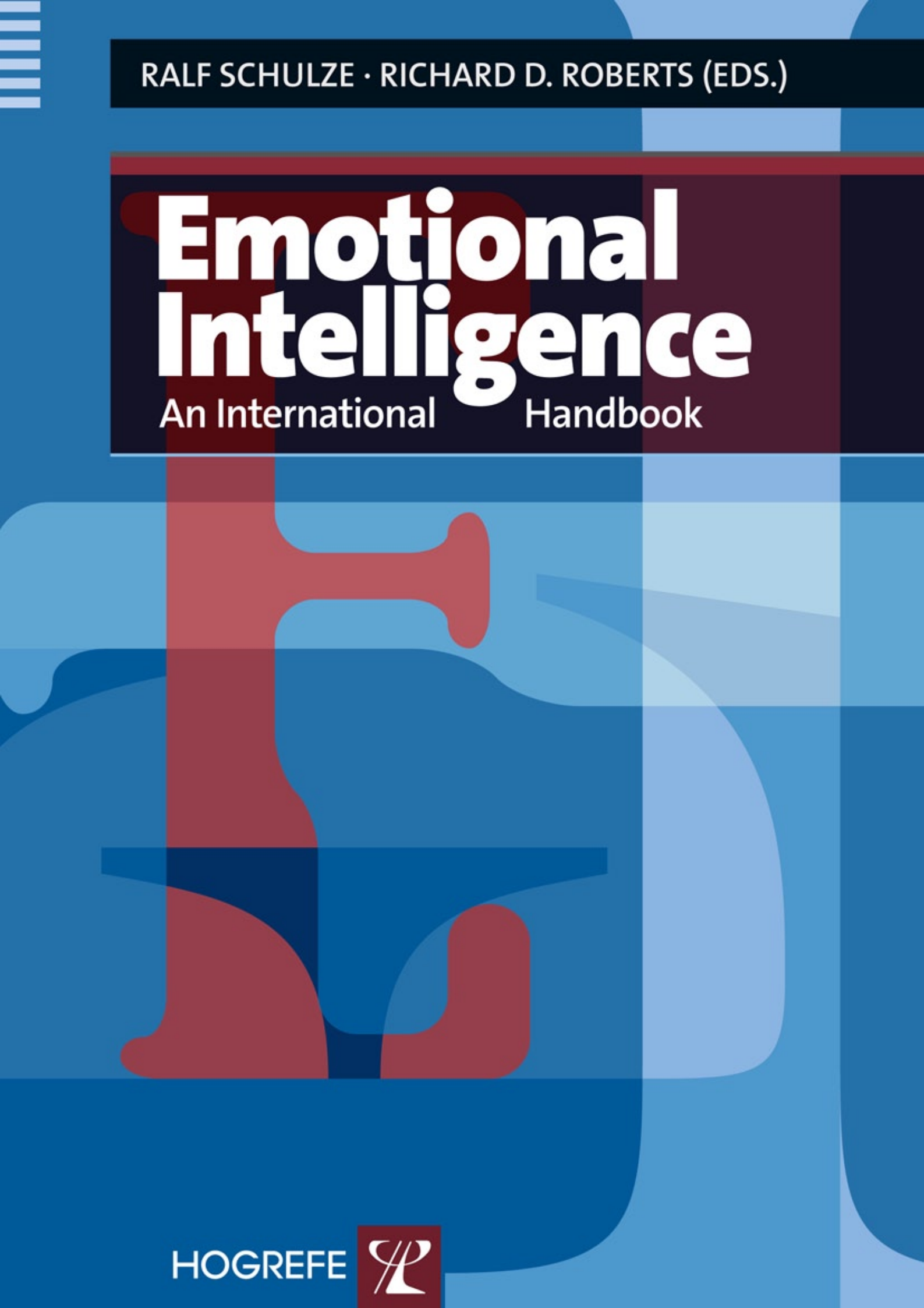
RALF SCHULZE · RICHARD D. ROBERTS (EDS.)

Emotional Intelligence

An International Handbook



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Emotional Intelligence: An International Handbook

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Edited by

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Foreword

The field of emotional intelligence (EI) has moved forward in dramatic ways since Jack Mayer and I published our first article on EI in 1990. In just a brief decade and a half, our state of knowledge has matured to the extent that an international handbook is now possible. And if we look back further, to the seminal and influential articles on social intelligence (even the ones doubting its existence), practical intelligence, and intrapersonal intelligence, we have clearly come further still. But now is not the time for complacency in EI research. Although we may have traveled a good ways down the road from those earlier days, it is only in recent years that there is an emerging consensus in the EI literature on definitions, best methods of measurement, and expectations for what EI should predict.

Perhaps what is most helpful about this handbook is that it very quickly does what many books and articles do not do: It clearly differentiates the genuinely scientific approach to EI from popularizations. In doing so, the chapters herein hold EI to the highest standard. Not only must EI have heuristic value, but it cannot be merely old wine in new bottles or an interesting idea impossible to operationalize. We have argued for some time that the most useful approach to EI is one that considers it a set of interrelated skills. In that sense, we define emotional intelligence as involving both the capacity to reason about emotions and to use emotions in order to assist reasoning. We believe EI includes abilities to identify emotions accurately in oneself and in other people, understand emotions and emotional language, manage emotions in oneself and in other people, and use emotions to facilitate cognitive activities and motivate adaptive behavior. These skills are ones that can be measured and that are not easily incorporated into definitions (and measures) of existing constructs such as social competence or personality.

