## The Cambridge Handbook of Personality Psychology

Personality psychology is a rapidly maturing science making important advances on both conceptual and methodological fronts. *The Cambridge Handbook of Personality Psychology* offers a one-stop source for the most up-to-date scientific personality psychology. It provides a summary of cutting-edge personality research in all its forms, from DNA to political influences on its development, expression, pathology and applications. The chapters are informative, lively, stimulating and, sometimes, controversial and the team of international authors, led by two esteemed editors, ensures a truly wide range of theoretical perspectives. Each research area is discussed in terms of scientific foundations, main theories and findings, and future directions for research. With useful descriptions of technological approaches (for example, molecular genetics and functional neuroimaging) the *Handbook* is an invaluable aid to understanding the central role played by personality in psychology and will appeal to students of occupational, health, clinical, cognitive and forensic psychology.

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# The Cambridge Handbook of Personality Psychology

Edited by
Philip J. Corr
and
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# Contents


*List of Figures* *page* ix
*List of Tables* xiii
*List of Contributors* xv
*List of Abbreviations* xviii
*Preface* xxi
*Editors' general introduction* xxii
*Editors' introduction to Parts I to VIII* xliii

**Part I. Foundation Issues** 1

1. Conceptual issues in personality theory
SUSAN CLONINGER 3

2. Personality psychology of situations
SETH A. WAGERMAN AND DAVID C. FUNDER 27

3. Personality: traits and situations
JENS B. ASENDORPF 43

4. Personality and emotion
RAINER REISENZEIN AND HANNELORE WEBER 54

5. The characterization of persons: some fundamental conceptual issues
JAMES T. LAMIELL 72

**Part II. Personality Description and Measurement** 87

6. The trait approach to personality
IAN J. DEARY 89

7. Methods of personality assessment
GREGORY J. BOYLE AND EDWARD HELMES 110

8. Structural models of personality
BOELE DE RAAD 127

9. The Five-Factor Model of personality traits: consensus and controversy
ROBERT R. McCRAE 148

10. Personality and intelligence
PHILLIP L. ACKERMAN 162

**Part III. Development, Health and Personality Change** 175

11. Childhood temperament
MARY K. ROTHBART, BRAD E. SHEESE AND ELISABETH D. CONRADT 177

12. The development of personality across the lifespan
M. BRENT DONNELLAN AND RICHARD W. ROBINS 191

13 Models of personality and health
MARKO ELOVAINIO AND MIKA KIVIMÄKI 205

14. Attachment theory: I. Motivational, individual-differences and structural aspects
PHILLIP R. SHAVER AND MARIO MIKULINCER 228

15. Attachment theory: II. Developmental, psychodynamic and optimal-functioning aspects
MARIO MIKULINCER AND PHILLIP R. SHAVER 247

**Part IV. Biological Perspectives** 263

16. Evolutionary theories of personality
AURELIO JOSÉ FIGUEREDO, PAUL GLADDEN, GENEVA VÁSQUEZ, PEDRO SOFIO ABRIL WOLF AND DANIEL NELSON JONES 265

17. Animal models of personality and cross-species comparisons
SAMUEL D. GOSLING AND B. AUSTIN HARLEY 275

18. Behavioural genetics: from variance to DNA
MARCUS R. MUNAFÒ 287

19. Neuroimaging of personality
TURHAN CANLI 305

20. Personality neuroscience: explaining individual differences in affect, behaviour and cognition
COLIN G. DEYOUNG AND JEREMY R. GRAY 323

21. The Reinforcement Sensitivity Theory of Personality
PHILIP J. CORR 347

**Part V. Cognitive Perspectives** 377

22. Semantic and linguistic aspects of personality
GERARD SAUCIER 379

23. Personality and performance: cognitive processes and models
GERALD MATTHEWS 400

24. Self-regulation and control in personality functioning
CHARLES S. CARVER AND MICHAEL F. SCHEIER 427

25. Self-determination theory: a consideration of human motivational universals
EDWARD L. DECI AND RICHARD M. RYAN 441

26. Traits and the self: toward an integration
MICHAEL D. ROBINSON AND CONSTANTINE SEDIKIDES 457

27. Personality as a cognitive-affective processing system
RONALD E. SMITH AND YUICHI SHODA 473

**Part VI. Social and Cultural Processes** 489

28. The storied construction of personality
AVRIL THORNE AND VICKIE NAM 491

29. Personality and social relations
LAURI A. JENSEN-CAMPBELL, JENNIFER M. KNACK AND MADELINE REX-LEAR 506

30. Personality and social support processes
RHONDA SWICKERT 524

31. Social pain and hurt feelings
GEOFF MACDONALD 541

32. Personality in cross-cultural perspective
JURIS G. DRAGUNS 556

33. Culture and personality
ROBERT HOGAN AND MICHAEL HARRIS BOND 577

34. Personality and politics
GIANVITTORIO CAPRARA AND MICHELE VECCHIONE 589

**Part VII. Psychopathology** 609

35. Mood and anxiety disorders: the hierarchical structure of personality and psychopathology
DAVID D. VACHON AND R. MICHAEL BAGBY 611

36. Personality and psychosis
GORDON CLARIDGE 631

37. Diagnosis and assessment of disorders of personality
STEPHANIE N. MULLINS-SWEATT AND THOMAS A. WIDIGER 649

38. Psychopathy and its measurement
ROBERT D. HARE AND CRAIG S. NEUMANN 660

39. Personality and eating disorders
NATALIE J. LOXTON AND SHARON DAWE 687

40. Personality and attention deficit hyperactivity disorder
RAPSON GOMEZ 704

**Part VIII. Applied Personality Psychology** 717

41. Personality in school psychology
MOSHE ZEIDNER 719

42. Personality in educational psychology
MOSHE ZEIDNER 733

43. Personality at work
GILES ST J. BURCH AND NEIL ANDERSON 748

44. Workplace safety and personality
ALICE F. STUHLMACHER, ANDREA L. BRIGGS AND DOUGLAS F. CELLAR 764

45. Personality and crime
DAVID CANTER AND DONNA YOUNGS 780

46. Treatment of personality disorders
FIONA WARREN 799

*Index* 820

# Figures


1.1 Theoretical constructs and correspondence rules 15

3.1 Perfect cross-situational consistency of inter-individual differences despite strong situational effects on behaviour 47

3.2 Situational profile of two children in verbal aggressiveness across five situations 48

5.1 Schematic representation of the traditional framework for scientific personality research. Reprinted from J. T. Lamiell 2000. A periodic table of personality elements? The 'Big Five' and trait 'psychology' in critical perspective, *Journal of Theoretical and Philosophical Psychology* 20: 1–24 with permission 73

5.2 Illustrative 'Big Five' personality profile based on interactive measurements, juxtaposed with previously-derived normative profile. Reprinted from 2003. *Beyond Individual and Group Differences: Human Individuality, Scientific Psychology, and William Stern's Critical Personalism* with permission from Sage Publications 79

6.1 A simplified representation of components of the personality system and their interrelations, according to Five-Factor Theory. From R. R. McCrae 2004. Human nature and culture: a trait perspective, *Journal of Research in Personality* 38: 3–14 103

