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The Effects of Political Culture and Structure on
Nutrient Reduction Policy

by

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THE EFFECTS OF POLITICAL CULTURE AND STRUCTURE ON NUTRIENT REDUCTION POLICY

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Since 2001, the U.S. Environmental Protection Agency has worked through a twelve state watershed nutrient task force to combat the Gulf of Mexico hypoxia that occurs every summer due to nutrient runoff in the Mississippi River basin. The hypoxic condition in the Gulf causes massive ecological and economic harm to the region and progress in addressing the issue has been slow. The twelve task force states represent a north-south cross section of the Basin and a variety of political cultures and structures. This research examines the openness to public participation resulting from political culture in these states and how that openness impacts progress in reducing nutrient runoff. Results show that original theories of political culture are less applicable in nutrient reduction politics. The relationship between openness to public involvement in reduction strategy and actual progress was also unsupported by the findings.

Introduction

In the summer of 2001, an area over 20,000 square kilometers, larger than the size of New Jersey, was under a state of hypoxia in the bottom waters of the northern Gulf of Mexico (Rabalais, Turner, & Scavia, 2002). Hypoxia is a state of dissolved oxygen depletion below two milligrams per liter. This dangerously low level of dissolved oxygen causes a strain on bottom dwelling aquatic populations, primarily brown shrimp (Craig & Crowder, 2005). Hypoxia is caused by eutrophication in the northern Gulf. Nutrients, specifically Nitrogen and Phosphorus, flow from the Mississippi and Atchafalaya River Basins into the Gulf of Mexico and cause an algae bloom. When the algae die, the decomposition process consumes a large portion of the dissolved oxygen on the sea floor. This hypoxia “dead zone” continued growing from 1985 until the 2000s (Rabalais, Turner, & Scavia, 2002) (Mississippi River/Gulf of Mexico Watershed Nutrient Task Force, 2001). The average hypoxic area in 1992 grew twice as large as the average area between 1985 and 1992. (Rabalais, Turner, & Scavia, 2002) However, the five-year average in 2013 was measured to be 15,216 square kilometers, a 25% reduction from the 2001 average.

Though much progress has been made since the U.S. Environmental Protection Agency (EPA) released an action plan in 2001, the 2013 EPA Reassessment shows the need for further progress to reach an area less than 5,000 square kilometers by 2015. (EPA Hypoxia Task Force, 2013) The actual 2015 measure was 16,760 km², an increase from 2013 and an indicator that nutrient runoff is still a problem. (National Oceanic and Atmospheric Administration, 2015) To address hypoxia in the Gulf of Mexico, the Environmental Protection Agency created the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force in 2001. (Mississippi River/Gulf of Mexico Watershed Nutrient Task Force, 2001) This task force is composed of

twelve key states in the Mississippi/Atchafalaya River Basin (MARB) and other federal agencies.

The last fourteen years of progress has shown that nutrient reduction is not a one-size fit all program, and the individual states must seek localized solutions. (Louisiana Nutrient Management Strategy, 2014) This is where the main topic of this research is introduced. As former Supreme Court Justice Louis Brandeis suggested to in the case of *New State Ice Co. V. Liebmann*, states are the laboratories of democracy. Hypoxia affects the Northern Gulf of Mexico the most, but the EPA has identified twelve states in the MARB that significantly contribute to the problem. This research hopes to examine the political cultures in these twelve states, the resulting variance in democratic structures, and the influence of that structure on nutrient reduction policy.

Furthering research around the Gulf of Mexico Hypoxia is crucial due to the ecological and economic harm caused by this annual occurrence. Bottom-dwelling gulf species integral to commercial fishing are being displaced by the hypoxic conditions. Low levels of dissolved oxygen over such a large area disturbs the breeding and foraging habits of the brown shrimp. (Craig & Crowder, 2005) Because of this disturbance, commercial fishermen in Northern Gulf states like Louisiana and Texas have seen declining brown shrimp landings. (O'Connor & Whitall, 2007). The economic effects of hypoxia on brown shrimp exceeded 1.2 billion pounds in 2012, equating to a dockside value of \$331.2 million and accounted for roughly 29% of the total catch by weight in the contiguous United States (National Oceanographic and Atmospheric Administration (NOAA), 2013). These numbers illustrate the enormous ecological and economic effects of hypoxia on the Northern Gulf states.

