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PS 531 Quantitative Political Analysis II

Pre-Analysis Plan

1. Describe a substantive question in social science. What theory are you assessing? Why should anyone care?

Could the racial trauma spur political participation? Experiences of racism are a common part of being a racial minority in the United States. These experiences have led to a phenomenon known as racial trauma (also known as race-based traumatic stress), the cumulative impact of years of race-based prejudice and discrimination (Carter 2007). Although racial trauma itself is a large topic in psychology, it remains understudied in political science—particularly when considering the possible relationship with political participation—despite the potential link between the two subjects. Exploring how experiences of racism may be traumatic and lead to political outcomes could help scholars understand how the lived experiences of marginalized groups shape them as political beings. Additional work on racial trauma will allow us to learn how to encourage post-traumatic growth in a political context. Specifically, the project is meant to show whether mobilization can be a coping mechanism and what drives some people to become more politically engaged in response to racism.

Racial trauma can be defined as the physical and psychological effects of different kinds of racism, such as prejudice and discrimination. This can be the result of a single event or it can arise after a series of smaller events and be the cumulative result of racist maltreatment, particularly for African-Americans. Studies have examined racial trauma and found negative effects, including symptoms of anxiety and depression (Leong, Park & Kalibatseva 2013; Assari

et al. 2017), a narrowing sense of time (having few long-term goals and not developing a sense of the future; Smith 2010), and greater risk of PTSD (Cheng & Mallinckrodt 2015; Sibrava et al. 2019). Some research even suggests that communities of color exhibit more acute PTSD symptoms (Roberts et al. 2011) and more overall physical and psychological distress (Brown et al. 2000; Kaholokula 2016).

2. The study you propose involves learning about a theory by observing certain of its implications. What one or two hypotheses that arise from the theory are you planning to assess? Why or how does the theory justify your expectations about these hypotheses?

The current study analyzes survey responses of political participation (both electoral and non-electoral behaviors) and symptoms of racial trauma. I focus on two exploratory hypotheses:

H1: Those who self-report racial discrimination will report lower rates of voting in the most recent election compared to those who do not report discrimination.

H2: Those with higher racial trauma scores will also have lower scores for non-electoral forms of political participation.

Neither hypothesis is concerned with emotions. While my theory is that emotions mediate the relationship between racial trauma and political participation, I would need an experiment in order to test this. Conducting an experiment on racial trauma is not feasible for ethical reasons; therefore, this paper uses observational data to assess the possible effect of racial trauma and political participation without examining emotions as a potential third variable.

I expect for the variables to be related such as exhibiting racial trauma symptoms will be associated with increased engagement in politics. Theoretically, trauma can immobilize people and cause their participation to decrease. This would be consistent with the symptomatology of

racial trauma because many of the symptoms are related to feelings of anxiety (e.g. avoiding people, places of things that remind you of the traumatic event, constant worrying, viewing the world as unsafe). Trait-based anxiety has been linked to decreased participation in marginalized communities (Podob 2020). Emotions can be state-based in that they are temporary states of being that have been induced, or they can be trait-based, meaning that they are an inherent part of one's personality and how they perceive things in the world around them. I conceptualize racial trauma as trait-based such that as a person accumulates racist experiences, those experiences shape them and their behaviors. Given that discrimination is a major determinant of racial trauma, it stands to reason that they would have similar effects. In other words, if we think that racial trauma impacts political behavior, then discrimination would probably also affect those behaviors.

As for the second hypothesis, racial trauma can be quantified using survey responses, which the present study explores. If there is a relationship between racial trauma and political participation, then it is worth exploring various participation types a) to see if there are differences in the direction or strength of the effect and b) to determine whether trauma can lead to mobilization in unconventional ways. Voting is the most straightforward way for people to involve themselves with politics, but less common types of political engagement such as protests or volunteering for campaigns are more costly in regards to time and resources. To participate in politics, some amount of privilege is required. Time and money in particular are the two most important resources one needs to engage with politics, which can be used by giving monetary donations to candidates or volunteering as part of a campaign. Civic skills such as writing and public speaking are also useful for involvement in politics. Those with the capacity to communicate well and coordinate a group of people can more effectively engage with their community and influence