8.1 Eysenck's (1970) hierarchical model of Extraversion 136

8.2 Partial models of Extraversion and Agreeableness of De Raad, Hendriks and Hofstee (1992) 137

8.3 Hierarchical emergence of factors (De Raad and Barelds 2007) 138

8.4 Circumplex representation of two factor solution (De Raad and Barelds 2007) 140

9.1 Gender differences, in *T*-scores, for adults in the United States (self-reports) vs. 50 cultures (observer ratings) on the 30 facets of the NEO-PI-R 152

10.1 An example of a hierarchical structure of intellectual abilities, derived from information in Carroll (1993) 164

10.2 Personality constructs and their relations. From P. L. Ackerman and E. D. Heggestad 1997. Intelligence, personality, and

interests: evidence for overlapping traits, *Psychological Bulletin* 121: 219–45. Copyright American Psychological Association. Reprinted by permission 166
13.1 Personality factors as modifiers of environmental demands 210
13.2 Personality factors affecting the perception of the environment 210
13.3 Personality as an independent factor 211
13.4 The transactional model of the core relationship between personality and health 220
18.1 Incidence of major depression as a function of *5-HTTLPR* genotype and number of life events. From A. Caspi *et al*. 2003. Influence of life stress on depression: moderation by a polymorphism in the 5-HTT gene, *Science* 301: 386–9. Reprinted with permission from AAAS 297
18.2 Amygdala activation to fearful faces compared to neutral stimuli as a function of *5-HTTLPR* genotype. Reprinted from A. R. Hariri *et al*. 2002. Serotonin transporter genetic variation and the response of the human amygdala, *Science* 297: 400–3 300
19.1 Amygdala response to emotional faces. Reprinted from T. H. Canli, *et al*. 2002. Amygdala response to happy faces as a function of Extraversion, *Science* 296: 2191 307
19.2 Relationship between neuroticism (N) and change of slopes of MedPFC activity within blocks of sad facial expressions 314
19.3 Lateral prefrontal cortex (LPFC) activation to fearful, relative to neutral, faces correlated with Agreeableness. Reprinted from B. W. Haas *et al*. 2007. Is automatic emotion regulation associated with agreeableness? A perspective using a social neuroscience approach, *Psychological Science* 18(2): 130–2 315
21.1 The relationship between (a) the real nervous system (Real NS), (b) the conceptual nervous system (Conceptual NS), (c) syndromes/behaviours related to (d) immediate stimuli/cognitions, and (e) past events/genes, providing descriptions in terms of structure, function and behaviour 352
21.2 Position in factor space of the fundamental punishment sensitivity and reward sensitivity (unbroken lines) and the emergent surface expressions of these sensitivities, i.e., Extraversion (E) and Neuroticism (N) (broken lines) 356
21.3 A schematic representation of the hypothesized relationship between (a) FFFS/BIS (punishment sensitivity; PUN) and BAS (reward sensitivity; REW); (b) their joint effects on reactions to punishment and reward; and (c) their relations to extraversion (E) and neuroticism (N) 357
21.4 The two dimensional defence system 363

21.5 Categories of emotion and defensive responses derived from 'defensive direction' (i.e., motivation to avoid or approach the source of danger) and avoidability of the threat (given constraints of the environment) 369
23.1 Humphreys and Revelle theory: causal chain 406
23.2 Tri-level explanatory framework for cognitive science 416
23.3 Cognitive-adaptive processes supporting personality traits 421
24.1 Schematic depiction of a feedback loop, the basic unit of cybernetic control 428
24.2 Hypothesized approach-related affects as a function of doing well versus doing poorly compared to a criterion velocity. Adapted from C. S. Carver 2004. Negative affects deriving from the behavioural approach system, *Emotion* 4: 3–22 437
25.1 Representation of the SDT continuum of relative autonomy, showing types of motivation, types of regulation, the nature of perceived causation, and the degree of autonomy or self-determination for each type of motivation 445
27.1 Illustrative intra-individual, situation-behaviour profiles for verbal aggression in relation to five situations in two time samples. From Y. Shoda, W. Mischel and J. C. Wright 1994. Intra-individual stability in the organization and patterning of behaviour: incorporating psychological situations into the idiographic analysis of personality, *Journal of Personality and Social Psychology* 67: 678. Copyright 1994 by the American Psychological Association. Reprinted with permission 475
27.2 The cognitive-affective personality system (CAPS). From W. Mischel and Y. Shoda 1995. A cognitive-affective system theory of personality: reconceptualizing situations, dispositions, dynamics, and invariance in personality structure, *Psychological Review* 102: 254. Copyright 1995 by the American Psychological Association. Adapted with permission 481
34.1 The motivational continuum of basic values 597
35.1 Correlations between subordinate and superordinate factors from an integrated hierarchical account of the structure of normal and abnormal personality. Reproduced from K. E. Markon, R. F. Krueger and D. Watson 2005. Delineating the structure of normal and abnormal personality: an integrative hierarchical approach, *Journal of Personality and Social Psychology* 88: 139–57 with permission 616
35.2 A schematic structural model of the DSM-IV mood and anxiety disorders. Reproduced from D. Watson 2005. Rethinking the mood and anxiety disorders: a quantitative hierarchical model for

DSM-V, *Journal of Abnormal Psychology. Special Issue: Toward a Dimensionally Based Taxonomy of Psychopathology* 114: 522–36 with permission 622

35.3 Best-fitting model for the entire National Co-morbidity Survey, a three-factor variant of the two-factor internalizing/externalizing model. Reproduced from R. F. Krueger 1999. The structure of common mental disorders, *Archives of General Psychiatry* 56: 921–6 623

35.4 An integrated representation of major personality markers of psychopathology, Watson's (2005) quantitative hierarchical model for DSM-V and Krueger's (1999) structure of common mental disorders 624

38.1 Four factor PCL-R item-based model of psychopathy (N = 6929). Reprinted with permission of Guildford Press from C. S. Neumann, R. D. Hare, and J. P. Newman, The super-ordinate nature of the psychopathy checklist-revised, *Journal of Personality Disorders* 21: 102–7 670

38.2 Two-factor PCL-R higher-order representation of the four correlated factors model (N = 6929). From Hare and Neumann (2008). Reprinted with permission from *Annual Reviews*. 672

42.1 Different component weights contributing to academic success in two hypothetical students 743

44.1 Model of the safety process 774

46.1 The cognitive model of psychopathology. From J. Pretzer and A. Beck 1996. A cognitive theory of personality disorders, in J. F. Lenzenweger (ed.), *Major theories of personality disorder*. New York: Guilford Press 807

46.2 Linehan's biosocial model of borderline personality disorder 811

# Tables


1.1 Major perspectives in personality 4
1.2 Milestones in the history of personality 6
3.1 Stability, agreement and coherence of observed and judged dominance in pre-school children 45
5.1 Illustrative assessments, population norms and standard scores 76
9.1 Correspondence of facet-level scales for three inventories 156
12.1 Summary of stability and change in the Big Five personality domains across the lifespan 196
12.2 Summary of core themes in personality development 200
18.1 Heritability coefficients for personality traits 290
21.1 Relationship between personality trait of 'defensiveness' (FFFS/BIS), difference between actual and perceived defensive distance, and the real defensive difference required to elicit defensive behaviour 365
23.1 Outline cognitive patterning for Extraversion-Introversion 414
23.2 Outline cognitive patterning for anxiety/Neuroticism 415
34.1 Definitions of ten value constructs and sample PVQ items 596
38.1 Items and factors in the Hare PCL-R. Copyright 1991. R. D. Hare and Multi-Health Systems, 3770 Victoria Park Avenue, Toronto, Ontario, M2H 3M6. All rights reserved. Reprinted by permission. 662
38.2 Items and factors in the Hare PCL: SV. Copyright 1995. R. D. Hare and Multi-Health Systems, 3770 Victoria Park Avenue, Toronto, Ontario, M2H 3M6. All rights reserved. Reprinted by permission. 663
38.3 Items and factors in the Hare PCL: YV. Copyright 2003. R. D. Hare and Multi-Health Systems, 3770 Victoria Park Avenue, Toronto, Ontario, M2H 3M6. All rights reserved. Reprinted by permission. 664
39.1 Summary of studies investigating sub-groups of eating disorders using personality-related measures 693
44.1 Personality variables correlated with workplace safety 765
44.2 Five-Factor Model personality variables correlations with workplace safety 766

