

The August Collection: Attitude Changes, Cognition in Lemurs, and Much More

August 18, 2022



How have our biases and attitudes changed in the last decade? Are there sex or gender differences in verbal skills? And do the impressions of personality we form from someone's face depend on our culture? New research in APS journals explored these questions and much more, including ADHD, and cognitive control in lemurs. In this episode of *Under the Cortex*, cognitive psychologists Ludmila Nunes and Andy DeSoto discuss five of APS's most interesting new articles.

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Unedited Transcript

[00:00:12.150] – Ludmila Nunes

How have our biases and attitudes changed in the last decade? Are there sex or gender differences in

verbal skills? And do the impressions of personality we form from someone's face depend on our culture? New research in APS journals explored these questions and much more, including ADHD and cognitive control in nonhuman primates. This is Under the Cortex. I am Ludmila Nunes with the Association for Psychological Science. To speak about five articles recently published in the journals of APS. I have with me Andy DeSoto, a cognitive psychologist and the director of Government Relations at APS. Welcome back, Andy.

[00:00:58.190] – Andy DeSoto

Hey, Ludmila. It's great to join you for another episode. Great to chat with you today. How are you doing?

[00:01:02.740] – Ludmila Nunes

I'm good. I hope you're doing well, too.

[00:01:05.020] – Andy DeSoto

I am too. I'm excited to talk about a couple more papers with you today.

[00:01:09.070] – Ludmila Nunes

So what have you selected for us today?

[00:01:12.770] – Andy DeSoto

Absolutely. So, a couple of papers that I thought we could chat about today. The first one is titled patterns of Implicit and Explicit Attitudes. Number four change in Stability from 2007 to 2020. And this paper was authored by APS member Tessa Charlesworth and one of APS's past president, Mazarin Banaji. And cool to see that this paper has received all three of APS's open Scientific practice badges for open data, open materials. And it's been preregistered, too.

[00:01:46.810] – Ludmila Nunes

To explain to our listeners a little bit more about what those badges mean and why we make a big deal about them.

[00:01:54.030] – Andy DeSoto

Absolutely. So from my perspective, APS and other scientists recognize the value in research transparency for a variety of reasons. When individuals conduct the research transparently, it allows other scientists to more easily assess their claims, build off of them in some cases. And it's thought that increased research transparency is associated with higher quality research in general. So what APS does, and we have done this really for about ten years or so, I believe, we have been recognizing scientific articles that are published in the journals with these three different badges. One for open data if the publishing scientists make the data that undergird the paper available in an open access repository, open

materials, when the authors make the materials that they used for conducting the research available in a similar way. And again, we talked a little bit about this last time. We podcast it together. But the preregistration badge and what this badge does, it indicates that the scientists have said what they're going to study, the kind of experiment that they're going to study before they conduct it. And one of the main reasons that we recognize preregistration and appreciate preregistration and research experiment is because we recognize that sometimes if the study is not preregistered.

[00:03:19.230] – Andy DeSoto

A scientist may explicitly or perhaps implicitly alter the goalposts of the study or decide to look at different measures that relate to a particular constructor concept that might be of interest to the paper that may increase the likelihood of a false positive research finding. So creating these pre registrations is just an additional way to be transparent about the goals and motivations for a study, as well as potentially reduces the likelihood of these false positive sorts of findings. And frankly, doing some preregistrations myself, I really think it's improved the quality of my own research and it made me.

[00:03:56.600] – Ludmila Nunes

Connect better study, that's very important and this is what advances science. Okay, let's talk about the research.

