

**SPR 14TH ANNUAL MEETING
PRECONFERENCE WORKSHOP #1
May 30, 2006
8:30 AM – 5:00 PM**

Title Executive functioning and its applications in prevention science: the what, the why, and the how.

Presenters Antoine Bechara, Ph.D., University of Iowa
Tom Dishion, Ph.D., University of Oregon
Phil Fisher, Ph.D., Oregon Social Learning Center
Ralph Tarter, Ph.D., University of Pittsburgh

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Description Advances in neuroscience are opening up new frontiers into the understanding of how brain and behavior are connected. In addition, new technology makes neurobiological data collection increasingly accessible. One area of neurocognitive functioning with implications for prevention is executive functioning. Executive functioning includes processes involved in decision making such as inhibiting actions, restraining and delaying responses, attending selectively and setting goals, planning and organizing. There are also important connections between executive functions, attention, and working memory. In this workshop, we will provide an overview of the brain systems that are involved in executive functioning. We will describe the ways in which executive functioning is measured, both in terms of specific tasks (computer tasks as well as laboratory assessments), as well as physiological (EEG) and neuroimaging (fMRI) approaches to assessing executive functioning. We will then discuss how these measures can be integrated into prevention research to help inform underlying theoretical models, to guide intervention efforts, and to be employed as potential outcome measures.

Career Level &

Prerequisites This workshop will be accessible to investigators with and without experience with the prefrontal cortex and executive function.

Methods The workshop will be interactive, and there will be opportunity for participants to ask questions about incorporating these measures into their research.

Materials Participants will receive a complete set of slides.

Presenters

Antoine Bechara, Ph.D. Dr. Bechara's focuses on understanding the neural processes underlying how we make decisions and choices. Researchers in the field of human decision-making have used a variety of methods, including functional neuroimaging, and work with brain damaged patients. Among the influential work using the brain lesion method has been the work I did with Antonio and Hanna Damasio, and the rest of the group, at the University of Iowa. This research has focused on the decision-making capabilities of patients who have suffered injury to the ventromedial sector of their prefrontal cortex. At the time, although the decision-making deficit seen in these patients was so obvious in their real life, there was no laboratory probe to detect and measure this decision-making impairment. My development of what became known as the Iowa Gambling Task (IGT) has enabled investigators, for the first time, to detect these patients' elusive impairment in the laboratory, measure it, and investigate its possible causes. This work has drawn attention to the potential value in studying the neural basis of decision-making, and in bringing this question to the laboratory through the use of structured decision-making tasks involving choices that mimic real-life situations, in the way they factor uncertainty, reward, and punishment. My research still focuses on understanding the anatomical, physiological, and pharmacological mechanisms of decision-making. However, my research also aims at integrating decision neuroscience with research in two key areas: one is mental health, and specifically substance addiction, and smoking; the other seeks to strengthen and expand interdisciplinary research between the fields of neuroscience, management, marketing, and economics, and social sciences, so that we can understand better why people decide and behave the way they do in real-life social settings.

Philip A. Fisher, PhD, Oregon Social Learning Center. Dr. Fisher is a research scientist at the Oregon Social Learning Center (OSLC) and a senior scientist at the Center for Research to Practice, both in Eugene, Oregon. He is particularly interested in prevention research in the early years of life. Dr. Fisher is Principal Investigator on the Early Intervention Foster Care (EIFC) project, a 10-year study funded by the U.S. National Institute of Mental Health (NIMH) to test the effectiveness of a preventive intervention for maltreated preschool-aged foster children. The intervention incorporates many of the elements of OSLC's Treatment Foster Care program for adolescents, and adds additional components such as a focus on developmental delays and a home visitation model of service delivery, that are designed to meet the needs of children in this age group. The research being conducted on the EIFC project examines how the intervention impacts multiple domains, including behavior, emotions, and neurobiology (specifically, HPA axis activity and prefrontal cortex function). He is also PI on other studies involving foster children and their families. These include (a) a randomized trial funded by the National Institute on Drug Abuse (NIDA) to evaluate a therapeutic playgroup intervention to promote school readiness for foster children; and (b) a longitudinal study funded by the National Institute of Child Health and Development to follow children identified at birth as high risk for child welfare system involvement through early adolescence. Related to these studies, Dr. Fisher is a Co-Investigator on an NIMH-funded network grant examining the effects of early experiences on glucocorticoid activity in the brain.

Dr. Fisher is also a Co-Investigator on two center grants at OSLC, Oregon Prevention Research Center Grant and Pathways Home: Reducing Risk in the Child Welfare System. Dr. Fisher is a licensed clinical psychologist. He serves on a number of national advisory groups, including a NIDA workgroup of Native American researchers and scholars and a National Institutes of Health study section that evaluates proposals for community-based interventions.

Tom Dishion, Ph.D. Dr. Dishion received his Ph.D. in Clinical Psychology from the University of Oregon. His interests include understanding the development of antisocial behavior and substance abuse in children and adolescents, as well as designing effective interventions and prevention programs. In particular, he and colleagues have examined the contribution of peer and family dynamics to escalations in adolescent substance use, delinquency, and violence. His intervention research focuses on the effectiveness of family-centered interventions, and the negative effects of aggregating high-risk youth into intervention groups. He is currently Director of Research at the Child and Family Center and Professor of Clinical Psychology, both at the University of Oregon. Prior to that, he was a research scientist at Oregon Social Learning Center. He has published over 90 scientific reports on these topics, a book for parents on family management, and two books for professionals working with troubled children and their families.

Ralph Tarter, Ph.D. Dr. Tarter is Professor of Pharmaceutical Sciences, Psychiatry and Psychology at the University of Pittsburgh where he is Director of the NIDA-funded Center for Education and Drug Abuse Research. Dr. Tarter has been researching brain-behavior relations for the past 30 years during which time he has focused on elucidating the neurobehavioral antecedents and consequences of substance abuse. He has edited 10 books, 2 special journal issues, and authored almost 300 papers on these topics. In this workshop, he will provide a perspective for conducting neuropsychological research in substance use that has ramifications for clinical practice involving both assessment and rehabilitation.