46.1 Sub-categories of personality disorders in the DSM-IV and ICD-10 classification systems 800
46.2 Examples of cognitive distortions 806
46.3 Examples of core beliefs, views of self and others typical of each personality disorder 809

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# Abbreviations

| | |
|---|---|
| A | Agreeableness |
| ACC | anterior cingulate cortex |
| ADHD | attention deficit hyperactive disorder |
| APA | American Psychiatric Association |
| APD | antisocial personality disorder |
| APIM | actor-partner independence model |
| APSD | Antisocial Process Screening Device |
| ARAS | ascending reticular activating system |
| BAS | behavioural approach system |
| BED | binge eating disorder |
| BFI | Big Five Inventory |
| BIS | behavioural inhibition system |
| BPI | Basic Personality Inventory |
| C | Conscientiousness |
| CAPS | cognitive-affective processing system |
| CAQ-sort | California Adult Q-sort |
| CAQ | Clinical Analysis Questionnaire |
| CBT | cognitive-behavioural therapy |
| CD | conduct disorder |
| CFA | confirmatory factor analysis |
| cns | conceptual nervous system |
| CNS | central nervous system |
| CPAI | Chinese Personality Assessment Inventory |
| CPS | Child Psychopathy Scale |
| CR | conditioned response |
| CS | conditioned stimulus |
| DAPP | Dimensional Assessment of Personality Pathology |
| DBT | dialectical behaviour therapy |
| DIF | differential item functioning |
| DTC | democratic therapeutic community |
| E | Extraversion |
| ECR | Experiences in Close Relationships |
| EFA | exploratory factor analysis |
| EI | emotional intelligence |
| FFM | Five-Factor Model |
| FFFS | fight-flight-freeze system |
| FFS | fight-flight system |
| FHID | factored homogeneous item dimension |

| | |
|---|---|
| fMRI | functional magnetic resonance imaging |
| FUPC | first unrotated principal component |
| GAS | general adaptation syndrome |
| HPI | Hogan Personality Inventory |
| HRM | human resource management |
| IAPS | International Affective Picture Series |
| IAS | Interpersonal Adjective Scale |
| ICD | International Classification of Diseases |
| IO | industrial/organizational |
| IRT | item response theory |
| LGM | latent growth model |
| LPFC | lateral prefrontal cortex |
| MBT | mentalization-based treatment |
| MDS | multidimensional scaling |
| MedPFC | medial prefrontal cortex |
| MMPI | Minnesota Multiphasic Personality Inventory |
| MPQ | Multidimensional Personality Questionnaire |
| N | Neuroticism |
| NA | negative affectivity |
| NEO-FFI | NEO Five-Factor Inventory |
| NEO-PI-R | Revised NEO Personality Inventory |
| O | Openness to Experience |
| OCD | obsessive-compulsive disorder |
| ODD | oppositional defiant disorder |
| O-LIFE | Oxford-Liverpool Inventory of Feelings and Experiences |
| P | Psychoticism |
| PA | positive affectivity |
| PAI | Personality Assessment Inventory |
| PANAS | Positive and Negative Affect Scale |
| PCL | Psychopathy Checklist |
| PCL–R | Psychopathy Checklist–Revised |
| PD | personality disorder |
| PDNOS | personality disorder not otherwise specified |
| PFC | prefrontal cortex |
| PPI | Psychopathy Personality Inventory |
| QTL | quantitative trait loci |
| ROI | regions of interest |
| ROV | regions of variance |
| RST | Reinforcement Sensitivity Theory |
| 16PF | Sixteen Personality Factor Questionnaire |
| SDT | self-determination theory |
| SEL | social and emotional learning |
| SEM | structural equation modelling |
| SIT | sustained information transfer |
| SNAP | Schedule for Nonadaptive and Adaptive Personality |
| SPQ | Schizotypal Personality Questionnaire |
| SRL | self-regulated learning |

| | |
|---|---|
| SRM | social relations model |
| SRP | Self-Report Psychopathy |
| SSSM | standard social science model |
| STM | short-term memory |
| SWB | subjective wellbeing |
| TCI | Temperament and Character Inventory |
| TIE | typical intellectual engagement |
| TMI | transmarginal inhibition |
| UCR | unconditioned response |
| UCS | unconditioned stimulus |
| YPI | Youth Psychopathic Traits Inventory |

# Preface

The study of personality requires an unusual feat of mental vision. Those of us who work in this field must focus narrowly on one or more specialized research topics, while simultaneously maintaining a wide-angle view of personality in a broader sense. The day-to-day demands of doing research can make it hard to preserve the broader focus, especially when immediate research projects are progressing well. The aim of this Handbook is to assist researchers, practitioners and students to regard the larger picture of personality research. Recent years have seen a resurgence of interest in personality, directed along lines of research that sometimes converge and sometimes seem to diverge. Our motivation in compiling this Handbook was to provide a general overview of the many areas of study that together define this branch of psychological science – that many of us consider to be becoming increasingly relevant and important in psychology more generally.

The contributors to this Handbook rose to their task admirably, producing relatively brief summaries of their respective areas of expertise in an accessible style that are intended to inform and stimulate, and at times provoke. We instructed contributors to present their material in a way that they thought most appropriate: our concern was to ensure that chapters were presented in the way that best suited the topics – as a result, some chapters are longer than others, and some topics are divided over several chapters. We offer a collective 'thank you' to all contributors not only for producing such high-quality chapters but also for their forbearance in the production process which, as a result of the number of chapters, was slower than anticipated. We can only hope that contributors are pleased by the finished Handbook.

We are very grateful to Cambridge University Press for agreeing to publish this work; especially to Sarah Caro, Commissioning Editor, for her constant encouragement and advice, and then, after Sarah's departure, to Andrew Peart and Carrie Cheek for their patience and skill in bringing this project to fruition. Gerald Matthews wishes to thank the University of Cincinnati for allowing a period of sabbatical leave, and the Japan Society for the Promotion for Science for supporting a study visit to the University of Kyushu, which assisted him in his editorial role.

