



Scott A. Huettel, PhD  
Professor, Psychology and Neuroscience  
Director, Duke Center for Interdisciplinary Decision Sciences

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To whom it may concern:

I write to indicate my very strong recommendation for **Dr. John Pearson**, who is applying for a position at your institution. I have known John for the past four years, during which time he has been a post-doctoral fellow in the laboratory of my close Duke colleague Michael Platt. John possesses a very rare combination of abilities: strong computational and modeling skills, a deep understanding of single-unit electrophysiology, excellent teaching ability, and a flair for engaging writing. I have considerable respect for him as a colleague and scientist, and I am hopeful of conveying that respect through this letter.

John's primary research projects have involved application of creative modeling techniques to single-unit data collected from higher cortical regions (e.g., cingulate cortex) in monkeys, while those animals perform relatively complex decision tasks. Such research presents challenges at all levels from experiment design to data collection to model comparison. Yet, as seen in his first-authored *Current Biology* paper, being able to overcome those challenges can lead to remarkable new insights. The firing rate of neurons in control regions like cingulate cortex may not necessarily track some simple property of stimuli or responses. Instead, as John's work demonstrates, such neurons may be tracking higher-order judgments about the environment, such as whether to exploit rewards from known sources or to explore to gain information about new sources of reward.

I won't further describe this or other studies in detail, but will leave those for John and his other referees. But, I do want to emphasize that relatively few of John's peers have a similar sophistication about how to create and test models that link behavior and brain function. The discipline of neuroscience tends to promote researchers who are talented experimentalists – or who simply were in the right place at the right time in their mentor's laboratory. Unlike in physics or economics, say, we often prioritize the quality of the data over the rigor of the analysis methods. Trainees with notable strengths in data analysis, modeling, and theory are much rarer. In my judgment, John is one of the two most talented trainees in data analysis/modeling within recent cohorts of cognitive and systems neuroscientists at Duke.

Like many other junior investigators who have a computational bent, John has been a collaborator on a number of research projects. He has been an instrumental contributor to a number of high-profile projects – including an ongoing project in my laboratory. That project (led by my graduate student Rene San Martin) attempts to separate learning about positive and negative outcomes within rapid electrophysiological signals, measured in human participants. Each subject's data set consists of several hundred trials of simple economic decisions, over which the subject tried to learn which stimuli predicted what outcomes. The key challenge for modeling such data comes from the fact that the brain responses are under-specified; i.e., we

as experimenters know the true probabilities of each stimulus, but must estimate what the subject believes about probabilities. Moreover, there are multiple brain responses that could be used to predict behavior. John has been both a thoughtful colleague and a patient mentor on this project. He's worked with Rene to develop an analysis strategy and to test different approaches to modeling the data. As I've watched them interact, I've been struck by John's ability to explain difficult concepts. John explains the advantages and disadvantages of different approaches – so that even less experienced colleagues (e.g., a new graduate student) feel like they are part of the project team. Frankly, such traits aren't that common in academics with strong technical skills; too often, they see their role on a project as solving others' problems, not as a continuing collaborator. John will be a great colleague in any department he joins.

John also has very strong "soft" skills. He's a talented writer – as one example, he was commissioned to write a feature story in Duke Magazine (sent to all Duke alumni/ae) on the neuroscience of decision making. That story was so well received that he was recruited to do another story on a different topic the following year. And, he has a reputation as an excellent teacher. I asked him to guest lecture in my *Decision Neuroscience* course last year, and he did very well. (Please note that I have extremely high standards for my own teaching and greatly respect people who do it well. I wouldn't ask anyone to teach in my class unless I thought that their session would be of very high quality.) Last year, our Director of Graduate Studies commented that our students needed training in MATLAB but that there was no formal or informal coursework that could help. I was serving in an administrative role at that time, and recruited John to teach a half-month intensive course. It was not only oversubscribed, but was so well received that he taught it again later in the year. Feedback from students was extremely positive – it was clear that John not only enjoys teaching but also has considerable abilities therein.

From the description above, it should be clear that John has many strengths as a junior academic. What limitations are most evident, at this stage of his career? One is evident from his vita: John has relatively fewer first-authored papers than other top people with similar research training. (Note that he has published in very top journals, however: *Science*, *Current Biology*, *TICS*, *Nature Neuroscience*, etc., not counting his papers in physics journals) My sense is that it took John a little time to find his niche when he came to Duke. Coming from a background in physics, he initially spent much of his time on joint projects, but he is now complementing that with more independent work. My expectation is that he will be the sort of person who regularly publishes his own work, but still gets involved with many other collaborations. He will not hole up in his laboratory, away from the rest of the department. I suspect that he is pretty typical of computational neuroscientists, in that regard.

Overall, my impression of John is extremely positive. Since I have become a faculty member, I have supervised or co-supervised 10 postdoctoral fellows and interacted closely (in academic or research contexts) with about 20 more, all in top research laboratories here at Duke. Most of these individuals will accept, or have taken, faculty positions at research universities. My sense is that John has the strongest computational skills of any in this group. (I have a current postdoc in my own laboratory whose skills I respect immensely, but I still think that John is more talented in that regard.) His productivity is only about average – relatively fewer papers, but of exceedingly high quality – as you can see from his vita. However, please also recognize that he

transitioned from a completely different field into a new culture, research technique, and method for analysis. In that light, his productivity seems much better. Moreover, his soft skills give him an advantage over many other peers in terms of his likely contributions to a department and university.

**In summary, I strongly recommend John for this position.** If you need further information, please do not hesitate to ask.

Best wishes,

A handwritten signature in blue ink that reads "Scott Huettel". The signature is stylized with a large, sweeping "S" and a cursive "Huettel".

Scott Huettel, Ph.D.

Professor, Department of Psychology and Neuroscience  
Director, Center for Interdisciplinary Decision Sciences  
Duke University