

# Overconfidence in Politics & Civic Education: Testing for the Dunning-Kruger Effect

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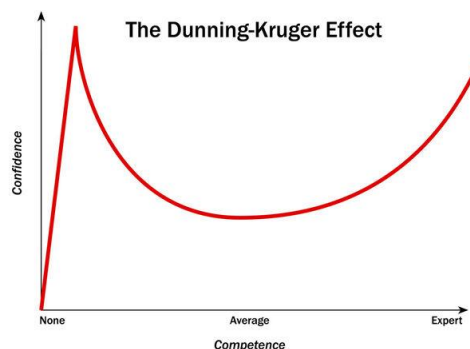
Presented at the 2019 American Political Science Association's Annual Meeting in Washington, D.C.

Research for this paper generously supported by an Arkansas Tech University Student Interdisciplinary Research Grant (SIRG). The presentation of this research generously supported by a 2019 Arkansas Tech University Professional Development Grant.

## Restatement of Problem and Professional Development Opportunity

Dr. Gooch and I used our pretest and posttest data of American Government courses at Arkansas Tech University (ATU) and Stephen F. Austin State University (SFASU) from Fall 2017 and Spring 2018 general education American Government courses to test if the Dunning-Kruger effect (DKE) was present and plagued the civic learning on college students. Dunning and Kruger basically argue that for many primarily knowledge-based activity domains—they originally examined grammar, humor, and logical reasoning—people in the bottom quartile for the domain suffered from a metacognitive deficiency where they are unable to evaluate their own or others' proficiency in the domain area. Simply put, they have a false sense of overconfidence in this domain area when their actual knowledge and performance in the area is quite poor and low. Not only is this problem metacognitive, but it is not easily fixed through social comparison (i.e., seeing others competently perform in the domain), as metacognitive growth—a higher level of learning on Bloom's taxonomy—is first needed to make those suffering from DKE to recognize their incompetence and become more competent in the domain area. As Dunning and Kruger explain, "Overestimation occurs, in part, because people who are unskilled in these domains suffer a dual burden: Not only do these people make erroneous Conclusions and Make unfortunate Choices, but their incompetence robs them of the metacognitive ability to realize it (Dunning & Kruger 1999)." (Kruger, Justin and Dunning 1999, 1121-1134).

Figure 1



Simply put, the DKE holds that many of those who perform poorly in a domain area think they are competent, often highly competent, because they do not have the critical skills to evaluate what good versus poor performance is. As a result, feedback on their poor performance is often ignored and they fail to learn and grow in the domain area. With the ATU professional development grant, Gooch and I were able to develop a first draft of a manuscript showing that the bottom quartile of college students in general education American Government courses suffer from DKE when it comes to knowledge of politics. With the funds from this grant, I traveled to the annual American Political Science Association's annual meeting, which was held August 30<sup>th</sup> to September 1<sup>st</sup>, 2019, in Washington, D.C. I presented our initial findings that DKE does plague college students in American Government courses and is likely an obstacle to citizenship development through the Political Science Education section of APSA. There where about 15 attendees of the panel, the presentation was well received, and Gooch and I are confident we have the foundation for a publishable manuscript, possibly in the journal *Political Psychology*. It will also be the basis of a chapter or two of a book we expect to produce in a few years.

### **Brief Review of Research Procedure**

For the conference, Gooch and I focused on testing for the DKE effect in college students at Arkansas Tech University and Stephen F. Austin State University during the Fall 2017 and Spring 2018 semesters through a pretest and posttest battery of assessments. Below I provide first a discussion of the research methodology with the research question and hypotheses. This is followed by a discussion of the findings.

#### *Test One: Examining for the DKE among American Government Students*

**Question One:** Do American Government students fit the DKE pattern, as expected by the literature?

**Hypothesis 1.1:** Students in the bottom quartile by their civic exam pretest will most overestimate their knowledge levels, as much as 4 times that of students in the top quartile.

**Hypothesis 1.2:** The bottom three quartiles will all overestimate their performance but at decreasing rates, while the top quartile will underestimate their knowledge levels.

Gooch and I have been implementing a pretest/posttest assessment in American Government courses for over a decade now. The assessment collects basic demographic information on the students, assess their civic engagement and political efficacy entering and leaving the course, and gives them a sample of US naturalization questions to assess their knowledge of American government. We have found previously that a one-semester course in American Government can improve civic literacy in statistically significant ways but has no apparent effect on civic engagement (Gooch and Rogers 2015, 295-344; Gooch and Rogers 2012, 53-82). In Fall 2017, we moved this assessment to Qualtrics and added a series of questions (one on civics, another on American government, and a third on American politics) that asks the students to rate their knowledge of politics on a scale of 1 to 10. While this is not exactly the way Dunning and Kruger and other psychologists have measured the DKE (they ask them to rank their knowledge compared to others), it also gives us the ability to see students' perceived knowledge versus their actual performance on the naturalization questions.