Hypoxic conditions were able to reach such harmful levels due to the Mississippi/Atchafalaya River Basin draining approximately 48% of the lower forty-eight states, with roughly 90% of the nutrient loading coming from agricultural and natural sources (Alexander, et al., 2008). Although Louisiana is facing most of the negative impacts of hypoxia, the state contributes 1.7% of the nitrogen and 2.4% of the phosphorus entering the system (Alexander, et al., 2008). This inequality in adverse impacts and total nutrient loading contribution asserts the importance of reviewing regulation efforts among states in the EPA's hypoxia task force. Examining how each state's government structures shape efforts to resolve this issue can provide insight on how to work past barriers to effect nutrient reduction policy.

Literature Review

This research focuses on the twelve states included in the Mississippi River Gulf of Mexico Watershed Nutrient Task Force (WNTF). Daniel J. Elazar's theory of political cultures from *American Federalism: A View from the States* will be applied to these states for comparison. Elazar's book was written in 1972, a study of more recent literature shows his theories are still applicable today (Fitzpatrick & Hero, 1988) (Smith & Greenblatt, 2015). Dr. Elazar described three main political cultures in the United States. He posited that this cultural division arose from migration patterns throughout U.S. history (Elazar, 1972). These political cultures are labeled Moralistic, Individualistic, and Traditionalistic. These cultures vary in how they perceive government, who should be involved in politics, and what is truly the role of government. Political cultures can have significant effects on how states choose to address different policy issues (Smith & Greenblatt, 2015).

The Moralistic political culture is based around the idea that government is meant to be used by citizens to advance the public good while encouraging all citizens to participate (Elazar,

1972). In the states with this culture, politics is considered by citizens and politicians to be one of the greatest pursuits of a good society. Public activity is centered on this idea of the public good and all government work is devoted to advancing the public interest. People in this culture believe that politics is a matter for every citizen, and not just professionals. In a moralistic state, government officials will actively seek to initiate new government activities and solve problems that before they become a large public concern.

In the Individualistic political culture, a premium is placed on the principle that government is a tool to be used for the advancement of self, and only professionals should be involved in politics to preserve the purity of the market (Elazar, 1972) (Smith & Greenblatt, 2015). Citizens of Individualistic states view government strictly as a creation for advancing self-interests. Public officials should focus only on handling those functions demanded by the people they are there to serve. States with an Individualistic culture will limit community intervention into private activity to the minimum necessary to maintain the marketplace.

States with a Traditionalistic political culture entrusts power to those elites who have held power generationally and through patronage networks, but regular citizens support this system as long as the status quo is maintained (Elazar, 1972) (Smith & Greenblatt, 2015). Traditionalistic and moralistic states share a similarity in that they believe that government is meant for more than the advancement of self-interest. However, their beliefs differ in that the Traditionalistic culture values avoiding change. Whereas the moralistic state will actively seek out problems and solutions, traditionalistic states will try to solve issues as they arrive only to keep things the way they are currently (Elazar, 1972). Citizens of these states trust their government's abilities, but believe that politics is solely the realm of the elite. Ordinary citizens are not expected to be active through basic procedures like voting.

Each state in the WNTF provides an executive summary of progress towards nutrient reduction¹. The strategies included information on bills passed, state agency action, and agency partnerships. These executive summaries were studied to determine applicable features of state strategies for nutrient reduction to compare among our twelve states.

Multiple reports were also studied to determine the actual effects of Gulf of Mexico Hypoxia. These studies showed that hypoxia provided ecological and economic harm (National Oceanographic and Atmospheric Administration (NOAA), 2013) (O'Connor & Whittall, 2007) (Craig & Crowder, 2005). They reported that brown shrimp populations were largely affected by hypoxia and this in turn related to high economic losses in the northern Gulf of Mexico. This literature shows how crucial it is to implement meaningful nutrient reduction policies.

