# Award for Distinguished Scientific Contributions: Anthony G. Greenwald

The APA Awards for Distinguished Scientific Contributions are presented to persons who, in the opinion of the Committee on Scientific Awards, have made distinguished theoretical or empirical contributions to basic research in psychology. Anthony G. Greenwald is a recipient of the 2017 award for his work in collaboration with Mahzarin R. Banaji. Greenwald "identified prejudice against the null hypothesis among researchers and unintended prejudices toward social groups among everyone." Greenwald's award citation, biography, and a selected bibliography are presented here.

## Citation

"For methodological rigor and theoretical insight that set a standard for modern psychology, Anthony G. Greenwald identified prejudice against the null hypothesis among researchers and unintended prejudices toward social groups among everyone. With the 'totalitarian ego,' he situated the self at the center of human cognition. He reclaimed the unconscious as a concept worthy of scientific study and developed new ways to measure thoughts and feelings that occur outside of awareness or control. In word and deed, he showed how methodological innovation can lead to theoretical progress. Relentlessly skeptical of his own work, and everyone else's, he launched the field of implicit social cognition through his remarkable contributions."

## Biography

There were two Anthonys in the fifth-grade class of Manhattan's Public School 82 in 1947. After their homeroom teacher's coin toss, Anthony G. Greenwald became Tony Greenwald. In 1949, Greenwald had to choose between becoming a trumpet player in Eugene Steiker's seventh-grade orchestra class or completing seventh through ninth grades in 2 years. Because it delayed high school graduation by a year, choice of the trumpet must have affected almost everything else described in this biography. Six years later, Greenwald's trumpet playing induced Keith Wilson, Director of Bands at Yale, to urge Greenwald's admission to Yale from the waiting list. Greenwald's trumpet playing, which evolved soon to a Clifford Brown-inspired Jazz bebop style, persisted actively for another 30 years.

Another stroke of fate in 1959 (no space for details here) resulted in Greenwald's admission to the social psychology PhD program in Harvard University's Department of Social Relations. The chance to do classical conditioning research in Richard Solomon's laboratory and to take Solomon's learning theory seminar spurred Greenwald's interest in theories of conditioning and learning. These also generated his opportunity to spend the summer of 1960 working in the Yale laboratories of Allan Wagner, Frank Logan, and Neal Miller. An extracurricular benefit was initiating lasting ties with several Yale Psychology doctoral-level students—Gordon Bower, Buz Hunt, Dave Sears, and Phil Zimbardo—teammates on Yale University's Psychology Department team in a summer softball league.

After Richard Solomon left Harvard at the end of Greenwald's first year, two relatively new Social Relations assistant professors, Elliot Aronson and Walter Mischel, were fortunately willing to provide research guidance. Alas, those two also left Harvard for other positions the next year. Greenwald would have been entirely unmentored at that point were it not for Merrill Carlsmith, 1 year Greenwald's senior as a doctoral-level student. Carlsmith had the rich prior undergraduate experience of working with Leon Festinger at Stanford University and became a valued source of inside knowledge and useful advice.

As Chair of the Committee on Higher Degrees of Harvard's Social Relations Department, Gordon Allport was aware of Greenwald's loss of three potential PhD advisors and generously offered to fill the gap. That unusual beginning notwithstanding, Allport's influence spanned five decades, because Greenwald later was guided by Allport's major contributions in three areas—attitudes, the self, and prejudice.

At the annual meeting of the Eastern Psychological Association in 1962, Greenwald heard Leon Festinger deliver an attack on social psychology's concept of attitude. Festinger highlighted the poverty of evidence that attitude changes produced related behavior changes. This was the impetus for Greenwald's dissertation project, a series of experiments that confirmed a positive relationship between attitude change and behavior change.

On receiving the PhD in 1963, Greenwald applied for and received a postdoctoral fellowship in Educational Testing Service's (ETS's) Personality Research Group, led by Samuel Messick, a rich font of professional and practical wisdom. Greenwald's first publications emerged during the 2 ETS years, but his undoubted main achievement was marrying Jean Alexander. They remain happily married, parents of three children born in Columbus, Ohio, where they arrived in 1965 for Greenwald's first academic position.
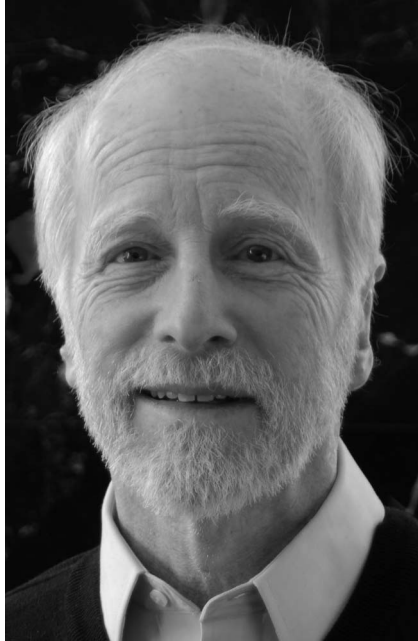
**Anthony G. Greenwald**

Greenwald's dissertation initiated 15 years of investigations of attitudes and persuasion, guided by the information processing theory tradition developed by Carl Hovland and colleagues at Yale, and powerfully advanced in the 1960s by Bill (William J.) McGuire. By the mid-1960s, an empirical weakness of the Yale approach had become apparent. The theory required that a persuasive message's impact should correlate with an audience member's memory for the message's content. But, in studies to test this, that correlation was generally absent. Greenwald proposed that the cognitive content of the persuasive setting included, not only the communicated message, but an added internal message—cognitive responses to persuasion—which could be oppositional. Empirical studies, which used a "listed thoughts" method to observe the internal message, supported this reasoning (1968). In their elaboration likelihood model of persuasion, two Ohio State PhDs of the early 1970s, Richard Petty and John Cacioppo, developed the potential of this idea much more fully than Greenwald ever did.

