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INTRODUCTION

Introduction to the Special Issue—Life Science in Politics: Methodological Innovations and Political Issues

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Abstract

We introduce the Special Issue on Life Science in Politics: Methodological Innovations and Political Issues. This issue of *Politics and the Life Sciences* is focused on the use of life science theory and methods to study political phenomena and the exploration of the intersection of science and political attitudes. This issue is the third in a series of special issues funded by the Association for Politics and the Life Sciences that adheres to the Open Science Framework for registered reports. Pre-analysis plans are peer reviewed and given in-principle acceptance before data are collected and/or analyzed, and the articles are published contingent upon the preregistration of the study being followed as proposed. We note various interpretations and challenges associated with studying the science of politics and discuss the contributions.

Life sciences and politics research

As we all know from having lived through the COVID-19 pandemic, issues surrounding both politics and science have become quite fraught and their intersection has become even more contentious. And yet, as the amazingly rapid development of successful vaccines shows, the importance of incorporating legitimate scientific enterprise into the political process can hardly be overstated. That reality does not make the successful integration of science and politics any easier to accomplish.

In the particular realm of life sciences, part of the problem is that people mean different things by "life sciences" and include or exclude different disciplines in those definitions. This lack of consensus or clarity matters because those definitions influence the kinds of research questions, methods, and forms of analysis that scholars employ. For instance, *Politics and the Life Sciences* highlights the range of issues that can be addressed from different life science perspectives in this nonexhaustive list:

> evolutionary and laboratory insights into political behavior, from decision-making to leadership, cooperation, and competition; evolutionary analysis of political intolerance and violence, from group conflict to warfare, terrorism, and torture; political and political-economic analysis of life-sciences research, health policy, agricultural and environmental policy, and biosecurity policy; philosophical analysis of bioethical controversies; and historical analysis of currently misunderstood issues at the intersection of the social and biological sciences.

These different definitions and meanings of "life sciences" highlight the critical role and value of interdisciplinarity: people trained in different backgrounds and disciplines can converge around central questions of shared interest. This allows diverse perspectives to be applied to causes of common concern, with the possibility of integrating different methods and theories to achieve a more comprehensive understanding of important issues. In preparing this special issue, we took a broad understanding of the life sciences, encompassing submissions engaged "with life science themes, theories, and/or methods …

[including] attitudes toward science or experts, new methods for the study of prejudice, research on public opinion about climate change and the environment, and evolutionary and life science approaches to political phenomena."

Thinking more systematically, what are the substantive areas of common concern that might spark such an overlap in interest between the social and life sciences? One potential pathway is to consider how political science and the life sciences can join in support of further advances in our understanding of political outcomes. This can prove trickier than might appear at first blush because the easy answers are not necessarily the most interesting or useful. The most common topic of examination, bordering on obsession, relates to voting. That does not make such inquiries meaningless, but in an age when few vote outside their existing political ideology or partisan attachments, it perhaps locates the question regarding the origins of political preferences too late. Scholars can thus utilize more specific models and methods from the life sciences to explore the foundations of such beliefs and values. In this way, the goal moves beyond an examination of mass publics, which is also valuable, to explore some of the bottom-up psychological dynamics that motivate political attachments and action. This allows observers to move beyond simply exploring how opinions are formed, to also investigate which beliefs might be susceptible to persuasion or the effects of misinformation. In addition, perspectives drawn from the life sciences provide theories and mechanisms by which to uncover the effects of temperament on individual behavior, including the propensity to self-select into certain groups and experiences and not others in ways that inform our appreciation of the effect of social networks on outcomes of interest. For example, in this issue, Prokosch, Smith, Kerry, and von Meding (2022) investigate and find that self-reported formidability in men is related to hierarchical beliefs that, in turn, predict attitudes toward disasters and climate change.

Life history approaches also introduce the possibility of highlighting the effects of life history and experience on changing political preferences and outcomes. Including life sciences provides a link between individual proclivities and larger societal issues, such as climate change or the risk of nuclear war. Motta (2022) provides an excellent example of how considering both pre-political predispositions and political attitudes can structure how we approach climate change. He develops a new measure of environmental justice concern and, through it, examines how these pre-political forces influence policy attitudes on climate interventions.

Although the traditional focus of political science as a discipline is often political outcomes, it is also worth asking about how political science methods and theories may be used to advance the life sciences. This can take the form of looking at politics as an independent variable that affects life science outcomes, such as research on the effects of politics on stress, sleep loss, and health outcomes. The pandemic provides another illustration of how closer integration between social scientists and life scientists could have been informative. For example, life scientists at the U.S. Centers for Disease Control and Prevention expressed surprise at politically grounded opposition to vaccine uptake, an objection that is not entirely surprising given the literature on politically motivated reasoning. In this special issue, Silber, Gerdon, Bach, Kern, Keusch, and Kreuter (2022) consider the circumstances under which individuals are willing to share their health data. In a German sample, they find that data type, who is collecting the data, and the research purpose all jointly affect people's willingness to share their health data.

