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## The Reinforcement Sensitivity Theory of Personality

One of the major neuropsychological models of personality, developed by world-renowned psychologist Professor Jeffrey Gray, is based upon individual differences in reactions to punishing and rewarding stimuli. This biological theory of personality – now widely known as ‘Reinforcement Sensitivity Theory’ (RST) – has had a major influence on motivation, emotion and psychopathology research. In 2000, RST was substantially revised by Jeffrey Gray, together with Neil McNaughton, and this revised theory proposed three principal motivation/emotion systems: the ‘Fight-Flight-Freeze System’ (FFFS), the ‘Behavioural Approach System’ (BAS) and the ‘Behavioural Inhibition System’ (BIS). This is the first book to summarize the Reinforcement Sensitivity Theory of personality and bring together leading researchers in the field. It summarizes all of the pre-2000 RST research findings, explains and elaborates the implications of the 2000 theory for personality psychology, and lays out the future research agenda for RST.

PHILIP J. CORR is Professor of Psychology at Swansea University. He has published over 60 scientific papers and is the author of the major textbook, *Understanding Biological Psychology* (2006).

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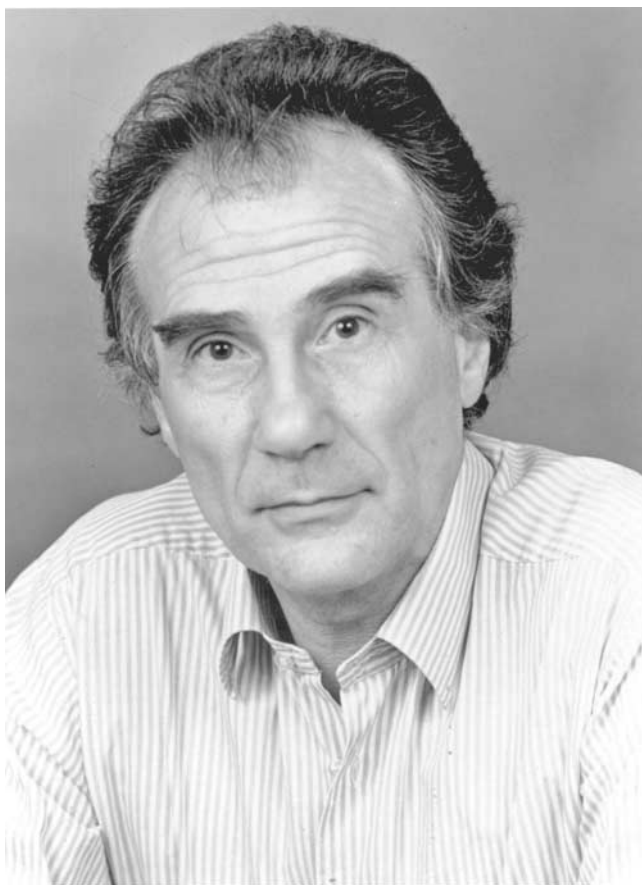
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Jeffrey Alan Gray (1934–2004)

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# Abbreviations

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ARAS	Ascending Reticular Activating System
BAS	Behavioural Approach System
BIS	Behavioural Inhibition System
CFA	common factor analysis or confirmatory factor analysis
CL	category learning
cns	conceptual nervous system
CNS	central nervous system
CR	conditioned response
CS	conditioned stimulus
DINN	dynamically interacting neural network
DMH	dorsomedial hypothalamus
ERP	event-related potential
FFFS	Fight-Flight-Freeze System
FFS	Fight-Flight System
fMRI	functional Magnetic Resonance Imaging
FNR	frustrative non-reward
GWPPQ	Gray-Wilson Personality Questionnaire
IRT	Item Response Theory
JAMS	Jackson's Appetitive Motivation Scale
JSH	joint subsystems hypothesis
MDD	major depressive disorder
MMN	mismatch negativity
NA	negative affect
NAS	Non-specific Arousal System
OCD	obsessive-compulsive disorder
PA	positive affect
PAG	periaqueductal gray
PCA	Principal Components Analysis
PD	panic disorder
PEN	Psychoticism-Extraversion-Neuroticism
PET	Position Emission Tomography
PHOB	specific phobia

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PTSD	post-traumatic stress disorder
QTL	quantative trait loci
RST	Reinforcement Sensitivity Theory
SHS	septo-hippocampal system
SPSRQ	Sensitivity to Punishment Sensitivity to Reward Questionnaire
S-R	stimulus-response
SSH	separable subsystems hypothesis
TMI	transmarginal inhibition
UCR	unconditioned response
UCS	unconditioned stimulus



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## Preface

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Jeffrey Alan Gray was known for his important contributions to many areas of psychology, latterly in his career, schizophrenia, stem-cell transplantation and a full-blown theory of the functions of consciousness. But his theory of anxiety and personality more generally – now known as Reinforcement Sensitivity Theory (RST) – is one of his greatest achievements and secures his place in the history books.

The high regard in which Jeffrey is held by colleagues world-wide was evident in the fact that all the authors I approached to contribute to this book readily agreed. I am grateful to them all for their scholarly chapters. I am especially grateful to William Revelle for agreeing to read all chapters before giving his reflections on the position of RST in the wider field of personality psychology. The contributors have given us much to consider, and in their work we may discern many of the landmarks that will surely characterize RST in the decades to follow.

This book testifies to the important developments that have taken place in Jeffrey's thinking over the years, as well as the thinking of others inspired by his ground-clearing work. As show-cased in this book, 'Gray's theory' is not a fossilized set of principles, assumptions and contentions; rather, it is a fecund scientific perspective that opens up new research possibilities. We witness this fecundity in the vitality and variety of theories and approaches that characterize RST research today, as well as in the variegated shoots of related reinforcement-based theories of motivation, emotion and personality. And we witness its true scientific credentials in its own refutation of some of the central elements of the original theory.

This book has one aim: to encourage the further development of RST. So in keeping with Jeffrey's scientific perspective, it is to the future that we must look, with all its challenges, rather than to the past with its seductive certitudes afforded by 20–20 hindsight. As the 2000 revision of Gray's 1982 *The Neuropsychology of Anxiety* marks a watershed in RST, this book serves to demarcate 'old' (pre-2000) RST from 'new' (post-2000) RST and, thereby, help to clarify new avenues of research.

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This delineation should be of value to all students of personality, distinguished and novice alike.

I am very grateful to Cambridge University Press for agreeing to publish this work; especially to Sarah Caro, Commissioning Editor, for seeing the merit in the original proposal and for constant encouragement and advice; and then, after Sarah's departure, Andrew Peart, who saw the project through to its fruition.

PHILIP J. CORR  
26 December 2006