agreement with one another).

bility that a justice-pair votes together decreases by four percent for each interruption. This evidence strongly supports the conflict theory. Meanwhile, we find no evidence for the dissatisfaction theory. We do find evidence for both the exposure and difficult case theories, but the effects are less than the conflict effect.

To assess whether this result only arises under certain conditions, we explore whether there is heterogeneity in the relationship between interruptions and voting agreement. One potentially important factor is the strength of the relationship between justices. An interruption between two justices in the first year they work together could indicate something different than an interruption in their twentieth year. We find some evidence to suggest that interruptions between justices who have served longer are less indicative of a conflict between them than are interruptions that occur earlier in the time they serve together. Another potentially important factor is party affiliation. A conservative justice might interrupt a liberal justice for a different reason than he or she interrupts a fellow conservative. We assess the extent that breakdowns in judicial coalitions of the same party have a similar effect to breakdowns in judicial coalitions of opposite parties. We find no evidence that the negative relationship between interruptions and voting is different for justices of the same and opposite parties. We also consider heterogeneity in the effect by other justice attributes (such as experience and gender) as well as by case attributes (such as the political salience and legal importance of the case). We find that while some of these characteristics are significant in their own right in predicting disagreement, there is no evidence that any of them significantly change the relationship between interruptions and voting.

We also investigate the relationship between voting agreement and different types of interruptions. Any time two justices speak almost simultaneously, the second speaker will technically be interrupting the first. That “interruption,” however, might be unintentional. We consider that short conversational overlaps are very different to the situation where one justice is speaking for a significant length of time before a second justice begins speaking, without waiting for the first justice to finish his or her point. The latter scenario is a true interruption, so we call this a “substantive interruption;” the former scenario is more likely to be an accidental conversational overlap than an interruption, so we call this a “conversational overlap.” We expect quite different relationships between the two types of interruptions and voting agreement. The social science literature on interruptions in other
contexts suggests that interruptions can be expressions of power.¹⁰ Two individuals accidentally speaking at almost the same time is a quite different phenomenon.

These two different types of interruption provide us an opportunity to conduct robustness checks on our results, to give us some confidence that we have identified the conflict inherent in interruptions. Because we expect only substantive interruptions to be associated with disagreement, finding no relationship between conversational overlaps and voting agreement would provide further evidence that we have identified the conflict inherent in interruptions. To explore this, we investigate whether interruptions that are not expected to contain conflict are nonetheless related to disagreement, and find no evidence that conversational overlaps are associated with voting disagreement.

Finally, we test the possibility that the relationship between interruptions and disagreement is driven by a more general conflict between justices, rather than conflict stemming from the specific case in question. In a second placebo test, we assess whether interruptions between justices in other oral arguments that day or that week predict voting disagreement. We find no evidence of a relationship between other interruptions between justices in that day or week and voting agreement. These results provide further evidence that it is the conflict inherent in interruptions that is driving the relationship with disagreement and that the conflict between justices is limited to the case in question.

Our study suggests that there has been evidence available about likely future votes of Supreme Court justices in plain sight even before the justices have voted at conference. The results add to recent evidence suggesting that emotional arousal in justices’ voices during oral arguments, as measured by their vocal pitch, predicts many of their eventual votes.¹¹ Our study also shows that oral arguments can offer evidence of justice interactions beyond that found in judicial opinions and the tone of their voice, and directs attention to interruptions at oral arguments as evidence of inter-justice dynamics. It is worth noting, however, that we do not have a robust way to isolate the direction of causality. It is possible that interruptions cause disagreement among the justices—for example, if there is antipathy produced by a rude

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¹⁰ See infra notes 86–89 and accompanying text. Note that there are competing theories of interruptions, but Jacobi and Schweers find that in the Supreme Court context, the strongest evidence is for the dominance hypothesis. See Jacobi & Schweers, supra note 4, at 1400.

¹¹ See generally Bryce J. Dietrich, Ryan D. Enos & Maya Sen, Emotional Arousal Predicts Voting on the U.S. Supreme Court, POL. ANALYSIS (forthcoming 2018) (showing that caseloads can be predicted based on the level of emotional arousal in the justices’ voices during oral arguments).
interruption. But it is also possible that disagreement causes interruptions—for example, if a justice attempts to shut down expression of a view with which he or she disagrees. Finally, we discuss possible interpretations of the findings under alternative assumptions about the direction of causality and argue that the findings suggest that oral arguments are not, at least to the justices, merely a form of theatre.

Part I sets the background.\textsuperscript{12} It provides illustrations of substantive interruptions and conversational overlaps, outlines the literature that is relevant to our inquiry, and examines why interruptions might be related to judicial voting disagreement. Part II describes our data, including how we define interruptions and how we differentiate substantive interruptions from conversational overlaps.\textsuperscript{13} Part III presents descriptive statistics of interruptions and justice-pair voting patterns.\textsuperscript{14} First, we assess the extent that interruptions are related to exposure to being interrupted; second, we describe the empirical strategy for assessing coalitions by the justice-pair; and third, we assess differences in interruptions and voting by justices and by justice-pairs. Part IV provides our estimates of the relationship between interruptions and agreements.\textsuperscript{15} We first investigate whether the relationship is indeed negative and significant and then test whether that relationship varies by attributes of the justices or attributes of the cases. Part V investigates whether substantial interruptions and mere conversational overlaps are meaningfully different in terms of predicting voting agreement among the justices.\textsuperscript{16} In Part VI, we present the implications of our analysis, propose potential future inquiries, and conclude.\textsuperscript{17}

I. BACKGROUND

A. Illustrations: Examining the Intent Behind Different Types of Interruptions

This Part provides some examples from Supreme Court cases during the Roberts Court to illustrate both substantive interruptions and conversational overlaps occurring during oral arguments.

Our aim is to understand the intent of the speaker who interrupts, which of course we cannot observe directly. We focus on intent because an intentional interruption is one of the clearest signals of some form of con-

\textsuperscript{12} See infra notes 18–102 and accompanying text.
\textsuperscript{13} See infra notes 103–115 and accompanying text.
\textsuperscript{14} See infra notes 116–120 and accompanying text.
\textsuperscript{15} See infra notes 121–133 and accompanying text.
\textsuperscript{16} See infra note 134 and accompanying text.
\textsuperscript{17} See infra notes 135–148 and accompanying text.
flict between justices. Reading between the lines of a given interruption and the context in which it was made, we can begin to distinguish between intentional and unintentional interruptions. Through this task, we can infer the intention of some interruptions. But the task of empirically classifying thousands of interruptions as either intentional or unintentional is more difficult. In order to differentiate intentional interruptions from mere conversational overlaps, we have to design a comprehensive definition that can be applied objectively and automatically, rather than examining the details of each interruption. Here we examine some representative examples.

In *Michigan v. Bay Mills Indian Community*, the Supreme Court addressed whether tribal sovereign immunity prevents a state from suing in federal court when activity that violates the Indian Gaming Regulatory Act “takes place outside of Indian lands.” The Act permits Indian tribes to operate casinos on Indian lands, under certain conditions; the Michigan Indian Land Claims Settlement Act designates lands bought with funds from a congressionally established trust as Indian lands. The Bay Mills Indian Community, a federally recognized Indian tribe located in Michigan, opened a casino on lands purchased with funds from that trust. The State sued, claiming the Bay Mills casino violated state gaming laws.

The Court ultimately barred Michigan’s suit on grounds of tribal sovereign immunity. The Court split five to four with Justice Kagan writing for the majority, joined by Chief Justice Roberts and Justices Kennedy, Breyer, and Sotomayor, who also wrote a concurring opinion. The Court held that Indian tribes retain “inherent sovereign authority” unless and until Congress acts to abrogate that sovereignty, and such sovereignty includes immunity from suit, including suits brought by states. Justices Scalia, Thomas, and Ginsburg all wrote dissenting opinions, and each of those Justices, along

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18 See supra note 113 and accompanying text. In the oral argument transcripts, the Court reporters code interruptions with either two dashes at the end of the text for the person being interrupted or at the beginning of the text of the person interrupting (or both). Below, we describe a refinement to the definition of the two-dash interruptions in two ways. First, we require the interrupter to speak for more than one second. Second, we require that the person who was interrupted to have been speaking for at least one second before the beginning of the next person’s speech episode. As we will see in Part I.A, this definition distinguishing substantive interruptions from conversational overlaps does not always treat the intentions of interrupters and interruptees in the same way, but it is a largely effective categorization. See infra notes 19–45 and accompanying text.


20 25 U.S.C. § 2701(5) (2012) (“Indian tribes have the exclusive right to regulate gaming activity on Indian lands if the gaming activity is not specifically prohibited by Federal law and is conducted within a State which does not, as a matter of criminal law and public policy, prohibit such gaming activity.”).

with Justice Alito, joined Justice Thomas’s dissenting opinion. Justice Thomas’s dissenting opinion argued that the Court had previously erred in extending tribal sovereign immunity to bar suits arising out of the tribe’s commercial activities conducted outside tribal lands, as that doctrine constitutes “an affront to state sovereignty” and creates inequities, rendering tribes more protected than other sovereigns. 22

The case had judicial voting coalitions that crossed the standard ideological lines—most notably with Justice Ginsburg joining the three most conservative Justices on the Court in dissent. 23 Yet even though the case outcome was not predictable on ideological lines, the Justices’ behavior at oral argument gave hints of the unusual breakdown among the eventual voting coalitions that was to come. This oral argument provided examples of both conversational overlaps and substantive interruptions, and illustrates the significance of those distinctions.

An exchange between Chief Justice Roberts and Justice Alito provides an example of a conversational overlap that should not be given significance by being counted as a substantive interruption:

*Samuel A. Alito, Jr.:* What remedy--
*John G. Roberts, Jr.:* If we get -- go ahead.
*Samuel A. Alito, Jr.:* --What remedy would a private person have? 24

Even though Chief Justice Roberts interrupted a Justice with whom he ultimately disagreed, their speech episodes occurred in such close proximity that this interaction is not the type that one would associate with a significant disagreement. The interruption seems unintentional. This is buttressed

22 Id. at 2045 (citing Kiowa Tribe of Okla. v. Mfg. Tech., 523 U.S. 751 (1998)).
23 Id. These coalitions, however, were consistent on methodological lines, with conservative and liberal formalists—Justice Scalia and Thomas, and Ginsburg, respectively—dissenting from a largely pragmatic coalition. See Fischman & Jacobi, supra note 2, at 1674–75, 1697–98, 1709 (showing that even in cases that cross ideological lines, consistent methodological patterns arise, with Justices Scalia and Ginsburg constituting the formalist end of the spectrum, and Justices Kennedy, Breyer, and the Chief Justice making up the most pragmatic end). The examples below, however, show that even cases that are inexplicable on both ideological and methodological lines can be meaningfully informed by examining interruptions at oral arguments. See infra notes 24–45 and accompanying text.
24 Oral Argument at 44:21, Bay Mills, 134 S. Ct. 2024 (No. 12-515), https://www.oyez.org/cases/2013/12-515. The underlying files from Oyez identify an interruption with the use of either two dashes (--) at the end of a speech episode of the speaker being interrupted or two dashes at the beginning of a speech episode of the interrupting speaker, or both. Id. This coding is also used in the official transcripts of Supreme Court oral arguments. See, e.g., Oral Argument, Perry v. Merit Sys. Prot. Bd., 137 S. Ct. 1975 (2017) (No. 16-399), https://www.supremecourt.gov/oral_arguments/argument_transcript/2016 [http://perma.cc/GZ3H-MNJV]. See infra Part II for information about the Oyez Project and the data used in this Article.
by the fact that the Chief Justice recognized that he interrupted Justice Alito and promptly yielded the floor to him, suggesting the interruption indicated no animosity, but rather constituted an incidental overlap.

Even when a justice recognizes that he or she has interrupted, this does not always result in deference to the interruptee. For instance, consider the following in the same case:

*Samuel A. Alito, Jr.*: Going forward then—

*Anthony M. Kennedy*: Why couldn’t you at least -- I think this is Justice Alito’s question. I don’t mean to interrupt. But why couldn’t you say that it’s a matter of compact interpretation whether these are Indian lands?25

Justice Kennedy persevered with his question, even having recognized that he interrupted Justice Alito, which makes it seem more deliberate than Chief Justice Roberts’s interruption above. Justice Alito, however, had only spoken four words before being cut off, which only took about one second before Justice Kennedy started speaking. As such, Kennedy’s interruption may have been unintentional, even if his decision to persevere after realizing he had interrupted was a deliberate choice.

We also consider conversational overlaps in terms of how long the interrupting justice speaks. This is illustrated by the interaction between two justices who once again ultimately disagreed in the case:

*John G. Roberts, Jr.*: They are quasi sovereigns. Which means--

*Ruth Bader Ginsburg*: Dependent sovereigns.

