



Introduction to the 2017 J. Don Read Early Career Award from the Society for Applied Research in Memory and Cognition:

Andrew C. Butler

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It is my pleasure to introduce Andrew C. Butler as the second winner of the J. Don Read Early Career Award from the Society for Applied Research in Memory and Cognition. Meissner (2017) provided an overview of how this award came about and how it was named for Don Read because of his important research and his worthy service in many roles in SARMAC. I will not rehearse this history here, but rather refer the reader to Meissner's remarks as he introduced Jason Chan as the first recipient of this award (Figure 1).



Figure 1. Andrew Butler 2015.

Education and Training

Andrew (Andy) Butler was an undergraduate student at Emory University, where he was heavily influenced by Eugene Winograd and his course on human memory. He dedicates the award paper in this issue to him. Gene was on the verge of retirement at that point, and Andy completed his honors thesis with Lynne Nygaard. He then became a research assistant for a year with Liz Bates at the University of California at San Diego studying issues in psycholinguistics, but the pull of memory research was still strong. He applied to graduate school to study that topic, and happily for me, he chose to come to work with me at Washington University in St. Louis from 2003 to 2009. I supervised his masters and Ph.D., and I thank Paula Hertel for asking me to introduce him and his article. By 2011, shortly after he left my lab, we had published 13 papers from his time at Washington University. I was first author on one—the last one. A few others on which we collaborated trickled out later.

Butler next went to work as a postdoctoral fellow with Elizabeth Marsh at Duke University, where he remained for several years while his wife, Anne Butler, completed her Ph.D. at the University of North Carolina. These years were also hugely profitable ones, as his vita attests, with collaborations with Marsh and her students. In addition, Andy received his own separate funding and, working with David Rubin, he developed an interest in autobiographical memory. After his postdoc, Andy moved into an assistant professor position at the University of Texas at Austin in 2015. However, a strange thing happened a year later: Medical faculty at Washington University decided to make an offer to Dr. Anne Butler. Our university was happy to welcome Andy back too, and thus he has returned to our university, to my delight.

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An Anecdote

Before turning to his research, I need to relate my favorite anecdote of his time in my lab, albeit one of many. In 2003–2004, I was president of the Association of Psychological Science. One pleasant duty of that position is to invite an outstanding scholar to give the opening address to an audience of well over a thousand. I invited Endel Tulving, and somewhat to my surprise, he accepted. A few months before the talk, Endel called me with a request. I have a vivid memory of the call. He asked me to arrange for someone dressed in a gorilla costume to come out behind him in the middle of his talk, to walk around a bit, beat his chest, and then walk off the stage. “Don’t ask questions,” he said. “Can you do it?” I promised to try.

I looked at my calendar. Later that day, Andy was coming in for a scheduled meeting to discuss one of his research projects. He is a tall person and would show up well on stage. But what would a graduate student, and a relatively new one at that, think of my asking him to dress up like a gorilla for the APS meeting? (Now, but not then, we might ask if this represents harassment of some sort.) I do not recall exactly how I broached the topic, except I resolved to let him know repeatedly that he did not have to do this. (I was thinking that some out-of-work actor in Chicago might be hired by APS if I couldn’t find anyone local.) I did tell him that he would probably spend the day with Endel Tulving and get to know him, as well as getting an all-expense paid trip to APS in Chicago. I no longer recall in the ins and outs of our discussion (he probably does), but Andy accepted after giving it some thought. I called APS officials and asked them to rent a large gorilla costume for the presidential address, which they did with bemusement. Sure enough, Tulving and Butler spent much of the day together, with Endel giving lengthy and repeated instructions on how Andy should behave as a gorilla (an issue to which Endel had obviously given some thought). The event came off exactly as planned, without a hitch. [Figure 2](#)

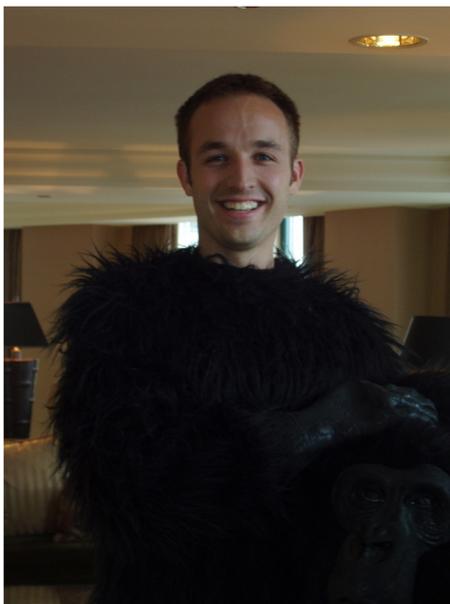


Figure 2. Andrew Butler shortly before he appeared on stage at Endel Tulving’s APS presidential address in May 2004.

shows Andy in his gorilla suit, holding the gorilla head, just before he went on stage.

