

SPR AWARD, 2012

For distinguished contributions to psychophysiology: Don C. Fowles

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The Senior Awards Committee of the Society for Psychophysiological Research selected Don C. Fowles as recipient of SPR's highest honor, the Award for Distinguished Contributions to Psychophysiology, for the year 2012. The award is reserved for the most eminent scholars in the discipline and is granted only in certain years. Don's receipt of this award reflects his outstanding contributions to psychophysiology as a researcher and active member of SPR over a distinguished career spanning five decades.

Don emerged as an important and visible figure in psychophysiology in the early stages of his career and has remained so ever since. As highlighted below, his scientific work has contributed fundamentally to our knowledge of the mechanisms and clinical correlates of electrodermal activity, motivational effects on cardiac activity, affective-physiological processes in major psychological disorders including psychopathy and schizophrenia, and early temperament as a vulnerability factor for the development of clinical problems. Don has also held all major offices in SPR and contributed in essential ways to basic practice in psychophysiology. He served as President of the Society (1986–87), Secretary-Treasurer (1981–84), member of SPR's Board of Directors (1977–80), Associate Editor for *Psychophysiology* (1976–82), and chaired the first SPR Guidelines Committee on Electrodermal Activity (EDA), appearing as lead author on the 1981 recommendations report (Fowles et al., 1981; > 600 citations to date). Don also contributed substantially to the recent updating of these EDA guidelines (Boucsein et al., 2012).

Don stands as a preeminent figure in the study of electrodermal activity (EDA). He contributed a series of key published works on EDA mechanisms and methods during the 1970s. These included a foundational *Psychological Bulletin* review on hydration and sodium reabsorption processes in EDA (Fowles & Venables, 1970b) and several papers focusing on effects of manipulations of epidermal hydration on skin potential and/or conductance: Fowles & Johnson, 1973; Fowles & Rosenberry, 1973; Fowles & Schneider, 1974, 1978; Fowles & Venables, 1970a; Schneider & Fowles, 1978, 1979). Additionally, Don contributed a review chapter on mechanisms of EDA (Fowles, 1975) to the influential psychophysiology sourcebook, *Bioelectric recording techniques*. During the decade of the 1970s, Don also contributed other important papers on EDA as an index of sympathetic arousal differences



in patients with schizophrenia (Fowles, Watt, Maher, & Grinspoon, 1970; Depue & Fowles, 1973, 1974, 1976), edited the book *Clinical applications of psychophysiology*, and published chapters on the biological basis of intersections between anxiety and depression (Fowles & Gersh, 1979; Gersh & Fowles, 1979). These efforts established Don as visible figure in the emerging area of experimental psychopathology.

Given his work on EDA and its application to clinical conditions, Don's interest was naturally drawn to the topic of psychopathy. David Lykken and Robert Hare had showcased this condition as an important topic of study for psychophysiologicalists with influential studies showing reduced EDA in "primary" (low anxious) psychopathic individuals during exposure to cues signaling a

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forthcoming aversive event. A puzzling twist, however, was that concurrent measurement of cardiac activity revealed normal or even *augmented* heart rate (HR) acceleration during stressor anticipation. Reconciling this discrepant pattern was seen as crucial to understanding affective response deviations in psychopathy. Don recognized the possibility of an answer in the workings of distinct brain motivational systems as described by animal biopsychologist Jeffrey Gray. Don's theoretical perspective on this was the focus of his landmark 1980 article in *Psychophysiology*, entitled "The three arousal model: Implications of Gray's two-factor learning theory for heart rate, electrodermal activity, and psychopathy" (> 900 citations to date; Fowles, 1980). In this paper, Don postulated that psychopathy entails a selective deficit in the behavioral inhibition (punishment, or "anxiety") system (BIS) as described by Gray, evident in attenuated EDA response to aversive cues, accompanied by intact functioning of the counterpart reward system (termed "behavioral activation system" [BAS] by Don), reflected in normal cardiac reactivity. This inventive and compelling formulation left a lasting imprint on the psychopathy area. Of broader importance to the field of psychophysiology, Don posited further, citing work by Paul Obrist demonstrating elevation of HR rate during active coping, that findings in the literature pertaining to cardiac-somatic coupling and effects of incentive manipulations on heart response could be accounted for by the idea that HR acceleration indexes activation of the BAS.

This paper was revolutionary and ahead of its time. It linked findings and concepts from Gray's work on motivation and learning in rodents to key unresolved questions in the human psychophysiology literature, forging a link between the two that permanently shaped thinking about arousal-related response patterns. It connected these two lines of basic research in turn to the study of psychopathology, providing a crucial point of reference for theorizing about the role of brain systems in physiological response deviations associated with clinical problems. In this respect, the paper presaged the emphasis on brain systems and processes in contemporary psychopathology and contributed to the prominent focus on clinical applications of psychophysiology among investigators in the field today. The paper also shone a spotlight on bio-motivational processes as a basis for understanding normal and abnormal physiological response, setting the stage for the expansion of biologically-oriented research on affect and motivation that occurred from the latter 1980s through to present.