The chapters in this handbook also place ideas about EI into the context of general theories and research pertaining to intelligence, emotion, and personality. This is more important than it might sound at first. One of the difficulties with popular ideas about EI is that characteristics of humans that are adaptive and desirable but have little to do with intelligence or emotion are sometimes classified as EI. These have included task persistence, zeal, optimism, good character, morality, and the like. It is important to consider what EI is but also what it is not. The most useful measures of EI should show only modest correlations with general intelligence and should be largely unassociated with standard measures of personality such as those mapping on to the "Big Five".

Couching EI—especially as measured—within conventional ideas about intelligence more generally, such as its overlap with social intelligence and

whether EI is best thought of as fluid, crystallized, or both, is also characteristic of many of the chapters in this handbook, and these perspectives are quite helpful. In other writing, we have tried to argue that EI meets the traditional standards—more or less—for what it means for some construct to be an intelligence. At first we asked this question in order to be provocative. But over time, it has turned into a more serious line of inquiry that is very much assisted by the kind of discussion that can be found here. As one of the author teams suggests, the interpretation of research results is greatly benefited by definitional and theoretical coherence in this area. Relating EI to other similar-sounding kinds of intelligence also motivates greater clarity in describing what is unique to EI.

A part of this handbook is devoted to issues of measurement. And these are welcome discussions. Although we have preferred ability-based measures to self-report inventories, there is no gold-standard yet in this field, and all measurement approaches pose serious challenges. Self-report measures may be prone to self-aggrandizement and other reporting biases and may have little discriminant validity with respect to typical personality measures. Ability measures present the dilemma of how we define a "correct" or, at least, a better or more adaptive answer? Reference to consensual norms or the responses of experts are two approaches, but they also represent interesting conceptual questions: What if the masses tend to be misguided in this area? Who, exactly, should be considered an expert? Measurement issues are not going to be easily resolved, but like the editors of this volume, I agree that future approaches need to emphasize the assessment of emotion-related abilities in ongoing, fluid situations and not just draw upon crystallized emotional knowledge.

Perhaps some of the most exciting work—but also where clever ideas far outstrip available data—is in the application of EI to education, work, psychopathology, and physical health. Appropriate speculation about the potential utility of EI, as both theory and as a set of measurable constructs, is featured in the final set of chapters here. The possibilities seem limitless, and the imaginative uses of EI already observed in the field are encouraging.

One area still needing considerably more attention—and the lack of research in this area is especially obvious in an international handbook—concerns culture. Is EI a culture-bound construct? Certainly display rules for emotional expression are culturally specific (just compare how people behave at funerals in different parts of the world). But are the underlying skills involved in identifying, understanding, managing, and using emotion also different across cultures? We think, in general, that they are not, but we really do not know for sure. And how might knowledge of cultural differences (e.g., in which cultures is giving honest feedback to your boss about his terrible idea an adaptive behavior and in which is it maladaptive?) be incorporated in theories and measures of EI? These are questions still needing to be addressed.

Reading these chapters is very satisfying and not just because so many of the contributors are friends whose thoughts about emotional intelligence I have always respected. These are thoughtful commentaries that steer the field in the right direction. They guide us clearly with respect to what we need to

do next. And they make it salient that globalization has contributed to great scientific strides forward in understanding EI.

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Preface

Emotional intelligence (EI) is a relatively recent addition to the set of psychological constructs that are the subject of scientific investigation. Although it can be argued that the roots of EI may be traced back to the start of the last century, the bulk of books, research, and peer-review publications exploring EI have appeared within the last 15 years. At the time of writing this preface, a literature search in the PsycINFO database indicated 700 or so publications using the term *emotional intelligence*, with only three publications appearing before 1990. However, EI has enjoyed a much more chequered history than these figures might, on first blush, suggest. Even though it is not easy to tell exactly how many of these publications are more a critique of the concept, rather than a constructive research effort, the ratio of critical commentary to empirical research appears remarkably high by available scientific standards.

The use of the term EI by mass media is even more recent. The speed with which the term *emotional intelligence* has been adopted and its accompanying enthusiasm by the general public is certainly remarkable. Arguably, not since Freud, has a psychological term had a comparable history of welcomed reception by laypeople, nor as wide-ranging influence on popular culture (witnessed by the fact that, among other things, books, toys, films, and even robots employ it as an advertising jingle). However, the number, strength, and veracity of supposedly scientifically founded claims associated with EI also appears unprecedented. For example, EI has variously been portrayed as the psychological factor *most* relevant for success in almost any field of application (i.e., in the home, workplace, and school). Claims of this sort simply lack scientific support, certainly on balance of available evidence.