*John G. Roberts, Jr.*: --Dependent sovereigns which is surprising that the scope of their immunity exceeds that of States or foreign sovereigns.26

In this instance, the interruption took the form of a correction of the Chief Justice, who ultimately sided with the majority, by an ultimately dissenting Justice. Nevertheless, we categorize this as a conversational overlap because although the interruptee spoke for long enough, the interrupter only spoke for less than a second (recall that one condition for an interruption is that the interrupter continues to speak for more than a second). This example is a nice illustration of how our speaking time-based definition does not always treat the intent of interrupters and interruptees in the same way. Here, Justice Ginsburg clearly intentionally interrupted Justice Roberts. The


26 *Id.* at 50:30.
interruption, however, was not for the purpose of taking over the conservation.

In contrast, other interruptions in the *Bay Mills* argument are clearly substantive. One occurred between the ultimate majority opinion writer and one of the dissenting authors:

_Elena Kagan_: Well, there seems something sort of strange about that, General, because as I read Kiowa, what it was, was an invitation to Congress. It was saying, you know, we have some concerns about this, we’re not sure it makes sense. We are dropping a very broad hint that Congress should change it. And 15 years later, Congress has done nothing. And then to come back 15 years later and to say, you know, Congress didn’t really accept our hint, so we’ll just do it ourselves and make Congress reverse it, wouldn’t you think that that’s a strange procedure to use?

_John J. Bursch_: --Actually, Justice Kagan, I think that’s the way that the common law works, that the Court does extend invitations to the legislative and executive branches.

_Antonin Scalia_: Maybe we’ve learned something in 15 years, such as the fact that--

_Elena Kagan_: Or that Congress thought that this did make sense.27

Here, Justice Kagan asked a very probing and challenging question to the Solicitor General of Michigan, who she ultimately ruled against. After the advocate responded, Justice Scalia made a statement challenging the argument implicit in Justice Kagan’s question; Justice Kagan in turn interrupted with a statement to rebut his response. Justice Kagan’s interruption here seems clearly intentional. The fact that these Justices ultimately disagree is not surprising in light of this interaction—arguably both Justices were advocating opposing positions, rather than simply asking questions.28

Another case, *Abbott v. Abbott*, involved quite different coalitions of Justices.29 *Abbott* concerned an international custody dispute and the question was whether a prohibition on a parent removing a child from a country without the other parent’s consent confers a “right of custody” within the meaning of the Hague Convention on International Child Abduction, which

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27 _Id._ at 58:55.
28 For an exploration of the significance of the justices’ use of such statements, in lieu of questions, and the justices’ increasing tendency to engage in advocacy rather than inquiry, see Tonja Jacobi & Matthew Sag, _The New Oral Argument: Justices as Advocates_, 94 NOTRE DAME L. REV. (forthcoming 2019).
would mean the child must be returned to the country of habitual residence. The case gave the Court the opportunity to resolve a circuit split: the Eleventh Circuit had embraced the position of the petitioner, who argued that as a statutory matter, the right to determine a child’s place of residence and to have a direct relationship with the child must include having a say in the country in which the child will live, and that the purpose of the Convention was to ensure that the courts in the country of the child’s habitual residence should determine custody disputes. The Second, Fourth, Fifth, and Ninth Circuits had rejected that position, taking a view consistent with the respondent that rights of access and visitation are not rights of custody, and so do not give rise to an obligation to return the child, and that doing so could harm or sever rights of custody, for instance if the actual custodial parent could not reenter the country. The Solicitor General intervened on behalf of the petitioner.

The majority was authored by Justice Kennedy and joined by Chief Justice Roberts and Justices Scalia, Ginsburg, Sotomayor, and Alito. The majority held that custody rights “include rights relating to the care of the person of the child and, in particular, the right to determine the child’s place of residence,” which can be held jointly. The majority also reasoned that any conclusion to the contrary “would render the Convention meaningless in many cases where it is most needed.” Justice Stevens wrote the dissenting opinion, joined by Justices Thomas and Breyer. The dissent stressed that petitioner “has no authority to decide whether his son undergoes a particular medical procedure; whether his son attends a school field trip; whether and in what manner his son has a religious upbringing; or whether his son can play a videogame before he completes his homework;” as such, he does not have “daily care or control over” his son and thus does not have a custody right.

Once again, Abbott was hard to predict on ideological lines, pairing the liberal Justice Stevens and the conservative Justice Thomas against the ideological rainbow coalition of the majority. In addition, the two coalitions crossed methodological boundaries, with, for instance, the pragmatic Justice Kennedy and the formalist Justice Scalia writing together, and the pragmatic Justices Stevens and Breyer writing with the very formal Justice Thom-

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30 See Abbott, 560 U.S. at 7; Brief for Petitioner at i, Abbott, 560 U.S. 1 (No. 08-645).
31 Abbott, 560 U.S. at 7.
32 Id.; Brief for Respondent at 11, 13, Abbott, 560 U.S. 1 (No. 08-645).
34 Id. at 13.
35 See id. at 23 (Stevens, J., dissenting) (arguing that the father only had visitation rights).
as.\textsuperscript{36} Analyzing the argument before the holding was announced, SCOTUSblog correctly noted that the oral arguments indicated that the “traditional alignments on the Court” appeared to be breaking down.\textsuperscript{37} We argue that despite the ideological and methodological heterogeneity of the coalitions, the outcome was not unpredictable: rather, there were hints about the then-future decision available by examining interruptions at the oral argument.

\textit{Antonin Scalia:} Well, if these things were effective--
\textit{Anthony M. Kennedy:} Well, but the ne exeat order--
\textit{Antonin Scalia:} --we wouldn’t -- we wouldn’t have a treaty, would we?
\textit{Karl E. Hays:} If they--
\textit{Antonin Scalia:} If these local remedies were effective, we wouldn’t have a treaty.
\textit{Anthony M. Kennedy:} --And I was--
\textit{Karl E. Hays:} --These--
\textit{Anthony M. Kennedy:} --I was going to say the ne exeat order, under your view, is the one order that can’t be enforced anyplace.
\textit{Karl E. Hays:} --Now, the – the -- a violation of the ne exeat provision could be enforced, but the question before this Court is whether the means of enforcing the ne exeat provision falls under the auspices of the Hague Convention.\textsuperscript{38}

Justices Scalia and Kennedy interrupted each other despite ultimately voting together. These interruptions seem intentional, with each Justice trying to win the floor. Yet these two Justices were the most common interrupters on the Roberts Court, so one might not take as much from it than interruptions between other justices.\textsuperscript{39} All other interruptions in this case occurring between pairs of justices who ultimately voted together were mere conversational overlaps. One occurred between two justices who are ordinarily ideologically opposed, but who both joined the majority in this case:

\textit{Antonin Scalia:} How many--

\textsuperscript{36} Id. at 5 (majority opinion); id. at 23 (Stevens, J. dissenting); see Fischman & Jacobi, supra note 2, at 1674–75.
\textsuperscript{39} Jacobi & Schweers, supra note 4, at 1434.
Ruth Bader Ginsburg: You would be on absolutely sound ground if this were a convention on the mutual recognition of jurisdiction and judgment, but it’s not.40

Similarly:

Ruth Bader Ginsburg: Do you know--
John G. Roberts, Jr.: So the woman would be subject to -- if she wanted to remain with the child, there would be no protection.41

Conversational overlaps also occurred between ideological allies who were both in the majority:

Ruth Bader Ginsburg: It’s a provision--
Sonia Sotomayor: Let’s assume there’s a law that says joint custody; mom can determine the place to live; mom can determine the education of the child; dad can visit when he wants; dad can review choices but not veto them.42

These interruptions do not seem intentional: the vying speech episodes are so close in proximity that the Justices are speaking almost at the same time. In contrast to these conversational overlaps, which occurred almost entirely between coalition members, repeated substantive interruptions occurred between the ideologically diverse coalitions. For instance, both a liberal and moderate-conservative majority justice repeatedly interrupted a liberal dissenting justice:

Stephen G. Breyer: Who’s against it? I -- as I read their brief, France is not on their side. It’s split.
Karl E. Hays: --Correct.
Stephen G. Breyer: Canada is on your side; that the House of Lords is -- has some dicta written by two judges, which is good, but it wasn’t a holding in the case.
Karl E. Hays: Correct.
Stephen G. Breyer: And -- and that’s about it, and so maybe they--
Ruth Bader Ginsburg: --You have -- you have a lady--
Antonin Scalia: Germany.
Stephen G. Breyer: --Germany.
Ruth Bader Ginsburg: --Elizabeth Butler-Sloss in the Court of Appeal in England, and that was a square holding.

41 Id. at 8:59.
42 Id. at 28:55.
Karl E. Hays: That was -- there -- there have been -- that is one instance.43

Similarly, the argument involved another back and forth between Justices Kennedy and Breyer. In this instance, Justice Breyer had asked a very long question, beginning at the start of the second minute. He then had an extensive back and forth with the advocate for the petitioner, Amy Howe, for almost two and a half minutes, before the following interaction:

Sonia Sotomayor: There is an alternative, isn’t there?
Amy Howe: --There is an alternative. I mean, certainly under Chilean--
Sonia Sotomayor: For the woman to go to the Chilean court?
Amy Howe: --Exactly, Justice Sotomayor. Under Chilean law and presumably under the law that you’ve hypothesized as well, Justice Breyer, the woman could go to court and ask for permission to leave the country, and that’s precisely what Mrs. Abbott could have done in this case. She just never opted to do that.
Anthony M. Kennedy: Well, suppose you -- suppose you have a--
Stephen G. Breyer: That isn’t my question.
Amy Howe: Okay.
Stephen G. Breyer: I’m trying to get at what the humane purpose would be, given your interpretation of the law in this kind of situation?44

The advocate then returned to responding to Justice Breyer’s question. So even though the advocate had engaged with Justice Breyer for over two minutes, and then another Justice, Sotomayor, had a back and forth with the advocate, when a third Justice, Kennedy, began to ask another question, Justice Breyer interrupted to draw the advocate back to his question posed almost three minutes earlier. For context, note that petitioner’s advocate only spoke for sixteen minutes in her primary presentation (twenty including her reply), as she was sharing her time with the Solicitor General’s representative.

So, in Abbott there were numerous conversational overlaps among those Justices who were eventually in agreement, and substantive interruptions occurred almost exclusively between those in disagreement. Below, our results show that the pattern of substantive interruptions occurring between eventual opponents in the case is not limited to these illustrative ex-

43 Id. at 48:58.
44 Id. at 4:32.
amples. The remainder of this Article shows that this pattern is systematic and statistically significant, and explores a number of complexities associated with that pattern of substantive interruptions being associated with future disagreement.

B. Relevant Literature

The Supreme Court is the head of one branch of government, frequently deciding some of the most controversial and salient policy issues of the day, such as the constitutional status of same-sex marriage, whether government rules violate the right to free speech, and questions of relative presidential-congressional power. Yet, its process of arriving at decisions that shape the law of the land is highly secretive and opaque. Unsurprisingly, there is a large body of literature attempting to inferentially determine every aspect of that process. And yet, even though oral arguments have been shown by scholars and declared by multiple justices to be im-

   
   Samuel A. Alito, Jr: Well, what happens in the case where--
   Antonin Scalia: Could the district appeal? That’s the end of the road? Can’t the district say the hearing officer is wrong?
   Gary S. Feinerman: Absolutely, the district can appeal.

46 Obergefell v. Hodges, 135 S. Ct. 2584 (2015) (ruling that the right to marry a member of the same sex is protected by the Fourteenth Amendment).

47 Recent cases include Heffernan v. City of Paterson, 136 S. Ct. 1412 (2016) (prohibiting employees from being fired on the basis of mistaken beliefs about their political views and expressions), and Expressions Hair Design v. Schneiderman, 137 S. Ct. 1144 (2017) (prohibiting restrictions on communication of different prices of goods).

48 Recent cases include National Labor Relations Board v. Noel Canning, 134 S. Ct. 2550 (2014) (ruling that the President cannot deem the Congress to be in recess, contrary to Congress’s own determination, and thus cannot make recess appointments in such circumstances), and Zivotofsky v. Kerry, 135 S. Ct. 2076 (2015) (determining that the President has the power, despite congressional legislation to the contrary, to recognize foreign states, including refusal to designate Jerusalem as part of Israel for the purposes of passport identification).

49 See generally, e.g., BOB WOODWARD & SCOTT ARMSTRONG, THE BRETHREN: INSIDE THE SUPREME COURT (1979) (conducting a detailed investigation to reveal the inner workings of the Court).


52 See, e.g., U.S. COMM’N ON REVISION OF THE FED. COURT APPELLATE SYS., STRUCTURE AND INTERNAL PROCEDURES: RECOMMENDATIONS FOR CHANGE: A PRELIMINARY REPORT 66
portant and affect case outcomes, an empirical literature on oral arguments has only recently begun to develop.