Research Activities

Turning back to Andy’s research, which constitutes the reason for his winning the J. Don Read Early Career Award, he has published on several central themes: applying cognitive psychology to educational issues, autobiographical memory, and collective memory (as well as some miscellaneous contributions). I will focus only on the first here. When Andy arrived in my lab, my students and I were beginning to explore effects of retrieval practice (aka *the testing effect*). Andy quickly got up to speed and began formulating his own interesting questions. Most retrieval practice studies to this point were laboratory studies using simple materials (e.g., paired associates) and relatively short delays (a few days). Andy was one of the first to ask if retrieval practice could help using more authentic educational materials (lectures) and with more realistic retention intervals (one month). Students saw three lectures and performed a different activity after each one: reading a summary, taking a multiple-choice test, or taking a short-answer test. In each of these conditions, some material was used for the manipulation whereas other equivalent material that had been presented during the lecture received no treatment. Relative to these control items, reading a summary and taking a multiple-choice test improved retention a month later to about the same extent, but retention was best for students who took a short answer test after the lecture. The last finding is perhaps due to the greater retrieval effort involved in recall relative to recognition. This study ([Butler & Roediger, 2007](#)) was the first modern demonstration of the power of retrieval practice in a simulated classroom setting, but [Jones \(1923\)](#) had obtained similar results 80 years previously.

During graduate school, Andy became interested in the role of feedback in testing effect or retrieval practice studies. In several series of experiments, he showed the critical importance of feedback for the practical use of retrieval practice as an educational aid. For example, students learn from taking multiple-choice tests, but one problem is that they can learn incorrect information. That is, on a typical multiple-choice test, students are asked to consider three plausible but wrong answers to a question along with the correct one. If they select the wrong one, especially with high confidence, they have just practiced a wrong answer and later retain that wrong answer ([Roediger & Marsh, 2005](#)). Andy asked the important question of whether the negative effect of wrongly answering multiple choice items could be nullified and perhaps even reversed by providing corrective feedback shortly after answering the question. He showed that the answer is *yes* ([Butler & Roediger, 2008](#)). In addition, although others had shown that providing correct answer feedback did not enhance later recall after students gave correct answers, Andy showed that feedback does help boost retrieval practice effects with complex questions, especially when the students answer correctly but with low confidence ([Butler, Karpicke, & Roediger, 2008](#)). Other experiments also showed that slightly delaying feedback may aid later retention of the information

relative to giving immediate feedback, so long as the feedback is processed thoroughly in both situations (Butler, Karpicke, & Roediger, 2007). Delaying feedback can also exert positive effects in promoting transfer in STEM education (Mullet, Butler, Verdin, von Borries, & Marsh, 2014).

Popular films and fiction are often used in classrooms as adjunct aids in the classroom, to increase student interest as well as to impart information. However, films and novels can take liberties with the facts in order to create a good story. Butler and colleagues asked whether erroneous information presented in movies might override information about an historical event that had been recently read. The answer was yes (Butler, Zaromb, Lyle, & Roediger, 2009). Even when students were warned about possible discrepancies occurring in the film from the accurate version they had read, a misinformation effect occurred (see too Umanath, Butler, & Marsh, 2012). In general, this line of research indicates that care must be taken when using fictional sources in classrooms (Marsh, Butler, & Umanath, 2012).

A critical question in the retrieval practice literature is whether information learned via retrieval practice can be transferred to different domains and to solve problems. Butler's dissertation provided an integrated series of experiments answering the question in the affirmative (Butler, 2010), and he has continued to address the critical issue of transfer—the holy grail in education—in later work (Butler, Black-Maier, Raley, & Marsh, 2017; Butler, Godbole, & Marsh, 2013). These studies have shown that retrieving and applying knowledge to different examples during learning promotes transfer on a later task.

Another important line of research has been with disciplinary experts in other fields. Even before he left graduate school, he and Doug Larsen (a pediatric neurologist) designed studies to show that retrieval practice can improve medical education (Larsen, Butler, & Roediger, 2009). Their collaboration has continued to flourish (e.g., Emke, Butler, & Larsen, 2016). On a different front, collaborating with Beth Marsh and with engineering faculty at Rice University, Andy spearheaded a project that improved student performance in a STEM classroom by applying techniques from cognitive psychology (Butler, Marsh, Slavinsky, & Baraniuk, 2014).

In the above paragraphs, I have provided a brief summary of some of Butler's research, but I have hardly done it justice.

The Present Paper

In his award paper, Butler again provides an incredibly useful service. Multiple-choice tests are widely used in educational assessment, especially in large classes, for summative assessment (i.e., to give grades). Such tests have also been used in many experiments examining retrieval practice. Yet a separate branch of knowledge exists that examines properties of multiple choice tests as assessments of general knowledge and abilities, that is, in standardized testing. A wealth of knowledge exists in this field of tests and measurement in which experimental psychologists are rarely trained. Andy has written an interesting

and concise paper comparing the main conclusions of these two related (but usually separate) branches of knowledge, and he shows that their findings are complementary. Further, the two bodies of knowledge can inform one another. I wish I had known many years ago that the best test items (for discriminating among students with great knowledge from those with less) have three alternatives, not four, and that complicated questions using “all of the above” and “none of the above” and weird combinations (e.g., A and B but not C) reduce the discriminability of a test. His paper should inform as well as open new lines of inquiry.

Conclusion

Andrew Butler is richly deserving of the J. Don Read Early Career Award. Although I have provided only a brief tour through some of his research, I have omitted as much as I have included. We can all look to his future for further path-breaking research. His career up to now doubtless represents only the beginning of sustained research informing educational practice.

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