As a result of this short (yet colorful) history, the concept of EI is associated with a relatively large literature, much controversy, and a remarkable tension between scientific and popular accounts. The editors of this book opine that this situation calls for focused, systematic research to clarify the issues, as well as more open dialogue between theoretical and applied researchers, on the one hand, and practitioners, on the other. We also feel that the field of EI is in need of diverse scientific approaches, rigorously examining the theoretical underpinnings of EI from multi-disciplinarian perspectives including intelligence research, the psychology of emotions, personality psychology, social psychology, psychometrics, and artificial intelligence. Practical implications for educational, organizational, and clinical contexts need also to be considered. To accomplish such an ambitious set of goals, while maintaining heterogeneity of perspectives and coping with the growing research demand, international research collaboration seems essential. It was the editors' intention, through

invitations to each of the current contributors, to assemble a group of experts that would give this volume a truly international flavor.

A disclaimer appears in order before we provide a look ahead to the topics covered in the book. The editors consider themselves neither high priests nor gravediggers devoted to either elevating or burying the concept of EI. As paradoxical as it might seem, we try to be as dispassionate as possible about this emotion-laden concept and the discussion surrounding it. Theories, measurement approaches, and applications of EI deserve balanced scientific discourse in order to advance psychological research and applications, as well as to provide scientific background for informed discussions in the public forum. We hope that this edited volume contributes to this goal by providing scholarly presentations as described in the following paragraphs.

This edited book brings together experts from around the world to present their perspectives on the scientific status of EI. In five parts of the book, theories of EI, assessment approaches, and research on the antecedents and consequences in occupational, educational, and clinical settings are presented. In these contributions, empirical evidence supporting or contradicting common assumptions about the nature of EI, and its relationships with other psychological constructs, are highlighted. The book thereby offers a critical appraisal of the scientific status of EI.

Part I introduces basic ideas, concepts, and frames of reference for theories, measures, and applications of EI. The editors of the book and two distinguished scholars, Gerald Matthews and Moshe Zeidner, provide a brief introduction to these basic concepts. This chapter provides background from intelligence, individual differences, measurement, and emotions research, which allow non-experts, in particular, to follow arguments put forth over the duration of the volume.

In Part II, a range of theoretical approaches are presented, their strength and weaknesses are highlighted, and conclusions on the status of EI theories are drawn. Aljoscha Neubauer and Harald Freudenthaler (Chapter 2) begin this section by providing a review of the most prominent models of EI. This chapter represents an indispensable resource for those readers who have not been introduced to current models and controversies in the field. In the next chapter by David Schultz, Carroll Izard, and Jo Ann Abe, a different perspective is taken. The focus of this chapter lies on the connections between emotion systems and EI, and the latter's development, in particular. This chapter enables the reader to view the field from a different theoretical angle by highlighting the connection between EI and emotions research. Perhaps to the surprise of the uninitiated reader, most models of EI are more heavily influenced by intelligence, rather than emotions, research. Hence, Chapter 3 can be regarded as an addition and complement to most other chapters, which are geared towards individual differences approaches. Chapter 4 by Joseph Ciarrochi and Claire Godsell introduces a new theory for human suffering, upon which a framework of EI is based. As for the previous chapter dealing with emotions systems, the authors broaden the set of theoretical perspectives by describing an approach to EI from yet another research tradition.

Historically, the field of EI has important conceptual predecessors in intelligence research that are closely connected to theoretical components of EI. Social intelligence (SI) appears among the most important of these forerunners. Sue-Mee Kang, Jeanne Day, and Naomi Meara (Chapter 5) elaborate on relationships between EI and SI. The overlap between these two concepts is stressed both on a theoretical and empirical level. Kang, Day, and Meara highlight many reasons why these areas should be considered in close connection and point to future areas of research that deserve more detailed attention. The last chapter of Part II, by Elizabeth Austin and Donald Saklofske, discusses communalities and differences between EI, SI, and practical intelligence (PI). They bring these three concepts together, delineate conceptual and empirical differences, and present data to support the widely disputed assertion that EI is incrementally valid for certain criteria. The authors of Chapter 6 facilitate the comprehension of subtle differences between theoretical approaches to these intelligences, by providing both a schema and set of criteria to comparatively evaluate these concepts.

The chapters in Part III of the book are devoted to measurement of EI. Chapter 7, by Oliver Wilhelm, provides an overview of measurement models of EI, especially those approaches that conceptualize EI as an ability, rather than a personality, trait. Basic models are explicated throughout this chapter as the reader is simultaneously guided through many of the conceptual assumptions underlying available assessment procedures. A critical issue for EI measurement is thereafter discussed in Chapter 8 by Peter Legree, Joseph Psotka, Trueman Tremble, and Dennis Bourne. The authors present an elaborate rationale for one of the most widely used procedures to score test-takers responses on EI ability tests, namely consensus scoring. Since scoring examinee's test responses remains a vexing issue for objective forms of EI assessment, this chapter is remarkably important. It not only provides a rationale justifying the assignment of scores using a consensual approach but also provides data supporting the basic premises that these contributors put forth.

In Chapter 9, Juan Carlos Pérez, K. V. (Dino) Petrides, and Adrian Furnham give a concise overview of trait EI and provide a comprehensive list and classification of measures of this concept. They present the state-of-the-art approach to trait EI assessment, which designates the conceptual approach to EI as a personality characteristic. Part III concludes with a chapter by Susanne Weis and Heinz-Martin Süß. They report a facetted approach to the measurement of SI, with supporting empirical data for their hypothesized model. A feature of this chapter is the connection drawn, especially at the measurement level, between the areas of SI and EI research. It therefore provides an excellent synthesis of the communalities and differences highlighted in earlier chapters focusing on theory.