In recent years, scholars in both law and political science have begun to ask whether and to what extent oral arguments matter, in terms of affecting judicial decision-making and thus the outcome of cases. Prior scholars have attempted to answer this question by first addressing at what point in cases justices determine their votes (e.g., before or after oral argument) and whether oral arguments influence voting or opinion writing. Some existing research investigating justices switching votes during the opinion drafting process (known as voting fluidity) has found that the justices actually change their positions following oral argument. While others have questioned this, failing to find the same result, more scholars have found that oral arguments can have multiple consequences, including affecting the case opinions.

(1975) ("I have had too many occasions when my judgment of a decision has turned on what happened in oral argument.") (quoting Justice Brennan); WILLIAM H. REHNQUIST, THE SUPREME COURT: HOW IT WAS, HOW IT IS 276–77 (1992) (stating that "if an oral advocate is effective, how he presents his position during oral argument will have something to do with how the case comes out"); James Iseler, Justice Kagan Shares Supreme Court Insights During Law School Conversation, U. MIC. REC. UPDATE (Sept. 10, 2012), http://www.ur.umich.edu/update/archives/120910/kagan [http://perma.cc/C5V2-F36N] (“You can sway people to your side or you can also lose a case in the oral arguments.”) (quoting Justice Kagan).

For arguments to the contrary, see JEFFREY A. SEGAL & HAROLD J. SPAETH, THE SUPREME COURT AND THE ATTITUDINAL MODEL REVISITED 280 (2002) (finding no evidence that oral arguments “regularly, or even infrequently, determine who wins and who loses”); Phillips & Carter, supra note 5, at 169 (arguing that the “information-seeking value” of oral arguments has diminished since the 1960s and that justices now use oral arguments for speaking, rather than asking); Andrew S. Polls, The Death of Inference, 55 B.C. L. REV. 435, 450 (2014) (providing an example of a Justice “observing” during oral argument rather than asking a question).


See, e.g., Eve M. Ringsmuth, Voting Fluidity Throughout the Decision-Making Process on the U.S. Supreme Court, 26 JUST. SYS. J. 197, 197 (2015) (finding “support for the notion that early fluidity, changing positions from before oral arguments to after, especially when combined with major shifts in the majority coalition, can be a bellwether of traditional fluidity”).

See Phillips & Carter, supra note 5, at 169 (arguing that the “information-seeking value” of oral arguments has diminished since the 1960s and that justices now use oral arguments for speaking, rather than asking); SEGAL AND SPAETH, supra note 53, at 280 (finding no evidence that oral arguments “regularly, or even infrequently, determine who wins and who loses”); see also DAVID W. RHODE & HAROLD J. SPAETH, SUPREME COURT DECISION MAKING 153 (1976) (“Oral argument does not, however, provide reliable clues as to how a given justice may vote.”); JEFFREY A. SEGAL & HAROLD J. SPAETH, THE SUPREME COURT AND THE ATTITUDINAL MODEL 208–09 (1993) (“The justices aver that it is a valuable source of information about the cases they have
For example, one study uses justice voting in previous cases to predict a justice’s position going into oral argument, and then uses this predicted measure to estimate whether oral arguments change voting.\textsuperscript{57} It uses the positions taken by Justices Blackmun and Powell prior to oral arguments to ask whether oral arguments change their votes and find that they switch votes only in a minority of cases.\textsuperscript{58} Another study predicts judicial votes on the basis of the emotional content of the justices’ at oral arguments.\textsuperscript{59} It finds that the justices use more unpleasant language towards the attorney that ultimately loses on the merits.\textsuperscript{60} This Article contributes to that discussion: in the conclusion, we argue that our findings of a relationship between interruptions at oral argument and disagreement in the ultimate decision suggest that oral arguments are important for the justices’ decision-making process.

In addition to assessing the relationship between oral arguments and case outcomes, existing literature does find some evidence that oral arguments are important because they provide information to the justices.\textsuperscript{61} For example, Timothy Johnson asks whether justices use oral arguments to seek information about cases.\textsuperscript{62} Using oral arguments and the Court’s majority opinions in a sample of cases from the Burger Court era, he finds some evidence that oral arguments are used to gather information.\textsuperscript{63}

Beyond the value of oral arguments to the justices and the impact of oral arguments on their decisions, a growing literature assesses how much information oral arguments provide about the justices’ future decisions. This agreed to decide, but that does not mean that oral argument regularly, or even infrequently, determines who wins and who lose.\textsuperscript{57} But see Benoit, supra note 54, at 34 (describing how justices process and react to oral arguments); Donald S. Cohen, Judicial Predictability in United States Supreme Court Oral Advocacy: Analysis of the Oral Argument in Tenn. Valley Auth. v. Hill, 2 U. Puget Sound L. Rev. 89, 90 (1978) (studying the relationship between justices’ predispositions to issues in a case and their actions during its oral argument).

\textsuperscript{57} Johnson et al., supra note 51, at 99–100 (showing that the quality of an advocate’s performance at oral argument influences justices’ votes on case outcomes).

\textsuperscript{58} See Eve M. Ringsmuth, Amanda C. Bryan & Timothy R. Johnson, Voting Fluidity and Oral Argument on the U.S. Supreme Court, 66 Pol. Res. Q. 429, 429 (2013) (finding that Justices Powell and Blackmun changed their votes in several cases because of oral arguments).

\textsuperscript{59} Ryan C. Black, Sarah A. Treul, Timothy R. Johnson & Jerry Goldman, Emotions, Oral Arguments, and Supreme Court Decision Making, 73 J. Pol. 572, 572 (2011) [hereinafter Black et al., Emotions and Decision Making]; see also Dietrich et al., supra note 11, at 1 (studying whether a judge’s emotional response at oral argument is a predictor of how the judge will vote).

\textsuperscript{60} See Black et al., Emotions and Decision Making, supra note 59, at 572.

\textsuperscript{61} See Benoit, supra note 54, at 34 (describing an information gathering benefit to the justices in oral arguments); Johnson, supra note 54, at 331–33 (same); Washby, D’Amato & Metrailer, supra note 54, at 418–20 (same).

\textsuperscript{62} Johnson, supra note 54, at 332–33.

\textsuperscript{63} Id. 331–33.
literature attempts to predict the outcome of cases based on elements of oral arguments. For example, Bryce J. Dietrich, Ryan D. Enos, and Maya Sen use audio recordings of Supreme Court arguments from 1982–2014 to forecast votes based on the emotional arousal of justices at oral argument and find strong evidence that arousal of justices is highly predictive of how justices vote.\textsuperscript{64} Their study focuses on vocal arousal of the justices and does not directly study interruptions. Our Article contributes to this inquiry, showing that there is information about likely coalitions in case outcomes available to the educated observer of oral arguments in the form of interruptions.

There is also a literature examining the occurrence of interruptions at oral arguments specifically. Barry Sullivan and Megan Canty examine interruptions at oral arguments from 1958–60 and 2010–12 and find that the justices interrupt each other more in the 2010–12 terms than in the 1958–60 terms.\textsuperscript{65} They show that this is part of a broader trend of greater judicial activity, mirroring increases in the number of interruptions of advocates by the justices and the amount of time that justices speak at oral arguments.\textsuperscript{66} Lawrence Wrightsman provides an anecdotal analysis of a broader range of years and empirically assesses the 2003–2006 Terms.\textsuperscript{67}

Most extant empirical studies of interruptions either cover only cases from 2004 (or later) onwards\textsuperscript{68} or are selective or impressionistic.\textsuperscript{69} At least two comprehensive empirical studies warrant mention. Tonja Jacobi and Dylan Schweers assess oral arguments in the 1990, 2002, and 2004–2015 terms and find a significant gender difference in interruptions at the Roberts Court.\textsuperscript{70} They provide a detailed analysis of the patterns of interruptions at

\textsuperscript{64} Dietrich et al., supra note 11, at 1, 3.
\textsuperscript{66} Id. at 1019, 1045.
\textsuperscript{67} LAWRENCE S. WRIGHTSMAN, ORAL ARGUMENTS BEFORE THE SUPREME COURT: AN EMPIRICAL APPROACH 164–65 (2008).
\textsuperscript{69} WRIGHTSMAN, supra note 67, at 164–65 (only covering the 2003–2006 terms); Sullivan & Canty, supra note 65, at 1035 (only covering oral arguments from 1958–1960 and 2010–2012).
\textsuperscript{70} Jacobi & Schweers, supra note 4, at 1429, 1435.
oral argument, but do not test whether interruptions are associated with voting agreement between justices.\footnote{See Jacobi & Schweers, supra note 4 (analyzing patterns of interruptions at oral argument).}

Ryan C. Black, Timothy R. Johnson, and Justin Wedeking authored another noteworthy empirical assessment of interruptions by assessing oral arguments between 1998–2007 and examining justice-to-justice interruptions using a notion of interruptions that is broader than we use.\footnote{BLACK ET AL., supra note 68, at 20–21.} In particular, they define an interruption as having occurred any time two justices speak back-to-back without an interjection or answer from an advocate.\footnote{Id. at 21.} Because we are interested in isolating the conflict inherent in interruptions from other reasons why justices may be interrupting each other, distinguishing between conversational overlaps and substantive interruptions is a better approach than defining an interruption as justices speaking back-to-back. Our definition excludes interruptions that one might not expect to reflect conflict. For instance, it is not uncommon for justices to make statements rather than ask a question, and a second justice speaking after such a statement should often not be taken as a conflict between the justices.\footnote{See Jacobi & Sag, supra note 28, at 43, 47–48 (analyzing justices’ use of statements in lieu of questions).} Black et al. find that six percent of all utterances by the justices are interruptions of other justices under their broader definition—as we will see, this is magnitudes higher than the number of interruptions under our definition.\footnote{BLACK ET AL., supra note 68, at 25.} Using the speaking back-to-back definition of interruptions and examining the 681 cases in the publicly available data, Black et al. identify a number of empirical trends associated with judicial interruptions, including the variation among justices’ tendency to interrupt and the tendency of justices who interrupt more to also be interrupted more.\footnote{Id. at 29.} They explore a number of hypotheses empirically, and find that justices are more likely to be interrupted by “ideologically distant colleagues;” that justices who frequently interrupt another speaker (including advocates) during oral arguments are more likely to be subsequently interrupted by their colleagues later in the proceedings; that justices with greater expertise in an area—as measured by the number of case opinions written in the area—are more likely to interrupt than other justices; and that justices are more likely to interrupt another justice if that justice interrupted them earlier in the proceedings.\footnote{Id. at 29, 41–44.} They find no evidence that speaking more generally is associated with more interruptions—as we
will see, this is not the case under our more specific definition of interruptions.\textsuperscript{78}

Our study takes a different focus, specifically exploring interruptions at oral arguments in order to examine the relationship between apparent manifestations of conflict at oral argument and subsequent disagreement in voting, as reflected in the final case outcomes.

We examine agreements and disagreements among justices by looking at voting at the justice-pair level. Certain peer effects between judicial colleagues have been shown to influence decision-making—through deliberation, group polarization, aversion to dissent, or some other channel.\textsuperscript{79} To this end, myriad literature has documented significant effects of judicial peers on judicial decision-making at the U.S. Circuit Courts of Appeals, and a recent paper by Richard Holden, Michael Keane, and Matthew Lilley finds compelling evidence that peer effects are also meaningful among justices on the Supreme Court.\textsuperscript{80}

\textsuperscript{78} Id. at 44; see infra notes 113, 121–123 and accompanying text.


Other studies have used the justice-pair measure of judicial agreement to examine different substantive questions, such as coalition stability in group or individual decision-making.\(^{81}\) One article that uses pairwise agreement to address the question most closely related to our inquiry is by Christine Kexel Chabot.\(^{82}\) That study primarily examines the effect of expert training on individual justice voting, but it also inquires as to the extent to which justices of similar legal education voted together.\(^{83}\)

We believe that analysis at the justice-pair level can be a powerful approach to thinking about how judges vote, particularly for examining the relationship between conflict and agreement among justices. To see why, consider how judges on a panel reach agreement. Agreement could theoretically arise automatically from the innate alignment of preferences between two judges, in which case a tally of votes could determine the outcome of the case. But in the absence of such consensus, persuasion is often required. This is particularly the case for the Supreme Court, as it is made up of nine people who typically work together for decades. It also has a strong tradition of joint opinion writing, in contrast to the British tradition of seriatim opinions.\(^{84}\) Convincing other justices to sign an opinion necessarily requires greater persuasion than when each justice writes alone. That justices actually engage in a process of judicial persuasion and negotiation is suggested by Lee Epstein and Jack Knight’s detailed analysis of memos among the justices, which finds that extensive persuasion and detailed negotiation is typically required in order to forge an opinion of the Court.\(^{85}\)

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\(^{81}\) See Melinda Gann Hall, *Small Group Influences in the United States Supreme Court*, 12 JUST. SYS. J. 359, 362 (1987) (testing coalition stability among groups of justices by using justice-pairs as “the most straightforward method of identifying blocs”); S. Sidney Ulmer, *Toward a Theory of Sub-Group Formation in the United States Supreme Court*, 27 J. POL. 133, 144–45 (1965) (developing a theory of sub-group formation on the Court using justice-pair agreement as an admittedly “arbitrary” method to get at the real topic of interest, group voting).