[00:04:03.680] – Andy DeSoto

Now what these two authors did was they looked at the pattern of explicit and implicit attitudes towards a variety of different groups over the last decade or so. Part of what led to this study was wondering if some of the politically charged period, especially over the last couple of years in particular, might have led to any changes or increases in the kinds of biases or attitudes, whether implicit or explicit, held in folks in the US. Over time. So what they did is they took advantage of project implicit, which is a site that collects all of this data and reports, in many ways really overwhelming database of test takers. Over the years, they analyzed over 7 million explicit attitude tests that came from their database. And overall, I would say that the pattern of results was relatively positive. For example, over that period of time, explicit attitudes decreased, or in other words, the kinds of attitudes or beliefs that an individual might endorse openly decreased over time. So for example, one of the examples given by the authors was the phrase, I strongly prefer thin people to fat people. This is something that over time slowly has been less endorsed by people who have taken the association test and related tests on the website.

[00:05:34.050] – Andy DeSoto

So overall, these sorts of explicit biases decreased over time. What the authors found also was that in some cases, implicit biases also decreased, including during this period of interest. The authors found that implicit biases that individuals showed on average toward race, skin tone, and sexuality is decreased in implicit bias. However, implicit bias did not decrease across all the categories that were measured by the scientists. And one of the things that they said in the conclusion of the article that I really appreciated was that these data show that change is possible but is not inevitable. In other words, that implicit bias has decreased over time in some of these categories, but it's not a given, this is going to happen necessarily. So I thought it was a really interesting study. If folks are listening and they want to learn a

little bit more about project implicit in these associated work, they can visit [implicit Harvard.edu](https://implicit.harvard.edu) to learn a little bit more.

[00:06:34.350] – Ludmila Nunes

Yeah, what was interesting about this article was the specific I thought was the specific categories in which implicit attitudes did not change much and those were about age, disability, and body weight.

[00:06:50.430] – Andy DeSoto

Thanks for pointing that out.

[00:06:51.720] – Ludmila Nunes

Yes, that can give some cues about areas in which more awareness might help because they already changed at the explicit level. It does not mean that we endorse these biases, but what it means is that we might still make these associations and discriminate on the basis of these implicit attitudes. So I selected this article, also published in one of our journals, in this case in *Perspectives on Psychological Science*. The title is Sex and Gender Differences in Verbal Fluency and Verbal Episodic Memory: A Meta Analysis. So Marco Hirnstein and colleagues did a meta-analysis examining the effect sizes of sex and gender differences in verbal fluency and verbal episodic memory. And what they found was that women tended to perform better than men in phonemic fluency. And this is, for example, if you give participants one letter, for example, P, and you ask them to generate words starting with that letter. So it seems that women just had an easier time coming up with many words starting with that phony. But in semantic fluency, which is naming things that have a given characteristic, for example, naming things that are round, the sex gender difference did not show up.

[00:08:29.850] – Ludmila Nunes

Instead it seemed to depend on the category. So for example, women named more fruits than men, but men were more able to name more animals than women. So these results are based on a meta analysis, as I said, and they also point out that this female advantage appears to be relatively stable over the past 50 years and the cross last types, so it doesn't change with age, with age group and over the years it stayed that way. However, these results also appear to be partly due to publication bias, meaning that in psychological science and in the other sciences there is an emphasis on publishing significant results. So if you find differences in your research, you are going to publish them and those differences are the ones that are going to be contributing to the effects in a meta analysis. So let's take these differences and how women might outperform men in some verbal skills measures with a grain of salt.

[00:09:44.980] – Andy DeSoto

Interesting. Do you think, or do the authors think that the size of this effect might be a little smaller than what the published research shows?

[00:09:53.730] – Ludmila Nunes

Exactly. And that happens a lot in metanalytic research and the preregistration can actually help knowing that some research was planned, it was conducted and it was well conducted and then actually the hypothesis were not supported.

[00:10:12.990] – Andy DeSoto

One thing that I was thinking of lamella while hearing you describe the study was how this would be just a wonderful classroom exercise. Perhaps I don't teach psychological science classes right now. But if I did. I would love to run some of these experiments in the classroom and see if some of these things. For example. The funny and the fluency and example that you gave. See how many words people can come up with when prompted with a particular letter whether those kinds of things show up in a classroom environment or not. And whether those data are consistent with the patterns that are shown in the meta analysis. So I should suggest that for a future teaching column in the APS website.