Part IV is devoted to applications of EI. In the first contribution to this section, Thomas Goetz, Anne Frenzel, Reinhard Pekrun, and Nathan Hall (Chapter 11) discuss the theoretical background, and application opportunities, of EI in the educational context. A theoretical model is put forward that positions EI in the context of learning and achievement. The authors highlight the signifi-

cance of EI in this applied domain while drawing important research implications. In Chapter 12, Rebecca Abraham gives an overview of another domain where EI is widely applied: the workplace. The reader is introduced to basic tenets and findings from this field, where leadership, performance feedback, and organizational commitment are covered.

In Chapter 13, James Parker shows why EI is relevant for clinical applications and provides references to empirical research in support of his claims. One concept of central importance, discussed throughout this chapter, is alexithymia: a deficit in perceiving, understanding, and communicating emotional experiences. The concluding chapter to Part IV, by Elisabeth Engelberg and Lennart Sjöberg, links EI and interpersonal skills. In reviewing pertinent literature, it brings to the reader's attention the fact that EI is highly relevant for social interaction and personal relationships, as well as showing, through empirical data, how EI can be linked to such applied issues as faking in high-stakes testing.

Each of the various approaches, findings, and conclusions made by these contributors are integrated in the fifth, and final, part of the book. In Chapter 15, the editors team up again with Moshe Zeidner and Gerald Matthews to synthesize the results and conclusions of the various chapters and analyze what we have learned and what we may have missed from the preceding commentaries. Unresolved issues in scientific research, which might be the subject of future research efforts, are highlighted, with a view to providing an account of both the current and projected scientific status of EI.

We are much obliged to the chapter authors for their invaluable scientific contributions and their cooperation in making this book possible. We hope that these interesting and thought provoking ideas, concepts, and empirical applications of EI will prove to be insightful and advance the readers understanding and knowledge of this elusive construct and the many controversies surrounding it. We are also grateful to the following "heroic" (least in our eyes) persons who helped typeset this book with LaTeX, provided valuable critical input, engaged in fruitful discussions, and/or otherwise kept our emotions from over-ruling our intelligence (and vice-versa): Niklas Ahn, Cristina Aicher, Blixa Bargeld, Lionel Benevides, King Buzzo, Alexander Freund, John Garcia, Michael Gira, Heiko Großmann, Julia Haubrich, Al Jourgensen, Nadine Kespe, Sabine Ludwig, Carolyn MacCann, Omar A. Rodriguez-Lopez, Matthew D. Roberts, Roudy Trouvé, Crazy Horse Weber, and Cedric Bixler Zavala.

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Contents

Part I

Introduction

1

Theory, Measurement, and Applications of Emotional Intelligence: Frames of Reference

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Summary

This chapter provides an introduction to theory, measurement, and applications of psychological constructs, with special reference to that set of concepts standing at the interface of emotional intelligence (EI) research. In particular, we provide the reader with a brief overview of the fields of intelligence, emotions, and personality research. We also discuss the importance of measurement in individual differences psychology and a subset of the methods that are often utilized by researchers working in this sub-discipline. Finally, we suggest the potential importance of EI in applied fields. Throughout these passages, we aim to establish the frames of reference for subsequent chapters in order to facilitate the reader's understanding of the many issues raised by contributors to this edited volume.

1.1 INTRODUCTION

Traditional approaches to cognitive assessment generally require the solution to an abstract problem (e.g., rotating an object in three-dimensional space) or some factual item that is important to the dominant culture (e.g., knowing the meaning of words), for which responses are scored as either right or wrong. Thus assessed, cognitive ability provides the single best psychological predictor of many real-life criteria. For example, meta-analyses have suggested that cognitive measures predict job and academic performance better than any other measured concept of psychological, sociological, or demographic significance (see, e.g., Schmidt & Hunter, 1998). However, while noteworthy, these relationships are actually constrained by rather modest limits. For example, even when cognitive tests are combined with other, well-established, psychological measures (e.g., personality, biographical data) and statistical corrections are made for a range of artifacts, validity coefficients for the prediction of real-life criteria seldom exceed .60 (e.g., Jensen, 1998; Matthews, Zeidner, & Roberts, 2002; Neisser et al., 1996). Moreover, cognitive constructs have often been criticized for being culturally and/or ethnically insensitive, ecologically questionable, and largely contrived. Findings from meta-analyses, along with attendant criticisms of cognitive tests, have spurned researchers to explore new psychological domains that might collectively raise the level of prediction while simultaneously addressing critical concerns.

In the current book, a range of specialists will argue that emotional intelligence (EI), along with two closely related constructs (i.e., social and practical intelligence) represent important psychological phenomena that have so far been given limited consideration by scientists working within this tradition. Broadly conceived, EI, which is discussed more often in the book than the other two constructs, represents a form of ability that processes and benefits from the emotional system (Matthews et al., 2002; Matthews, Roberts, & Zeidner, 2004; Mayer, Salovey, & Caruso, 2000). Of note, it may comprise an entire family of constructs that may be juxtaposed to concepts that derive from traditional approaches to the measurement of academic intelligence. In turn, each EI construct may add incremental validity (over and above cognitive abilities, as typically measured) to the prediction of real-life outcome variables, including physical health, academic performance, perceived quality of life, and psychological well-being.