\(^{83}\) Id.


\(^{85}\) Epstein & Knight, *supra* note 9, at 99–106 (examining written memos from Justices lobbying their colleagues for changes and negotiating conditions for their joining the opinion, and showing the resultant changes in opinions from early drafts until the final opinions).
C. The Meaning of Interruptions Between Justices at Oral Argument

What can we learn about judicial relationships from interruptions between judges at oral arguments? There is a broad social science literature examining patterns in interruption behavior, the causes and effects of interruptions, and various theories of the purpose of interruptions. This literature spans multiple contexts of interruptions, including interruptions in a group, one-on-one interruptions, interruptions in a professional setting, and interruptions in a social setting.

The explanation we seek to isolate is the “conflict” theory: interruptions constitute a type of observable conflict that is systematically associated with disagreement. This concept has been more comprehensively explored outside the judicial literature; other social science studies of interruptions find that interruptions represent expressions of power by the interrupter over the interruptee. Furthermore, that literature finds that many interruptions are attempts by speakers to maximize their power positions in group settings through assertions of dominance. Interruptions have long been recognized as manifestations of both conflict and dominance in the psychology literature, such that interruptions are now often used as measures of dominance.

89 See Adrienne B. Hancock & Benjamin A. Rubin, Influence of Communication Partner’s Gender on Language, 34 J. LANG. SOC. PSYCHOL. 46, 51 (2014) (studying conversations between two individuals concerning either cell phones or reality television).
90 But see BLACK ET AL., supra note 68, at 44 (finding interruptions motivated by revenge).
91 Jacobi and Schweers also find support for this conclusion. See Jacobi & Schweers, supra note 4, at 1478 (noting that interruptions occur between justices with opposing ideologies).
93 See e.g., Amerigo Farina, Patterns of Role Dominance and Conflict in Parents of Schizophrenic Patients, 61 J. ABNORMAL & SOC. PSYCHOL. 31, 31 (1960) (using interruptions to measure conflict in families of schizophrenics); Theodore Jacob, Patterns of Family Conflict and Dominance as a Function of Child Age and Social Class, 10 DEV. PSYCHOL. 1, 3–4 (1974) (using interruptions, as well as talking time and attempted interruptions, to measure dominance and conflict patterns in families); Lennard A. Leighton, Gary E. Stollak & Lucy Rau Ferguson, Patterns of Communication in Normal and Clinic Families, 36 J. CONSULTING & CLINICAL PSYCHOL. 252,
One study by Julia Goldberg attempts to break down the association between interruptions and dominance more precisely. She finds that there are power-driven interruptions—those that attempt to assert dominance—and non-power, neutral interruptions—those that are not power grabs.95

Additionally, scholars find that interruptions may be in part a product of group level power dynamics, as well as individual level power dynamics. In the legislative context, psychologist Lyn Kathlene examines transcripts of state legislative committee hearings and finds that an increasing proportion of women in a legislative body increases the extent that men become more verbally aggressive through both interrupting and otherwise controlling the hearing.96 This study of interruptions is consistent with findings that existing constituents in a given situation, including in the boardroom, feel threatened by the entry of less traditional members.97 Thus, interruptions look a lot like other dominance behaviors. Accordingly, we may gain insight about the nature of judicial relationships and judicial conflict by examining interruptions in Supreme Court oral arguments.

One reading of extant findings on interruptions in the context of the Supreme Court suggests that conflict is at work. For instance, Black et al. find that ideology contributes to the frequency of justice-to-justice interruptions, with justices more likely to interrupt their ideological opponents.98 Jacobi and Schweers find support for this conclusion and further find that these patterns are asymmetric, with conservatives disproportionately interrupting liberals and males disproportionately interrupting females, reflecting the two majority groups of the period studied interrupting the two minority groups.99 Beyond any conflict that may arise stemming from ideological or gender divisions, we seek to examine the relationship between conflict (interruptions) and ultimate agreement more broadly.

The social science literature on interruptions also provides support for our distinction between conversational overlaps and substantial interruptions. Starting in the 1930s, the psychology literature initially treated all

254–55 (1971) (showing an association between both the number of times a person is interrupted and interrupting behavior on one hand and conflict in families on the other).

94 Nicola Ferguson, Simultaneous Speech, Interruptions and Dominance, 16 BRIT. J. SOC. & CLINICAL PSYCHOL. 295, 301–02 (1977); Jacob, supra note 93, at 3–4.

95 Goldberg, supra note 92, at 883.

96 Kathlene, supra note 88, at 569.

97 See, e.g., AARON A. DHIR, CHALLENGING BOARDROOM HOMOGENEITY 53–54 (2015) (describing how male directors tend to resist calls for diversification in corporate boardrooms in order to protect their status).

98 BLACK ET AL., supra note 68, at 41.

99 Jacobi & Schweers, supra note 4, at 1478; see also Feldman & Gill, supra note 68, at 61 (reporting a similar effect regarding gender).
overlaps in conversation—all “simultaneous speech”—as interruptions; however, according to psychologist Richard J. Watts, psychology research improved greatly when scholars realized that some conversational overlaps in speech were quite different from others. Studies found that there are predictable transition points in conversation where overlaps do not have the same significance; for example, topic sharing is a sign of mere conversational overlaps. Conversational overlaps are not necessarily considered impolite, whereas interruptions typically are, as substantial interruptions deprive the speaker of the floor.

In summary, there are good reasons to suggest that interruptions between justices might constitute a type of observable conflict that is systematically associated with disagreement. Although a conflict between judges leading to interruptions and a breakdown in voting of the coalition is one possible explanation of our findings, we must consider other factors that could lead to justices interrupting one another. A possible second ‘exposure’ explanation for justice-to-justice interruptions is that a justice who considers a case special might not only be more prone to disagree with other justices but also be more prone to control the oral argument by speaking more or longer in the case. Justices who speak more in a case might be more exposed to interrupting or getting interrupted simply by virtue of taking up more time in the oral argument, so the relationship between interruptions and disagreement might be driven exclusively through this exposure.

A third ‘dissatisfaction’ theory is that a justice interrupts because he or she is at odds with the rest of the Court about the direction of the oral arguments and the anticipated outcome of the vote, but who that interruption is directed against is not important. On this theory, Justice X interrupting Justice Y in a case is not indicative of Justice X and Y’s unique disagreement in the case but of Justice X’s disagreement with the Court in general; the point of Justice X’s interruption is that it is occurring in the case by Justice X, and Justice Y’s identity is unimportant. This may occur, for example, if the case is very salient to the individual justice, but is not particularly salient to the rest of the Court.

100 See WATTS, supra note 6, at 67–70 (describing the history of psychology research on interpretations, the effect of the over-inclusive approach, and the development of different categories of interruptions).
101 Id. at 70.
102 Id. at 73. The research also shows other meaningful differences within the category of simultaneous speech: in particular, unsuccessful interruptions are significantly less associated with dominance than successful interruptions. See Derek B. Roger & Andrea Schumacher, Effects of Individual Differences on Dyadic Conversational Strategies, 45 J. PERSONALITY & SOC. PSYCHOL. 700, 704–05 (1983) (showing that high and low dominance predispositions predicted the rate of successful interruptions but not of unsuccessful interruptions).
A fourth ‘difficult-case’ theory for interruptions and voting disagreement is that a given justice is interrupting not because of something else related to the justice they interrupt or because they are at odds with the rest of the Court but because of some reflection of the case that is common to all justices. Then, Justice X interrupting Justice Y in a case is not indicative of Justices X and Y’s disagreement in the case, or of Justice X being at odds with the rest of the Court in general, but rather of the case itself. In fact, Justice X’s interruption could have been done by Justice Z and the interruption could have been of a justice other than Y; the point of the interruption is that it is occurring in the case by some justice. The difference between the dissatisfaction and difficult-case explanations is that in the difficult-cases, the interruption is not specific to either of the justices involved in the interruption but is simply a response to the nature of the case itself. There are innumerable possible aspects of cases that can make a case difficult in this way and cannot be individually controlled for, such as unusual fact patterns, disagreement among the justices as to whether certiorari should have been granted, peculiar circuit splits, etc. In the remainder of this Article, we examine the relationship between interruptions and disagreement, and test these four explanations of that relationship.

II. DATA

Our empirical analysis uses data from the words spoken at oral arguments of Supreme Court cases and justices’ subsequent votes. The data for justice votes comes from the Spaeth Supreme Court Database, which contains information on how individual Supreme Court justices voted on cases and case information (e.g., issue of the case) for those decided between 1960 and 2015. The unit of analysis in the Supreme Court Database is the justice-vote. We create a dataset where the unit of analysis is the case-justice-pair and define the main outcome of interest as whether the justice-pair voted together in the case (taking a value of one if the justices voted in the same direction and a value of zero if the justices did not vote in the same direction). For most cases in which nine justices vote, there are thirty-six justice-pair observations. For cases with eight and seven justices, there are twenty-eight and twenty-one justice-pairs, respectively.

We match these case-justice-pair outcomes to interruptions between the justice-pair in the corresponding case from a dataset we built based on information from the Oyez project. Oyez is a multimedia archive of Supreme Court cases that contains all words spoken during Supreme Court oral arguments.\footnote{OYEZ, https://www.oyez.org/ [http://perma.cc/H8R3-V45M].} It has a webpage for each case and archives the full transcript of the oral argument for every argument since 1960, among other resources.\footnote{See generally, e.g., Oral Argument, Ala. Legislative Black Caucus v. Alabama, 135 S. Ct. 1257 (2015) (No. 13-895), https://www.oyez.org/cases/2014/13-895.} The transcript webpage is presented in the order in which words are spoken. Each time a new speaker begins to speak, the webpage identifies the speaker and then follows with the words spoken until the next speaker begins. The format is similar to the official oral argument transcripts for cases from 2004 to 2016 that the Supreme Court makes publicly available.\footnote{Compare Oral Argument, Ala. Legislative Black Caucus, supra note 105, with Oral Argument, Perry v. Merit Sys. Prot. Bd., 137 S. Ct. 1975 (2017) (No. 16-399), https://www.supremecourt.gov/oral_arguments/argument_transcript/2016 [http://perma.cc/GZ3H-MNJV] (both formats organizing the transcript in the same fashion).} The official transcripts have been used in prior research.\footnote{See, e.g., BLACK ET AL., supra note 68, at 14 (relying on official transcripts); WRIGHTSMAN, supra note 67, at 80–83, 86 (same); Feldman and Gill, supra note 68, at 37–40 (same); Jacobi & Schweers, supra note 4, at 1405 (same).} But whereas the official transcripts are only available from 2004 onwards, the Oyez project’s transcripts begin in 1960.\footnote{One limitation of the Oyez site is that the written record of the words spoken at oral arguments are based on the Court’s audio recordings. Even though Oyez has made significant progress in identifying each speaker, there are some remaining gaps. Some elements are missing in the data. In particular, in some speech episodes, speakers are not identified. This is apparent because speech episodes are defined but the place where the name of the speaker is usually provided is simply empty. This is in the underlying HTML files that we used to generate the data, not simply in our version of the data. The large majority of missing elements was fixed by Oyez between January 2017 and July 2017. The first round of our web scraping ran from January 3, 2017 to January 8, 2017. To be conservative, we reran the analyses after excluding all cases in which (1) there was a speech episode of a justice that was interrupted and no speaker was identified, and (2) a justice interrupted a speech episode but no speaker of the interrupted speech episode was identified. The results and general patterns do not materially change if we keep the cases with interruptions but simply ignore the missing speakers.} We scraped the Oyez website for the text of words spoken in each Supreme Court case since 1960—that is, we ran an automated program that obtained all of the oral argument transcripts on the website.\footnote{As pointed out in Bryce J. Dietrich, Ryan D. Enos & Maya Sen, Supporting Information (to go online) for: Emotional Arousal Predicts Voting on the Supreme Court 2 n.2 (forthcoming 2018), https://scholar.harvard.edu/files/msen/files/scotus-audio-si.pdf [https://perma.cc/UY6P-Z9V2]. Oyez dramatically changed its website sometime between September 6, 2015, and October 12, 2015. They report that the old version of the website contained much less aggressive web scraping barriers. Dietrich et al. scraped an older version of the website on July 1, 2015. Id.} The complete
From these files, we created a dataset and formatted the data such that each observation is a unique “speech episode” of a speaker at oral argument. A speech episode consists of all words spoken between the time a justice or an advocate begins to speak and the time the next speaker begins to speak. For each speech episode, the Oyez interface offers “transcript-synchronized and searchable audio.”

The synchronized interface operates by highlighting the text of the words of a speech episode that is being played through the audio output. Figure 1 depicts an example of the graphical user interface of the Oyez transcript-synchronized audio recording system.

Figure 1: Graphical User Interface (GUI) of Oyez Transcript-Synchronized Audio Recordings

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110 We also scraped data in January 2017, but it was less complete than the July 2017 data, as Oyez had not yet fixed the missing data problem, and it did not contain the second half of the 2017 Supreme Court Term. See OYEZ, https://www.oyez.org/about [http://perma.cc/F3AN-8DG7].