Objectives and Hypothesis

The primary research question is, “How do political cultures and the resulting government structures influence nutrient reduction policy in the twelve WNTF states?” Answering this question can provide information about the impact of government structure on who is allowed to be involved in policy decisions, and to what extent. Furthermore, a connection between openness to public involvement and progress on nutrient reduction needs to be

¹ (Minnesota Pollution Control Agency, 2014) (Louisiana Nutrient Management Strategy, 2014) (Ohio Environmental Protection Agency, 2013) (Arkansas Natural Resources Commission, 2014) (Illinois Department of Agriculture, 2015) (Indiana State Department of Agriculture, 2015) (Iowa Department of Agriculture and Land Stewardship, 2015) (Kentucky Division of Water, 2014) (Mississippi Department of Environmental Quality, 2015) (Missouri Department of Natural Resources, 2014) (Tennessee Department of Environment and Conservation, 2015) (Wisconsin Department of Natural Resources, 2015)

solidified. This research makes the assumption that openness is conducive to progress in nutrient reduction.

To find a proper answer to the research question, four objectives had to be completed. This research contains a twelve state sample rather than the complete fifty in Elazar's work. (1) It must be determined if the twelve states conform to their prescribed political culture under the context of nutrient reduction. (2) State's openness through legislative and executive actions also needed to be analyzed. Once the political culture characteristics and openness to public participation were determined, (3) discrepancies between actual and projected actions taken to reduce nutrient runoff are analyzed. These objectives lead to (4) discovering any influences political culture and structure may have on nutrient reduction policy.

Objective 1	Determine conformity to political culture
Objective 2	Analyze openness of states through legislative and executive actions
Objective 3	Find discrepancies and conformities with actual and projected actions taken to reduce nutrient runoff
Objective 4	Discover influences of political culture/structure and openness on nutrient reduction policy

Table 1. Research Objectives

The hypothesis is that the structure of Moralistic states will allow for the most participation from the voting public to influence nutrient reduction policy, and the culture of moralistic states will encourage nutrient reduction for the public good. This theory is based off of Elazar's original findings in *American Federalism*. In a full fifty state sample, Moralistic states are the most open to public participation in order to achieve a public good. As nutrient reduction benefits the public as a whole more than individuals, Moralistic states in the WNTF should maintain conformity to Elazar's theory.

The null hypothesis is Moralistic states are not structured to be the most open in the context of nutrient reduction policy. Analysis of the metrics determining openness will confirm part of the hypothesis if Moralistic states lead in the areas of avenues of direct democracy, voter turnout, legislative action, and provide the least sovereign authority to their governors. Contrary results will confirm the null hypothesis.

Methods

This study will focus on the twelve states included in the WNTF. The analysis of political culture and structure will use Daniel J. Elazar's three political cultures. Though this work was first introduced in 1972, it has continued to be relevant and cited in the study of Political Science (Smith & Greenblatt, 2015). Dr. Elazar's theory describes three main political cultures, Moralistic, Individualistic, and Traditionalistic. The twelve WNTF states to be studied are Minnesota, Wisconsin, Iowa (Moralistic), Missouri, Illinois, Indiana, Ohio (Individualistic), Louisiana, Arkansas, Kentucky, Mississippi, and Tennessee (Traditionalistic). Basic characteristic prescribe to these states from Elazar's work will provide the basis for understanding their expected political cultures.

This research will also reference Kevin Smith and Alan Greenblatt's *Governing States and Localities* to determine the openness of states to public participation. Smith and Greenblatt's book contains data on voter participation, avenues of direct democracy, and powers of the governor among the fifty states. Examining voter participation may determine the political involvement of the electorate. The powers of the governor provide some information on how much trust is vested in the executive versus a legislature. The avenues for direct democracy reflect a state's openness in opportunities for direct public involvement.

In reviewing the current legislation passed or introduced, this research attempts to examine the effort among elected officials to promote nutrient reduction policies. As the electorate directly elects the legislature, and state agencies fall under the realm of an executive, this study considers steps in nutrient reduction through the legislature as more open to public influence, whereas steps through state agencies will be considered to be more closed to the general public. In states where the legislature is taking a strong lead in nutrient reduction efforts, we may say that the political structure there allows for more citizen influence in nutrient reduction policy. In states where state agencies are at the helm of reduction efforts, we may say that the structure provides for the executives (directors) to steer the process for policy development. This measure will group legislation in individual states under their respective political culture classifications. Legislative action will then be measured by the quantity of nutrient reduction bills introduced per state, bills passed per state, and the rate at which these bills become law. This methodology provides a quantifiable metric to a largely qualitative study.