*Philip J. Corr*
*Gerald Matthews*

# Editors' general introduction

Philip J. Corr and Gerald Matthews

Personality psychology has never been in better health than at the present time. The idea that we can describe and measure meaningful stable traits, such as extraversion and emotionality, is no longer very controversial (though see James T. Lamiell, Chapter 5). The study of traits has been boosted by, at least, a partial consensus among researchers on the nature of the major traits, by advances in genetics and neuroscience, and by increasing integration with various fields of mainstream psychology (Matthews, Deary and Whiteman 2003). Other perspectives on personality have also flourished, stimulated by advances in social-cognitive theory (Cervone 2008; Ronald E. Smith and Yuichi Shoda, Chapter 27), by the rediscovery of the unconscious and implicit personality processes (Bargh and Williams 2006), and by increasing interest in the relationship between emotion and personality (Rainer Reisenzein and Hannelore Weber, Chapter 4). The growing prominence of personality as an arena for an integrated understanding of psychology (Susan Cloninger, Chapter 1) has motivated the present Handbook. In this introductory chapter, we provide a brief overview of the main issues, themes and research topics that are addressed in more depth by the contributors to this volume.

Despite contemporary optimism, the study of personality has often been contentious and riven by fundamental disputes among researchers. A persistent issue is the nature of personality itself: what issues are central to investigating personality, and which properly belong to other sub-disciplines of psychology? At times, it has seemed as though different schools of 'personality' research have been addressing entirely different topics. Until quite recently, there was little communication between biologically and socially oriented researchers, for example. Debates in the field tended to devolve into rigid dichotomies, forcing researchers into one camp or another:

- Is personality a 'nomothetic' quality, described by general principles applying to all individuals? Or should personality be studied 'idiographically', focusing on the uniqueness of each individual?
- Does behaviour primarily depend on personality, or is it more powerfully shaped by situation and context?
- Is personality infused into conscious experience, so that people can explicitly describe their own traits? Or, as Freud argued, is much of personality unconscious, so that people lack insight into their own natures?

- Is personality primarily a consequence of individual differences in brain functioning, or of social learning and culture?
- Is personality mainly determined by the individual's DNA, or by environmental factors? (note that this dichotomy is not the same as the preceding one: environment affects brain development)
- Is personality fixed and stable throughout adulthood, or does the person generally change over time, and perhaps grow into maturity and wisdom?

The increasing wisdom of the field is suggested by progress in finding satisfying syntheses to these various dialectics, including a recognition of the importance of person-situation interaction in shaping behaviour, and the intertwining of genes and environment (and brain and culture) in personality development (Matthews, Deary and Whiteman 2003). Nonetheless, important and sometimes fundamental differences in perspective remain (Caprara and Cervone 2000). Many contributors to the present Handbook approach personality via the resurgent notion of stable personality traits that exert a wide-ranging influence on many areas of psychological functioning. The editors' own work aligns with this perspective. However, it is important to present a historical perspective on the controversies within the field, to examine critically the core assumptions of trait theory, and to expose some of the fissures that remain within different versions of this theory. Part I of this Handbook briefly introduces some of the basic conceptual issues that have shaped inquiries into personality.

The historical arc that has seen trait psychology go into and out of favour may (most simply) reflect the changing dialectic between scientific and humanistic approaches noted by Susan Cloninger (Chapter 1). One can do personality research as a 'hard' or natural science without subscribing to universal traits, as demonstrated by work on 'behavioural signatures' (the *individual*'s consistencies in behaviour across different environments: e.g., Shoda 1999). However, trait theories have had a lasting appeal through their aspirations towards a universal measurement framework (akin to Cartesian mapping of the Earth or the periodic table), and their relevance to all branches of personality theory. Nonetheless, trait theory does not satisfy those seeking to understand the individual person, or the intimacy of the person-situation relationship, or the humanists that want to help humankind. Contributors to Part I of this Handbook address some of the central issues that define a struggle for the soul of personality theory. We especially highlight (1) the psychological meaning of measures of personality, (2) the role of personality in predicting behaviour, and (3) the holistic coherence of personality.

There are some points of agreement that are close to universal, at least among scientifically-oriented researchers. As further explored in Part II of this Handbook, personality researchers have a special concern with the meaning of measurements of personality (whatever the particular scale or instrument). Numerical measurements must be anchored by some process of external validation to reach theoretical understanding. For example, a theory that specifies multiple brain systems

allows us to link the numbers we get from personality scales to parameters of those systems (Philip J. Corr, Chapter 21), and to make predictions about how trait measurements relate to objective measurements of brain functioning (e.g., from functional magnetic resonance imaging, fMRI). We are right to be wary of the factor analysis of questionnaires interpreted without such theoretical and external referents.

Another basic concern is the prediction of behaviour (whether at individual or group level). We are all interactionists now, in accepting the importance of both person and situation factors, but the simple acknowledgement of interaction does not take us very far (see Seth A. Wagerman and David C. Funder, Chapter 2; Jens B. Asendorpf, Chapter 3). At the least, we need both a fine-grained understanding of how personality factors bias the dynamic interaction between the individual and the environment in some given social encounter, as well as a longer-focus understanding on how personality and situations interact developmentally over periods of years, or even decades (see M. Brent Donnellan and Richard W. Robins, Chapter 12).

A focus on the general functioning of the person, emerging from many individual components or modules, is a further common theme. There is a tension between the idea of a coherent self and several features of biological science, including the division of the brain into many functionally distinct areas (neuroscience), the determination of brain structure by multiple genes (molecular genetics), and the evolution of the brain to support multiple adaptive modules (evolutionary psychology). Contrasting with these fissile tendencies, if there is one issue on which most personality psychologists agree, it is that the whole is more than the sum of the parts. Comparable difficulties in finding personality coherence also arise in social-cognitive approaches which discriminate multiple cognitive, affective and motivational processes underlying personality (Caprara and Cervone 2000). Should we see personality as a fundamental causal attribute of the brain that, in Jeffrey Gray's (1981) phrase, becomes a great flowering tree as it guides the development of many seemingly disparate psychological functions? Or does personality coherence reside in the idiosyncratic schemas that lend unique meanings to the lives of individuals (Caprara and Cervone 2000)? Or is personality coherence functional rather than structural in nature, reflecting the person's core goals and strategies for adaptation to the major challenges of life (Matthews 2008a)? Defining personality in some holistic sense, as opposed to a collection of functional biases in independent modules, may be informed by integration of personality and emotion research. As discussed by Rainer Reisenzein and Hannelore Weber (Chapter 4), the study of emotion has similar integrative aims.

Trait researchers pursue 'normal science' (Kuhn 1962), in that they share common core assumptions about the nature of personality. There is a reasonable degree of consensus on dimensional models, the importance of both biology and social factors, and person x situation interaction. Some alternative perspectives on personality, such as those grounded in social constructivism, are clearly outside the paradigm. Social-cognitive perspectives appear to be in the process of

negotiating their stance towards trait models. Some aspects of social-cognitive research use normative trait-like measures (e.g., self-esteem), and might be integrated with the trait paradigm (Michael D. Robinson and Constantine Sedikides, Chapter 26). Other aspects that take an idiographic view of personality coherence (Caprara and Cervone 2000) may represent an alternative paradigm.

This volume primarily covers the various expressions and applications of trait theory as the dominant paradigm in personality, while recognizing the important contributions of social-cognitive models (Ronald E. Smith and Yuichi Shoda, Chapter 27) and the idiographic (Auril Thorne and Vickie Nam, Chapter 28) and humanistic (Edward L. Deci and Richard M. Ryan, Chapter 25) traditions of the field. The remainder of this introductory chapter briefly highlights key issues relating to the focal issues reflected in the section structure of the book: measurement issues, theoretical stances (biological, cognitive and social), personality development, the role of culture, and applications.