111 Id.

112 In the event that this version of the Article does not display tabular or graphical material, please refer to an alternative version, such as is available on SSRN or Boston College Law Review; links are currently available at http://ssrn.com/abstract=3039105 and https://lawdigitalcommons.bc.edu/bclr/vol59/iss7/3/. 

episode for E. Joshua Rosenkranz in Figure 1 would begin with the words “Your Honor” and end with the words “the violation of --of--.”

For the interface to highlight the relevant words that are being played through the audio, the webpage feeds the timing of the words spoken in the audio file into JavaScript. The underlying file that creates the webpage that we scraped contains the time stamps of each highlighted text (to the 0.001 of a second) in which the words spoken begin and end. We utilize these time stamps to create the time stamp of each speech episode. As discussed below, these time stamps are critical to our empirical analysis because they will be used to distinguish between interruptions that are meaningful and mere conversational overlaps.

The underlying files from Oyez identify an interruption with the use of either two dashes (--) at the end of a speech episode of the speaker being interrupted or two dashes at the beginning of a speech episode of the interrupting speaker, or both. This coding is also used in the official transcripts of Supreme Court oral arguments. Figure 1 also provides an example of an interruption. There, the two dashes at the end of Rosenkranz’s speech episode were immediately followed by a speech episode of Justice Kagan; this indicates that Justice Kagan interrupted Rosenkranz, at least as coded in the transcripts.

The two dash coding of interruptions is a useful starting point to identifying interruptions. We now discuss a refinement of the definition of an interruption to address the situation when two people start talking at about the same time and one stops to yield to the other. This type of speech disruption is not a meaningful breach in the course of conversation that one should identify as an “interruption.” We expect the two dash coding of interruptions to fail to distinguish between meaningful interruptions, where the interrupter continues to speak after the interruption, and non-meaningful “conversational overlaps,” when two people begin speaking at around the same time. Using the time stamp of speech episodes, we define meaningful interruptions in two ways. First, we use the time stamps of the interruptions to refine the definition of an interruption where the interrupter continues to speak for more than one second. As an example, consider Justice Kagan’s interruption in Figure 1. Justice Kagan interrupted Rosenkranz and then spoke for more than one second. We believe this is a meaningful interruption because Justice Kagan appears to have completed her thought. Note that we experimented with different thresholds for the amount of time (e.g., 0.5 second, 1.5 seconds) and found similar results.

As a second refinement, we use the timing of the previous speech episode. In Figure 1, Rosenkranz had been speaking for more than one second before Justice Kagan interrupted. We believe that the Rosenkranz’s speech episode in Figure 1 is clearly substantial, and so Justice Kagan’s interrup-
tion was a substantive interruption. For our definition of a substantive interruption, we require that the person who was interrupted to have been speaking for at least one second before the time stamp of the beginning of the next person’s speech episode. We define overlaps in speech that last for less than these times as conversational overlaps and separate them from meaningful interruptions. Once again, we experimented with different thresholds for the amount of time and find similar results. In Part V, we investigate differences between substantial interruptions and conversational overlaps.

Conversational overlaps are common; a typical example arises in *Birchfield v. North Dakota*, as shown in Figure 2. In this example, Justices Sotomayor and Breyer began speaking almost simultaneously; although Justice Sotomayor spoke first, Justice Breyer had probably begun speaking before realizing that Justice Sotomayor had already spoken two words. Justice Breyer’s words appear not to be a substantive interruption, but rather a simple conversational overlap.

Figure 2: Example of Non-Meaningful Interruptions

<table>
<thead>
<tr>
<th>Sonia Sotomayor</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you --</td>
</tr>
<tr>
<td>Stephen G. Breyer</td>
</tr>
<tr>
<td>if --</td>
</tr>
<tr>
<td>Sonia Sotomayor</td>
</tr>
<tr>
<td>If you obstruct justice by refusing to comply with the warrant, you can punish someone for the obstructing justice, and you can get the same outcome as putting them in jail for being drunk and driving.</td>
</tr>
</tbody>
</table>

From these Oyez data on speech episodes, we identify interruptions according to the above definitions, along with the identities of the interrupt-

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113 We also experimented with defining a meaningful interruption using the number of words spoken in a speech episode (requiring the interrupted speech to be at least two words and requiring the interruption speech to be at least two words). We also experimented with the number of words used for the refinement (e.g., three words, four words). The conversational overlaps we found using the word count largely overlapped with the conversational overlaps we found using the time stamps.

114 See infra note 134 and accompanying text.

er and interruptee. For each case, we then calculate the number of interruptions between each justice-pair.

III. DESCRIPTIVE STATISTICS: INTERRUPTIONS, EXPOSURE, AND GENERAL TENDENCIES

This Part presents descriptive statistics of interruptions and justice-pair voting patterns. In Section III.A, we assess the extent that interruptions are related to exposure to being interrupted. In Section III.B, we present descriptive evidence on voting and interruptions between judicial pairs. In Section III.C, we assess differences in interruptions and voting by justices and by justice-pairs.

A. Interruptions and Exposure

A justice who speaks frequently or lengthily might have a higher likelihood of interrupting or being interrupted, even without increased levels of conflict. Additionally, speaking more in a case may signal a justice’s greater tendency to disagree with the other justices in the case more generally. If interruptions are related to justices’ airtime, it would be possible to observe a relationship between interruptions and disagreement driven exclusively by variation in speaking time unrelated to conflict. As such, it will be important to control for the exposure to being interrupted.

We measure exposure in three different ways: (1) the time spent speaking, which is calculated from the time stamps of each speech episode, (2) the number of sentence breaks, and (3) the number of words spoken, which is calculated from the transcripts. Here, we assess the relationship between these exposure measures and interruptions. Figure 3 plots a standard binned scatter plot of the relationship between each of the exposure measures and interruptions. To create the figure, we create twenty equal sized groups of case-justice-pairs for each of the exposure measures, and calculate the average number of interruptions for each bin. Figure 3 shows a strong relationship between the exposure measures and interruptions. Given that another measure of justice interruptions—any time two justices speak back-to-back without an interjection or answer from an advocate—was found to be unrelated to exposure, Figure 3 provides some evidence that our definition of

116 See infra notes 118–119 and accompanying text.
117 See infra notes 120 and accompanying text.
118 A binned scatter plot is a way of representing data in a more summary form than a complete scatter plot, which can be difficult to interpret when there is a high number of observations. A binned scatter plot groups the x-axis into equal sized bins, making it easier to observe overall patterns.
interruption is different than the previously used definition in at least one way: the more a justice talks, the more likely he or she will interrupt or be interrupt-ed.119 Figure 3 also shows that each of the exposure measures appears to be equally related to interruptions. Below, we use the words spoken as our measure of exposure, but find consistent results using the other measures as well.

Figure 3: Relationship Between Exposure Measures and Interruptions

B. Voting and Interruptions by Justice-Pair

The main question this Article seeks to answer is whether interruptions between justices in a case are related to voting in that case. A different and more general question is whether justices who disagree more generally are generally more likely to interrupt each other. To assess this more general relationship, we calculate the percent of cases with interruptions and the percent of cases in voting agreement for each justice-pair. Panels A and B of Figure 4 plot the distribution for interruptions and voting, respectively.

In terms of interruptions, Panel 4A shows that the average justice-pair interrupts each other in one percent of cases but the distribution is skewed to the right. Whereas twenty-six percent of justice-pairs have never interrupted each other and another ten percent of justice-pairs interrupt each oth-

119 BLACK ET AL., supra note 68, at 20–21.
er less than one time per five hundred cases, fifteen percent of justice-pairs interrupt each other in at least three percent of cases. Now referring to Panel 4B, the average justice-pair votes in agreement in sixty percent of cases.

To assess the relationship between general voting agreement and interruptions at the justice-pair level, Figure 5 reports a binned scatterplot and a line of best fit, where the proportion of cases with interruptions between the justice-pair is on the x-axis and the proportion of cases with voting agreement between the justice-pair is on the y-axis. Figure 5 provides no evidence of an overall relationship between justices who vote together and interruptions between the justices in all cases. This suggests that any relationship between justice-pair agreement and interruptions is not driven by a general tendency to disagree or a general tendency to interrupt.
Figure 4: Distribution of Interruptions and Voting Agreement at the Justice-Pair Level

A. Interruptions

B. Voting Agreement
C. Interruptions and Voting by Justice and Justice-Pairs

The relationship between interruptions and voting agreement in a case could be idiosyncratic to the justices. For example, Justice Scalia might interrupt someone often, but that might be less reflective of whether he is going to vote against that justice than the same behavior by another justice because Justice Scalia has been thought by some to be a disruptive justice.\(^{120}\) To assess the relationship between interruptions and voting at the justice level, we first calculate the difference in voting agreement between cases with and without an interruption. For example, Justice Scalia and Jus-

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\(^{120}\) Justice Scalia is often described as being especially disruptive, and even having been the catalyst for the phenomenon of common interruptions on the Supreme Court. See, e.g., Nina Totenberg, *Justice Antonin Scalia, Known for Biting Dissents, Dies At 79*, NPR (Feb. 13, 2016), http://www.npr.org/2016/02/13/140647230/justice-antonin-scalia-known-for-biting-dissents-dies-at-79 [http://perma.cc/VN4V-97ZK] (“When [Justice Scalia] came to the Court, the justices asked few questions during oral argument. [He] jumped in, pummeling lawyers relentlessly with questions. Soon other justices took a more active approach to questioning, so that most lawyers could get less than a sentence out of their mouths before being interrupted.”). *But see* Jacobi & Schweers, *supra* note 4, at 1430 (showing that Justice Scalia is not the most disruptive justice on the Supreme Court, but rather comes in second behind Justice Kennedy and just ahead of Chief Justice Rehnquist).
Justice Stevens voted together in thirty-four percent of cases where one interrupted the other and forty-one percent of cases where one did not interrupt the other. The difference in voting agreement between cases with and without an interruption for these justices is seven percentage points.

In Figure 6, we plot the average difference in voting agreement in cases with and without an interruption for each justice on a line. Only four Justices, Justices Blackmun, Whitaker, Warren, and Breyer, lie to the left of the origin, meaning that they disagree more in cases without interruptions between themselves and another justice than they do in cases where one of the justices interrupted the other justice at least once. All other Justices to have served on the Court since 1960 are more likely to disagree in cases where at least one interruption occurred between the Justices. This provides preliminary evidence of a negative relationship between interruptions and agreement.

Figure 6: Differences in Disagreement for Cases with and Without Interruptions
IV. RESULTS: THE RELATIONSHIP BETWEEN INTERRUPTIONS AND VOTING

A. Testing the Four Theories of Interruptions

To estimate the relationship between justice-pair interruptions and disagreement in a case, we regress whether a justice-pair voted together in a case on the number of interruptions between them in the case. Equation (1) sets out our main econometric specification:

\[ v_{ict} = \alpha + \beta I_{ict} + \gamma E_{ict} + \psi A_{jct} + \theta D_{ct} + \sigma_t + \lambda_{ct} + \phi_i + \varepsilon_{ict} \] (1)

where \( v_{ict} \) is an indicator for whether justice-pair \( i \) voted together on case \( c \) in Term \( t \), where justice-pair \( i \) is made up of justice \( j \) and \( j' \). As described in more detail below, \( E_{ict} \) is the exposure of justices to being interrupted measured by the proportion of justice words spoken by the justice-pair, \( A_{jct} \) is the total number of the justice \( j \) interruptions in the case, \( D_{ct} \) is the total number of justice interruptions in the case, \( \sigma_t \) are term fixed effects, \( \lambda_{ct} \) are issue area fixed effects, and \( \phi_i \) are justice-pair fixed effects.

In the most sophisticated models that we do not report, we enrich the model by replacing justice-pair fixed effects with justice-pair-Term fixed effects, thus comparing the likelihood of a justice-pair to vote together in cases in which they do not interrupt one another in a given Term to likelihood of the justice-pair to vote together in cases in which they do interrupt one another in the same Term. Justice-pair fixed effects are important to our approach because they net out differences in the propensity for two judges to vote with each other. The main coefficient of interest, \( \beta \), is on the variable \( I \), which indicates the number of interruptions between the justice-pair in the case. We estimate Equation (1) using a linear probability model. Following the clustering approach with paired data in the international trade literature and the networks literature, we cluster at the justice-pair level.\(^{121}\) Table 1 provides the results. In Column 1, we only control for differences in disagreement between terms and issue areas. Relative to the sixty percent baseline agreement in cases, the point estimate of -0.045 in Column 1 suggests that justices who interrupt each other in cases are eight percent less likely to agree in those cases. Column 1 can be thought of as the average relationship between interruptions and voting across all justice-pairs, and not how interruptions change the relative likelihood that a justice-pair votes together. Column 2 adds controls for differences in overall agreement between each justice-pair through justice-pair fixed effects. Justice-pair fixed effects control for the average difference in disagreement between each jus-

\(^{121}\) See Battaglini & Patacchini, supra note 8, at 20; Chilton & Posner, supra note 8, at 22.
tice pair, implying that Column 2 estimates the average change in the likelihood that a justice-pair votes in agreement for cases with interruptions between the justice-pair. The resulting point estimate is slightly reduced to -0.038, and the precision of the estimate is increased (the standard errors decreased from 0.014 in Column 1 to 0.008 in Column 2). The overall direction, magnitude, and significance of the effect remains: interruptions are associated with disagreement and the relationship is substantially and statistically significant.