In this opening chapter, we provide an overview of intelligence models, emotions theories, and a construct that has come to be closely related to EI because of the proliferation of self-report measures used to assess it: personality. We also explore various methods and techniques frequently used by scientists working in these fields. In the penultimate section we touch briefly on applied issues, before closing with some comments on how this chapter is to be viewed in the context of the entire volume.

1.2 HUMAN INTELLECTUAL ABILITIES

Scientific understanding of human abilities has gained much from the research of Carroll (1993), who summarized and integrated over 400 studies conducted within the factor analytic tradition (Roberts, Markham, Zeidner, & Matthews, 2005). Carroll's reanalysis of each data set led him to a model having three levels (or strata). On Stratum I lay primary mental abilities. On Stratum II are a variety of broad cognitive abilities also identified by Cattell, Horn, and associates in their theory of fluid and crystallized intelligence (e.g., Horn & Noll, 1994). Finally, on the third-stratum is a general intelligence factor. The importance of Carroll's concepts extends to educational interventions, public policy on testing, and sociological issues (see, e.g., Spearitt, 1996). It is also likely to guide theory and research in individual differences for some time (Roberts et al., 2005).

The uniqueness of Carroll's (1993) model is that virtually all models of cognitive abilities may be subsumed under its broad umbrella. In the passages that follow, we introduce each of these models, which contributors to this volume will variously refer to. Before leaving Carroll, it is perhaps appropriate to note that he did make suggestive comments of direct relevance to issues raised by contributors to this book (i.e., emotional, social, and practical intelligence). In particular, Carroll (1993) notes that there is evidence for a domain of behavioral knowledge, which is relatively independent from Stratum II constructs, certainly in some data sets. He also suggests that this domain requires more careful and systematic exploration than had been accomplished up to the time of his writing.

1.2.1 Structural Models of Intelligence

In the following subsections, we present a selection of prominent structural models of intelligence. They are all very closely related to a statistical technique called *factor analysis* that will not be explained in this chapter. For a deeper understanding of structural models of intelligence—and factor analysis, which many theories of EI draw upon—the reader is referred to Schulze (2005).

Psychometric g. Perhaps the most famous theory of intelligence is that offered by Spearman (e.g., 1923) who proposed that there are two factors underlying mental test performance: a general factor (g) and specific factors (s). Specific factors are unique to performance on any cognitive test, whereas the general factor permeates performance on all intellectual tasks. As a consequence, Spearman postulated that g alone is of psychological significance. Individual differences in g are the result of differences in the magnitude of mental energy invested in any given task. It is worth noting that a strict g account of human intelligence would render the concept of EI quite problematic; by definition, EI requires the presence of at least one other intelligence (e.g., something we might call rational intelligence) for the qualifier (i.e., emotional) to have cur-

rency (Matthews et al., 2002). This notion is clearly inconsistent with a single-factor intelligence model.

Primary mental abilities. In a significant departure from Spearman, Thurstone (e.g., 1938) proposed, and later provided supportive evidence for, primary mental abilities (PMAs), which collectively comprise intelligence. While originally finding thirteen such factors, Thurstone eventually settled on nine that he was both able to consistently validate and assign psychological labels. The PMAs so derived include: verbal comprehension, verbal fluency, number facility, spatial visualization, memory, inductive reasoning, deductive reasoning, practical problem reasoning, and perceptual speed. These factors are not ordered in any particular way and are thus of equal importance in detailing the structure of intelligent behavior (for this reason, Thurstone's model is sometimes called an *oligarchic theory*).

Structure-of-intellect model. While the number of factors in Thurstone's theory is large, Guilford (e.g., 1967, 1988) took a more extreme view in positing that some 180 factors comprise intelligence. Accordingly, for Guilford, every mental task involves three aspects (also called *facets*): operation, content, and product. There are six kinds of operations in this model, five types of content, and six varieties of products. The *structure of intellect* has been symbolized as a rectangular prism composed of 180 ($6 \times 5 \times 6$) smaller prisms. Each dimension of this prism corresponds to one of the three ingredients (i.e., operation, content, and product) with each of the 180 possible combinations of these three categories forming even smaller rectangular prisms. An early appeal of this model was its ability to incorporate both creativity and social intelligence (what Guilford calls behavioral cognition [see, e.g., O'Sullivan & Guilford, 1975]) into its structure—psychological dimensions that few models of intelligence include. For this reason, the reader may note that several of the chapter authors refer to the structure-of-intellect model in their commentaries.