## Measurement of personality

Measurement issues may be broken down into a series of interlinked questions. First, should quantitative measurements be at the center of personality research at all? Answers in the negative would come from psychodynamic theorists, and from social constructivists (cf., Avril Thorne and Vickie Nam, Chapter 28). There are also those who challenge the basic assumptions of psychometric methods used in personality assessment (James T. Lamiell, Chapter 5), or even the validity of any psychological measurement (Barrett 2003). For the most part, however, personality researchers share the assumption that scientific tests of personality theory require quantitative assessments of personality. Typically, it is dimensional traits such as extraversion, anxiety and sensation-seeking which are assessed, but personality characteristics unique to the individual may also be quantified (Ronald E. Smith and Yuichi Shoda, Chapter 27).

Assuming that measurement is desirable, the next question is what do we measure? As Ian J. Deary (Chapter 6) points out, Gordon Allport raised a question that still awaits an answer: what is the basic unit of personality? In practice, various sources of trait data have been used, following Raymond Cattell's classification (see Gregory J. Boyle and Edward Helmes, Chapter 7), that distinguishes self-reports (which need not be accepted at face value), objective behaviours and life-record data. Questionnaire assessments of traits are familiar, and need no introduction. The major structural models of personality such as the Five-Factor Model (FFM) (Robert R. McCrae, Chapter 9) are largely based on questionnaire scales, although they gain authority from evidence on the convergence of self-report with other measurement media, such as the reports of others on the personality of the individual (Goldberg 1992). Assessment may also be reconfigured by the resurgence of interest in the unconscious. Implicit personality dimensions distinct from self-report dimensions assessed via behavioural techniques based on

speed of response to trait-relevant stimuli are promising, although psychometric challenges remain (Schnabel, Banse and Asendorpf 2006).

Having chosen a data source, the next issue for trait researchers is what specific analytic techniques should be used to identify and discriminate multiple dimensions of personality (Gregory J. Boyle and Edward Helmes, Chapter 7). The traditional tool here (Cattell 1973) is exploratory factor analysis (EFA), which assigns the reliable variance in responses (e.g., on a questionnaire) to a reduced set of underlying factors or dimensions. For example, factor analysis of the various English-language verbal descriptors of personality suggests that most of the variation in response can be attributed to just five underlying factors that provide a comprehensive description of personality in this medium (Goldberg 1990). EFA, however, is subject to various limitations, including the existence of an infinite number of mathematically-equivalent factor solutions (alternate 'rotations'), different principles for factor extraction, and the lack of any definitive method for deciding on the key question of how many factors to extract (Haig 2005). These difficulties have been known from the beginning of research using factor analysis, and most theorists have advocated using factor analysis only in conjunction with other approaches that may provide converging evidence, such as discriminating clinical groups and performing experimental investigations (Eysenck 1967).

As Gregory J. Boyle and Edward Helmes (Chapter 7) discuss, interest is growing in 'modern' methods for scale construction that contrast with classical test theory; these methods include item response theory and Rasch scaling. Multivariate methods that complement or replace traditional EFA have also become increasingly sophisticated. The single most important advance may be the development of confirmatory techniques, which are used to test whether or not a factor model specified in advance fits a given data set. Testing goodness of fit provides some protection against making too much of the serendipitous factor solutions that may emerge from EFA. Confirmatory factor analysis is itself one instance of a larger family of structural equation modelling techniques that allow detailed causal models to be tested against data (Bentler 1995).

The final set of questions concerns the nature of the measurement models that emerge from the application of multivariate statistical methods. For many years, debate over the structure of personality revolved around disputes over the optimal number of factors for personality description. Famously, Cattell advocated sixteen (or more) factors, whereas Eysenck preferred a more economical three. The Five-Factor Model represents the most popular resolution of the debate (Robert R. McCrae, Chapter 9), although there remain significant dissenting voices (e.g., Boyle 2008). In addition, disputes can to some extent be resolved within hierarchical, multilevel models that differentiate broad superfactors such as the 'Big Five', along with more numerous and narrowly defined 'primary' factors (Boele De Raad, Chapter 8).

A more subtle issue is how to discriminate dimensions of personality from other domains of individual differences, especially intelligence (Phillip L. Ackerman, Chapter 10). The term 'personality' is sometimes used in a wider sense to refer to

the full spectrum of personal characteristics, including abilities. Careful psychometric modelling can help to resolve the boundaries of different domains within this broader sphere of individual differences. The new construct of 'emotional intelligence' is an example of the problems that may arise. Different versions of the construct have been proposed that seem variously to belong in either the ability or personality domain, or some no man's land in between (Matthews, Zeidner and Roberts 2007).

## Developmental processes

Given that we can assess personality descriptively, one of the next fundamental issues to consider is personality development. How do our personalities originate? How do they change over time? What psychological processes support development? Broadly, two rather different perspectives have been adopted historically. An essentialist position (see Haslam, Bastian and Bissett 2004) supposes that individuals have a rather stable nature, evident early in childhood, which is perpetuated, with minor changes, throughout the lifespan. This position is compatible with a strong hereditary component to personality and a view that biology is destiny. Conversely, in the spirit of J. B. Watson, we may see personality as accumulating over time through significant learning experiences. Theories as various as psychoanalysis, traditional learning theory and modern social-cognitive theory have all seen learning as central to personality. Such approaches tend to suggest a more malleable view of personality.

Understanding development breaks down into a number of discrete research issues, including measurement models for the lifespan, identifying qualitative differences between child and adult personality, modelling the processes that contribute to development, and linking personality development to the person's broader experience of life and wellbeing. Contributors to this volume address some of the key issues involved.

Assessment and continuity of personality in the early years are often attacked via studies of temperament. The general idea is that even infants may show rudimentary qualities such as emotionality and activity. These basic 'temperaments' may persist into adulthood, for example as positive and negative emotionality, and also provide a platform for development of more sophisticated personality attributes. It is sometimes assumed that temperament is closer to biological substrates than adult personality, which is more strongly influenced by social-cultural factors (Strelau 2001). Just as with adult personality, we can investigate the dimensional structure of temperament, although, with young children, the primary data source must be observations of the child's behaviour rather than self-report.

One of the most parsimonious and also most influential models of temperament is that proposed by Rothbart and Bates (1998; Mary K. Rothbart *et al*., Chapter 11). Its major dimensions include Surgency/Extraversion (including activity and

sociability), negative affectivity and effortful control, all of which may be identified through observational methods. A key question is the extent to which childhood temperament shows continuity with adolescent and adult personality. Do active children become extraverted adults? Do 'whiny' infants become emotionally unstable in later life? The consensus on such issues is that temperament does indeed predict adult personality, although personality may be somewhat unstable during the childhood years. An important line of research constitutes longitudinal studies that track temperament, personality and real-life behaviours of periods of years. For example, the Dunedin study in New Zealand has tracked around one thousand infants into adulthood, and demonstrated that childhood temperament is modestly but reliably predictive of adult personality and further criteria including criminal behaviour and mental disorder (e.g., Caspi, Harrington, Milne *et al*. 2003).

As M. Brent Donnellan and Richard W. Robins (Chapter 12) discuss, the FFM has proved a useful framework for investigating both stability and change in personality over the lifespan. Factor analytic studies confirm the convergence of personality and temperament dimensions (Strelau 2001). We should note that factorial convergence does not preclude qualitative changes in the nature of the dimension over time.

