

Remembering Edward E. Smith

March 29, 2013



Edward E. Smith

Our friend, colleague, and extraordinary scholar, Edward E. Smith, passed away August 17, 2012, at the age of 72. Most recently, he was the William B. Ransford Professor of Psychology and the William B. Ransford Professor of Psychology (in psychiatry) at Columbia University, as well as the Director of the Division of Cognitive Neuroscience at the New York State Psychiatric Institute.

Although Ed's career sadly was cut short, it was nonetheless long and illustrious. He was elected to the American Academy of Arts and Sciences in 1994 and to the National Academy of Sciences in 1996. In recognition of his contributions, Ed was also the recipient of the 1999 APS William James Fellow Award and the 1997 APA Award for Distinguished Scientific Contributions.

Dr. Smith's contributions went well beyond his science. He was an editor of the journal *Cognitive Science*, beginning near the time of its inception and later was elected as a Fellow of the Cognitive Science Society. He served on the boards of many professional organizations, including APS, and overall his service record was outstanding. He co-authored one of the most widely used *Introduction to Psychology* textbooks as well as the textbook, *Cognitive Psychology: Mind and Brain*, co-authored with Stephen Kosslyn. Ed was a dedicated and gifted teacher and mentor at all levels.

Ed (born April 23, 1940) received his bachelor's degree from Brooklyn College in 1961 and attended graduate school at the University of Michigan, where his fellow graduate students included future leaders in the field like Irv Biederman and Amos Tversky. Ed's advisors were Paul Fitts and Arthur Melton, the latter acting as his official PhD advisor. At this point, cognitive psychology did not exist as an official field, but information processing was in the air and the use of reaction times to draw inferences about mental processes was undergoing a renaissance. Just two years after receiving his PhD, Ed wrote a major review and analysis of choice reaction time (*Psychological Bulletin*, 1968).

Ed was an assistant professor at the University of Wisconsin before moving to Stanford University in 1970. During his tenure at Stanford, Dr. Smith began his studies of semantic memory and conceptual behavior. “He, along with Eleanor Rosch and Carolyn Mervis, first established the principle that some examples of a category are “better” than others; in other words there are clear goodness of example effects.” The 1974 Smith, Shoben and Rips (*Psychological Review*) paper presenting a featural comparison model addressing typicality phenomena was an instant classic.



Edward E. Smith. Photo courtesy of the University of Michigan.

Ed’s heart was always in the East Coast and he returned to New York City for a sabbatical at Rockefeller University for the 1976-1977 academic year. Ed’s mentoring was not interrupted during this period, and he hit it off with a University of South Dakota PhD in the William K. Estes lab; a few years later (1981) he and I published an influential book on models of knowledge representation under the title *Categories and Concepts*. Ed continued to make important contributions to the psychology of concepts for decades, often collaborating with Dan Osherson. The East Coast called again in 1979 when Ed went to Cambridge, Massachusetts, to join Bolt, Beranek and Newman (in Boston) as a senior scientist. Aside from facilitating his collaborations with Dan Osherson, Ed worked on a range of projects that included efforts to train thinking skills (see the 1985 Nickerson, Perkins and Smith book, *Teaching Thinking*).

But the University of Michigan also had its pull and Ed returned there in 1986. Ed always liked the challenge of learning new things and the emerging field of cognitive neuroscience soon attracted his attention. He not only mastered positron emission tomography (PET) and functional MRI (fMRI) remarkably quickly, but almost equally quickly he became a leader in this field. His colleague John Jonides became a close collaborator and their studies of working memory using cognitive neuroscience tools represent key contributions to our field (see, for example, their 1997 “Cognitive Psychology” paper).

A cognitive neuroscience bonus for Ed was frequent opportunities to consult with colleagues at New York University (NYU) and Columbia University. This also laid the groundwork for Ed’s third return to the East Coast when he joined the faculty at Columbia University in 2004. Ed was home. Ed and John

Jonides continued to work together and Tor Wager also became a frequent collaborator. Ed worked on multiple systems of memory and category learning, but further branched out with studies on placebo effects, Alzheimer's disease, aging and schizophrenia. He never slowed down.

Dr. Smith's research impact was broad and deep, but he always had time for his colleagues. Our field has lost a true star.

-APS Past President Douglas L. Medin

Professor, Cognitive Psychology, Northwestern University

Irving Biederman

Harold W. Dornsife Professor of Neuroscience, University of Southern California

I am sure that Ed would be embarrassed, as am I, to reveal that we met at a freshman mixer at one of Brooklyn College's local fraternities. Even as an 18-year-old, Ed's remarkable personal, social, and intellectual traits were clearly evident. He had an insatiable curiosity and a critical and agile mind with absolutely no need for ego stroking. He took what people had to say seriously and thoughtfully and always responded with understanding and insight. People felt better about themselves when being around Ed because of the respectful, intelligent manner in which he treated their ideas and person.

I had taken Intro Psych and liked the mix of science and accessible significance and application. I suggested to Ed that he might feel the same and he did. Years later when Ed was a faculty member at Stanford, he coauthored several of the later editions of the Hilgard text that we used for that course. We both also took the experimental psychology course, taught by Elizabeth Fehrer, though I took it a semester before Ed. The lab class of about 24 was divided into 12 teams and we did an experiment a week. Each team recruited a subject for that week's experiment. We would then pool the data and write up a lab report with a literature review, data analysis, and interpretation. The reports typically ran about 25 pages. We knew we were learning a lot, though it was only in graduate school that we appreciated the enormous benefits of Fehrer's course.