[00:10:48.630] – Ludmila Nunes

Yes, we should definitely do that.

[00:10:51.210] – Andy DeSoto

Should I jump to a next study?

[00:10:53.250] – Ludmila Nunes

Yes, please do.

[00:10:54.780] – Andy DeSoto

Sure. The next study I want to talk a little bit about is titled Parsing ADHD with Temperament Traits. And this paper was authored by APS fellow Joel Nigg and published in Current Directions in Psychological Science. And something I wanted to let everybody know about is that the journal Current Directions in Psychological Science is meant to provide has got a special mission. And the mission is to present summaries of really interesting lines of research, often coming from an individual's lab and lab tradition, but sometimes a little bit more of a synthesis than that, and not only present these really valuable summaries, but also provide them at a level that is accessible to the average reader. I think what we say is it's supposed to be accessible to the average college undergraduates, for example. So I really recommend to anyone who's listening out there who wants to know more about what the state of the art sciences to say about a particular topic, to just slip through the virtual pages of Current Directions in Psychological Science. And there's just so much to be learned again from those articles. In particular, this one from Joel Nigg examines the topic of Attention Deficit Hyperactivity Disorder, which we commonly know as ADHD.

[00:12:10.630] – Andy DeSoto

And I really recommend that interested folks read this paper to learn a little bit more. But one of the things that Nigg argues in his paper is that his data show that it's really important to understand the

heterogeneity that is, the variance of different conditions that express themselves in ADHD and the way that folks experience those conditions. One of the conclusions that he makes is that he believes that measuring individuals temperament, that is, their emotional reactivity, that that's one really important way to understand ADHD. And in fact, the organizing principle that provides could be really valuable. He suggests in his paper that some of the ways that he's pioneered in using temperament to understand ADHD might even be more effective than using existing ADHD subtypes or profiles that exist currently. It's a really interesting, cutting edge work on this topic and thinking about how his work has potential to improve things like theory and mythology and assessment. It got me thinking about some work that APS has sponsored recently. The National Academy of Sciences recently completed a consensus report on the topic of ontology and science. Vocabulary is one synonym for ontologies and the way that for the purpose of health psychology and the other behavioral sciences might work on and further develop and further improve on shared ontologies in our science.

[00:13:42.290] – Andy DeSoto

And it got me thinking that some of the work that's described in this paper by Joel Nigg is just a perfect example of the ways that ontologies can strengthen science, in this particular case is related to ADHD, but in other areas, too. So my two takeaways in this article is that folks should understand what current directions is and consult those articles anytime they want to hear about these really interesting research findings. But also, again, visit psychologicalscience.org and type in ontologies to read some of APS's recent coverage on this really important study, which is super related to the paper that I was just describing.

[00:14:18.990] – Ludmila Nunes

I'm glad you brought that connection, because when I read this article, I thought of that immediately.

[00:14:24.780] – Andy DeSoto

Excellent.

[00:14:25.600] – Ludmila Nunes

Okay. And I have one more about how personality across world regions predicts variability in the structure of face impressions. So the title might be more complicated than what the research actually is. And I thought this one was really interesting because it explains how cultural learning can play a role on how we infer personality traits from faces. This article was published in Psychological Science by DongWon Oh and colleagues, and the research suggests that depending on where you live, where you grew up, and the structure of personalities that are prevalent in that region, that's going to influence the way you perceive personalities from people's faces. So, for example, in a region where people tended to report aggressiveness and intelligence at the same time, so if these two personality traits tended to cooccur in the population in that region, people from that area also tended to evaluate those traits more similarly in other spaces. So if they associated facial characteristics to one of those traits, let's say intelligence, those same characteristics were also associated to aggressiveness. In this example, and in another study reported in the same article, the authors collected data from 232 world regions and found that people used the personality structure they learned from their local environment to form these lay

beliefs about personality.