Though this research makes certain assumptions about state agencies and legislatures, it does not ignore that agency directors may structure their agencies to be more responsive to public demand. Studying the responsibilities of state agencies in nutrient reduction can reveal that agency action is being driven by legislation, stakeholder input, or public demand. Agencies structured this way may still prove to be open to public influence and allow for stakeholders to work together on nutrient reduction policies.

Examining which stakeholders are included in developmental processes may provide further insight on the political culture and structure underlying partnerships. A truly traditionalistic state may choose to have its agencies only partner with political elites, whereas a truly moralistic state may choose to have its agencies reach out to as many stakeholders as

possible. The relationship between the legislature and state agencies provides a glimpse at whether a state values the virtue of a legislator acting as representatives of the people, or the state agency and its specialized professionals to make decisions.

To determine the potential impacts of structure on policy, this research analyzes metrics related to the development and implementation of nutrient reduction policy. The Environmental Protection Agency's state milestones on nutrient criteria focuses on five development stages. It starts with (1) planning for criteria development, then (2) collection of information and data, (3) analysis of information and data, (4) proposal of criteria, and (5) adoption of EPA-approved criteria. The data gathered through these milestones provide critical information to monitor water bodies, facilitate proper nutrient pollution discharge permits, and management of total maximum daily loads of nutrients (U.S. Environmental Protection Agency, 2015). State progress along these milestones are an indicator of commitment to strict nutrient criteria approved by the EPA. If a state is at the end stages of these milestones, it will bolster the argument for that state's structure being supportive of nutrient reduction policy.

The study will finish with an analysis of which political culture and resulting structures provide the best political environment for nutrient pollution regulation, and which ones create barriers. This is done through comparing political culture and structure openness to progress on EPA milestones. As the research question deals with both state openness and the connection between openness and nutrient reduction policy, it is critical that both pieces of the hypothesis are carefully examined.

This research has limitations in that it is largely qualitative rather than quantitative. Much of the data also relies on self-reporting from the states. Though we can compare the size of the hypoxic zone over the past two decades, it is hard to quantify how open the state government

structure is to public involvement. Therefore, the main weakness of this research lies in the fact that it must assume legislative action is more open to public influence than state agency action. State legislators are directly accountable to the electorate, whereas agency executives are less concerned with election results. Regardless of these limitations, the research can still provide some insight on the openness of government structures in the WNTF and how that impacts nutrient reduction policy.

Results

Objective 1 – Determine Conformity to Political Culture










States	Popular Referendum	Ballot Initiative	Constitutional Amendment by Initiative	Recall of State Officials		
Moralistic						
Minnesota	No	No	No	Yes		1
Wisconsin	No	No	No	Yes		1
Iowa	No	No	No	No		0
Individualistic						
Missouri	Yes	Yes	Yes	No		3
Illinois	Yes	Yes	No	No		2
Indiana	No	No	No	No		0
Ohio	Yes	Yes	Yes	No		3
Traditionalistic						
Louisiana	No	No	No	Yes		1
Arkansas	Yes	Yes	Yes	No		3
Kentucky	Yes	No	No	No		1
Mississippi	No	Yes	Yes	No		2
Tennessee	No	No	No	No		0

Table 2. Avenues of Direct Democracy

Conformity to Elazar's prescribed political cultures for the twelve WNTF means Moralistic states should provide the most avenues for direct democracy, highest voter turnout, and least amount of sovereign authority vested in the governor, followed by Individualistic and

then Traditionalistic states. Other than voter turnout, the study's results weaken the political culture groups' conformity.

The four avenues of direct democracy used as metrics are the popular referendum, ballot initiative, constitutional amendment by initiative, and recall of state officials. Conformity to prescribed political culture should place Moralistic states ahead of all groups and Traditionalistic last, but the results of *Table 2. Avenues of Direct Democracy* show the contrary. Out of three Moralistic states, only two states provide one avenue of direct democracy each. This is a surprising result as it puts Moralistic states behind both Individualistic and Traditionalistic states. Even with one less state than the Traditionalistic group, Individualistic states had the most avenues of direct democracy with eight options for its citizens.