One of the experiments was on the free recall of a 15-word list in which we plotted the serial position curve. My subject, a freshman from our fraternity, produced a typical serial position effect — better recall at the beginning and end of the list than for the items in the middle. (One of the things that impressed Ed and me was how regular and replicable the data from psychology experiments could be. They matched the data in the texts with greater fidelity than what we were able to achieve in physics lab.) When Ed took the same course a semester later, he recruited the same subject, who was presented with the identical list. On the very first trial, the subject perfectly recalled all 15 words! Now during the prior semester — and this is a true story — this subject went straight F — failing every course. In characteristic not-so-tongue-in-cheek-Ed-Smith-reasoning, Ed theorized that since the subject had learned absolutely nothing in the intervening months, he had suffered no retroactive interference so, naturally, evidenced perfect recall!

As an undergraduate, Ed won the psychology department's prize for the highest average in his major: nine courses, all As. (This was a time decidedly before grade inflation. I believe that the highest GPA

that had ever been attained at Brooklyn College when we graduated in 1961 was 3.5.) He used the prize, a \$5 gift certificate to the college bookstore, for a book on handicapping thoroughbred racing, an avocation of his at the time. He enjoyed more success in psychology.

When we arrived at Michigan for graduate school, we had not decided on a subfield within psychology in which to specialize. During orientation, an experimental psychologist, Paul Fitts — widely recognized as the father of human factors engineering — approached us, and based on our undergraduate honors research in auditory and visual masking with Elizabeth Fehrer and David Rabb (in whose labs we had done our honors research at Brooklyn College), declared that we were to work with him. We didn't argue, but the course of our professional lives was largely set by his demand invitation. We were lucky to be at Michigan at that time. Among other first-year students in the experimental psychology program were Amos Tversky, Howard Egeth, and Bob Crowder. Mike Posner and Robyn Dawes were a few years ahead of us. There were a number of others, and most of us felt that we were learning at least as much from each other as we were from the faculty.

Almost all of us took academic positions right out of graduate school, but Ed opted for a highly prestigious post doc to the Harvard Cognition Project to work with George Miller and Jerome Bruner. Unfortunately, the Vietnam War was getting into high gear and while there were exemptions for college teachers under the age of 26, exemptions for post docs were up to the discretion of the local draft board which steadfastly refused to grant him one; so Ed spent the next two years in the Army, stationed at St. Elizabeth's Hospital in Washington, DC. Ed, in typical indomitable fashion, used this time most productively, including developing his thoughts about psychiatric problems and schizophrenia, an interest that he retained throughout his academic career, and which he was working on intensively at the end of his life.

We mourn the passing of an extraordinary individual, one who enhanced the science he embraced as well as the lives of so many that he touched. I share that loss, but for me he was the only remaining hyperlink to my undergraduate years and, to some extent, my graduate years. I am now the only person who knows the identity of that unfortunate subject in the free recall experiment.

Elizabeth Ligon Bjork

Professor, Cognitive Psychology, University of California, Los Angeles

I had the good fortune to meet Ed Smith very early in his distinguished career in psychology. Upon entering the Human Performance Center at Michigan as a new graduate student, it quickly became apparent to me that Ed Smith was one of the advanced students you should use as a model. His brilliance was easy to discern in any discussion, but what impressed me just as much about Ed was his sense of humor and that someone so smart could still have such a sweet and caring nature.

Coming from a major in mathematics with almost no training in psychology, I felt pretty intimidated by all of my classmates who, typical of those times, were all males and who also seemed to know so much more than I did and even to speak in a different language. In one of my first classes there, "Theory of Data" co-taught by Clyde Coombs and Amos Tversky, it was Ed, as a fellow classmate, who took me aside one day and encouraged me to speak up and not let "us guys" do all the talking. He became a hero of mine then and has remained so ever since. I just hope that at Michigan — and in later years — I

managed to convey to him the great esteem and fondness I felt for him.

Lyle Bourne

Professor of Psychology Emeritus and Faculty Fellow, Institute of Cognitive Science, University of Colorado Boulder

I was deeply saddened by the news of Ed Smith's passing. Ed was a treasure, as a friend and as a psychologist. I am honored to prepare a remembrance of Ed for the APS website. I was never Ed's colleague or collaborator. Yet it seems that I've known him for all of my professional life. We first met at a GUV[1] gathering in Starved Rock State Park in the late '60s or early '70s, when we were both a lot younger. We found some shared interests at that time in concepts and categorizing. We could never quite come to a proper common interpretation of findings, but we did always agree that the data were what counted in the last analysis.

Over the years, we stayed in contact by exchanging letters (and e-mails) and by chatting at meetings. Ed served as informal and too often unacknowledged reviewer and critic on some of my papers. I could always count on him for valuable advice and new insights. Indeed, he had a profound influence on my work even though we didn't always see things the same way. Like others who have written about Ed, I found him to be smart, open-minded, broad in his interests, easy to talk with, and extremely important to the advancement of experimental cognitive psychology. I will miss our exchanges, which were always enlightening to me.

[1] Gesellschaft fur Unendliche Versuche, an honorary society for young Midwestern experimental psychologists. As readers probably know, members are kicked out of GUV after reaching the crotchety old age of 40 years.