Coupled with statistical modelling of personality change over the lifespan is a concern with the underlying processes driving change and stability. We prefigure our later discussion of personality theory by indicating several avenues towards understanding development. The grounding of temperament in biology points towards the role of neuroscience. There are good correspondences between the fundamental dimensions of temperament and some of the key constructs of biological theories of personality (Mary K. Rothbart *et al*., Chapter 11). Importantly, brain development depends on both genes and environmental influences, and, as genes may become active at different ages, genetic influences may incorporate personality change. Cognitive and social processes are also critical for personality development. Traits such as Extraversion and Neuroticism are associated with biases in cognitive functioning that confer, for example, an aptitude for acquiring social skills in extraverts, and heightened awareness of threat in high neurotic persons (Matthews 2008a). Self-regulative theories (Charles S. Carver and Michael F. Scheier, Chapter 24; Michael D. Robinson and Constantine Sedikides, Chapter 26) have addressed how cognitive representations of the self mediate the individual's attempts to satisfy personal goals in a changing external environment. Furthermore, cognitive development takes place within a social context (Bandura 1997) that may powerfully affect personality, for example, in relation to exposure to role models, internalization of cultural norms and educational experiences (Moshe Zeidner, Chapters 41, 42).

Most researchers accept that neural, cognitive and social processes interact in the course of personality development, although building and validating detailed models of the developmental process is difficult. Two examples will suffice. There is a growing appreciation that research on personality and health should be placed in the context of the lifespan (Marko Elovainio and Mika Kivimäki, Chapter 13).

Activities such as smoking and exercise exert their effects over long intervals. Whiteman, Deary and Fowkes (2000) suggested that a full understanding of personality requires the integration of two models, a structural weakness model that focuses on internal vulnerabilities (e.g., genetic predispositions to illness), and a psychosocial vulnerability model that focuses on external factors such as life/work stress. Cognitive factors such as choosing health-promoting coping strategies may play a mediating role.

Similarly, development of emotional competence depends on the interaction between biologically-based elements of temperament that confer emotionality on the child, and social learning processes, such as modelling of emotional response. Individual differences in brain systems for handling reward and punishment stimuli (Philip J. Corr, Chapter 21) may govern whether children develop cheerful or distress-prone temperaments, respectively. However, the distress-prone child may still grow up to be well-adapted if he or she learns effective strategies from parents and peers for coping with vulnerability to negative emotion. Cognitions are also critical in that language capabilities influence the child's capacity to understand and express emotion. Traits such as emotional intelligence emerge from this complex and enigmatic interactional process (Zeidner, Matthews, Roberts and McCann 2003).

Finally, in this section, we note the resurgence of one of the grand theories of personality, John Bowlby's attachment theory, reviewed in this volume in two chapters authored by Phillip R. Shaver and Mario Mikulincer (Chapters 14, 15). Bowlby's insight was that the child's pattern of relationships with its primary care-giver affected adult personality; secure attachment to the care-giver promoted healthy adjustment in later life. The theory references many of the key themes of this review of personality. Attachment style may be measured by observation or questionnaire; a common distinction is between secure, anxious and avoidant styles (Ainsworth, Blehar, Waters and Wall 1978). It also corresponds to standard traits; for example, secure attachment correlates with Extraversion and Agreeableness (Carver 1997). Attachment likely possesses biological aspects (evident in ethological studies of primates), social aspects (evident in data on adult relationships), and cognitive aspects (evident in studies of the mental representations supporting attachment style) (Phillip R. Shaver and Mario Mikulincer, Chapter 14). As with other personality theories, a major challenge is developing a model that integrates these different facets of the attachment construct.

## Theories of personality

Allport (1937) saw personality traits as possessing causal force. Traits correspond to 'generalized neuropsychic structures' that modulate the individual's understanding of stimuli and choice of adaptive behaviours. Thus, traits represent more than some running average of behaviour. For example, we could see trait anxiety as simply the integral of a plot of state anxiety over time, but this perspective tells us nothing about the underlying roots of vulnerability to anxiety.

A theory of the trait is required to understand the causal basis for stability in individual differences, and the processes that incline the person to view stimuli as threatening, and to engage in defensive and self-protective behaviours.

One of the hallmarks of personality theory is the diversity of explanatory concepts it invokes (Susan Cloninger, Chapter 1). We could variously attribute trait anxiety to sensitivity of brain systems controlling response to threat, to cognitive processes that direct attention to environmental threat, or to culture-bound socialization to see oneself as threat-vulnerable. Three sections of this Handbook address three major perspectives that mould contrasting theories. According to biological perspectives, personality is a window on the brain. Hans Eysenck and Jeffrey Gray articulated the influential view that individual differences in simple but critical brain parameters, such as arousability and sensitivity to reinforcing stimuli, can drive far-reaching personality changes, expressed in traits such as Extraversion and Neuroticism. These theories emphasized the role of individual differences in genes for brain development (polymorphisms) in generating personality variation (in conjunction with environmental factors). As a broad research project, biological theory thus emphasizes studies of behaviour and molecular genetics, psychophysiology, and the linkage between neuroscience and real-world behavioural functioning, including clinical disorder.

Cognitive and social-psychological theories bring different issues into the foreground of research. The essence of cognitive theories is that personality is supported by differing representations of the world, and the person's place within it, coupled with individual differences in information-processing. For example, Aaron Beck (Beck, Emery and Greenberg 2005) attributed depression to the negative content of self-schema, such as beliefs in personal worthlessness. Emotional pathology also relates to biases in attention, memory and strategies for coping. A major feature of cognitive approaches is the use of the experimental methods of cognitive psychology to link traits to specific components of information-processing. These approaches typically link cognition to real-life behaviour and adaptation through self-regulative models that seek to specify stable individual differences in the processing supporting goal attainment (Charles S. Carver and Michael F. Scheier, Chapter 24).

Social psychological accounts focus on the interplay between personality and social relationships (Lauri A. Jensen-Campbell *et al*., Chapter 29), and several interlocking issues. These include the extent to which personality characteristics (including traits) arise out of social interaction, the reciprocal influence of personality on social interaction, and the role of culture in modulating these relationships. Biological and cognitive theories typically conform to a natural sciences model, but at least some variants of social psychological theory owe more to the idiographic and humanistic traditions of the field discussed by Susan Cloninger (Chapter 1). A vigorous research programme that looks back to the social learning theories of Walter Mischel and Albert Bandura combines elements of both cognitive and social psychology within an idiographic framework (Caprara and Cervone 2000; Ronald E. Smith and Yuichi Shoda, Chapter 27).

In a sense, each research tradition may stand alone. Each has its own distinct research agenda and methods supporting a self-contained domain of scientific discourse. However, each perspective on theory faces contemporary challenges that are a product of previous progress. We will review these shortly. The more general point to emphasize is that there is increasing convergence between different approaches. Cognitive and social neuroscience approaches are increasingly infusing personality research, and it is also clear that core social-psychological constructs, such as the self-concept, overlap with trait-based constructs (Matthews, Deary and Whiteman 2003). There are still unresolved issues regarding the extent to which, for example, cognitive and social accounts of personality may be reduced to neuroscience (Matthews 2008b; Corr and McNaughton 2008). It can be agreed, though, that there has never been a greater need for proponents of different research traditions to talk to one another in the service of theoretical integration.