political outcomes. Having these resources is more common among people with socioeconomic advantages (Brady, Verba, & Schlozman 1995; Wolfinger & Rosenstone 1980). Moreover, poorer populations tend to possess less of these resources than the wealthy. Their time is limited in that they may have to work long hours and may even have multiple jobs, they have less money in that their income may only be enough to cover basic necessities, and their civic skills are not as polished because they often have less education and fewer opportunities to hone those skills. While political interest is the most important predictor of political involvement (Ritter 2008), it may be difficult to display that interest if one is struggling to meet one's most essential needs. Ensuring that necessities such as food, water, and shelter are attainable is a difficult task for some more than others. Prioritizing the fulfillment of these needs may require that other matters must be subservient to making sure that essential needs are met first. Solt (2008) determined that economic inequality reduces interest, discussion, and overall engagement with politics on an individual level. If a person decides that the financial cost of participation is more than the benefit, then they may forgo participation due to budget constraints. Lack of access to certain resources (which can be a partial cause of racial trauma due to feelings of inferiority compared to another group) also hinders participation, especially in terms of non-voting participatory activities. In sum, racial trauma could have an effect on non-electoral participation that is distinct from voting, therefore my second hypothesis provides the opportunity for me to explore this possibility further.

My theory that racial trauma affects political participation justifies both of the above hypotheses. For the first, it allows me to investigate racial discrimination as a direct predictor of racial trauma. Racial discrimination and racial trauma are separate concepts, but they are interrelated such that a person with more discriminatory experiences is more likely racially traumatized.

Discrimination is a form of racial violence that can lead to negative emotional and psychological effects (Carter 2007).

3. What data and research design will help you answer this question? Why are you making these choices? (Remember that a statistical model is not a research design.)

The data contains survey responses from undergraduates at a university in central Illinois (N = 390). All respondents were part of an undergraduate subject pool and received course credit in exchange for their participation in the study. I generated my own data because no existing data sets included questions about clinical trauma symptoms and political behaviors; the only way I could have shown a link between my variables of interest was to create my own survey to collect data. When I previously wrote a paper on this topic, I used data from the Pew Research Center's Survey of Religion Among Black Americans. In addition to describing their religious beliefs and church attendance, respondents answered questions related to how much their blackness mattered to their personal identity, whether they believed that U.S. institutions (specifically the criminal justice system in this case) were just and effective, and how successful they felt organizations in their community were in helping blacks reach racial equality. But ideally, racial trauma should be measured by the amount of racism and discrimination encountered in one's past and how much those experiences have affected their current life (e.g. self-perception, worldview, everyday mannerisms).

I will assign values to the main variables of interest in my data set. Discrimination is an explanatory variable that is binary (yes/no) while electoral participation is an outcome variable that is also binary (yes/no). Both are directly related to my first hypothesis. Racial trauma was measured with the TSDS as a continuous, explanatory variable. Non-electoral participation was

measured as an outcome variable through a series of questions asking about five types of political participation that were not related to voting. Respondents checked boxes to indicate whether they engaged in these forms of participation for a presidential candidate's campaign, for a candidate in another office, or for another political group or cause (presumably, if a respondent did not check any of the boxes that they did not engage in any of the listed activities). These variables are related to my second hypothesis.

4. What are the advantages and disadvantages of this research design to addressing your question?

The advantage of designing the study this way is that I can study racial trauma ethically and minimize the risk of re-traumatizing marginalized people. Studying racial trauma is methodologically difficult; researchers cannot randomly assign people to trauma conditions for ethical reasons. But doing so in an observational study does not have the same concerns because people are not assigned to a condition that could harm their mental state. Additionally, the TSDS does not ask about specific racially traumatic events. Rather, it only asks about the effects of those events without requiring people to recount details of experiences that were traumatic for them. About half of the total sample answered the TSDS battery because first, they were asked whether they had ever experienced racial discrimination. If they indicated that they had, then they answered the TSDS question to demonstrate the effects that racial discrimination have had on them. But for respondents who indicated that they had not been discriminated against because of their race, they did not answer any other questions. The disadvantage is that I observe the impacts of discrimination for a smaller number of people. But overall, I see this part of the design as advantageous because it allows me to compare those who self-report discrimination to

those who did not and see whether political participation differed between the two groups. It also ensures that I do not assume that anyone has been discriminated against before; I allow the respondent to communicate whether they have experienced discrimination instead of assuming one way or another because of their racial or ethnic identity.