Social scientists also have the opportunity to offer our expertise on context and group identities for better understanding of biological phenomena. In this issue, Gonzalez, Jin, and Wang (2022) challenge the negativity bias and conservatism literature by testing these effects in non-White populations, including Latinx Americans, whose partisanship, ideology, and perceptions of threat relationships may or may not differ from White Americans. Importantly, this registered report format allows for their null results to be published—that is, negativity bias in a recall task was unrelated to conservatism in their entire sample. Furthermore, Ruisch, Von Mohr, Naber, Tsakiris, Fazio, and Scheepers (2022) demonstrate that context matters in connecting biological systems and perceptions to our politics: interoception is related to ideology in their American, online sample but not Dutch lab participants.

Where are the big theoretical contributions in the scientific study of politics? This is where the life sciences can bring important insights by offering useful strategies for exploring the micro-foundations of

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political attitudes, preferences, and behavior. By integrating with other disciplines, and uniting different methodological approaches, entirely new areas of inquiry can be raised and explored. At the individual level, novel questions can be asked and addressed that allow for the possibility of combining top-down and bottom-up perspectives on importance issues, such as the sources of political ideology or the origins of prejudice, discrimination, racism, and sexism. Prokosch and colleagues (2022) suggest that physical formidability may be a place to look for further connections to development and maintenance of these attitudes.

State of research in science in politics

Interest in the intersection between science and politics is increasing, but much of this area in the public domain has been fueled by misinformation and driven by ideological motives. One example is the increased public skepticism of experts and findings generally agreed upon by the scientific community (e.g., COVID-19 information and climate change). Thus, the scientific has become political. On the other hand, using psychological and life scientific methods to understand the motivations of human socio-political behaviors often remains a niche area of interest without as much legitimacy as many other forms of inquiry. This is unfortunate because the life sciences have much to offer in aiding our understanding of political preferences and policies, just as politics clearly infuses the progress of science, not least through funding allocations.

Within academic circles, some of the responsibility for limitations in the work lies with the scholars themselves. It is not just outside forces that restrict progress in this area. Many scholars who have traditionally supported a greater incorporation of life sciences into political science and political psychology have advocated for the work and its importance rather than undertaking and doing the work themselves. For example, scholars of genetics and politics have known for at least a decade that epigenetics—a process by which the expression of genes is altered without changing the underlying DNA—complicates how we should interpret evidence for genetic influences on political phenotypes (Landecker & Panofsky, 2013). Yet, very little progress has been made in tracing the concrete implications of epigenetics for political outcomes, despite, for instance, findings that stress responses to the Holocaust (e.g., Bierer et al., 2020; Dashorst et al., 2019) and other instances of extreme trauma predisposes children to increased vulnerability to both physical (diabetes in particular; e.g., Roseboom et al., 2006) and mental health (PTSD and low cortisol in particular; e.g., Yehuda et al., 2001) challenges (e.g., Goosby et al., 2018).

Some of the reason for the absence of cutting-edge life science work in political science clearly lies in how expensive and difficult it can be to undertake biological work that requires special equipment or training without sufficient support or meaningful collaboration across disciplines. It often requires both to do this kind of work well. Part of the goal of this special issue is to provide some financial support to encourage early career scholars to engage with questions at the intersection of politics and the life sciences, to promote open science practices like transparency, and, we hope, to spur both contributors and readers to develop interdisciplinary teams that can conduct the next generation of research at the intersection of life science and politics research. Indeed, Ruisch and colleagues (2022) demonstrate that physiological data can be collected on larger, online samples thereby reducing the costs and expanding the generalizability of this type of research.

The challenge of doing this interdisciplinary work well is not only structural. It often remains incumbent on the scholar to clearly communicate the importance of the work in an accessible manner to broad audiences. Sometimes this kind of work can raise antagonism or opposition by those who incorrectly associate it with past real injustices, and it becomes necessary for scholars to assume the burden to demonstrate that careful care has been taken with ethical considerations. In addition, scientists cannot simply assume that others will immediately see or understand the interest inherent in such inquiries. Again, responsibility lies with those conducting the work to clarify its meaning and significance

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beyond basic research. In sum, it can be difficult to publish life science approaches to sociopolitical questions, and one may also face accusations of essentialism, eugenics, and other forms of bigotry once supported by certain methodologies. In this area of study, the shadow of eugenics looms large, and it is incumbent on researchers to ensure that their work does not replicate or seek to validate the harms of the past.