Next, we reflect briefly on some of the main challenges for each theoretical perspective, which are taken up by contributors to this volume.

## Neuroscience

The neuroscience of personality has advanced considerably from Hans Eysenck's (1981) pioneering efforts to advance biological models as a new Kuhnian paradigm for the field. Genetic studies, psychophysiology and 'the neuroscience of real life' have all made major advances. The leading biological theories, such as Reinforcement Sensitivity Theory (Philip J. Corr, Chapter 21), aim to integrate various strands of evidence in delineating the neuroscience of personality.

The case of heritability of personality was originally based on behaviour genetics, and the finding that the similarity between related individuals, such as siblings, related to their degree of genetic similarity (Johnson, Vernon and Mackie 2008). The attribution of around 50 per cent of the variance in major personality traits to heritability is uncontroversial. The field has also tackled such important issues as non-additive effects of genes and gene-environment interaction. Studies of personality variation within a given population are not, however, informative about the mechanisms through which genes build the individual brains that differ in the familiar personality traits.

There is currently some excitement about the prospects for molecular genetics, i.e., identifying polymorphisms (different variants of the same gene) that may produce individual differences in neural functioning and ultimately observed personality. Approaches focusing on genes for neurotransmitter function have had some success in linking personality to DNA (Marcus R. Munafò, Chapter 18). The search is on for 'endophenotypes' – highly specific traits that are shaped by the genes and influence broader personality traits and vulnerability to mental illness. At the same time, the likely complexity of mappings between genes, brain systems and behaviour may present a barrier to future progress (Turkheimer 2000).

There is also growing interest in the evolutionary basis for human neural functioning. Initially, evolutionary psychology was more concerned with personality in the sense of 'how all people are the same', rather than with individual differences.

Recently, however, researchers (e.g., Penke, Dennisen and Miller 2007) have begun to explore how evolutionary genetic mechanisms may produce variation in traits across individuals. Aurelio José Figueredo *et al*. (Chapter 16) point out that variability in strategies for managing social relationships, including sexual relationships, may be critical for human personality. Furthermore, the evolutionary perspective aligns with growing evidence for continuity between animal and human personality (or temperament), as Samuel D. Gosling and B. Austin Harley (Chapter 17) discuss.

Research methodology has also advanced since the heydays of Hans Eysenck and Jeffrey Gray. The traditional indices of central and autonomic arousal remain important, but contemporary brain-imaging methods offer the prospect of transforming personality neuroscience. Two chapters in this volume (Turhan Canli, Chapter 19; Colin G. DeYoung and Jeremy R. Gray, Chapter 20) review how methods such as functional magnetic resonance imaging (fMRI) establish associations between personality traits and specific brain areas. Excitement about such research has justification. At the same time, much remains to be done to go beyond establishing correlations between traits and neurology, to develop causal models that explain the correlations. It also remains to be seen whether the psychometric models based on questionnaire data will prove adequate to capture personality variation seen at the neural level (Ian J. Deary, Chapter 6).

## Cognitive science of personality

For forty years or so, cognitive-psychological research on personality has traded quite successfully on the insights and methods of the 'cognitive revolution' of the 1960s. As previously indicated, major themes include the importance of stable self-knowledge, studies of information-processing using objective performance indices, and the concept of self-regulation as an approach to handling dynamic interaction between the person and the outside world. The use of language in the assessment of personality also raises important issues regarding the role of cognitive representations and semantics (Gerard Saucier, Chapter 22). Theoretical landmarks include schema theories of emotional pathology (Beck, Emery and Greenberg 2005), information-processing accounts of anxiety and impulsivity (Eysenck, Derakshan, Santos and Calvo 2007; Revelle 1993) and the cybernetics of self-regulation (Carver and Scheier 1998).

As in other realms of personality, these well-established theories face new challenges. We will briefly highlight three of these here: the scope of cognitive models, the relevance of social psychology, and the development of causal models of person-situation interaction. The first issue is whether cognitive personality theories can really explain the full range of personality phenomena. It is something of a cliché to say that cognitive models suggest a dehumanized, robot-like perspective on human functioning (although, arguably, one based on a misunderstanding of cognitive science: Matthews, Zeidner and Roberts 2002). By contrast, investigations of the emotional basis of personality have been a staple of the field, addressed from multiple perspectives (Rainer Reisenzein and Hannelore Weber, Chapter 4). Recent work on emotional intelligence (Mayer, Salovey and Caruso

2000) suggests that there may be affective elements of personality that are not easily reduced to cognitive processes. Positive psychology emphasizes the generative role of emotions in signalling peak experiences and personal fulfilment (cf., Edward L. Deci and Richard M. Ryan, Chapter 25).

It is also unclear whether cognitive theories can accommodate renewed interest in unconscious processes. Although the classical psychodynamic theories have their defenders, most cognitive psychologists see only weak parallels, at most, between the Freudian unconscious and the unconscious information-processing revealed by experiments on information-processing (Kihlstrom 1999). Of more interest is that stable traits can be revealed through implicit behavioural measures, whose place in some over-arching dimensional model of personality remains to be explored (Schnabel, Banse and Asendorpf 2006).

A second challenge comes from social psychological approaches that situate both cognition and personality within social interaction. The self-schema may be attributed to generalized self-knowledge relevant to all individuals (Michael D. Robinson and Constantine Sedikides, Chapter 26; Wells and Matthews 1994). We can assess self-esteem, for example, using standard instruments – and relate the measurements to traits such as neuroticism. The contrasting social-psychological perspective is that self-related constructs can only be understood in the context of social relationships and the cultural milieu (Caprara and Cervone 2000). Not only is the self shaped through social interaction, but it is negotiated via discourse with others; so that it resides 'between' rather than 'within' people (Hampson 1988). A potentially important compromise between social constructivism of this kind and conventional cognitive theory was advanced by Mischel and Shoda (1995). Social learning may lead to the development of organized networks of cognitive-affective processing units that support the individual's unique patterns of interaction with the social world (Ronald E. Smith and Yuichi Shoda, Chapter 27).

The third issue here is the causal role of individual differences in cognition in generating personality differences. Information-processing models typically establish correlations between traits and multifarious processing components (Gerald Matthews, Chapter 23), but it remains unclear whether processing causes personality or vice versa. Recent work on anxiety (Wilson, MacLeod, Mathews and Rutherford 2006) establishes a causal role for processing: training participants to respond to threat stimuli appears to increase anxiety (stress vulnerability). At the same time, trait anxiety relates to processing biases and strategic preferences that influence cognitions of threat. Self-regulative theories may be usefully extended by specifying reciprocal relationships between personality traits and specific processing functions that support adaptation to external social environments (Matthews 2008a).