Fergus Craik

Senior Scientist, Rotman Research Institute, Baycrest, and University Professor Emeritus of Psychology, University of Toronto

I knew Ed Smith socially and professionally at Stanford when I visited for a year, and over the subsequent years at Michigan, Columbia, and occasionally in Toronto. Stanford seemed like an academic paradise to me, and I remember being puzzled by Ed's less than ecstatic appraisal of life in Palo Alto! The answer of course was that Ed was an Eastern city man, and he soon headed back east to Ann Arbor and New York City. From the beginning I was struck by Ed's extremely lucid approach to both concepts and data; he could sum up the gist of a complex problem and then suggest ingenious and creative ways to test alternative hypotheses. I particularly remember fruitful conversations with Ed and John J. at Michigan when they were 'getting into aging' — I was there already apparently! Ed had a quite unusual blend of technical sophistication and common sense in his approach to theories and experiments — he always seemed to get to the heart of the matter. And as everyone who knew him attests, he was a wonderfully warm and generous person. He will be remembered with respect and affection.

Howard Egeth

Professor of Psychological and Brain Sciences, Johns Hopkins University

Ed and I entered the graduate program at Michigan in 1961 and became close friends almost immediately. Michigan was a great place to be in the early 1960s. Our entering class included Irv Biederman, Bob Crowder, Bob Sorkin, and Amos Tversky. Ed, Irv, and I were all students of Paul Fitts in the Human Performance Center, where the faculty also included Art Melton, Ward Edwards, and Dick Pew. It was a heady time and the “cognitive revolution” was afoot. Ed and I shared an office and worked closely together. We collaborated on several projects and published three papers together resulting from our work as graduate students. The faculty at Michigan was outstanding but, as several of us noted over the years, we probably learned as much from our fellow students as we did from the faculty.

When we left Michigan the Vietnam War was raging. Ed served with the Public Health Service at St. Elizabeth’s Hospital in Washington, DC. I ended up just an hour away at Johns Hopkins (JH) in Baltimore, and so we were able to keep collaborating and socializing for a couple of more years. After that, we looked forward to seeing one another at conventions and meetings. In addition, Ed became the “modal” colloquium speaker at Johns Hopkins. I think he gave five colloquia at JH during his career. Ed was a wonderful friend and scientist. He had great skills as both an experimentalist and a theorist. And he was, of course, just a great collaborator. Others have confirmed all of these points, many times. But there is an additional observation I’d like to make about Ed. He had great breadth of knowledge, so much so that I once suggested that if one were in charge of a very small but very elite institution that could have but one professor of psychology, that professor should be Ed Smith.

Robert Goldstone

Chancellor’s Professor of Psychological and Brain Sciences and Director of Cognitive Science Program, Indiana University Bloomington

As a graduate student, I followed Doug Medin from the University of Illinois to the University of Michigan in 1989, where I was immediately exposed to Ed’s powerful combination of brilliance, humor, savvy, and caring. I was an eager participant in the “Ed and Doug Show” — our name for the weekly joint Smith-Medin lab meeting. I benefitted immensely from Ed’s suggestions for improving my experiments and models, his clever connection-drawing to other relevant literatures, and his generous, supportive spirit.

When I arrived at the University of Michigan, Ed was just in the process of transforming himself from a “conventional” cognitive psychologist into a cognitive neuroscientist. He was a very quick study, and it was remarkable to see his rapid transition from taking courses in neuroscience from the U. Michigan Medical School to teaching a first-rate course on cognitive neuroscience not so long thereafter. His excitement for new brain recording and imaging techniques was contagious, and he did a superb job of conveying the promise and potential of taking a neurally informed view of cognition. He was beginning what would be a long series of seminal collaborations with John Jonides, and it was inspiring for us graduate students to see an already very well established professor taking risks in his research and exploring terrae incognitae. He encouraged graduate students to think boldly and adventurously, and he led in the best way possible — by example.

Ed gave my peers and me priceless advice on conducting research, preparing dissertations, landing and

keeping jobs, and keeping perspective in science. On this last point, I remember a conversation with Ed where he was describing how he had mostly dropped out of the field of concepts and categorization for 15-20 years. He said, "But it was absolutely fine. I was happy to see that basically nothing had changed in 15 years, so I could hop right back in where I had left off."

Patricia Gurin

*Nancy Cantor Distinguished University Professor of Psychology, Emerita, University of Michigan;
Chair of Department of Psychology, 1992–2002*

I knew Ed Smith in a different way from most colleagues writing about him. I served as department chair of psychology at the University of Michigan when Ed was a highly valued faculty member in the department. So while I have followed Ed's singular work in cognitive psychology and cognitive neuroscience, my relationship with him involved aspects of Ed's character that concerned his leadership as a department member more than they related to his intellectual achievement. One aspect was Ed's limitless curiosity. He was never bound by what was current in cognitive psychology but instead was looking ahead at new ways to explore the connection between mind and brain. Ed was central in the development of cognitive neuroscience at Michigan, back when fMRI was just becoming a tool of investigation. Ed, along with John Jonides and David Meyer, decided they needed to know more anatomy if they were going to use this, and other tools, effectively. All of them took an anatomy course together and then helped the department understand how the understanding of cognition was going to be transformed through neuroscience. His curiosity thus motivated his leadership in the department that spanned not only across his colleagues in cognitive psychology but across all areas, and indeed across the university.