Thus, our first test is to see if we can recreate the pattern of the DKE literature by evaluating this gap among students completing the assessment. Following the literature, students are broken into four quartiles. For each quartile we compare the pretest average perceived level of knowledge to the average performance on the knowledge test. The expectation is that those in the bottom quartile will most egregiously overestimate their knowledge of politics versus the other three quartiles. To truly replicate the pattern, what we actually expect to see is that the first

three quartiles all overestimate their knowledge, but at a decreasing rate, while the highest knowledge quartile actually slightly underestimates their knowledge (Kruger, Justin & Dunning, David 1999, 1121-1134).

*Test One Findings*

While we did not have time to look at all four quartiles for the conference, Gooch and I clearly found evidence of the DKE plaguing American Government students in college. By simply looking at the bottom quartile and the top quartile, one clearly finds the DKE in the former group through the use of an Anova test.

Figure 2

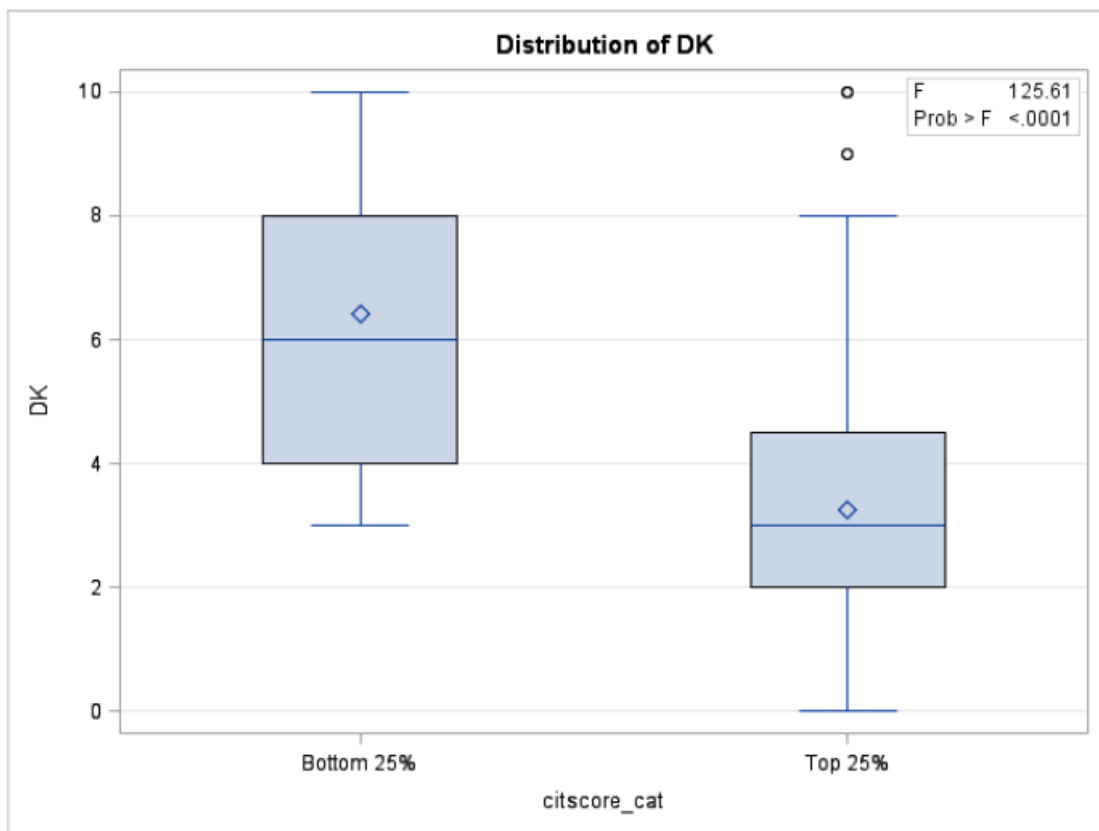


Table 1

One Way ANOVA of Top and Bottom Cit Score Categories					
The ANOVA Procedure					
Dependent Variable: DK					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	654.341488	654.341488	125.61	<.0001
Error	261	1359.628094	5.209303		
Corrected Total	262	2013.969582			

R-Square	Coeff Var	Root MSE	DK Mean
0.324901	47.19092	2.282390	4.836502

Source	DF	Anova SS	Mean Square	F Value	Pr > F
citscore_cat	1	654.3414878	654.3414878	125.61	<.0001

Students in the bottom quartile on the civic literacy assessment clearly overestimated their abilities and knowledge in politics when compared to students in the top quartile. Not only is there a gap in the estimations of their political abilities between the two groups, but the difference is statistically significant at the .0001 level. As a second check on this we also ran a Tukey's Studentized Range (HSD) test and found the results were statistically significant at the .05 level.