Gf-Gc theory. Various critics bring into question each of the preceding theories highlighted above; for example, the number of PMAs has shown to exceed nine, though equally the data attest that there are considerably less than 180. Moreover, PMAs tend to cluster together, suggesting a hierarchical arrangement of factors. For this reason, contemporary focus has been given to hierarchical models of intelligence. In the most prominent of these—the theory of fluid (Gf) and crystallized (Gc) ability—there is considered to be enough structure among established PMAs to define several distinct types of intelligence. Empirical evidence, from several lines of inquiry, supports the distinctions between factors of this theory (e.g., Cattell, 1971; Horn & Noll, 1994; Roberts et al., 2005). Data have shown that these broad factors: (1) involve different underlying cognitive processes; (2) share different predictive validities; (3) are differentially sensitive to intervention; and (4) appear to be subject to different sets of learning and genetic influences.

The most compelling evidence for the distinctions between these constructs comes from factor analytic and developmental research. The main distinguishing feature between Gf and Gc is the amount of formal education and acculturation that is present either in the content of, or operations required during, tests used to measure these abilities. It is well established that Gf depends to a much smaller extent on formal education experiences than does Gc. Moreover, while Gc remains constant or improves slightly over the course of an individual's life span, Gf generally declines as a function of age. Besides Gf and Gc, evidence suggests the existence of broad visualization (Gv), broad auditory function (Ga), short-term acquisition and retrieval (SAR), tertiary storage and retrieval (TSR), and broad speediness (Gs). In isolation, each construct represents a broad organization of ability that involves mental processes, for which each factor is purported to have a neurophysiological counterpart.

1.2.2 Systems Theories of Intelligence

Two contemporary theorists—Gardner (1993) and Sternberg (1985)—have proposed intelligence models that attempt to be fairly encompassing in dealing with both the internal and external world of the human being. Because such theories view intelligence as a complex system, they are often referred to as *system models*, a point of departure used to demarcate them from the structural models covered above. Such systems models, in expanding the subject matter of intelligence research, include concepts that structural models would not necessarily view as intelligence. Perhaps because of their breadth, EI researchers often embrace systems theory accounts of intelligence more strongly than they do structural theories. For example, one will find no mention in Goleman (1995) of structural models of human cognitive abilities, although he cites Gardner's theory to support scientific evidence for EI quite frequently.

Multiple intelligences. Gardner's (1993) theory of "multiple intelligences" derives from consideration of criteria, such as domains where extraordinary degrees of talent/giftedness are exemplified, deficits in brain-damaged individuals have been isolated, or there appears an evolutionary history and plausibility. In all, Gardner posits seven independent types of intelligence. These include: linguistic intelligence, spatial intelligence, logical-mathematical intelligence, musical intelligence, bodily-kinesthetic intelligence, intrapersonal intelligence, and interpersonal intelligence. The final two intelligences cover the individual's attempts to understand both their own and other people's behaviors, motives, and/or emotions. Clearly, both of these constructs are relevant to EI.

Triarchic theory. Sternberg (1985) has also emphasized a departure from traditional conceptualizations, defining intelligence as "purposive adaptation to, and selection and shaping of, real-world environments relevant to one's life" (p. 45). By recourse to various analogies, Sternberg shows that academic intelligence, as assessed by psychometric tests, is imperfectly related to the ability

to function intelligently in everyday life. On this basis, he goes "beyond IQ" to emphasize different aspects of intellectual functioning, prominent of which is practical intelligence (PI), a concept that contributors to this volume actually discuss in some detail. According to Sternberg, PI is especially dependent on acquired tacit knowledge, which is procedural rather than declarative, informal rather than formal, and generally learnt without explicit instruction. In short, tacit knowledge is reflected in knowing what to do in a given situation, and getting on and doing it. It occurs without ever necessarily being taught what to do, how to do it, or being able to articulate why you are doing it.

Practical, social, and emotional intelligence share a focus on acquired knowledge (declarative and procedural), flexible cognitive-retrieval mechanisms, and problem solving that does not lend itself to one correct solution. Recently, Hedlund and Sternberg (2000) argued that the main distinguishing feature between each concept lies in the content of the knowledge, and the types of problems, emphasized. Thus, "unlike many approaches to understanding social and emotional intelligence, the tacit-knowledge approach ... limits the definition of practical intelligence to cognitive ability (such as knowledge acquisition) rather than encompassing an array of individual differences variables" (Hedlund & Sternberg, 2000, p. 157). Elsewhere, we have suggested three categories of tacit knowledge that directly impinge upon EI: managing self, managing others, and managing tasks (Matthews et al., 2002).

Concluding thoughts on intelligence theories. This brief foray into theories of intelligence suggests that the concept of EI has a richer history than many of its principal advocates often imply. Our commentary also suggests that paramount to the development of EI models should be how constructs comprising it align with intelligence models (whether they be structural or systems approaches). This issue raises many questions; for example, is EI really a new form of ability or can it be subsumed under one or more already existing constructs? Presently we know very little of how EI relates to broad cognitive abilities, or how EI relates to practical and social intelligence. Because these are important scientific issues, in several chapters that follow, contributors take up these issues in considerable detail.

1.3 EMOTIONS THEORY

In this section, we give the reader some background on consensus and controversies surrounding the study of emotions that contributors to this book will often draw upon, albeit sometimes implicitly. Our aim is to equip the reader with sufficient information to critically evaluate the status of EI models, measures, and applications discussed throughout the book for its correspondence with features outlined in the account of emotions theory that follows. Notably, this topic is often given a relatively minor role in accounts of EI, though underlying many of the approaches discussed in the current volume are issues highlighted throughout this section.