Ed cared about graduate students and younger colleagues. He was always ready to write thoughtful and compelling evaluations as part of the tenure process for junior colleagues. There was never a time that I needed Ed's contributions in this regard that he was too busy or unavailable to help. Once the department had decided to go forward recommending tenure for one of the cognitive area members, Ed was right there to do everything possible to mount a successful case to the College of LS&A and the Provost. Some may imagine that the quality of a person's scholarship automatically impels a positive tenure decision, but they have likely not participated in tenure decision discussions that take place above the departmental level. Ed understood the importance of a narrative that explained to non-psychologists why a colleague's work is truly significant. He was always ready to craft that narrative.

Ed carried a vision about the department as a community of scholars and learners who together produced a first-rate department. As a graduate student initially studying clinical psychology, Ed embraced all levels of psychological functioning. He appreciated the reciprocal impact of culture and psychology. At the same time that he was exploring brain structure and functions, he, along with Douglas Medin and Richard Nisbett, led the department in developing a Culture and Cognition Program. He pressed his colleagues to fashion a broad net that would include in this program colleagues and students from biopsychology, cognitive psychology, developmental, social, personality, clinical, and organizational psychology.

Finally, let me emphasize Ed's gentleness. Even when there was conflict within the department, as often happened around allocation of space and other resources, Ed maintained a respectful, gentle approach to

those who disagreed with him. So I come to our collective sadness as losing Ed not only by losing his extraordinary intellectual achievements, but also by losing a beloved, gentle, wise, committed partner in the work of our department.

John Jonides

Daniel J. Weintraub Professor of Psychology and Neuroscience, University of Michigan

In 1985, Gary Olson and I conspired in a darkened aisleway at the Psychonomic Society meetings. Gary and I had an agenda: to work hard to recruit Ed to come to Michigan from BBN; it worked. He joined our faculty in 1986 and was with us for about 17 years.

Ed's first few years at Michigan were spent continuing to work with Doug Medin and others on issues of categorization and higher cognitive processes. During that time, Ed and I were mostly social friends. We went running together, had lunch together, attended events together, served on committees together and the like. But nothing really close.

All of that changed in 1989. I was finishing up a tour of duty in the Dean's office, and Ed and I had individually and jointly discovered a very influential article by Posner and colleagues that reported the first neuroimaging study of cognitive processes. It made use of the now dinosaur-ish technology of positron emission tomography to measure blood flow. By sheer coincidence, we had a sabbatical scheduled at the same time the very next year, and we spent that time going to class: neuroanatomy, systems neuroscience, biophysics of PET, some biochemistry, and the like. We wrote an outlandish grant proposal with Bob Koeppe, a PET physicist with whom we began our work, to study analogical reasoning and its neural basis. Our first experiment was by any standard about as speculative as one could get, but we gathered up our courage and presented the results at a meeting organized by ONR. Also at that meeting was Pat Goldman-Rakic, who was talking about her work on short-term memory in monkeys. Right after Pat's talk, Ed and Bob and I huddled in a hallway outside the meeting room and, literally on a napkin, designed up our first neuroimaging experiment on working memory. A couple of years later, this turned into our first neuroimaging paper in *Nature*. What followed was a glorious run of a dozen years with some 38 joint papers, a host of fantastic graduate students, a few research grants, and the best lab meetings I can ever recall.

One more anecdote: In May 1996, Ed excitedly came into my office to announce that he had just received word that he had been elected to the National Academy. What is most memorable about that incident is that Ed was both disbelieving and proud at the very same time. His disbelief in having been elected was so symptomatic of his easy and unassuming style. And his pride was a measure of the deep care that he put into his work. This is a man who had a lifelong knack to ask the simplest yet the deepest of questions. That's what marked him as a scientist to me.

What was it like to work with Ed? Dozens of people know the answer to that question because dozens have shown the good sense to work with him over the years. In 2002, on the occasion of an event that Colleen Seifert and I put on when Ed was heading to Columbia, which we fondly called the "Edfest", I invented the Ed Smith Intelligence Quotient. It was measured by the number of times others had the intelligence to co-publish with Ed. Many tried to achieve the highest score, but I'm proud to say that my score was the highest. It was both a pleasure and a privilege to work with Ed those many years and

to get to know him well. I loved the scientist; I loved the intellect; and I loved the friend.

Roberta Klatzky

Carnegie Mellon University

Many have spoken of how helpful Ed was to students and how generous with his time. He was all of that for me during my graduate student days at Stanford. I arrived there from Michigan with a degree in mathematics and a small number of psych courses under my belt (one taught by Bob Bjork!). I wore a thin veneer of chutzpah over a heavy sheeting of angst, which wasn't alleviated as I observed the brilliance and preparation of my classmates! Ed was not my official advisor, but his door was always open, and I often walked through (oh yes, bumming cigarettes was part of the ritual — they cost under 2 cents apiece those days). We had many discussions about the fine points of reaction time, but the subtexts were as important as the details: Understanding mental processes is the goal of cognitive psychology; understanding methods is a tool. Don't simply accept the current theory; find and dig into the questions it raises. The sub-subtext was equally lasting and important, but harder to articulate. It had to do with fostering kindness and camaraderie amidst the realities of doing science. When he joined the APS board a few years ago we had the chance to interact again, to my pleasure. He was embracing new intellectual challenges, as ever, but the same Ed, fostering kindness and camaraderie while doing science.