Table 2

Tukey's Studentized Range (HSD) Test for DK

**Note: This test controls the Type I experimentwise error rate.**

Alpha	0.05
Error Degrees of Freedom	261
Error Mean Square	5.209303
Critical Value of Studentized Range	2.78472

Comparisons significant at the 0.05 level are indicated by ***.				
citscore_cat Comparison	Difference Between Means	Simultaneous 95% Confidence Limits		
Bottom 25% - Top 25%	3.1547	2.6004	3.7090	***
Top 25% - Bottom 25%	-3.1547	-3.7090	-2.6004	***

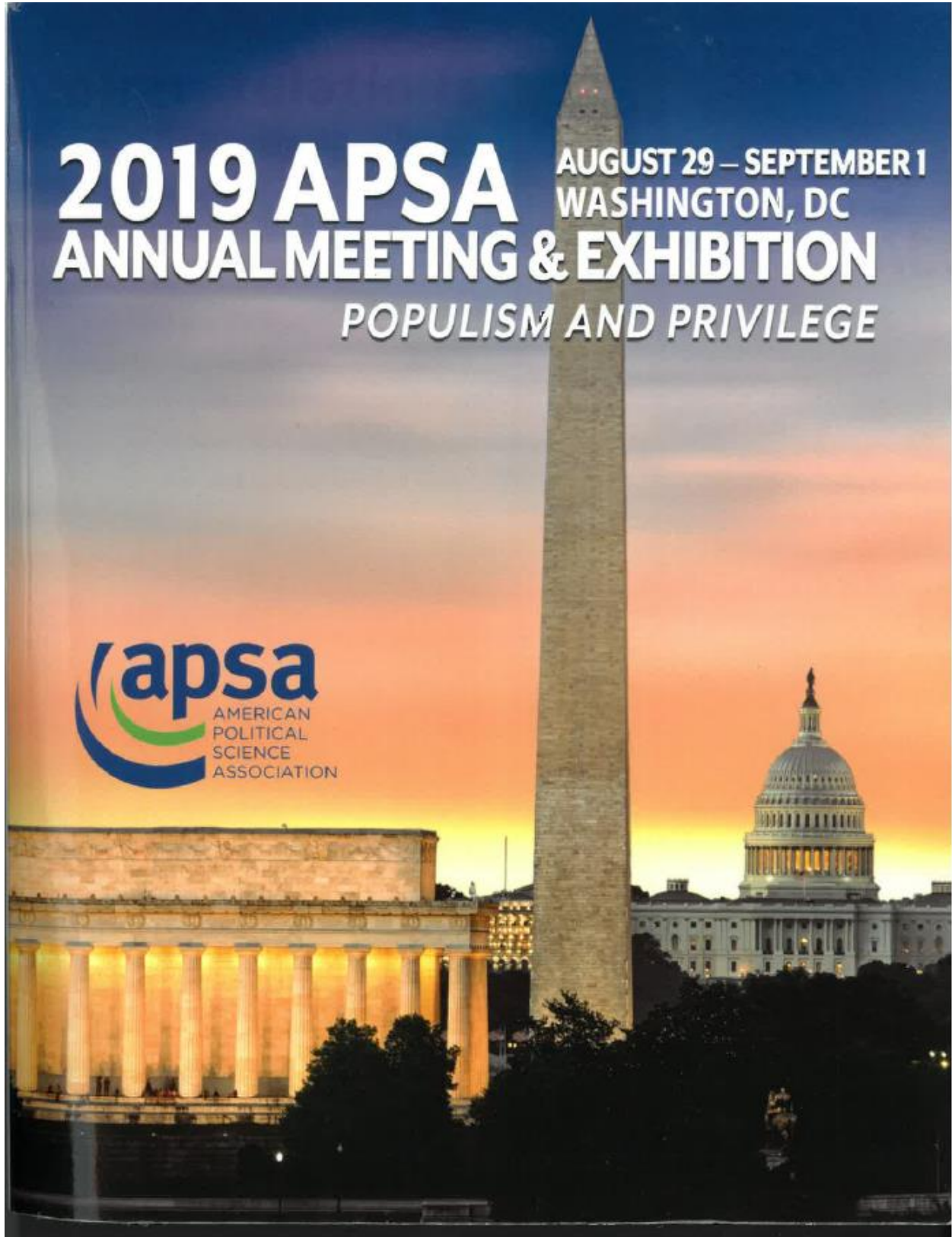
## Conclusions and Recommendations

Given our initial findings that the DKE does plague about a quarter of students in general education American Government courses, we plan to investigate what challenges this raises for educating these students. For one, Anson has argued partisanship had further reify the DKE, making partisans even more resentment to information and education on politics that does not fit their partisan lens (Anson 2018, 1173-1192). We also have an assessment of the pedagogy teachers are using when teaching the American Government course. Therefore, we can investigate how pedagogy (traditional lecture versus flipped classroom versus discussion-oriented classes, etc.) may affect the DKE students. Do some pedagogies help overcome the DKE better than others? Gooch and I plan to explore all these issues in future iterations of this initial investigation of the DKE challenge for American Government classes

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