The voter turnout results from *Table 3. Voter Turnout: 2012 Election* shows the most conformity to Elazar's prescribed characteristics of political culture. This metric shows actual public participation through voting. It is important to consider that 2012 was a Presidential election year which typically produces higher turnout. Analyzing turnout on a comparative rather than absolute basis will better articulate the implications of the results. All three Moralistic states had a higher turnout than the other nine in the WNTF. Traditionalistic states were the furthest

State	% Voting Age Population	
Moralistic	69.26666667	Average
Minnesota	71.3	
Wisconsin	69.4	
Iowa	67.1	
Individualistic	58.5	Average
Missouri	59.5	
Illinois	53.3	
Indiana	56	
Ohio	65.2	
Traditionalistic	52.9	Average
Louisiana	57.1	
Arkansas	47.5	
Kentucky	53.2	
Mississippi	57.3	
Tennessee	49.4	

Table 3. Voter Turnout: 2012 Election

behind. Only two states in the sample had a turnout below fifty percent and both are Traditionalistic. Iowa had the lowest turnout for Moralistic states. Iowa is the closest in proximity to Individualistic states and progress on EPA state milestones shows further similarities to Individualistic characteristics.

States	Budget-Making		Item Veto			
	Full Responsibility	Shares Responsibility	All bills	Appropriations Only	No Item Veto	Item Veto - Majority vote override
Moralistic						
Minnesota	...	Yes	...	Yes	...	*a
Wisconsin	*b	...	...	*c	...	...
Iowa	...	Yes	...	Yes	...	...
Individualistic						
Missouri	*b	...	...	Yes	...	...
Illinois	...	Yes	Yes	...	...	...
Indiana	Yes	...	...	...	No Veto	...
Ohio	Yes	...	...	Yes	...	...
Traditionalistic						
Louisiana	...	Yes	...	Yes	...	*a
Arkansas	...	Yes	...	Yes	...	Yes
Kentucky	*b	...	...	*d	...	Yes
Mississippi	...	*e	Yes	...	...	...
Tennessee	...	Yes	...	Yes	...	Yes

*a 2/3 of elected legislatures of each house to override
*b Full proposal responsibility; legislature adopts or revises
*c Partial Veto (line item)
*d Veto any distinct item or item appropriating money
*e Present balanced budget based on revenue estimated by Budget Committee and governor's office

Table 4. Powers of the Governor

The powers a state invests in its chief executive should reflect how much trust it places in the governor compared to its legislature. As this research assumes that legislative action is more open to public input than executive action, more power invested in the governor will demonstrate less openness. In this metric, Moralistic states conform to Elazar's prescribed characteristics. However, the more important result here is that Traditionalistic states are similar to Moralistic states contrary to what Elazar's theory supports. *Table 4. Powers of the Governor* displays a governor's authority in budget-making and the ability to veto line items in bills. Three of four Individualistic states provide their governors with full budget-making responsibility. Both the Traditionalistic and Moralistic group only have one state where the governor has full responsibility. Under line item veto authority, all Moralistic and four of the five Traditionalistic

states allow the line item veto for appropriations bills only. Full conformity to Elazar's theory would have produced a table where Moralistic states provide the least sovereign authority in a single executive and Traditionalistic states providing the most authority.

Objective 2 – Analyze openness of states through legislative and executive actions

The twelve state sample in the WNTF provides an unequal number of states per political culture group. Analyzing the results from legislative action calls for doing so on an average per state basis rather than a total number. This research is interested in the number of bills introduced per state, bills passed per state, and the pass rate in each political culture group. The normalized results present a more accurate picture of how active the legislatures in each group have been in creating nutrient reduction policy. Openness in this research is measured partially by legislative action. *Table 5. State Legislation* presents side by side results on this metric. Analysis of the data leads to a few key points. Traditionalistic state legislatures are not very active, but when a nutrient reduction bill is introduced, it passes at a 100% rate. This is reflective of the theory that the elite rule politics in Traditionalistic states. If action will be taken at all, it is already decided on by those with experience. Moralistic states have the lowest pass rate, but a higher introduction rate than Traditionalistic states. As nutrient reduction policy is a public good (reducing algae bloom), Moralistic states should score the highest in all three areas according to theory. Individualistic states dominate in this metric with the highest amount of bills introduced and passed per state.