Geoffrey Loftus

University of Washington

I met Ed more than 40 years ago. He was an esteemed scientific mentor, beginning as a member of my Stanford doctoral committee and then morphing into a valued go-to person, who was constantly issuing forth novel observations, imaginative solutions to problems, and new, kick-around scientific ideas. He was never cynical about psychology, he never found it dull, and he was instrumental in fostering my love of research and scientific thinking that exists to this day.

But more importantly — much more importantly — Ed was a close friend who was there when I needed him with wise personal advice, laugh-out-loud humor, witty observations, and astonishingly on-target academic/political advice. And — very important “and,” here — even though I took it as a given that Ed was pretty much beyond me in all possible intellectual dimensions he was...somehow...so warm and comfortable that I never felt intimidated or awed by him. He was just a long-haired, moderately scruffy guy who was fun to hang out with — but at the same time, a guy whose presence I always felt somehow, magically, contributed to who I was as a person. It's hard to explain, but that's the way it felt. He was always laughing with you. He *never* laughed at you.

The adventures I shared with Ed were many and varied. Unfortunately, some of the most interesting ones probably shouldn't be described in a public, archival article (actually, on reflection, I'm not sure Ed would have objected, but I can't be sure, so I won't take the chance). But — some great times with Ed reside in my past. I wish there could have been more in the future. I miss Ed very much.

Ellen M. Markman

Stanford University

From the moment I first arrived at Stanford as a new assistant professor, Ed was welcoming, kind, and generous. He made sure I was included in all aspects of the life of the department — intellectual, professional, and social. Stanford has formal pre-tenure evaluations and Ed was on leave the year I was to be evaluated. He made it a point to fly back so that he could be present for the meeting. He was a wonderful colleague, mentor, and friend. And I was by no means the only beneficiary of Ed's generosity. He was warm, respectful, and inclusive to his other colleagues, to his (devoted) graduate students, to his (adoring) staff. Ed was surrounded by people who loved being with him. Ed's sense of humor permeated every interaction. He had a knack for seeing irony and humor everywhere and he was always laughing. He also loved psychology and his enthusiasm was infectious. While the rest of us would be showing off by finding flaws in the design, analysis, or theoretical rationale of some piece of research, Ed would see the insight, originality, and contribution of the work. You liked psychology more when you were around Ed; you liked yourself more, enjoyed life more. It was such a privilege to have been his colleague and friend.

Michael McCloskey

Johns Hopkins University

Ed Smith was a brilliant researcher who made seminal contributions in cognitive psychology and cognitive neuroscience. However, Ed was not only brilliant but also kind. I especially remember his kindness to me when I was a first-year graduate student at Princeton. As my first research project in graduate school, I was following up on a study Ed and his colleagues had published in *Psychological Review*. I thought that Ed's theory made a prediction about minimum reaction times in an experiment he had reported, and I wrote him a letter about the prediction. (This was back in the Dark Ages, before email.) Ed responded with a very nice letter, saying that the prediction was quite interesting, that he had gone back to his data to examine the minimum reaction times, and that the prediction was not confirmed. He then very gently pointed out that his theory did not actually make the prediction, and that the minimum RT results were entirely consistent with the theory. He did this in such a nice way that instead of feeling stupid, I felt flattered that he had taken my idea seriously. I also remember with gratitude many enlightening conversations with Ed at Psychonomic Society meetings and elsewhere; he was always generous with his time and his ideas.

Janet Metcalfe

Columbia University

There was joy at Columbia when we managed, against all odds since every department in the country was after him, to recruit Ed Smith. And, happily, he was delighted, too. Ed loved New York and Columbia. He was very much appreciated here — we knew what a treasured person, scholar and scientist we had managed to recruit — and he basked in it. He brought a wonderful sparkle to the department, with his deep knowledge of the central issues in cognitive psychology as well as the philosophy and history behind them, his unrelenting scientific rigor, and his abiding curiosity about the mind. While he was dedicated to neuroscience, he was also insistent that the insights of past cognitive research enlighten that

enterprise. He sometimes bemoaned brain researchers' faddism and dismissal of hard-earned psychological knowledge. His need for understanding was impressive. Although neither a mathematician nor a modeler, himself, Ed liked mathematical models. He would insist that the models be explicated so clearly that their claims and predictions could be easily appreciated and evaluated. This clarity — that was keenly demonstrated in the classic book that he and Doug Medin wrote on categories and concepts — was a hallmark of his intellectual style, and one that made him a lucid teacher. I had many lunches with Ed while he was here. Of course, we talked about theatre and food and art and work and about how happy he was, in New York with his new love Renee. And we gossiped a little. But most of our conversations focused on the breakthroughs, talents and careers of young researchers — the people Ed so much wanted to see thrive. He was a wonderfully generous mentor, scholar, scientist, colleague and friend. He is sorely missed.

Douglas L. Medin

Professor, Cognitive Psychology, Northwestern University

Dear Friends,

What a loss. Ed was amazing and I'll just add my own anecdote or two (or three). I first met Ed when he came to Rockefeller University (RU) on a sabbatical leave around 1976-1977. I was just getting interested in categories and wasn't sure what concepts were. Ed knew both. It was fun and exciting to talk with Ed about these issues. As our discussions lengthened and were supplemented by visits to RU by people like Art Reber and Lee Brooks, Ed and I began to talk about doing a book together and a few years later *Categories and Concepts* came out.