Other disadvantages include the issue of non-response for non-electoral participation. I assume that those who do not check boxes for non-electoral participation simply did not engage in any of the listed types. This makes it impossible to distinguish between non-participation and non-response because not checking boxes could mean low participation, but it could also be that respondents simply did not answer the question. Given that there were abnormally high non-response rates for electoral participation (i.e. voting), it is entirely possible that people in the sample are simply not answering the question. With Qualtrics surveys, one can request a response to remind a survey taker when they have not answered a question, but due to the way the question is structured, not responding may not always be a problem. The issue is that there is no way to know whether a person not answering the non-electoral participation questions is truly from a lack of participation, forgetting to answer the question, or deciding not to answer for other reasons.

The sample consists of 154 men and 233 women with three people identifying as non-binary. Most of the respondents were white (59%), with remaining respondents being Latino (22.8%), Asian (16.2%), Black (4.1%), mixed race (7.4%), Native American (0.5%), and another race not listed (1.5%). Out of all the respondents, 161 indicated that they had experienced racial discrimination at some point whereas 161 stated that they had not; 46 people did not respond. Those who did self-report discrimination answered a battery of questions from the Trauma Symptoms of Discrimination Scale (TSDS; Williams et al. 2018). All respondents indicated

whether they were eligible to vote in the last presidential election, whether they voted, and whether they engaged in non-electoral forms of political participation in the past 12 months (displaying a yard sign, wearing a button or bumper sticker, attending a rally or protest, volunteering for a campaign, or contributed money). The order was randomized such that half of respondents answered the participation battery first and half answered the trauma battery first.

5. Describe your measures and any indices you construct.

The Trauma Symptoms of Discrimination Scale (TSDS) from Williams, Printz, and Delapp (2018) measures racial trauma in this way. In sum, the Pew Data was somewhat useful because it provided insight into group consciousness among Blacks in the US and how they perceive American institutions. But because the data set does not contain measures of trauma (as with other data sets that I am aware of), I must collect my own data to ensure I capture my variables of interest.

The TSDS measures racial trauma along physical, psychological and behavioral dimensions. The original version contains 21 items asking respondents about changes they experienced following discrimination. But since I am only concerned with the psychological and behavioral symptoms, I omitted the questions regarding physical symptoms, which, after combining similar items to cut down on the number of questions, constituted 12 items that were in my survey (see Appendix A). The measure also contains a second section assessing the different types of discrimination that people have experienced, but this was also omitted since the current study only focuses on race and respondents were asked specifically about racial discrimination. Respondents address each item on a scale of 1 to 4 based on how true each of the statements about racial trauma are for them. Williams, Printz, and DeLapp (2018) show that the survey is very reliable; Cronbach's

alpha for the original survey that includes the physical symptoms is 0.94. The code chunk below shows that without these items, internal reliability only decreases slightly ($\alpha = 0.922$).

6. Use data to make the case that your research design allows you to interpret observed quantities (like observed data comparisons or parameters of models fit to data) as theoretically relevant and clear.

Given that my study is observational rather than, I will conduct mahalanobis distance matching to create a quasi-experiment out of observational data. This will allow me to draw causal inferences and theoretically relevant conclusions on how racial trauma and political participation may be related.