[00:16:19.470] – Ludmila Nunes

So an implicit structure of personality, and then those beliefs were what influenced their face impressions. So basically showing what had already been hinted at in that initial study in this report. So I work quite a bit with implicit structures of personality. So maybe that's why I thought this one was so interesting. But also how culture shapes these perceptions, these impressions, and how we form impressions. So these structures are not static, and they're not the same all over the world.

[00:16:54.090] – Andy DeSoto

That's really interesting. It gets me thinking of it. These are dimensions that I don't always think about personality science myself on, but I'll have to start paying closer attention to that in terms of my own lay beliefs that I may hold about personality.

[00:17:08.430] – Ludmila Nunes

I know you selected a really interesting article to finish our selection.

[00:17:13.830] – Andy DeSoto

Yes. Last but not least for our roundup today, this is a really interesting one involving a type of research population that I've never read a paper about before. Lemurs in this case, the title of the paper is The Evolution of Cognitive Control in Lemurs, authored by Francesca de Petrillo and her colleagues, published in Psychological Science. And again, a triple badger. Not a triple lemur, but a triple badger, as we like to call it, receiving those open practice badges for open data, open materials, and scientific preregistration, as the title of the paper suggests. It examines the concept of cognitive control, which is that ability that helps plan and acquire information, adopt new strategies and the like. And these particular authors are interested in how this ability developed in human beings. And to get to the bottom of that, they look not at humans for this particular study, but at non human primates or lemurs in particular. And really interestingly, the authors developed ways to measure cognitive control. Again, this ability to plan and acquire information across a couple of dimensions in the sample of lemurs. And what was really interesting about the lemurs that were studied, some I had to look up the pronunciation of these terms, but some of the lemurs are frugivorous.

[00:18:34.420] – Andy DeSoto

They're fruit eaters. And some types of lemurs are folivores. They're leaf eaters. And it turns out that it is more cognitively demanding to eat fruit, to have a diet of fruit, partly because fruit grows a little unexpectedly, it requires searching for it. And the resource, the food may be not evenly dispersed in a particular area, a higher bar to get in the food that you need to survive, whereas leaf feeders, that's an easier job because leaves are readily abundant, you can get them anywhere. And it requires less sort of cognitive processing to successfully engage in the sleep eating diet. And what the authors found is that the ecology of the lemurs, whether they were frugivorous or folivores, it predicted the cognitive control of the species, the ecological complexity. Again, the more complicated fruit diet was a better predictor

of these cotton of control abilities. And the lemurs over time. The authors found this because one of the things they were trying to do was compare this theory of ecology and its effect on intelligence with a contrasting theory that social complexity was something that drove cognitive evolution and cognitive control. And again, using a couple of other tests that examined the lemur social backgrounds, at the end of the day, supported this ecological intelligence hypothesis.

[00:20:01.240] – Andy DeSoto

Again, that the environment, the fruit versus plant diet is what predicted the cognitive abilities of the lemurs. So, a really interesting study. Again, a really interesting sample. I was hoping that there would be a little more imagery in the paper than there was because I wanted to see some of the pictures of the lemurs. But there were really interesting illustrations that well described the study. So anyone who's interested in this sort of comparative research and thinking about how to take advantage of these really important samples to come to a better understanding of how humans may have evolved, we'll definitely want to check out this paper.

[00:20:34.890] – Ludmila Nunes

Yes, I really liked that one, too. It was great having you.

[00:20:39.870] – Andy DeSoto

Thank you very much. It was great to join. And one of the things that's so cool about the APS journals is that you flip through the pages and you do encounter so many different scientific studies that do range just like you said at the very outset, from cognitive control and lemurs to how attitudes have changed over time. So every time I look through these studies and select them and hear about the ones that you're talking about, it really broadens my horizons of what the field of psychological science really is.

[00:21:07.080] – Ludmila Nunes

This is Ludmila Nunes with APS, and I've been speaking to cognitive psychologists and policy experts Andy DeSoto. If anyone is interested in reading these studies or learning more, please visit our website psychologicalscience.org. Thank you for listening.

Feedback on this article? Email apsobserver@psychologicalscience.org or login to comment.