Table 1: Relationship Between Interruptions and Voting

<table>
<thead>
<tr>
<th></th>
<th>Voted in Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td>Justice-Pair Interruptions</td>
<td>-0.045***</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
</tr>
<tr>
<td>Proportion of Words Spoken by Justice-Pair</td>
<td>-0.038***</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
</tr>
<tr>
<td>Total Interruptions</td>
<td>0.000</td>
</tr>
<tr>
<td>Justice-Pair in Case</td>
<td>(0.005)</td>
</tr>
<tr>
<td>Total Justice</td>
<td>-0.008***</td>
</tr>
<tr>
<td>Interruptions in Case</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Proportion of Words Spoken in Case by Justices</td>
<td>-0.007***</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
</tr>
<tr>
<td>Justice-Pair Interruptions × Total Justice</td>
<td>0.005**</td>
</tr>
<tr>
<td>Interruptions in Case</td>
<td>(0.002)</td>
</tr>
</tbody>
</table>

Covariates

<table>
<thead>
<tr>
<th>Term FE</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issue Area FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Justice-Pair FE</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Observations 196,626 196,626 196,626 196,626 196,626
Voted in Agreement 0.600 0.600 0.600 0.600 0.600

Note: Standard errors in parentheses clustered at the justice-pair level. * p<0.1, ** p<0.05, *** p<0.01. Proportion of words spoken is multiplied by 10.

Above, we discussed several explanations for why justices who interrupt each other in a case might be less likely to vote together. Our theory is that interruptions are a type of observable conflict, and conflict is systematically associated with disagreement. To isolate the conflict channel from other explanations, we now examine three other possibilities.

Column 3 explores the exposure theory—that disagreement is higher because justices involved with an interruption speak more in the case. We have already seen in Figure 3 that interruptions are more likely to occur between justices in cases where they speak more; as such, the effect of inter-
ruptions on disagreement could simply reflect the relationship between time spent speaking and disagreement. We account for this possibility by controlling for the relative speaking time of the justices in the case. In Column 3, we find a strong relationship between justice-pair speaking time and disagreement: a ten percentage point increase in the time a pair of justices spend speaking decreases the likelihood of their agreement by 5.3 percentage points. The point estimate on interruptions between justice-pairs is decreased to -0.026, but remains statistically significant. The results suggest that although almost half of the effect of interruptions on disagreement is explained by time spent speaking, the effect of interruptions on disagreement remains substantively meaningful and statistically significant.

Column 4 examines the dissatisfaction theory of interruptions—that an interrupting justice is interrupting because he or she is at odds with the rest of the Court. To do so, we add a variable for the total number of interruptions of the justice-pair in the case, labeled “Total Interruptions of Justice-Pair in Case.” We find no evidence that interruptions of a justice in the case are reflective of the interrupting justices’ disagreement with other justices in the case: the coefficients are consistently zero or close to zero and do not approach statistical significance.

Column 4 also explores the difficult-case theory of interruptions—that interruptions are simply a reflection of something idiosyncratic about the case generally that is common to all justices. To do so, we add a variable for the number of total interruptions in the case by any justice in the case, labeled “Total Justice Interruptions in Case.” Similar to the exposure story about specific justices interrupting each other, more justice interruptions in a case generally could simply reflect that the justices are collectively speaking more in a case relative to the time the advocates spend speaking in the case. As such, we also control for the proportion of words spoken in the case by the justices (i.e., words spoken by justices divided by words spoken by both justices and advocates), labeled “Proportion of Words Spoken in Case by Justices.”

We find strong evidence that interruptions in a case by any justice is significantly related to disagreement in the case. The point estimate of -0.008 on total justice interruptions in a case indicates that each justice interruption is related to a decrease in overall agreement between the justice-pairs of the pair-wise Court overall by 1.3 percent (-0.008/0.600). Note that this is in addition to the effect of interruptions between the justice-pair, the effect of a specific justice interrupting in a case generally, and the issue in the case. Also note that the results are not highly sensitive to the inclusion of the proportion of the words spoken in the case by the justices, the issue area fixed effects, or other controls. We also find evidence that the relative balance of justices and advocates speaking in the case is related to disagre-
ment in the case. The point estimate of -0.007 on proportion of words spoken in a case by justices suggests that a ten percentage point increase in the proportion of the words spoken by the justices collectively in the case decreases overall agreement between the justice-pairs by 1.2 percent (-0.007/0.600).

The effect of interruptions between a justice-pair on disagreement of the pair in Column 4 is decreased by one-third compared to Column 3 and is no longer statistically significant. This is perhaps not surprising because Column 4 constitutes a very hard test: the variation that identifies the effect of total interruptions of the justice-pair in the case and the effect of total justice interruptions in the case also identifies the effect of justice-pair interruptions.

Perhaps more importantly, the specification assumes that the effect of interruptions between a justice-pair is independent from the effect of interruptions in the case overall. As discussed above, one might expect the effect of an interruption in a case in which other justices are also interrupting to be different than an interruption in a case in which it is the only interruption. We relax this assumption in Column 5 by including an interaction term between justice-pair interruptions and total justice interruptions in the case. The point estimates in Column 5 are also displayed graphically in Figure 7 (the vertical bars on each effect show the ninety percent confidence intervals—i.e., we can say with ninety percent confidence that the true effect lies within the estimated range of values).

The results in Column 5 and displayed in Figure 7 help explain why the estimates in Column 4 of Table 1 are statistically insignificant. The positive interaction term suggests that interruptions between justices in a case where there are more interruptions between other justices have a smaller effect on disagreement. The main effect on interruptions in Column 5 is consistent with that in Column 3 and is again statistically significant. This suggests that interruptions between justices are predictive of their disagreement in cases, but less so in cases with other justice interruptions than in cases without other justice interruptions. In both Columns 3 and 5, the main result suggests that the probability that a justice-pair votes together decreases by 2.6 percentage points for each interruption. This implies that, from a baseline of voting together in sixty percent of cases, an interruption decreases the probability of voting together by (0.026/0.60=) 4.3%. Overall, these results provide evidence that the conflict inherent in interruptions even after controlling for the exposure to being interrupted and a proxy for a difficult case, which are both independently associated with less voting agreement.
Overall, these results provide strong evidence that a justice-pair is less likely to vote together because of the conflict inherent in interruptions, but that the conflict inherent in interruptions is lower in cases where there are more interruptions between other justices. We also unearthed evidence for the exposure and difficult-case theories of interruptions, but no evidence for the dissatisfaction theory.

Figure 8 provides another graphical illustration of the regression results. The figure plots the average agreement between justices in cases by the number of interruptions in the cases. The first short-dashed line with circle markers provides the raw average agreement rate. In cases with no interruptions between two justices, the justices vote together sixty percent of the time. This rate of agreement decreases by five percentage points in cases where there is one interruption between the justice-pair, by nine percentage points in cases where there are two interruptions between the justice-pair, and by thirteen percentage points in cases where there are three or more interruptions between the justice-pair. The figure also allows us to assess whether the relationship between interruptions and disagreement is linear (as assumed in the regressions in Table 1). It provides evidence that the relationship is roughly linear.
Figure 8: Graphical Relationship between Interruptions and Agreement

The numbers in the first line are the average agreement rates across all justice-pairs and cases, and not how interruptions change the relative likelihood that a justice-pair votes together. The second line—the long dash line with triangle markers—shows the average change in the likelihood that a justice-pair votes in agreement for cases with interruptions between the justice-pair. After controlling for differences in agreement between justice-pairs, the relationship between interruptions and disagreement is dampened compared to the overall average, but the relationship is still very strong. Compared to cases where a justice-pair has no interruptions, the justices are on average four percentage points less likely to vote with each other if there is one interruption, six percentage points if there are two interruptions, and eight percentage points if there are three or more interruptions.

These average changes in the second line are for the overall relationship between interruptions and agreement. Employing a similar strategy to isolate the conflict theory from Table 1 from other causes of interruptions, the third line captures the agreement rate over justice-pair interruptions that

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122 To construct the figure, we regress agreement on justice-pair fixed effects, obtain residuals, and calculate the average residual for justice-pair-cases with one, two, and three or more interruptions. We then add the average agreement with no interruptions back to these numbers so that they can be compared to the averages. This is a common way to visualize a relationship between two variables after controlling for other variables.
we attribute to the conflict explanation—the solid line with square markers. Compared to cases where a justice-pair had no interruptions, and after controlling for other theories to explain interruptions, the conflict inherent in interruptions suggests that a justice-pair is on average one percentage point less likely to vote with each other if there is one interruption, two percentage points if there are two interruptions, and three percentage points if there are three or more interruptions.\footnote{This series is estimated in the same fashion as the second plotted line but with the addition of other control variables from Column 3 of Table 1.}

**B. Heterogeneous Effects**

This section investigates whether the relationship between interruptions and voting differs across different justices and different types of cases. To study these heterogeneous effects, we re-estimate the regression in Column 3 of Table 1 above, now including interaction terms between interruptions and various justice and case attributes.

We first investigate whether the relationship between interruptions and voting differs across the justices. There are reasons to suspect that various characteristics of the justices themselves could make the relationship between interruptions and agreement vary. First, the nature of the conflict hypothesis is one of relationships between the justices; this could reasonably be expected to change over time, as the justices get to know one another, learn each other’s idiosyncrasies, develop friendships or animosities, and come to anticipate each other’s likely stances on issues, and thus their expected agreement or disagreement in eventual outcomes. This relationship aspect need not be confined to the two justices having served together on Supreme Court: relationships started when two justices served together on prior courts could have similar effects. Additionally, the length of each justice’s experience, and the difference between the pair, could be significant because a small but significant seniority norm has been shown to affect interruptions on the Court.\footnote{Jacobi & Schweers, supra note 4, at 1483.}

Second, we might expect differences with the median justices in terms of ideology because he or she is often the swing justice in a case. As discussed, many studies in the empirical judicial behavior literature find a strong effect of ideology on judicial voting, as well as an effect of the ideology of other judges on a panel.\footnote{See supra notes 46–85 and accompanying text.} In recent years, this understanding has led to even public commentators recognizing the special position of the median
justice on the Court.\footnote{The power of the median voter has been recognized for decades—\textsc{Duncan Black, The Theory of Committees and Elections}, at xxxii (1958); Duncan Black, \textit{On the Rationale of Group Decision Making}, 56 \textit{J. Pol. Econ.} 23, 28 (1948)—but only entered the popular consciousness in relation to the Supreme Court in recent years, a natural consequence of the Court press coming to appreciate the import of the large empirical judicial literature showing the effect of ideology on the Court. See, e.g., Lee Epstein & Tonja Jacobi, \textit{Super Medians}, 61 \textit{Stan. L. Rev.} 37, 40 (2008) (studying the power of the median voter in the Supreme Court); Aaron Blake, \textit{Republicans Just Quietly Got Some Very Good Supreme Court News}, \textit{Wash. Post} (July 3, 2017), https://www.washingtonpost.com/news/the-fix/wp/2017/07/03/republicans-just-quietly-got-some-very-good-supreme-court-news/?utm_term=.c2d939674993 [http://perma.cc/V44T-TE3R] (“Here’s how the Supreme Court looked between 1935 and 2015 . . . . Keep an eye on that yellow line for the median justice, and imagine it being John G. Roberts Jr. instead of Kennedy.”); Alicia Parlapiano & Margot Sanger Katz, \textit{A Supreme Court with Merrick Garland Would Be the Most Liberal in Decades}, \textit{N. Y. Times} (Mar. 16, 2016), https://www.nytimes.com/interactive/2016/02/18/upshot/potential-for-the-most-liberal-supreme-court-in-decades.html [http://perma.cc/3SJ8-7MZZ] (tracking the ideology of the Court over time, specifying the position of the Court median, and showing how if Merrick Garland had been appointed to the Court, Justice Breyer would have become the new median, making the overall Court considerably more liberal).} Not only does this lead to different expectations for the median, but some Court medians have been more powerful than others, depending on the ideological clustering or dispersion of other justices around the center of the Court.\footnote{Epstein & Jacobi, \textit{supra} note 126, at 47.} As such, we might expect not only the median to behave differently, but this could potentially be true for other justices close to the median.