- i. If you are using an observational study design then explain how you will make the case for interpretable comparisons (this is the same as question as 'What is your identification strategy?'). That is, explain how you will use statistical adjustment (like matching or covariance adjustment aka "controlling for") to persuade yourself and others that the comparison that you are showing reflects what you say it does. If you are making comparative or causal inference, I assume you will explain the natural or quasi-experimental design and approach you will be using here. "I controlled for a lot of background variables in a linear model." will not be acceptable here. If you are making population inferences, you should explain your approach as well. (2 paragraphs plus some tables or figures)**
- ii. If you are using an observational study design, explain how you will judge the success of your adjustment strategy. For example, you may explain here about**

balance tests and other diagnostics that refer to the problem of adjustment for confounding or making the case for an as-if-randomized comparison, or an as-if-randomly sampled set of observations, etc.. (1 paragraph)

I will do matching using mahalanobis distance to calculate how far apart observations are in a multivariate space, but another option is matching based on propensity scores as a way to weight covariates that are predictive of racial discrimination (e.g. race, ethnicity) to give a linear combination of covariates. There is also the option of doing pair matching (i.e. matching respondents who report discrimination to those who do not) or full matching (i.e. matching one treated respondent to one or more non-treated respondents). I intend to do full matching to ensure that fewer observations need to be dropped, but matching based on mahalanobis distance or propensity scores is more complicated. The data is observational, therefore it could be sensitive to confounding variables. Arguably, the best way to determine how to match respondents lies in sensitivity analysis, which will reveal which matching method is least vulnerable to confounders. I will essentially be using sensitivity analysis as a comparative robustness check to pick a matching method.

Matching will also allow me to adjust for covariance. Traditionally, scholars create regression models with a long series of different variables (e.g. age, gender, race, income) as a way to "control for" covariates. But I find this approach problematic; if I used this method, I would never know for sure if I controlled for enough things because there would always be a covariate that I did not control for that could have an effect on the results. It would also be unclear whether I truly should control for those covariates because those variables could generate outliers, in

which case I would not wish to remove those variables because I would want to be aware of the presence of outliers.

7. Explain your plans for any missing data or extreme outcome or covariate values you may encounter when you get the real data (or perhaps you have the background data but not the real outcomes, so you can explain your plans for such data issues in that case here too).

I will impute for any missing covariates. For variables which are categorical, I will impute the most common response based on the rest of the sample. For those which are continuous, I will impute the mean. I plan to remove any outliers and do a balance test to make sure that my adjustment strategy worked; if it did, then the covariates will be evenly dispersed between the treatment groups and control groups.

8. What statistical tests do you plan to use? Explain why you chose these tests and any decision making criteria you will use upon seeing the results of the tests. You should also engage with the problem of multiple testing here if you are going to show the results of more than one test. (Recall that confidence intervals and hypothesis tests convey more or less the same information. So a confidence interval is a form of testing.)

As for a statistical test, I will conduct independent samples t-tests. The first one would determine whether experiencing discrimination impacted whether a person voted (hypothesis 1) and the second one would show whether exhibiting racial trauma symptoms affected non-electoral political activities (hypothesis 2). However, performing more than one statistical test can be risky in that it can increase the chance of a Type I error; in other words, it increases the probability of getting a false positive, meaning that we may find a treatment effect in the results when there

isn't one in reality. The tests that I am doing are independent of each other, so making a Type I error is less of a concern.

9. Explain how you will judge the performance of those tests. Will you only use simple false positive rate and power? Or do you need to add familywise error rate? false discovery rate? Or something else? Explain why you made this choice.

Even though the samples are independent of one another, I would still like to calculate the false discovery rate (FDR) to adjust the tests' significance levels and reduce the risk of a Type I error.

The FDR is more liberal than calculating the family-wise error rate because instead of examining the likelihood of getting one false positive, it evaluates the chance of getting a false positive for *all* results that contain a p-value less than 0.05. Therefore, I chose the FDR because it will give me a better ability to detect a treatment effect.

I also did a randomization-based permutation test and bootstrapping. I chose to do both of these methods at the same time so that I could a) estimate the sampling distribution of my outcome variable and b) verify the assumptions of the test statistic and the distribution to see if the bootstrap results aligned with the permutation test results. If they do, then that indicates the results are robust and the data fits the assumptions of the test. One can bootstrap to get the distribution, then use permutation to do a hypothetical experiment and see how the results would be different if the two groups in your sample had different values for the outcome variable. In other words, what would the results look like if the people in the control group had been treated and the people in the treatment group had been controlled?