In particular, we will come to find that there are a range of EI theories. One reason for this state-of-affairs appears to be the fact that psychological theories of emotions result in several, incompatible approaches. Emotions have been related to a set of largely independent (i.e., modular) brain systems; to a central executive control system residing in the frontal cortex; to dimensions of subjective experience measured by questionnaires; and to information-processing routines for self-regulation. Indeed, from a scientific standpoint, the subjective nature of emotions constitutes a complex problem, which specialists are forced to grapple with. Although there are physical counterparts to emotions (e.g., facial expressions), they are primarily defined by labels attached to conscious awareness (e.g., feelings of sorrow). Psychological science has a materialist basis; hence it is enigmatic why any material object, including the brain, has the property of awareness (Matthews et al., 2002). The broad answer to this problem has been to construe emotions as corresponding to some underlying process or system, which can be described in materialist terms. Thus conceived, emotions might represent a type of learning, specific brain systems, properties of information-processing mechanisms, and so forth.

Researchers also differ in their conceptions of the correspondences between emotions and physical reality. A disconnect between theorists concerns the centrality of subjective experience. Biological theorists are inclined to downplay subjective emotion (see, e.g., Damasio, 1999; Panksepp, 1998). For them, emotion is (1) fundamentally a state of specific neural systems, (2) activated by motivationally significant stimuli, and (3) a construct difficult to observe. The activity of the system is expressed through various responses including autonomic nervous system activity, behaviors, and subjective feelings, which are conceptually distinct from emotions (Damasio, 1999). Conversely, emotions may be seen as a subset of conscious experience. This approach is identified with the operationalization of emotions through self-report measures. There is a large literature on the measurement of emotions and feeling states, which uses standard psychometric techniques to identify and validate dimensions of feeling (see Matthews et al., 2002).

Another disjuncture among emotions theories concerns how emotions interrelate with cognition and motivation. Emotions are typically associated both with evaluations of personal significance and with motivations to act. For example, fear correlates with evaluations of personal threat and with the inclination to escape the feared object. Traditionally, emotion (subsumable under the superordinate category of *affect*), motivation (also referred to as *conation*), and cognition make up a three-fold classification used in many areas of psychology. Emotion thus represents a distinct system, separate from motivation and cognition, though interacting with them. Given separate domains, there are various conceptions of the inter-relationships between them. One view is that emotions are chained to motivations and cognitions (Plutchik, 1980);[1]

[1]It is interesting to note that most prominent social psychological theories of attitude–behavior relationships—for example, the theory of reasoned action and theory of planned behavior (see Schulze & Wittmann, 2003)—contain exactly such links as one of their cornerstones.

another ís that emotions "combine motivational, cognitive, adaptational, and physiological processes into a single complex state that involves several levels of analysis" (Lazarus, 1991, p. 6). Viewed from this perspective, the feasibility of studying EI comes to depend on the way that a researcher assumes affect, conation, and cognition are linked.

Yet another disconnect among theories of emotions refers to the extent to which feeling states are free-floating in some specific interaction with the external environment. A distinction is often made between emotions and moods (e.g., Ortony, Clore, & Collins, 1988). An emotion is transient, tied to a particular stimulus (or event), and appears quite complex and differentiated because it reflects an individual's cognition of an event. Moods, by contrast, are more free-floating, need not refer to any particular object, and may persist longer than emotions. Moods also appear more easily reduced to a small set of basic dimensions. Much emotions theory explicitly suggests that emotions are grounded in specific interactions with the environment, a proposition that jars with the actual content of emotions measures, which often assess general feelings, rather than feelings about some event.

1.3.1 Issues in Conceptualizing Emotions

Singular or multiple? Emotion may be defined as a high-level mental property (e.g., Lazarus, 1991) or as an attribute of physiological functioning (Damasio, 1999). Emotions may also be identified with parts of conscious experience, with latent systems whose state may be unconscious, or with psychophysiological systems of causal relevance. Currently, there is little that is definitive in the empirical evidence to decide which definition is the most efficacious. Generally, it is useful to apply a three-level cognitive science framework (Pylyshyn, 1999). Depending on the research context, it appears useful to see emotion as (1) a property of brain systems, (2) information-processing, or, (3) abstracted personal meanings that do not map onto neural or cognitive architectures in any simple way (Matthews et al., 2002).

It appears useful to distinguish two families of emotions theory. The first type of theory starts with a conceptual analysis of emotion, distinguishing emotions from other aspects of mental life and attempting to delineate defining features of general and specific emotions. Different instances of theory differ in fundamental issues relating to definition, consciousness, and causality. The common theme, however, is that emotion is a construct, which may be distinguished from the subjective feelings that are one of several manifest expressions of emotions. This approach may be grounded in terms of models from cognitive psychology (Lazarus, 1991) and neuroscience (Panksepp, 1998) or in philosophical-conceptual terms (Ben Ze'ev, 2000). The implications of the model may be explored empirically through studies of various types of response, including self-report, overt behavior, and physiology.