## Social psychology and personality

Traditional social psychological approaches to personality face the converse issue to cognitive theories; that is, much of what has been seen as uniquely social about personality may, in fact, be understood in terms of trait constructs and the

individual's mental representations. As previously discussed, many of the core attributes of the self such as self-esteem and self-efficacy may be represented as generalized self-knowledge (Matthews, Schwean, Campbell *et al*. 2000; Michael D. Robinson and Constantine Sedikides, Chapter 26). This perspective supports empirical work on the interplay between personality and social relationships (Lauri A. Jensen-Campbell *et al*., Chapter 29) that shows how various social processes are biased by traits. For example, highly agreeable individuals broadly view others more positively, express higher empathy, and adopt more helpful and constructive interaction strategies. An understanding of traits may similarly inform research on social supportnstructive interaction strategies. An understanding of

## Part VII. Psychopathology

The final parts of this Handbook shift the focus from personality theory to applications. In making this transition, there is a special place for abnormal personality and clinical psychology. Historically, the need to explain and treat abnormality in personality functioning has been a major driver for advances in the field, across perspectives ranging from the psychodynamic to the biological. The chapters in this part of the Handbook survey modern understanding of abnormal personality, as a necessary precursor to therapeutic perspectives. Two developments have been especially influential in recent years. The first is the widespread acceptance of dimensional models of abnormality, in place of rigidly categorical systems. The second is appreciation of abnormality as the extremes of normal personality. Thus, neuroticism grades into mood and anxiety disorders, psychoticism and schizotypy into actual psychosis, and lack of conscientiousness and agreeableness into antisocial personality and psychopathy. As well as these central foci of abnormal psychology, research is also increasingly exploring the role of personality in specialized disorders, including eating disorders and attention deficit hyperactive disorder (ADHD). Contributors to this part of the Handbook explore issues of both psychometrics and structural modelling, as well as theory and etiology of disorders.

Vachon and Bagby seek to provide an overview of the relationship between personality traits and mood and anxiety disorders, within the framework of models that specify a joint structure for normal and abnormal personality. The authors review hierarchical models of mental disorder that seek to relate each diagnosis in the DSM system to general vulnerability factors, such as negative affectivity (neuroticism), combined with more specific risk factors. A major task for future research is to articulate causal models that describe the observed relationships between personality factors and psychopathology.

Claridge takes up the challenge of considering how serious mental disorders (e.g., schizophrenia) relate to normal personality. The constructs that provide the bridge between personality and psychosis are dimensional traits for abnormal personality. Traits such as schizotypy and psychoticism may act as vulnerability factors for clinical psychosis. 'Input dysfunction' – difficulties in controlling stimulus processing – may play a key mediating role. Claridge concludes by addressing the intriguing question of whether abnormal traits may convey some benefits to the person, countering elevated risk of psychosis.

Psychopathy is another important abnormal trait that may be measured as a continuous dimension, using questionnaires. Hare and Neumann review research on psychopathy and its measurement. Four correlated dimensions, referring to interpersonal, affective, lifestyle and antisocial elements of psychopathy, may be distinguished. This structural model is supported by various psychometric techniques, including confirmatory factor analysis and multidimensional scaling. Longitudinal studies are addressing the development of psychopathy and its relationship with antisocial behaviours.

Eating disorders have become increasingly prominent in Western cultures in recent years. Loxton and Dawe review the role of personality in disorders such as anorexia and bulimia. Although cultural factors are important, various traits related to both anxiety and impulsivity may operate as risk factors. The individual's vulnerability to eating disorders may be understood in terms of their approach and avoidance tendencies, as specified within neuroscience models of personality.

Another disorder that increasingly vexes the general public is ADHD, which may severely limit students' educational attainments. Gomez describes how ADHD is systematically related to major temperament and personality dimensions. The condition appears to relate to emotional reactivity expressed in traits such as neuroticism. ADHD is also associated with an inhibition deficit associated with low conscientiousness and constraint. Like other contributors to this part of the Handbook, Gomez points to the need for longitudinal studies to establish causal relationships between personality and psychopathology.

## Part VIII. Applied Personality Psychology

Proof of the value of personality psychology comes from its various real-world applications. For many years, personality scales have been applied in various domains in which assessment and evaluation of the individual are critical. These include diagnosing mental disorders, identifying exceptional or troubled children, and hiring people for jobs that may fit their personality. Contributors to this part of the Handbook cover the major applications of personality to assessment in the educational, occupational and clinical domains, including criminology. Beyond selection of individuals for therapy or employment, understanding of personality may also support and inform interventions, including choosing appropriate treatments for clinical patients, supporting the rehabilitation of criminals and creating supportive learning environments for individual students in schools and universities. These more 'active' applications require a more detailed, theory-driven understanding of personality. For example, the clinician needs to know what an individual's personality profile means in relation to their neurological, cognitive and social functioning. Best practice in all of the areas surveyed requires integration of psychometrically rigorous assessment with theory-based understanding.

In two linked chapters, Zeidner reviews educational applications of personality. The first chapter addresses school psychology, which is concerned with fostering students' emotional and intellectual adjustment, often in relation to abnormality. By contrast, educational psychologists focus primarily on issues of student learning and achievement. School psychologists have become especially focused on the emotional health needs of students. Students may benefit from various psychological interventions directed toward problems, including limited social skills, test anxiety and traumatic reactions. Zeidner's second chapter, on educational

psychology, considers how personality influences such key educational outcomes as academic performance, social interactions with teachers and other children, and motivation and classroom conduct. Educational psychologists may usefully seek to influence the social-cognitive factors that may mediate the impact of personality on the educational experience, including academic self-concept, self-efficacy, attributions and goal-setting. Educational interventions may thus be founded on the social-cognitive theory described in previous chapters of this Handbook.

The workplace is also a major arena for the application of personality psychology. In the first of two chapters on industrial-organizational applications, Burch and Anderson review personality at work. Improved psychometric models of personality, coupled with advances in understanding of personality processes, have lead to a resurgence of this field. The Five-Factor Model provides a useful framework for organizing evidence that personality traits relate to both job performance and additional work-related behaviours, such as organizational citizenship, leadership, career path and counter-productive behaviours.

Stuhlmacher, Briggs and Cellar review workplace safety and personality. Various personality traits have been linked to measures of indices in safety in domains such as hazardous industries (e.g., mining, construction) and vehicle driving. High neuroticism, low agreeableness and low conscientiousness have all been linked to higher accident involvement in occupational settings, although effect sizes are often modest. The authors recommend a greater focus on narrow rather than broad traits in future research; for example, sensation-seeking may be more predictive in comparison with the broader trait of extraversion.

Canter and Young consider the relationship between personality and crime. Two major themes are interpersonal characteristics of crime, which may differentiate criminals, and the emotional benefits the offender derives from criminality. Although criminality may be linked to traits such as extraversion and neuroticism, it may be more useful to explore the narrative meaning of the crime for the offender. The role of personality in the performance of criminal actions must be understood within the social and cultural context of those actions.

Mullins-Sweatt and Widiger adopt the Five-Factor Model (FFM) as a framework for discussing diagnosis and assessment of personality disorders. Dimensional models of personality have advantages for diagnosis over traditional categorical schemes, exemplified by the DSM-IV-TR. They conclude by recommending a four-step diagnostic procedure that assesses the 'Big Five' traits, identifies concurrent social impairments, evaluates whether impairments are clinically significant and matches the individual's personality profile to prototypic profiles of important diagnostic constructs. However, they argue that the optimal description is provided by the person's actual FFM profile.

The treatment of personality disorders is discussed by Warren. She begins by discussing the difficulties of diagnosing personality disordered clients and engaging them in treatment. The treatments themselves may be divided into three

main strands, related to the medical model (e.g., pharmacological treatments), psychodynamic theory and cognitive-behavioural theory. However, therapy often involves an eclectic approach that borrows elements from several different theories, pointing the way towards a more integrative understanding of personality disorder.