10. Show and explain how your test performs in regards to those properties (at least you will show false positive rate and power).

I will conduct power analysis using 'DeclareDesign' to determine the sample size needed for sufficient power and a good false positive rate; I would prefer the false positive rate to be no more than 5% because this would indicate only a 5% chance of rejecting the null hypothesis when it is true. I will do a difference in means test (i.e. independent samples t-test) and calculate the conditional average treatment effect (CATE).

Given that both hypotheses are uni-directional, I intend to use a one-tailed t-test; I will compare rates of political participation between those who report discrimination and those who do not

The alpha level will be set at 0.05 and I will reject the null hypothesis if the p-value is greater than 0.05. Since the study contains more than one hypothesis and will require more than one test, I plan to adjust for multiple comparisons using Bonferroni's correction.

11. What statistical estimators do you plan to use? Explain why you chose these estimators. Especially explain what is your target of estimation — what is the estimand? (1 paragraph)

I plan to use the sample mean as my estimator and the CATE as my estimand. This way, I can determine the mean effect of racial trauma on political participation. Average treatment effect will show the average outcomes for both the treatment group and the control group; it will also provide insight into how large the treatment effect is and whether the effect is positive (i.e. racial trauma increases participation) or negative (i.e. racial trauma decreases participation). The CATE specifically will allow me to see how people responded to the treatment varied across subgroups (i.e. racial groups). African-Americans experience more racial discrimination than other

marginalized groups (Chou, Asnaani & Hofmann, 2012; Williams, Kanter & Ching, 2018), thus it stands to reason that because Blacks experience more discrimination than other groups of color, they may also have the most racial trauma. Likewise, because Whites typically report the least amount of racial discrimination, I expect them to also have the least amount of racial trauma compared to other racial groups.

12. Explain how you will judge the performance of those estimators (especially bias and MSE)? (1 paragraph)

I will assess the performance of CATE as an estimator by calculating the bias and the mean squared error (MSE). If the CATE is biased, then that means that it does not capture the actual effect; the effect that the CATE shows differs from the true average treatment effect. The MSE of an estimator represents the average squared difference between the values from the true effect and the values that the estimator produces. Ideally, the MSE should be as small as possible. A small MSE means that the average squared difference between the CATE outcome values and the true outcome values is minimal; therefore, a smaller MSE indicates that the estimator is more accurate. In contrast, a larger MSE indicates a larger difference between the values from the estimator and the values from the true effect, therefore a larger MSE means that the estimator is less accurate. Because we do not know the population mean we will never be completely certain of the amount of bias, but we can bootstrap to estimate the amount of bias.

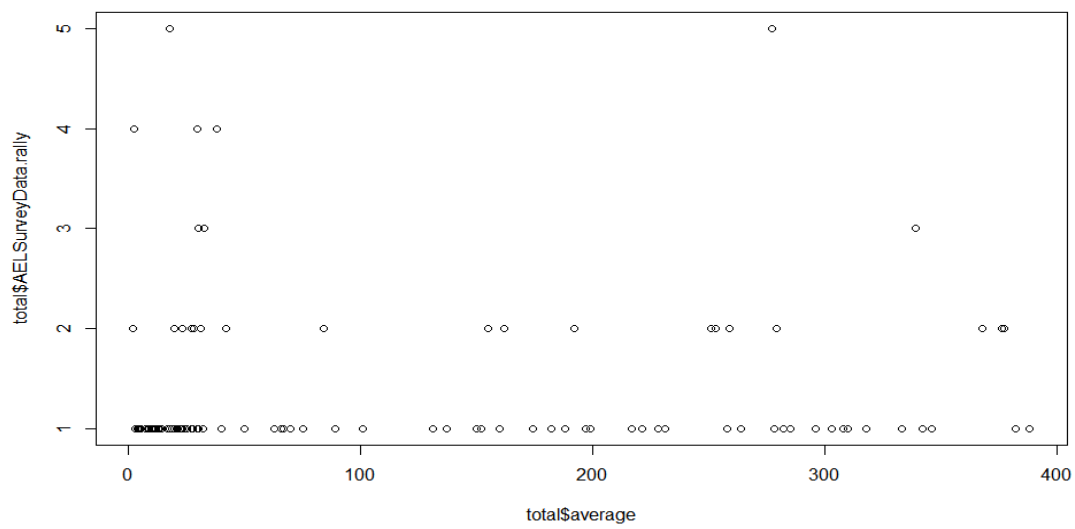
13. Show and explain how your estimator performs in regards to those properties (at least bias and MSE). (2–4 paragraphs)