In the early 1970s, Greenwald failed in multiple attempts to use the sleeper effect, a classic persuasion finding, in tests of his cognitive response theory (more on this shortly). He judged it sensible to take up at least one additional line of research, giving a chance that one might be productive while another was struggling. The first added research topic grew from Greenwald's previous interest in learning–behavior theory along with William James's presentation of ideomotor theory in his 1890 chapter on "The Will" in *Principles of Psychology*. Using a theoretical device from Hull–Spence learning–behavior theory, Greenwald (1970) showed how mental images of (anticipated sensory feed-back from) voluntary actions could mediate response selection—precisely as required for ideomotor action. This led to multiple studies over the next 30 years, developing the concept of ideomotor compatibility between stimuli and responses. A central prediction (1972), confirmed in multiple experiments, was that two choice reaction time (RT) tasks could be performed simultaneously ("timeshared"), without mutual interference, when stimuli and responses were ideomotor-compatible. This was an exception to cognitive psychologists' widely held assumption that human decision making was a limited-capacity process that could manage only one decision at a time.

A third line of work, continuing to the present, developed from Greenwald's inability to replicate the sleeper effect in persuasion—a finding sufficiently accepted to appear in most college-level social psychology textbooks. This work was methodological, seeking to describe how nonreplicable findings can become widely accepted. Greenwald's proposed explanation was in terms of confirmation bias, laid out in "Consequences of prejudice against the null hypothesis" (1975). Attention generated by that article led to an invitation to become Editor of *Journal of Personality and Social Psychology* (JPSP). Greenwald's debut editorial (1976) introduced manuscript submission procedures expected to minimize publication of nonreplicable findings. The procedures closely resembled recent innovations proposed for the same purpose. However, substantial unrest expressed by authors led APA's Publications and Communications Board to shorten Greenwald's editorial term.

There were other things to do. A sabbatical year spent at Stanford in 1978–1979 gave exposure to Roger Shepard, Amos Tversky, Gordon Bower, Herb Clark, Ernest Hilgard, Eleanor Maccoby, and former fellow Harvard student, Merrill Carlsmith. Greenwald was in awe of the axiomatic foundation for measurement, perception, and judgment being advanced by Shepard and by Tversky. It offered the hope of elevating social psychology's concept of attitude to a higher plane of understanding. Alas, neither Greenwald nor anyone else has yet found a way to actualize that possibility. The year spurred development of another research interest—the psychological self. In "The totalitarian ego: Fabrication and revision of personal history" (1980), Greenwald interpreted the self as a self-preserving knowledge organization, sharing this property both with totalitarian dictatorships and with well-established scientific paradigms.

The program of studying the scholarly literature on the self in the next few years (in collaboration with Steve Breckler) was interrupted by encountering a surprising 1983 publication in the journal Cognitive Psychology. The article reported five replications of a procedure that produced unconscious semantic activation (subliminal priming). If that result was valid, it could allow multiple important research directions. Greenwald sought to reproduce the

1983 result, a needed preliminary to pursuing a new area of research—unconscious cognition. The opportunity to do this coincided with building a new laboratory when Greenwald moved to University of Washington in 1986. Alas, the 1983 result was not to be found, leading Greenwald, after numerous tries, to conclude that the finding was not replicable, at least as originally reported.

Greenwald had already concluded that publication of repeated null findings was not a path to scientific advance. That conclusion came as part of a happy ending to the sleeper effect story. Research with Anthony Pratkanis reported a replicable sleeper effect, obtained using a procedure much different from those used in the classic studies of the 1940s and 1950s. The example of that denouement motivated Greenwald's search for procedures that would reliably produce subliminal priming, eventually reported with Sean Draine and Richard Abrams (1996).

While Greenwald was still at Ohio State University, a remarkable gift arrived from India in 1980—in the person of Mahzarin R. Banaji. Her energy and scientific approach were evident from the beginning. Greenwald came to appreciate the full breadth of Banaji's abilities after she was independently functioning in her first academic position at Yale. Greenwald and Banaji then began a collaboration that started by adapting methods of implicit memory research to study "implicit attitudes" and "implicit stereotypes." This led to the article in which they identified this area of research as "implicit social cognition" (1995), in turn leading to much of what both have done since then.

Their search for measures of implicit attitudes and stereotypes was underway for a few years when the procedure of (what became) the Implicit Association Test (IAT) was first tried out by Greenwald at University of Washington in 1994. Convinced of the procedure's usefulness, Greenwald succeeded in persuading Banaji to start using the method at Yale, where she recruited doctoral-level student Brian Nosek's active involvement. Nosek rapidly became a full collaborator, also the primary creator of a still-active website that presents multiple versions of the IAT. Almost 20 years after first publication of the IAT (1998), the three developers continue to work on its development. As postdoctoral fellows at University of Washington, Laurie Rudman and Buju Dasgupta contributed importantly to this work. A further offspring of the IAT that remains to be fully developed is balanced identity theory (2002), an extension of Fritz Heider's balance theory, using trios of IAT measures to identify stable configurations that link attitudes, stereotypes, identities, and self-esteem.

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