Don proceeded to test his ideas regarding the motivational basis of cardiac reactivity in a series of innovative studies in the early 1980s (Fowles, 1983a; Fowles, Fisher, & Tranel, 1982; Tranel, Fisher, & Fowles, 1982; see also Fowles, 1982). Consistent with his theorizing, these studies demonstrated that incentive manipulations contribute to increases in cardiac (HR) activity not attributable to motoric effort. Findings from this work were featured in a key update to Don's 1980 paper, entitled "Motivational effects on heart rate and electrodermal activity: Implications for research on personality and psychopathology" (Fowles, 1983b), and in his subsequent SPR Presidential Address paper (Fowles, 1988). Don's address paper focused on the relevance of appetitive (BAS) and aversive (BIS) systems to a range of clinical conditions, including anxiety disorders, major depression, and disinhibitory conditions including psychopathy, substance abuse, mania, and schizophrenia. The paper was again ahead of its time, advocating a "levels of analysis" approach to the study of clinical problems organized around core bio-behavioral constructs—along lines similar to the National Institute of Mental Health's current Research Domain Criteria initiative. The impact of this paper has

been substantial, as evidenced by the large number of citations it has garnered to date (> 400) and the directions in which research on psychophysiology and psychopathology have moved since it was published.

Don's contributions to psychophysiology are particularly remarkable considering the parallel investment of time and energy he has made over his career to advancing the disciplines of clinical science and psychopathology research. His activities along these lines were especially vigorous in the late 1980s through the 1990s. After serving as Editor (1986–89) of the field's premier psychopathology journal, the *Journal of Abnormal Psychology*, Don served as President of the Society for Research in Psychopathology in 1991. During 1994–95, he served on the Coalition Steering Committee that established the Academy of Psychological Clinical Science, an alliance of research-oriented clinical psychology programs dedicated to advancing scientifically-oriented training and resources in this area—later serving as Treasurer (1995–2000) and President (2002–2004) of the Academy. Don also served as President in 2004 of another scientific advocacy group, the Society for a Science of Clinical Psychology.

Throughout this period, Don made further pivotal contributions to psychophysiology and physiologically-oriented understanding of clinical problems. He published a chapter on electrodermal mechanisms in the 1986 psychophysiology sourcebook by Coles, Porges, and Donchin (Fowles, 1986). A major article in the 1992 *Annual Review of Psychology* focused on the interplay between biological and environmental influences in schizophrenia. He co-edited a handbook on EDA research in 1993, along with books on psychopathology that featured coverage of biologically-oriented research (Chapman, Chapman, & Fowles, 1993; Fowles, Sutker, & Goodman 1994). Notable contributions during the 2000s have included key papers on temperament and EDA in young children as related to the development of psychopathology (Fowles, 2000; Fowles & Kochanska, 2000; Fowles, Kochanska, & Murray, 2000) and influential publications on physiological correlates and etiological mechanisms of psychopathy (Dindo & Fowles, 2011; Fowles & Dindo, 2006, 2009, Patrick, Fowles, & Krueger, 2009). Already highly cited, these recent works are destined to become required reading for scholars and students in psychophysiology and clinical science.

Don was born in Arkansas in 1939 and raised by his mother after his parents divorced following the war. He attended school in Little Rock and won a National Merit Scholarship to attend M.I.T., where he double-majored in biology and literature with a concentration in psychology. Don completed his PhD at Harvard under Brendan Maher, an early pioneer in experimental psychopathology who inspired Don's interest in biological aspects of temperament and clinical problems. Don's initial exposure to psychophysiology came through a 1st-year summer research assistantship at the Bedford VA hospital that focused on the then-new method of EEG biofeedback. Following completion of his dissertation, a study of physiological responsivity in schizophrenia with Maher, David Shapiro, and Bernard Tursky, Don undertook a postdoctoral position with Peter Venables in London to investigate physiological mechanisms underlying the electrodermal response. Don spent 1968–70 as a faculty member at the University of Oklahoma and the balance of his career in the Psychology Department at the University of Iowa, where he is now Professor Emeritus.

Along with his towering intellectual contributions and tireless service to the field, Don is widely known for his generosity and consideration. His scholarly reviews and commentaries are notable

for their objectivity and incisiveness and his personal communications are invariably thoughtful and gracious. He goes out of his way to connect with students and new investigators at annual SPR meetings—showing interest in their work, sharing ideas and suggestions, and nurturing their interest in the discipline. In these quieter ways, Don has contributed importantly to the unique spirit of decency and cross-generational camaraderie that exists within the Society.

For all these reasons and more, Don Fowles is strongly deserving of SPR's Distinguished Contributions award. As an intellectual force, creator, catalyst, leader, advocate, and model of professionalism, Don has shaped the discipline of psychophysiology and those who practice it in critical ways over many years. During each stage of his career he has produced brilliant scholarly work of

lasting importance—from his early research on mechanisms of electrodermal activity, to his subsequent work on motivational influences on autonomic reactivity and the role of motivational systems in psychopathology, to his recent influential writings on temperament and physiological response in young children and etiological mechanisms in psychopathy. Don has also served SPR in all major official capacities and advocated tirelessly for the prioritization of empiricism in clinical psychology training and practice. Importantly, he is also a caring person who inspires others to goodness by example. Don's receipt of SPR's highest honor recognizes the many ways in which his presence and efforts have enriched the Society over the course of his long and distinguished career, and the legacy of his scientific contributions and the enduring impact he has had on investigators in the field.

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Supporting Information

Dr. Fowles's bibliography can be found in the online version of this article.