Third, like seniority, gender has also been shown to affect interruptions at Supreme Court oral arguments: Jacobi and Schweers showed that the female justices are three times as likely to be interrupted as the male justices.\footnote{Jacobi & Schweers, \textit{supra} note 4, at 1465–66. This disproportionate effect held true for both interruptions by other justices and interruptions by male advocates. \textit{Id.} In contrast, female advocates interrupted at a rate of approximately zero, regardless of the gender of the justice. \textit{Id.} at 1466.} So we might expect the ideology and the gender of the justices to be a significant factor.

To test the consistency of the negative relationship between interruptions and agreement between the justices in light of these possibilities, we estimate whether the relationship varies across seven judge attributes: same political party (Column 1); the length of time served together (Column 2); former colleagues, as measured by whether the justices served together on a circuit court of appeals at the same time (Column 3); whether one of the justices is the swing justice in the Term (Column 4); whether one of the justices is one of the middle three swing justices in the Term (Column 5); difference in experience (Column 6); and same gender (Column 7).
For political party of the justice, we use the common measure of justice ideology of the party of the appointing president.\textsuperscript{129} For the swing justice in the Term and the three middlemost justices, we use Martin-Quinn scores in the relevant Term, a commonly used measure of judicial ideology.\textsuperscript{130} For difference in experience, we use the absolute value of the difference in years’ experience between each justice-pair. Table 2 presents the results. Note that the main effect of time-invariant justice attributes is absorbed by the justice-pair effects.

We find no evidence that the same political party, the swing justice, the three middlemost justices, difference in experience, and different gender significantly alter the nature of the relationship between interruptions and disagreement—the coefficient on interruptions remains highly statistically significant and of a consistent direction and magnitude. Swing justice is the only variable that is significant other than interruptions; however, the interaction between the swing justice and interruptions is not significant, so while the swing justice is significantly related to disagreement, being the swing justice does not change the relationship between interrupting and disagreement.

There is some evidence of a differential effect over the course of serving on the bench together. The point estimate of 0.021 for the interaction between length of service together and interruptions in Column 2 does not quite reach statistical significance at conventional levels, but it is very close. Moreover, the main effect of interruptions almost doubles when we allow the effect to change over the course of the time justices serve together. Combined, this suggests that interruptions between justices who serve together longer are less indicative of a conflict between them than are interruptions that occur earlier in the time they serve together.

\textsuperscript{129} This is a dichotomous variable, defined according to whether the president who nominated the justice was Republican or Democrat. There are well known examples of justices who were great disappointments to presidents—Republican President Eisenhower is reported to have called the liberal Chief Justice Earl Warren one of his two greatest presidential mistakes. See Ed Lazarus, \textit{Four Enduring Myths About Supreme Court Nominees}, TIME (May 26, 2009), http://content.time.com/time/specials/packages/article/0,28804,1900851_1900850_1900845,00.html [http://perma.cc/WC3E-A4FD] (reporting this claim but explaining it as a product of a knowing political deal, rather than as a surprise to Eisenhower). Nonetheless, the party of the appointing president has been shown to be a strong predictor of judicial behavior, albeit with less nuance than continuous scores. See Matthew Sag, Tonja Jacobi & Maxim Sytch, \textit{Ideology and Exceptionalism in Intellectual Property: An Empirical Study}, 97 CAL. L. REV. 801, 838 (2009) (showing that the party of the appointing president proxy was consistent with the commonly used Martin-Quinn continuous scores of judicial ideology, although the latter did absorb the full explanatory power of the former when both measures were used).

\textsuperscript{130} See Martin & Quinn, \textit{Martin-Quinn Scores, supra} note 1.
Table 2: Differential Relationships Between Interruptions and Voting by Justice Attributes

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interruptions</td>
<td>-0.025**</td>
<td>-0.072**</td>
<td>-0.027***</td>
<td>-0.029***</td>
<td>-0.031**</td>
<td>-0.024*</td>
<td>-0.023**</td>
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<tr>
<td></td>
<td>(0.010)</td>
<td>(0.033)</td>
<td>(0.008)</td>
<td>(0.009)</td>
<td>(0.014)</td>
<td>(0.012)</td>
<td>(0.009)</td>
</tr>
<tr>
<td>Interruptions × Same Political Party</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln(Years Served Together)</td>
<td></td>
<td>-0.003</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.011)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interruptions × ln(Years Served Together)</td>
<td></td>
<td>0.021</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>(0.014)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interruptions × Served Together on Circuit</td>
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<td>0.004</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.005)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Swing Justice</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interruptions × Swing Justice</td>
<td>0.016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.021)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle Three Justices</td>
<td>-0.009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interruptions × Middle Three Justices</td>
<td>0.007</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.018)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interruptions × Difference in Experience</td>
<td>-0.004</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interruptions × Different Gender</td>
<td>-0.014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.019)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Standard errors in parentheses clustered at the justice-pair level. * p<0.1, ** p<0.05, *** p<0.01.

C. Salient and Important Cases

We next explore whether the relationship between interruptions and voting differs by the salience or the importance of the case. Interruptions might mean something different when the legal or political stakes are very high in a case than they would for more mundane fact patterns or less controversial topics where the Court might expect less public scrutiny. To explore this, we use a proxy for salience developed in Epstein and Segal of whether a case is mentioned on the front page of the *New York Times*.\(^{131}\) This captures the salience of the case in terms of the level of public interest. It is possible, however, that a case might be salient to justices and the legal community but not to the public. To capture this second notion of salience,

we also use a measure of whether a case is published in the Congressional Quarterly.132 This measure “is based on experts’ retroactive assessment of whether a case was a landmark decision,” and captures the legal significance of the case. Scholars have used both measures as proxies for important Supreme Court cases.133

Before turning to the results, note that justices interrupt each other in 1.9% of cases that are not covered in the New York Times but interrupt in 2.5% of cases covered in the New York Times, and that justices interrupt each other in 1.9% of cases that are not in the list of Congressional Quarterly’s legally important cases but interrupt in 3.2% of cases that are in the list of legally important cases. These summary statistics suggest that justices interrupt more in cases that are salient, either politically or legally, or both. Table 3 reports the results for publicly salient cases (Column 1) and legally important cases (Column 2).

We find that average justice-pair agreement is 15.9 and 22.5 percentage points lower in politically salient and legally important cases, but find no strong evidence that the relationship between interruptions and voting differs for politically salient and legally important cases. Note, however, that the size of the point estimate on interruptions in Column (1) decreases to -0.016 and that we lose statistical significance at conventional levels. This appears to be driven by the interaction term between interruptions and a case’s appearance in the New York Times, which is of the same size as the main effect. Taking the point estimates at face value, this would suggest justice-pairs are 3.2 percentage points less like to agree when one interrupts the other in a case cited in the New York Times and 1.6 percentage points less likely to agree when one interrupts the other in a case not cited by the New York Times.


133 See supra note 132 and accompanying text.
Table 3: Differential Relationships between Interruptions and Voting by Case Salience and Legal Importance

<table>
<thead>
<tr>
<th></th>
<th>Voted in Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td>Interruptions</td>
<td>-0.016</td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
</tr>
<tr>
<td>New York Times</td>
<td>-0.159***</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
</tr>
<tr>
<td>Interruptions × New York Times</td>
<td>-0.016</td>
</tr>
<tr>
<td></td>
<td>(0.027)</td>
</tr>
<tr>
<td>Congressional Quarterly</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Interruptions × Congressional Quarterly</td>
<td>0.016</td>
</tr>
<tr>
<td></td>
<td>(0.029)</td>
</tr>
</tbody>
</table>

Note: Standard errors in parentheses clustered at the justice-pair level. * p<0.1, ** p<0.05, *** p<0.01.

V. PLACEBO TESTS

A. Substantial Interruptions and Conversational Overlaps

Above, we described a refinement of the definition of an interruption. The purpose was to distinguish between a substantial interruption, which we expect to express conflict and be associated with disagreement in voting, and a mere overlap in two justices speaking (“conversational overlaps”), which we do not expect to express conflict and be associated with disagreement in voting. The time stamps for each speech episode from the Oyez data help us to make this distinction empirically. Although our main interest is in substantial interruptions, assessing the relationship between conversational overlaps and voting agreement can help give context to the relationship between substantial interruptions and voting. Assessing whether conversational overlaps are related to disagreement serves as a type of placebo test: if conversational overlaps are predictive of disagreement, such a relationship may call into question the credibility of the conflict explanation for the substantial interruptions and voting relationship because we do not expect that conversational overlaps are reflective of conflict.

In this section, we assess the relative predictive power of substantial interruptions and conversational overlaps. To do so, we re-estimate Table 1 but also include equivalent variables for the number of conversational overlaps. We also include the same set of substantial interruptions, which allows us to assess whether there is a relationship between conversational overlaps and voting in addition to the relationship between substantial interruptions and voting. Table 4 reports the results.
There are three main findings in Table 4. First, comparing Tables 1 and 4, the relationship between substantial interruptions and voting is not affected by the inclusion of conversational overlaps. The point estimates on substantial interruptions in each of the columns in Table 4 are largely unchanged from those in Table 1.

Second, there is no evidence of a relationship between conversational overlaps and voting. In each column, the point estimate on conversational overlaps is small relative to the point estimate on substantial interruptions.

Third, total conversational overlap interruptions in a case—i.e., all conversational overlaps among all justices, not just the relevant justice-pair—are associated with decreases in voting agreement between justices in the case. In other words, justices are more likely to be in disagreement when other justices in the case are more likely to begin speaking at the same time.

Combined, the results suggest that although conversational overlaps do not reflect conflict between the interrupting and interrupted justices, they do reflect something about cases in which justices are more likely to disagree. So, we could imagine a case that prompts a lot of spirited talking, resulting in a lot of conversational overlaps, but not necessarily reflecting conflict between the interrupter and the interruptee.
Table 4: Relationship Between Voting Agreement and both Substantial Interruptions and Conversational Overlaps

<table>
<thead>
<tr>
<th>Voted in Agreement</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Justice-Pair Interruptions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substantial Interruptions</td>
<td>-0.044***</td>
<td>-0.037***</td>
<td>-0.026***</td>
<td>-0.009</td>
<td>-0.027**</td>
</tr>
<tr>
<td></td>
<td>(0.013)</td>
<td>(0.008)</td>
<td>(0.008)</td>
<td>(0.009)</td>
<td>(0.010)</td>
</tr>
<tr>
<td>Conversational Overlaps</td>
<td>-0.005</td>
<td>-0.009</td>
<td>-0.007</td>
<td>0.003</td>
<td>-0.003</td>
</tr>
<tr>
<td></td>
<td>(0.009)</td>
<td>(0.007)</td>
<td>(0.007)</td>
<td>(0.008)</td>
<td>(0.011)</td>
</tr>
<tr>
<td>Total Interruptions of Justice-Pair in Case</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substantial Interruptions</td>
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<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.005)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conversational Overlaps</td>
<td>-0.001</td>
<td>-0.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.004)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Justice Interruptions in Case</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substantial Interruptions</td>
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<td>-0.009***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conversational Overlaps</td>
<td>-0.003***</td>
<td>-0.004***</td>
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<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Justice-Pair Interruptions × Total Interruptions of Justice-Pair in Case</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substantial Interruptions</td>
<td>0.005***</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conversational Overlaps</td>
<td>0.001</td>
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<td></td>
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<tr>
<td></td>
<td>(0.001)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Proportion of All Words in Case by this Justice-Pair</td>
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<td></td>
<td></td>
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<tr>
<td>Substantial Interruptions</td>
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<td>-0.025***</td>
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<tr>
<td></td>
<td>(0.006)</td>
<td>(0.006)</td>
<td>(0.006)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conversational Overlaps</td>
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<td>-0.007***</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.002)</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Observations</td>
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<td>196,626</td>
<td>196,626</td>
<td>196,626</td>
<td>196,626</td>
</tr>
<tr>
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<td>0.600</td>
<td>0.600</td>
<td>0.600</td>
<td>0.600</td>
</tr>
</tbody>
</table>

Note: Standard errors in parentheses clustered at the justice-pair level. * p<0.1, ** p<0.05, *** p<0.01. Proportion of words spoken is multiplied by 10.

B. Interruptions at Other Oral Arguments

Next, we explore the possibility that the relationship between interruptions and disagreement is driven by a more general conflict between justices rather than conflict directed at the case in question in the spirit we have in
mind. It might even be possible that short term inter-justice animosity in a
day, week, or month could affect how the justices subsequently vote. For
example, most arguments are heard on Mondays, Tuesdays, and Wednes-
days, and the justices vote at conference on those cases on the Friday fol-
lowing oral argument. It is possible that one case in the week could create
animosity between two justices and that animosity could carry over to other
cases heard that week. Any carry-over animosity could influence both how
justices treat each other at oral arguments (whether they interrupt) and
whether the justices vote together. For example, if a justice strategi-
vally votes in case A to influence how other justices vote in case B, there could be
conflict between justices in one case resulting from another case. In that
scenario, the fact that we see two justices interrupting each other and voting
against each other in a case could simply reflect a conflict between them on
the day of the oral argument that is unrelated to conflict between the justices
in that case. We seek to rule out this possibility.