Political Culture (# of states)	Bills Introduced per State	Bills Passed per State	Pass Rate
Moralistic (3)	1.67	1.0	60%
Individualistic (4)	2.0	1.25	62.5%
Traditionalistic (5)	0.8	0.8	100%

Table 5. Stage Legislation

Analysis of agency strategy is the most subjective metric in this research. The results are short and based on a qualitative study of what is written in each state's nutrient reduction strategy. The implicit biases of the research affects perceptions of openness in agency strategy. These results are therefore weighted much less than the others in the research. The results, though, also do not impact the whole of the research to a large extent. In fact, the agency strategies in the twelve WNTF sample are similar across the board. State agencies in all three political cultures demonstrate a premium value on public input. These agencies all incorporate advisory committees, working groups, and public-private partnerships in planning and executing nutrient reducing strategies. Traditionalistic states stand out in one area where three of the five states have committed to a guiding principle of not creating new regulations or programs and utilizing existing initiatives. This creates the appearance of less openness to public involvement through legislative action, but the group maintains a wide breadth of public and private entity involvement in planning for nutrient reduction.

Objective 3 - Find discrepancies and conformities with actual and projected actions taken to reduce nutrient runoff

The EPA's five state milestones have three classifications of progress. A state may report a step being complete or incomplete, or it may provide a projected date for completion. *Table 6.*

EPA State Milestones displays the progress each state has made in completing the milestones for nutrient reduction. It was projected that Moralistic states would be the further progressed in the milestones. The results confirm this projection as Minnesota and Wisconsin are the only two states who have completed the final milestone. Iowa strays from its Moralistic peers and has not completed even the first milestone. Individualistic states are a close second with all four states having completed the third milestone. Indiana and Ohio have at least provided dates for completion of the final milestone. The Traditionalistic group conform to projections here as well with only two of its five states having completed at least the first milestone. Those two states have also provided dates for completion of the final milestone.

States	Planning for Criteria Development	Collection of Information & Data	Analysis of Information & Data	Proposal of Criteria	Adoption of Criteria	Date Provided for Completion
Moralistic						Completed
Minnesota						Incomplete
Wisconsin						Incomplete
Iowa						Incomplete
Individualistic						Completed
Missouri						Incomplete
Illinois						Incomplete
Indiana						Incomplete
Ohio						Incomplete
Traditionalistic						Completed
Louisiana						Incomplete
Arkansas						Incomplete
Kentucky						Incomplete
Mississippi						Incomplete
Tennessee						Incomplete

Table 6. *EPA State Milestones*

Discussion

The research sought to discover what effects state political culture and the resulting structures have on nutrient reduction policy in the twelve WNTF states. The hypothesis that

Moralistic states are structured to be the most open and therefore will be the most progressed in meeting EPA milestones was supported by a preliminary study of Minnesota (Moralistic), Ohio (Individualistic), and Louisiana (Traditionalistic). The results from a full twelve state sample confirmed the null hypothesis that Moralistic states in the WNTF are not structured to be the most open. However, this group of states has progressed the most in EPA milestones.

Conformity to Political Culture

Elazar's theory posits that Moralistic and Individualistic states would be much more open to public involvement than Traditionalistic states. Results from Table 3 (Voter Turnout) supports this theory and shows much more public involvement in voting in Moralistic states. The results from Tables 2 (Direct Democracy), 4 (Powers of the Governor), and 5 (State Legislation) weaken this theory's applicability in nutrient reduction policy.

Voter Turnout

The results from voter turnout are not an indicator of action on nutrient reduction policy, but it supports the hypothesis that Moralistic states are the most open to public involvement. However, it measures a result of openness rather than openness itself. Voter participation in these states are much higher than the other two groups. This is a reflection of the culture of the electorate and does not hold as much weight as the metrics of direct democracy, powers of the governor, or legislative action. It cannot be ignored, though, that Moralistic states have created a culture where citizens believe they possess an influence on government action.

Avenues of Direct Democracy

Moralistic states fell far short of expectations in this metric. Not only did they not have the highest amount of avenues, they had the least with a total of two between three states.

Traditionalistic states are expected to have the least amount of avenues but had a total of seven, falling behind Individualistic states only by one. This highly weakens the theory that Moralistic states are structured to be more open to public participation. The metric measures the most direct way the public can be involved in policy. Though this does not measure progress on actual nutrient reduction, it shows that Moralistic states are not structured to be as open as the hypothesis suggests. The results for individualistic states in this metric conforms to political culture as it allows for public involvement to pursue individual interests.

Powers of the Governor

The results displayed in *Table 4. Powers of the Governor* do not suggest that Moralistic states are not open, as the results in *Table 2. Avenues of Direct Democracy* show. The results do show that Moralistic states may not be the most open in our WNTF states sample.