Behind the scenes I got a chance to see what a great writer Ed was. I still remember being shocked (pleasantly) that Ed would start a book by writing "Concepts are important stuff." One more "behind the scenes" story: At one point Ed sent me a figure he had done designed to show that typicality depends on the reference concept. The specific example Ed had in mind was to show that chicken might be an atypical bird but that it was a typical farm animal and among the features Ed listed for chickens (besides found on farms) was "has four legs." It wasn't a typo — Ed's concept of chicken was largely based on what showed up at the dinner table. Ed really impressed me with his ability to find the nugget(s) of wisdom in otherwise flawed papers, papers that I had dismissed. That's just one of a very long list of sterling Ed qualities.

Ed changed my life both personally and professionally and I'll write a bit about the latter. Ed was a pro and very well-connected and streetwise. On this particular dimension, Bill Estes was of no help nor was my background at the University of South Dakota terrifically useful. But Ed was a walking Professional Issues course and in this realm he was my primary teacher by far. He knew where the jobs were even before they were advertised. He told me I should think about the University of Illinois and he put in a good word for me. I ended up going there and it was a great department. A decade later, a few years after Ed left Bolt, Beranek and Newman and went to the University of Michigan, Ed called me and suggested that I come to the University of Michigan. Ed's previous advice was good, so I did.

I was at the University of Michigan for three years and though the university was not at that time the best fit for me, I treasure many memories and value many friendships from those days. The hardest thing

Ed had to tell me when I got there was that we would not be allowed to have adjacent offices because people were worried that he and I would talk too much. Nonetheless, we did have joint lab meetings (called “The Ed and Doug Show” for some reason) and they were great. Ed’s wisdom was ever present. At this time Ed was moving seriously into cognitive neuroscience and I wasn’t, but he was still a treasure. Many of my fondest memories were our going for runs in the North campus indoor gym, typically with John Jonides (John, I treasure you too, by the way).

After I left Michigan we kept in touch, though our research was continuing to diverge. We still published some together (the most recent being a 2012 Rips, Smith & Medin review chapter for an edited book), but the best was always being able to chat with Ed about anything (as Gordon Logan says, he could help you with your research no matter how distant your research areas were). I miss him.

Walter Mischel

Niven Professor of Humane Letters in Psychology, Columbia University

I’ve been friends with Ed for more than 40 years. A couple of years ago Ed and I shared some stories about big public events that made us nervous. For Ed it was in 1998 when he received the Brooklyn College distinguished alumnus award and shared the stage with Harry Belafonte at the huge ceremony on graduation day. Belafonte came first and sang his famous banana boat song, “Day O!” and got an enormously wild response from the delighted crowd that begged for an encore. Then it was Ed’s turn, and in his typical style, he opened with “*Thanks Harry for the warm up!*” He got as much applause as Belafonte.

In his research and thinking Ed Smith was a boundary crosser years before boundary crossing in psychological science became fashionable. He saw the deep connections between ideas and phenomena in many different areas of our science that had been parsed at exactly the wrong joints. He led the way in getting at the underlying similarities and in making sense of the connections — bridging the hyphens. When new methodologies became available, Ed was in the forefront to explore their potential and apply them to the most important questions.

Most of Ed’s peers in cognitive psychology remained cognitive psychologists when the revolution in brain science began. Ed did too, but he also went on in mid-life to become a leader in the birth of cognitive neuroscience, using brain-imaging techniques to study working memory. He harnessed the new methods to explore with increasing depth and breadth the questions that mattered to him about working memory, attention, reasoning, placebo effects, Alzheimer’s disease, schizophrenia — Ed’s list is not only remarkably long but amazingly diverse. Yet it also reveals the enduring themes that mattered to him and drove him from the start to the too-early end of his career. In 1969 he published a paper on short-term memory impairment in schizophrenia. Forty-three years later, his last paper, still listed as in preparation, was on reward learning in schizophrenia. We are immensely enriched by what he discovered in the intervening years.

Personally, as they say in Brooklyn, Ed was a real mensch. Those who knew him well will long miss him and always treasure what it was like to be with him.

Raymond Nickerson

Research Professor, Department of Psychology, Tufts University

If memory serves, I first met Ed Smith (and Howard Egeth) when he and Howard were still grad students at the University of Michigan. I am not sure what I was doing there at the time, but my clear recollection is of meeting two very bright and energetic young men. Much later, I got a chance to work with Ed a bit when we were both at Bolt, Beranek and Newman (BBN), where we co-authored a book with David Perkins, *The Teaching of Thinking*. That experience confirmed my initial impression that Ed was exceptionally bright and energetic, and proved that he had retained both traits.

Ed was at BBN from September, 1979, to August, 1986. In a note to me some years later, he credited Allan Collins, a fellow University of Michigan PhD, with luring him there, where he and Allan often collaborated on projects. While at BBN Ed did work on reading comprehension, semantic memory search, computer-based tutoring, comprehensibility of written instructions, and the teaching of thinking. Also, it was during this time that his book with Douglas Medin, *Categories and Concepts*, was published.