The Supreme Court Database includes the date of each oral argu-
ment.134 For this placebo test, we assess whether interruptions between jus-
tices in other oral arguments in the same day or in the same week predict
voting disagreement. Using the date of the oral arguments, we calculate the
number of interruptions between each justice-pair that occurred on the day
and in the calendar week. We estimate the effect of all interruptions on dis-
agreement in the cases that day or week. Table 5 provides the results. Col-
umn 1 includes all interruptions the same day as the oral argument, Column
2 includes all interruptions in the same week as the oral argument, and Col-
umn 3 includes both the interruptions in the same day and same week. Table
5 provides no evidence of a relationship between other justice interruptions
in the same day or week and voting agreement, which provides some evi-
dence that the conflict between justices is limited to the case in question.
Moreover, controlling for other interruptions does not affect the relationship
between interruptions in the case and disagreement in the case.

134 The Supreme Court Database also includes the date of any rehearing. See supra note 103
and accompanying text.
Table 5: Relationship Between Interruptions at Other Oral Arguments and Voting Agreement

<table>
<thead>
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<th></th>
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</tr>
</thead>
<tbody>
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<td></td>
<td>(1)</td>
</tr>
<tr>
<td>Justice-Pair Interruptions</td>
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</tr>
<tr>
<td></td>
<td>(0.008)</td>
</tr>
<tr>
<td>Interruptions in Other Arguments that Day</td>
<td>0.010</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
</tr>
<tr>
<td>Interruptions in Other Arguments that Week</td>
<td>0.003</td>
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<tr>
<td></td>
<td>(0.004)</td>
</tr>
<tr>
<td>Covariates</td>
<td></td>
</tr>
<tr>
<td>Judge Dyad FE</td>
<td>Yes</td>
</tr>
<tr>
<td>Term FE</td>
<td>Yes</td>
</tr>
<tr>
<td>Issue Area FE</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>195,596</td>
</tr>
<tr>
<td>Voted in Agreement</td>
<td>0.600</td>
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</table>

Note: Standard errors in parentheses clustered at the justice-pair level. *p<0.1, **p<0.05, ***p<0.01.

VI. DISCUSSION AND CONCLUSION

This Article asked whether interruptions at oral arguments are related to eventual judicial disagreement in the case. Using data on the interruptions between justices in cases from 1960 to 2015, we found that on average a judicial pair is seven percent less likely to vote together in a case for each interruption that occurs between the judicial pair in the case at oral argument. Our main contribution was to develop competing theories driving the relationship and shed empirical light on the different theories. The particular theory that we expected would shed most light on judicial relationships was the conflict theory: that interruptions constitute a type of observable conflict that is systematically associated with disagreement. Through a conditioning-on-observables research design, we isolated the conflict theory from an exposure theory (justices who speak more in a case might be more exposed to interrupting or being interrupted), a dissatisfaction theory (an interrupting justice is interrupting because he or she is at odds with the rest of the Court about the direction of the oral arguments and the anticipated outcome of the vote), and a difficult-case theory (that interruptions are simply a reflection of the case generally that is common to all justices, where cases with more disagreement are more prone to have more interruptions).

We found strong evidence that the conflict inherent in interruptions explains over half of the relationship between interruptions and disagreement: even after accounting for the exposure, dissatisfaction, and difficult-case theories, the probability that a justice-pair votes together decreases by four percent for each interruption. We also found some evidence for both
the exposure and the difficult-case theories, but not for the dissatisfaction
theory.

These results fit with some anecdotal evidence. For example, in Whole
Women’s Health v. Hellerstedt, a dispute that gained national attention prior
to the oral argument and was expected to be both controversial and poten-
tially significant in its policy impact,135 there were a very large number of
interruptions.136 But while those interruptions between justices could have
signaled conflict, and so been predictive of disagreement, the case could
also be idiosyncratic because of its enormous salience and significance. In
that oral argument, the female justices spoke disproportionately often, per-
haps out of a strong personal interest in a case of such importance for wom-
en’s rights.137 But with all three of the female justices being liberal,138 and
eventually voting together, interruptions between them are more likely to be
the result of fervent agreement and desire by each to ask the killer question,
rather than a sign of conflict between them, even when those interruptions
were not mere conversational overlaps. This suggests that it is important to
take into account characteristics of the cases, such as salience, as well as
other characteristics, including those of the justices, as the next section
does.

A. Implications

The results contain three important broader lessons. First, they add to
our understanding of what interruptions mean at oral arguments—that is,
they are informative about an aspect of judicial behavior. Second, the re-

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135 See, e.g., Amy Howe, Justices Enter the Fray with Grant in Texas Abortion Case: In Plain
English, SCOTUSBLOG (Nov. 13, 2015), http://www.scotusblog.com/2015/11/justices-enter-the-
fray-with-grants-in-texas-abortion-case-in-plain-english/ [https://perma.cc/832T-EMPG] (observ-
ing that “today the Justices stepped back into the abortion wars in a big way” in accepting the
petition for certiorari). See generally Whole Women’s Health v. Hellerstedt, 136 S. Ct. 2292
(2016).

cases/2015/15-274.

137 See, e.g., Nancy Northup, Sneaking Around the Constitution: Pretextual Health Laws and
the Future of Roe v. Wade, 26 HEALTH MATRIX 1 (2016) (describing the dangers to women’s
equality rights of pretextual health laws regulating abortions); Catherine Gamper, Note, A Chill
Wind Blows: Undue Burden in the Wake of Whole Women’s Health v. Hellerstedt, 76 MD. L.
REV. 792, 793 (2017) (arguing that as a result of the case and expected Supreme Court nomina-
tions, in the future “laws that regulate an individual’s access to abortions will likely survive the
undue burden test while those laws that restrict an abortion provider’s provision of abortions will
likely fail”).

138 In the 2015 Term, Justices Sotomayor, Ginsburg, and Kagan had Martin-Quinn scores of
ideology of -2.94, -2.65, and -1.54, respectively, making them approximately 1.50, 1.35, and 0.79
standard deviations (1.95) to the left of the overall Court that Term. Martin & Quinn, Martin-
Quinn Scores, supra note 1.
sults provide a new tool for predicting future voting behavior. Third, the results aid our understanding of the role of oral arguments—that is, they elucidate an aspect of judicial decision-making, particularly the debate in the literature about whether oral arguments are important and add to the evidence that oral arguments do matter. 139

In terms of what interruptions mean in the context of oral arguments, we found evidence that oral arguments represent expressions of conflict. This is consistent with the broad social science literature showing that interruptions constitute a form of conflict and dominance behavior in a variety of contexts ranging from the workplace to the household. 140 Regardless of the direction of causality, we have shown that interruptions are associated with disagreement. Even if justices make voting decisions in a case prior to the oral argument, the fact that oral argument comes before voting implies that our results provide new information about what will happen in a Supreme Court case prior to the conference where justices’ votes takes place. This gives us more information than just a justice’s general tendency to vote in a particular way based on justice-level attributes like ideology; it gives us case-specific information for pairs of justices.

Our finding that interruptions and disagreement are associated might shed light on the significance of oral arguments. As discussed, numerous justices have declared that oral arguments are important to them and have influenced the way they vote, and scholars have shown that this is a predictable and significant effect. 141 Yet, other justices deny oral arguments are important and other scholars find no evidence that they are important. 142 Our results provide support for the claim that oral arguments do matter.

Even without knowing the direction of causation between interruptions and voting agreement, we can conclude that oral arguments matter, at least to the justices, by considering both possible directions of causality. If interruptions cause disagreement, then oral arguments clearly matter: a conflict between two justices at oral arguments perpetuates further conflict in the form of two justices failing to agree in the ultimate decision of the case. Accordingly, inter-judicial behavior at oral arguments itself can shape the law.

If disagreement causes interruptions, the situation is more complicated. If disagreement exists prior to the oral argument taking place, then arguably cases have already been effectively determined prior to oral argument and

139 See supra notes 51–53 and accompanying text.
140 See supra notes 86–89 and accompanying text.
141 See supra notes 51–52 and accompanying text.
142 See supra note 53 and accompanying text.
oral arguments are just a form of theater. Even if causation runs in this direction, however, it does not necessarily follow that oral arguments are unimportant. To see why, consider four possibilities of how disagreement could cause interruptions.

Suppose Justice A interrupts Justice B at oral argument. If disagreement leads to interruptions, then not only must Justice A have already made up his or her mind, but Justice A expects to disagree with Justice B. One explanation is that Justice A expects to disagree with Justice B due to Justice B’s general ideological or methodological tendency, but still believes that Justice B’s vote is malleable. Justice A interrupts Justice B to influence Justice B’s vote, which would imply that we are only partly in the reverse direction of causality scenario: at least some justices perceive the votes of other justices to not be predetermined, and oral arguments still matter in terms of shaping case votes.

A second explanation is that every justice has already decided how he or she is going to vote and expects every other justice to have similarly already made their decision. Justice A might nonetheless interrupt Justice B because Justice A is attempting to shape the way that Justice B approaches the question and the formation of his or her reasoning in the eventual opinion. This second explanation would imply that oral arguments still matter: they do not matter in terms of changing votes, but they matter in terms of shaping doctrine.

The third and fourth explanations both involve scenarios where every justice has already decided on their vote and every justice has already decided on the reasoning. Why, then, are justices interrupting their expected adversaries in the case? A third explanation is that the justices are grandstanding. Then, oral arguments may indeed be a dog and pony show; nevertheless, the conclusion that oral arguments do not matter still does not follow. If the justices grandstand during oral argument, performing for the attendant public and the broader public through the Court reporters, then that tells us that oral arguments matter, just in a different way. The justices must at least care about how oral arguments are perceived. Even if oral arguments do not influence case votes or how the opinion is written, the grandstanding explanation would imply that oral arguments nonetheless shape judicial behavior. It also might suggest that the justices believe that perceptions of oral arguments contribute towards the legitimacy of the Court, which an exten-

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143 It is theoretically possible that justices come to oral arguments with an open mind and make a decision during the oral argument but prior to interrupting another justice, but this is likely uncommon due to the short period of time involved.
sive literature has in turn shown to be central to judicial power in part because the judiciary has neither the power of the sword nor the purse. The fourth and final possibility is that justices are not grandstanding but simply cannot stop themselves from interrupting. This final theory is a behavioral explanation: that interrupting justices have self-control problems that overcome their self-restraint to wait for a place in the conversation. Yet we have shown that interrupting justices are not randomly interrupting but rather are interrupting other justices in cases in which they are more likely than usual to disagree. Accordingly, the lack of self-control means either (1) that interrupting justices care about oral arguments enough to systematically interrupt colleagues with whom they expect to disagree, or (2) that justices are particularly unable to control themselves from interrupting when they are prone to disagree with a colleague. The Justices regularly profess that the latter is not the case: that their disagreements over issues of law create no personal animus whatsoever. As such, the only explanation under which oral arguments do not matter is if the justices have been consistently misrepresenting their own personal responses to disagreement. Otherwise,


145 THE FEDERALIST NO. 78 (Alexander Hamilton).

under all other explanations, oral arguments have significance, at least to the justices.

So, ambiguity may still exist as to the extent of the importance of oral arguments as well as of the mechanism of their impact, but this line of reasoning suggests it is harder to argue that oral arguments are meaningless.

B. Potential Future Research

We feel there are at least two important avenues for future research. The first potential avenue would be to attempt to isolate the direction of causality. We have established a relationship between conflict (interruptions) and agreement (voting together), but not which causes which. Although it might be very difficult or impossible to identify a credible research design to isolate the direction of causality, we feel that further efforts to understand the justices’ goals of oral arguments—e.g., the extent to which justices use oral arguments to gather information, to signal to their colleagues the strength of their beliefs, or as attempts to influence their colleagues—can help shed light on whether interruptions cause or simply reflect the eventual disagreement.

The second potential avenue for future research relates to differences in the meaning of interruptions. We have only begun the process of understanding differences in the meaning of interruptions by distinguishing between meaningful interruptions and mere conversational overlaps. We consider it quite possible that the relationship between interruptions and agreement could be reversed for some types of interruptions. For example, there could be a positive relationship between interruptions and agreement in cases where the interruption occurs when the justice is trying to help a specific side or justice. In some oral arguments, some of the justices come to the argument favoring one side and seemingly wanting to see that side do well. This was explicitly acknowledged in a case in the 2016 Term, Dean v. United States. After Justice Sotomayor had repeatedly asked petitioner’s advocate, Alan G. Stoler, questions that appeared directed at helping him make a persuasive argument, Stoler confused Justice Sotomayor and Justice Kagan. Justice Kagan responded by saying “She’s Justice Sotomayor . . . . She was the one helping you.” This is an unusually frank recognition by a justice of a perhaps not uncommon phenomena, and it is one that is not limited to the justices helping the advocates. Although establishing a way to quantify “helpful” interruptions was beyond the scope of this Article, we

believe that this is a meaningful distinction that is worthy of further investigation.