Traditionalistic and Moralistic states were oddly similar in this metric. Conformity to Elazar's theory would give the governors in Traditionalistic states much more sovereign authority in budget-making and line item veto. Results show almost identical powers in Moralistic and Traditionalistic states in shared budget-making and item veto on appropriations bills. This metric alone does not confirm the null hypothesis, but it does weaken the idea that Moralistic states in the WNTF are the most open.

State Legislation and Executive Action

The state legislation and executive action metrics rely the most on assumption and qualitative analysis. Due to the qualitative nature of this research, the assumptions are necessary and largely strengthen the research findings. Legislative action is considered to reflect openness, and the results of this measure again show that Moralistic states are not the most open of the

three groups in the context of nutrient reduction policy. Though there are still more bills introduced and passed per state than the Traditionalistic group, Individualistic state legislatures have been the most active. These results further support the null hypothesis and weakens Elazar's theory's applicability to nutrient reduction.

Results from a qualitative analysis of agency action also weakened the hypothesis. According to the hypothesis, Moralistic states should have the most public input in agency action. The results show that all three groups are virtually identical in how they approach public input in planning and execution. The only difference is in three Traditionalistic states where the agencies work under a guiding principle to utilize existing programs and not advocating for new regulations. Aside from that variance, all groups place a premium on public input. This alone does not disprove the hypothesis, but it again strengthens the null hypothesis by showing that Moralistic states are not superior in structuring for public input in nutrient reduction strategies.

Progress in Nutrient Reduction

Along with the results from *Table 3. Voter Turnout*, the results from *Table 6. EPA State Milestones* support the hypothesis that Moralistic states are the most open and that openness leads to furthest progress in nutrient reduction. This metric focuses on the latter portion of the hypothesis predicting that state progress in EPA milestones. Moralistic states, except for Iowa, have indeed completed the final milestone before the other nine states. Though Individualistic states are close behind, none have reached the final step. These results present a new consideration in this research. The hypothesis must be broken into two pieces and analyzed separately. The performance of Moralistic states in this metric confirms that this culture provides the best environment for nutrient reduction progress, but the connection between a state's openness and its progress in reducing nutrient runoff comes into question.

Conclusion

Nutrient reduction continues to be a vital mission for the WNTF. The hypoxic conditions in 2013 provided relief in knowing that a large scale (25%) reduction could happen, but the data from 2015 paints a more dismal picture. The goal was to reach an area of 5000 km² or a 75% reduction from 2001, but instead the area grew from 2013. (National Oceanic and Atmospheric Administration, 2015) In a highly polarized time in American politics, insight into how state political culture and structure impacts nutrient reduction policy can greatly improve the conditions in the Gulf of Mexico.

Daniel Elazar's work in *American Federalism* produced much knowledge on state political culture. His theories ostensibly supported the hypothesis that Moralistic states are structured to be the most open and that openness will provide for the most progress in nutrient reduction policy. This study did not confirm the hypothesis, but has refined the theory behind it. Moralistic states made the most progress on EPA milestones which strengthens part of the hypothesis. However, metrics measuring openness to public involvement in nutrient reduction policy place Individualistic states in the lead. Individualistic states provided more avenues of direct democracy and produced more legislative action. Traditionalistic states also fared much more closely with Moralistic states in the powers they provide to their governors than Elazar's theory would suggest. If openness is related to progress in nutrient reduction, then Individualistic states should be the most ahead in the milestones. As this is not the case, the connection between openness and nutrient reduction is not clear at this time. The results maintain that Moralistic states provide the best environment for nutrient reduction policy (according to EPA milestones) in the WNTF, but what characteristics support that progress still need to be discovered.

Further research should establish more quantifiable metrics of measuring openness and public participation. Other measures of nutrient reduction beyond EPA milestones such as total Nitrogen and Phosphorus yield reduction should be considered as well to produce a more robust and empirical study. The qualitative nature of this research is its biggest weakness, but this can be counteracted by incorporating more research in environmental politics to enhance research objectivity. Impacts of Gulf of Mexico Hypoxia are real and dangerous to the ecology and economics of that area. As recent data has shown the hypoxic zone growing, it is ever more important that this research progresses to further educate on navigating the political environment surrounding nutrient reduction policy.

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