Ed's interests were extraordinarily broad, and his scholarship impressive. I was very sorry to see him leave BBN when he did and tried hard to dissuade him from doing so, but had to acknowledge that he was a bona-fide teacher/researcher at heart, and he really belonged at a university. He was an accomplished man, and his early passing is a big loss to psychological science.

Dick Nisbett

Theodore M. Newcomb Distinguished University Professor, Department of Psychology, University of Michigan

Ed was a remarkable and wonderful person. He was always a cheerful companion no matter how badly things were going for him, and always sympathetic with others when things were going badly for them. One of the great pleasures of my life at Michigan was going to lunch with Ed. He was terrific to talk psychology with and great to gossip with.

Ed was a marvelous colleague in every sense. Some of the work I've done that I value most was research I conducted with Ed. Our work together was always far better than if I had done it alone. Ed was also a great colleague in that he always did more than his fair share of work — in research collaboration, in teaching, and in department matters. He always over-delivered.

Ed was brilliant of course, but his mind was remarkable in other ways as well. He just had such superb judgment (by that I mean not the same judgment as mine, but judgment that often made me change my mind). The range of his knowledge and understanding was remarkable. I valued his opinion about work in social psychology as much as I value the opinion of any social psychologist. In work outside my expertise I learned to just accept whatever opinion Ed had. Ed also had great taste in theater, literature, and the arts, which he cared about very much.

People who know Ed would not be in the least surprised that he was a great teacher of graduate students. Both in lecture and in discussion he made work come alive. He made material that would be dull in

other hands exciting. I taught a graduate seminar with him, in which I learned a lot and had tremendous fun. Discussions were like jazz, with Ed and me and the very bright students playing off one another. People who know Ed — and therefore know about his reserve — might be surprised to know that he was as successful in undergraduate teaching as in graduate teaching. I once asked a department chair how he could be so successful at teaching undergraduates, and she said it was because he was so *clear*. I'm sure he was that, as well as a model of intellectual rigor. Ed provides proof that undergraduates can be captivated by a teacher who is no showboater.

Ed had a great sense of humor. He appreciated other people's humor and he was very funny himself. Ed was from Brooklyn and I'm from Texas. I happened to mention to Ed one day that there were only three or four people from Texas who were in *Who's Who* because of scientific accomplishments. Ed said, "There are apartment houses in Brooklyn that have done better than that."

Robert Nosofsky

***Distinguished Professor, Department of Psychological and Brain Sciences, Indiana University
Bloomington***

I first had the honor of interacting with Ed when I was a young grad student and he regularly attended the Estes lab-seminar meetings at Harvard. Already a world-famous professor, he was incredibly friendly and treated all the grad students with great respect. I was inspired by his collaborative work with Doug Medin on categorization and concepts, and those early interactions set the course for my entire career. Ed was a great theoretician and experimentalist who had a knack for looking at the big picture and addressing questions of profound interest. For me, what made him extra special was that he was the friendliest and most fair-minded and open-minded scientist that I have known. During the past decade, we had taken opposing theoretical viewpoints on the question of whether a separate implicit neural system governs certain forms of categorization. Although our theoretical positions differed, he was incredibly open-minded to my ideas and a source of encouragement. Ed is someone who should serve as a model for us all.

Gary Olson

***Donald Bren Professor of Information and Computer Sciences, University of California, Irvine, and
Emeritus Professor, University of Michigan***

Ed has been special to me in several ways. Most dominant were his many intellectual accomplishments. My first encounter with these was when I was in graduate school and read his seminal *Psychological Bulletin* review of choice reaction time, published in 1968. Then there was his major series of works with Doug Medin on categorization, which again influenced my thinking about these matters. And later, there was his important work with John Jonides on the neuropsychology of memory. But there were other connections. I remember sharing with him our experiences with the military as a result of the Vietnam War. He ended up in the Public Health Service at St. Elizabeth's Hospital in Washington, DC, and I ended up in the Navy in New London, Connecticut. We both were affected professionally and personally by these experiences. And then there was having Ed as a colleague at Michigan. He was a warm, caring, and fun person to be around. He was always a model for me of what a quality academic was all about.

Lynne Reder

Professor, Psychology Department, Carnegie Mellon University

Ed was my first academic advisor and he cemented my interest in cognitive psychology. My first publication was with Ed and he was the one who convinced me to go to Michigan for graduate school. I served as a teaching assistant in his Intro Psych course and as a research assistant for him, both for credit. After I graduated I asked to be an RA for pay because I wanted to hang around another quarter. Kind and generous as always, he agreed even though he did not really need my help. I know of no professor who attracted a wider circle of friends among the graduate students at Stanford. Everyone sought him out for his advice and his witty conversation. He was unpretentious and treated everyone fairly.

I valued Ed's opinion enormously. He was smart, funny, hip, and warm at the same time. Equally important, he really knew what was intellectually interesting and at the forefront. He asked big and interesting questions and he had a keen sense of the cutting edge of methods to help answer these big questions. In his early career, he wrote an important paper on the use of choice reaction time when others were still using accuracy as their primary dependent measure. He thought hard about all the new methods and questions, but what really got him excited was the advent of neuroimaging. He recognized the promise of fMRI from the earliest studies and he jumped in with both feet and did not look back.

While Ed loved to chat with people about their personal lives, he would not complain about all the hardships he endured in his own personal life. He was no whiner, even at the end.