I evaluated the CATE estimator's performance by using bootstrapping to do 1,000 simulations to see how racial trauma impacts political participation across different hypothetical scenarios in the data. The estimator has a bias of -0.22 and an MSE of 0.15. A negative number for bias means that the estimator may be underestimating the true effect whereas a positive number indicates that the estimator is overestimating the true effect. Therefore, the CATE estimator is slightly underestimating the effect of racial trauma on political participation. The MSE is quite small so it fits relatively well with the data.

I also examined an Ordinary Least Squares (OLS) estimator to determine whether I should use a linear model for my data. The results demonstrate that OLS is very biased and does not accurately capture the effect. The MSE is higher for OLS than it is for CATE (0.24), therefore it does not fit as well with the data.

14. Make one mock figure or table of the kind you plan to make when you use the actual outcome. Interpret the results of the mock analysis as if it were the real analysis. Saying something like, “If the real outcome were as I have simulated it, then the following table/figure would mean such and so about the theory.”

I visualized the distribution of non-electoral participation scores with scatterplots showing the correlation between TSDS scores and scores for different types of non-electoral participation (five scatterplots total). Below is an example of one plot I created. I also used an interaction plot to visualize the CATE so I could see the difference in outcomes (i.e. political participation) at different levels for a given covariate (while I was unfortunately unable to produce the interaction plot, the code for it is included in the appendix).



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Appendix A

(Abridged) Trauma Symptoms of Discrimination Scale

Have you ever been discriminated against based on your race or ethnicity?

- Yes
- No
- I don't know

Due to past experiences of discrimination, I often feel nervous, anxious, or on edge, especially around certain people.

- Never
- Rarely
- Sometimes
- Often

Due to past experiences of discrimination, I often feel afraid as if something awful might happen.

- Never
- Rarely
- Sometimes
- Often

Due to past experiences of discrimination, I often have nightmares about the past experience or think about it when I do not want to.

- Never
- Rarely

- Sometimes
- Often

Due to past experiences of discrimination, I often worry too much about different things.

- Never
- Rarely
- Sometimes
- Often

Due to past experiences of discrimination, I often find that being embarrassed or looking stupid are one of my worst fears.

- Never
- Rarely
- Sometimes
- Often

Due to past experiences of discrimination, I often become easily annoyed or irritable.

- Never
- Rarely
- Sometimes
- Often

Due to past experiences of discrimination, I often feel constantly on guard, watchful, or easily startled, especially around certain people or places.

- Never
- Rarely
- Sometimes

- Often

Due to past experiences of discrimination, I feel the world is an unsafe place.

- Never
- Rarely
- Sometimes
- Often

Due to past experiences of discrimination, I feel isolated and set apart from others.

- Never
- Rarely
- Sometimes
- Often

Due to past experiences of discrimination, I avoid certain situations or speaking to certain people.

- Never
- Rarely
- Sometimes
- Often

If I think about past experiences of discrimination, I cannot control my emotions.

- Never
- Rarely
- Sometimes
- Often

Due to past experiences of discrimination, fear of social situations causes me a lot of problems in my daily functioning.

- Never
- Rarely
- Sometimes
- Often

Based on Williams, Printz, & DeLapp (2018)

Appendix B

See the code file here: [PS531PreAnalysisPlan/README.md at main · AELewis1999/PS531PreAnalysisPlan · GitHub](#)