The second type of theory starts with an operationalization of affect, for example, through a questionnaire that measures the intensity of feelings (e.g., happiness). Research then moves to explain the causes and consequences of

the constructs indexed by the questionnaire. Mood research is usually of this kind. For example, Thayer (e.g., 1996) has identified energy and tension as two fundamental aspects of mood, and explored their antecedents and psychological consequences in empirical studies. However, there is reason to suspect that more specific emotions can be grounded in the same operational approach and some authors have developed self-report emotions measures (see, e.g., Izard, Libero, Putnam, & Haynes, 1993). Whereas the first approach addresses emotion primarily as a universal psychological quality, the second is especially concerned with individual differences: why people are more or less emotional than one another and the behavioral consequences of this individual variation.

Central or peripheral? Another key conceptual issue in the study of emotions is the extent that emotions are based in physical reality. If emotions reflect the workings of a material system, it is important to identify the system (or systems) concerned. Historically, debates surrounding the source of emotions have addressed whether emotions are centrally or peripherally generated (i.e., whether emotions are a direct reflection of some brain system, or whether emotions are constructed from cues provided by peripheral signals; e.g., sweaty palms). The centralist view gains credence from evidence that emotions are influenced by damage to certain brain areas and by drugs such as cocaine, heroin, and ecstasy that affect neurochemistry. Support for the peripheralist position comes from studies showing that, within limits, the way humans experience bodily activity seems to feed into emotional experience (e.g., Parkinson, 1996).

Centralist thinking can be traced to Darwin's view that emotions are concomitants of physiological reactions (e.g., crying when sad evolved from the response of the eye to a foreign object). Darwin's studies of emotions aimed to show that responses were innate, appearing reflexively to trigger stimuli of evolutionary significance. Contemporary studies emphasize specific brain systems believed to have evolved to handle stimuli that are motivationally significant. These include evolutionarily relatively primitive systems, such as the amygdala, and areas in the frontal lobes of the cerebral cortex, whose development is an especially human characteristic. Evidence for the role of these systems in emotion comes from studies of experimentally-induced brain lesions in animals, and accidental damage in humans (e.g., Damasio, 1999). Links between the various neurotransmitters of the brain and emotions are also important (Panksepp, 1998). The general position is that various brain systems analyze incoming stimuli for reward, punishment, and other motivational implications, and concurrently produce both emotions and physiological change.

The peripheralist perspective, although acknowledging biology, emphasizes a more psychological basis for emotions. Its progenitor, William James, saw emotion as a form of perception based on awareness of signals from peripheral bodily organs, such as the heart and skin. Common sense suggests that if we encounter a snake, this event causes a state of fear, and so we run away. James turned common sense around by proposing that the threatening event elicits pre-organized bodily reactions. These include physiological responses

such as accelerated heart rate, shallow breathing, and the like, and behaviors, such as flight. Awareness of these responses is emotion: running away precedes fear. While peripheralism fell out of favor in the first part of the twentieth century, the principal legacy of this tradition remains focused interest in the role of feedback from physiological systems in producing emotions (e.g., Damasio, 1999). Moreover, James' work, by referring to individual's personal idiosyncrasies, memories, and associations as shaping emotions, introduced psychology into emotions research.

Cognitive theories. The cognitive revolution, which commenced in the early 1960s, led to a fundamental reexamination of almost every domain of psychological enquiry. The idea that mental processes can be compared to symbolic computer programs allowed theorists to detach emotions from biological substrate. Studies conducted under this framework found that both subjective distress and autonomic nervous system responses (e.g., skin conductance) depended on the orientation given to the individual and their strategy for dealing with distressing material (e.g., Lazarus & Alfert, 1964). The cognitive approach was also bolstered by clinical studies suggesting that emotional disorders derived from maladaptive cognitions (e.g., Beck, 1967). These theorists pointed to the role of faulty knowledge and styles of interpreting events as the underlying source of cognitions.

Cognitive theories can be expressed in both centralist and peripheralist terms. They are centralist to the extent that information-processing directly outputs emotional states. For example, Simon (1967) suggests that emotions reflect interruptions to ongoing behavior; it has also been argued that appraisal processes generate emotions. Evaluating an event as a threat (consciously or unconsciously) may necessarily produce anxiety, and anxiety may require a prior threat appraisal. As with biological centralism, this concept of emotions suggests that there exists a concomitant, central (cognitive) process. However, there is not necessarily any simple one-to-one mapping between specific cognitions and emotions. Averill (1980), for example, makes an important distinction between pre-reflective and reflective experience. Pre-reflective awareness is the raw stuff of experience, generated, presumably, by unconscious analysis of events, and common to animals and humans. Reflective experience refers to the subsequent, meaning-based reconceptualization of experience. Extending this line of reasoning, transactional theories (e.g., Lazarus, 1991) see emotions as an index of some abstracted personal meaning. Specific information-processing routines, such as a threat appraisal, may feed into the personal meaning, but do not rigidly determine it. Instead, the emotion reflects a construction of meaning based on the various cues provided by analysis of the eliciting event.

Functions of emotions. Following on from the legacy left by Darwin, evolutionary psychology views emotions as resulting from natural selection, operating around the Pleistocene epoch, when our species separated from its lower primate precursors. Hence, we might expect that emotions will sometimes