Though these are very important concerns, we can be assured that some life scientists and other social scientists without these concerns will happily plod along, running studies and publishing findings devoid of historical, social, and ethical contexts. So, these editors implore our readers and scholars to take up this challenging and important work to provide appropriate and necessary balance to those who might undertake such work for profit in the wider economy! To this end, we are pleased to publish the study by Gonzalez, Jin, and Wang (2022), a group of scholars who are both experts in race and ethnic politics as well as psychophysiology and neurobiology. We intentionally sent this piece to reviewers with expertise in both of these theoretical and methodological areas to ensure that the participants, questions, theory, and methods had been carefully vetted for both scientific and ethical considerations. We note that this piece has a very small *n* in the physiological aspect of the study because of challenges posed by in-person data collection. In this case, the problems arose from errors on the part of the researchers, but issues related to in-person data collection are quite common and frequent. Of course, the pandemic made such face-to-face activities more difficult than they might have been before, but such obstacles are by no means restricted to pandemic-related restrictions. Rather, in-person data collection can be very difficult for all kinds of reasons, including high rates of no-shows and ensuring diversity in sample recruitment.

However, none of these challenges proves insurmountable. After all, innovative work in this area has been, and is being, conducted by many scholars in other disciplines, most notably cognitive neuroscience, which has recently seen a notable increase in the exploration of substantive topics related to political ideology and discourse. The article by Ruisch and colleagues (2022) in this volume explores further connections and innovative approaches to understanding not only individual physiological responses, as in Gonzalez et al.'s (2022) study, but also perceptions of one's physical body. By combining a lab study with an online, webcam-based data collection, they sought convergent validity for their measures and hypothesis tests while uncovering important differences in two contexts.

Structure

As with the two prior special issues of *Politics and the Life Sciences*, one on "Disgust and Political Attitudes" (Petersen et al., 2020) and a second on "Psychophysiology, Cognition, and Political Attitudes" (Mansell et al., 2021), the contributions in this issue received funding from the Association for Politics and the Life Sciences under an initiative created in 2018 to publish open science. A call for papers was put out across various social science disciplines. All proposals were required to submit a fully specified study design that included theory and methods as well as proposed analyses. They were required to have a pre-analysis plan with a registered report. Each successful submission received $2,000 toward data collection.

The call for papers encouraged a wide variety of topics that engaged with life science themes, including but not limited to topics related to attitudes towards science or experts, new methods for the study of prejudice, research on public opinion about climate change and the environment, and evolutionary and life science approaches to political phenomena. Each went through an extensive review process prior to data collection, and successful submissions received in-principle acceptance prior to data collection, contingent on the authors following through on their original design and analysis plan. We received 13 initial submissions, of which eight were invited to prepare a registered report to be sent to reviewers. Because of the rigors of the review process and challenges with data collection linked to the pandemic, only five of these registered reports were accepted for publication in the special issue.

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Conclusion

The articles in this special issue necessarily cover only a small fraction of the topics, problems, and questions that might usefully be addressed by taking a life science approach to the study of political issues. There are many other topics that can be engaged in quite a productive fashion, including topics related to the effect of sleep, genetics markers, formidability, hormones and other characteristics, such as narcissism, on political preferences, attitudes, and behavior. Moreover, political scientists can and should continue to study the domestic and international policy process in areas of concern to the life sciences, including public health, vaccinations, climate change, genetic modification in agriculture, and even in speculative topics like transhumanism.

While it is easiest to apply these topics to issues that are particularly salient in today's politics, such as discrimination and race, or polarization and ideology, applications are certainly not limited to such topics. Other areas may include issues of chronicity, or how the circadian rhythm and the biological timing of the body can exert a decisive influence on a variety of outcomes, including sleep and conscious decision-making. Investigations into the microbiome are demonstrating remarkable effects on various mood states, such as depression and anxiety, as well as various physical ailments, suggesting rich possibilities for investigations with regard to political preferences. Temperature issues have certainly become more salient as climate change raises temperatures around the globe. Climate change has also drastically increased traumatic events for many victims of wildfires, floods, hurricanes, droughts, and other disasters. Although certainly nowhere near the only cause of trauma, work on the intergenerational transfer of trauma has already uncovered effects on physical outcomes, such as diabetes risk, but also psychological harm. Issues surrounding the effects of trauma on fear, anger, and preferences for order and security over freedom come to the fore in light of the increasing prevalence of trauma. The covid pandemic alone has clearly inculcated a generation with the trauma of loss, grief, and anxiety. Less work has been done on resilience and the prospects for overcoming trauma, and yet prospects to fund such efforts depend primarily on political choices.

We hope this special issue serves as a brief but provocative entry into some of the ways in which the interdisciplinary examination of the intersection of science and politics can be pursued. We also hope that it inspires many others to follow in the path of these valuable investigations.

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