Lance J. Rips

Professor, Cognitive Psychology, Northwestern University

Ed Smith was a person of great warmth and intellectual clarity. A true generalist, he published in all areas of cognitive psychology, as well as in cognitive neuroscience, social psychology, and even (in a few early papers) clinical psychology. He brought to these projects a clear-headed, pragmatic view that I found valuable when I was a student of Ed's and, in later years, when I spoke with him or read his papers.

Two points stand out about Ed's mentoring. One is that Ed was generous with his time. While I was a graduate student, I would barge into his office several times a day with whatever was on my mind. Ed was not only tolerant of this pesky behavior, but took the time to point me in the right direction. This generosity extended not just to his graduate students, but also to other students and colleagues. He was willing to spend hours talking about their plans and many more hours reading and commenting on drafts of their papers. He did all this at a point in his career—as a junior professor in a discerning department—when he was under great pressure to get out work of his own.

A second aspect of Ed's mentoring was his remarkable classroom teaching. His courses were extremely popular, not because of a flamboyant style, but because he was attuned to his students' levels of understanding. Graduate students would sit in on Ed's undergraduate course to learn how cognitive psychology ought to be taught. The same honesty and unpretentiousness that went into those lectures

were there in all Ed's interactions. I'll miss his curiosity and insight.

Colleen Seifert

Arthur F. Thurnau Professor of Psychology, Yale University

Ed Smith was a walking "jukebox" of cognitive psychology. In the days before Internet search, he was able to listen to a question and identify who had worked on similar problems. Ed knew so much because, *Zelig*-like, he was *there* when the important questions emerged. He knew Irv Biederman when he set out after the geon, and Steve Kosslyn when he first asked how images differed from pictures. Ed himself was an integral part of the most important developments in the field of cognition, including semantic networks (with Ed Shoben and Lance Rips), *Categories and Concepts* (with Doug Medin), and inductive reasoning (with Dan Osherson, Eldar Shafir, and others). He had, at the least, exquisite taste in collaborators.

Ed's collegiality at Michigan was best expressed by Richard Gonzalez: "Ed raised the level of discourse in any conversation." Whether a scientific talk, hallway debate, or the controversy over vending machines, Ed's gentility brought out the best in others. Ed was also a lot of fun to be around. He coaxed me into eating calamari, and coached me when visiting just after my son was born ("Support the head!"). His favorite television show was Saturday Night Live, particularly a skit called "The Cheerleaders." Despite the hundreds of prestigious addresses he gave, he confessed to me that he still got nervous before every one of them. Ed never forgot his humble beginnings in Brooklyn, but he became one of the greats in science while maintaining his core essence: He was a class act.

Robert J. Sternberg

Provost and Professor of Psychology, Oklahoma State University

What I remember best about Ed Smith is something he did not remember at all. I was a first-year graduate student feeling intimidated by the eminence of all these great Stanford professors. They seemed to live on a different plane from us mere mortals. Early in the fall semester, I walked into my office at some odd hour and I heard a loud noise coming from the direction of Ed's office. I looked outside and there was Ed vacuuming the rug in his office. It would never have occurred to me that a Stanford professor would know how to use a vacuum cleaner or, if he did, actually would use it to clean his own office.

That story somehow captures my view of Ed — a terrific academic with a common touch. He was one of the least pretentious and most down-to-earth people I have known. He had no airs about him and yet rose to the top of his profession.

Three things truly distinguished Ed. First, he was a natural collaborator. Second, he was bold and constantly pursuing new areas of research. Third, he always went for the really important problems. I miss Ed greatly.

Barbara Tversky

Professor Emerita of Psychology, Stanford University, and Professor of Psychology and Education, Teachers College, Columbia University

I see Ed walking streets across the country, leaning forward, head down, a man in a hurry. Ed grew up in Brooklyn. He once told me he wasn't comfortable unless he had concrete under his feet and buildings on both sides. Ed and I overlapped in graduate school at Michigan. Early on, he ran experiments inspired by Neisser's work on parallel processing by proofreaders. A few graduate students in philosophy were his subjects in lengthy experiments; they needed the money. One day, one of them brought a copy of *Scientific American*, with an article by Neisser, to ask if that was what the experiments were about. The breadth of his research interests was marked early on, from information processing to mental illness. He spent his time helping me study for prelims, making the phenomena light and easy with his uncanny clarity. He stayed a prototypic example of a friend, a mentor, and a scientist as our paths intersected at Stanford, Cambridge, NYU, and finally Columbia. All those years, Ed yearned to be in New York City.

Ed took other perspectives instinctively, and on everything: psychology, politics, people, theater, events. He never disagreed; he just asked, "but couldn't you see it this way?" and articulated an exquisitely clear alternative. His effortless clarity was part of the draw of a graduate seminar he taught at Stanford, after writing his classic book on categorization with Doug Medin. Most of the students were faculty, many of whom were inspired to work on the topic. Ed was a city boy, and at some point suggested that chickens were atypical birds because they had four legs. In supermarket packages, perhaps. Many years later, when I was new to NYC, we set out from NYU to a restaurant farther downtown. He looked to me to find the way. Astonished, I said, "You're the New Yorker." "Yes," he said, "but I have no spatial imagery. Imagine how hard it was for me to learn the brain." Ed was an excellent student, always, to the end, asking penetrating questions, taking notes.