

# The Handbook of Clinical Linguistics

Edited by

*Martin J. Ball,  
Michael R. Perkins,  
Nicole Müller, and  
Sara Howard*



# The Handbook of Clinical Linguistics

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BLACKWELL PUBLISHING

350 Main Street, Malden, MA 02148-5020, USA

9600 Garsington Road, Oxford OX4 2DQ, UK

550 Swanston Street, Carlton, Victoria 3053, Australia

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First published 2008 by Blackwell Publishing Ltd

1 2008

*Library of Congress Cataloging-in-Publication Data*

The handbook of clinical linguistics / edited by Martin J. Ball . . . [et al.]

p. ; cm. — (Blackwell handbooks in linguistics; 24)

Includes bibliographical references and index.

ISBN 978-1-4051-3522-1 (hardcover : alk. paper) 1. Language disorders.

2. Linguistics. I. Ball, Martin J. (Martin John) II. Series.

[DNLM: 1. Language Disorders. 2. Linguistics. WL 340.2 H2354 2008]

RC423.H3252 2008

616.85'5—dc22

2007037584

A catalogue record for this title is available from the British Library.

Set in 10/12pt Palatino

by Graphicraft Limited, Hong Kong

Printed and bound in Singapore

by C.O.S. Printers Pte Ltd

The publisher's policy is to use permanent paper from mills that operate a sustainable forestry policy, and which has been manufactured from pulp processed using acid-free and elementary chlorine-free practices. Furthermore, the publisher ensures that the text paper and cover board used have met acceptable environmental accreditation standards.

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# Introduction

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Although the insights of the speech and language sciences have long been applied to the description and analysis of communication impairment, the widespread use of the term 'clinical linguistics' dates only from the publication of the book of that title by David Crystal (1981). Crystal defines clinical linguistics as "the application of linguistic science to the study of communication disability, as encountered in clinical situations" (Crystal, 1981, p. 1). Further, Crystal (1984, p. 31) adds to his definition: "clinical linguistics is the application of the theories, methods and findings of linguistics (including phonetics) to the study of those situations where language handicaps are diagnosed and treated."

Restricting the direction of application from linguistics to language disorder is deliberate: "the orientation . . . should be noted. It may be contrasted with the approach of neurolinguists, for example, who study clinical language data in order to gain insights into linguistic or neurological theory" (Crystal, 1984, pp. 30–1). However, it has since been recognized that the study of communication disorders can tell us a great deal about the nature of communication itself, and the scope of the term has subsequently been extended. For example, Ball and Kent (1987, p. 2) in the preface to the then newly launching journal *Clinical Linguistics and Phonetics*, state that they prefer a definition that covers "either applying linguistic/phonetic analytic techniques to clinical problems, or showing how clinical data contribute to theoretical issues in linguistics/phonetics". This approach is the one we take in this handbook.

In the 1970s and 80s Crystal and his colleagues worked to develop linguistically based profiling techniques for the analysis of normal and disordered syntax (Crystal, Fletcher, & Garman, 1976; Crystal, 1979), and then phonology, prosody and semantics (Crystal, 1982). At about the same time a particular interest in the clinical application of phonology began to emerge, with work by Grunwell (1982), Ingram (1976, 1981), Edwards and Shriberg (1983), and Edwards and Gierut (1986) among many others. The founding of the journal *Clinical Linguistics and Phonetics* in 1987 provided an expanded forum for the development of clinical linguistics, and the lead article by Crystal pointed the

way to the exploration of interactions between levels of analysis in clinical linguistics (Crystal, 1987). The 1990s saw a number of book-length treatments of specific areas of clinical linguistics such as syntax (Grodzinsky, 1990), pragmatics (Gallagher, 1991; Smith & Leinonen, 1992), psycholinguistics (Lesser & Milroy, 1993), new approaches to phonology (Ball & Kent, 1997), transcribing disordered speech (Ball, Rahilly, & Tench, 1996; revisited in Müller, 2006), instrumental aspects of clinical phonetics (Ball & Code, 1997), and the detailed application of these specific areas in the form of individual case studies (Perkins & Howard, 1995). The increasing momentum of research into clinical linguistics has continued into the current decade. Collections of research articles have been published which attest to the full scope of the discipline (e.g. Fava, 2002; Maassen & Groenen, 1999; Windsor, Hewlett, & Kelly, 2002). *Clinical Linguistics and Phonetics* now appears monthly with articles covering a range of linguistic areas and disorder types, and dealing with a variety of different languages. Recent books show the expansion of clinical linguistics into new areas: Ball (2007) describes a clinical sociolinguistics, Perkins (2007) provides a unified theory of pragmatic ability and disability, and Guendouzi and Müller (2006) investigate the nature of discourse in dementia. The discipline has clearly matured to a point where an up-to-date survey in the form of a handbook is warranted, if not overdue.

For this handbook we have commissioned state-of-the-art articles by leading clinical linguists and phoneticians with the aim of covering the main areas of research in the field. It is organized according to the different areas of linguistics – e.g. phonology, syntax, pragmatics – rather than to different types of communication disorder – e.g. aphasia, specific language impairment, dysarthria. The latter approach has been avoided partly because there are handbooks of communication disorders already in existence (e.g. Blanken, Dittmann, Grimm, Marshall, & Wallesch, 1993; Damico, Ball, & Müller, forthcoming; Kent, 2003), but also to reflect the status of clinical linguistics as a subdiscipline of linguistics rather than of speech and language pathology. The aim has been to include discussion of a range of pathologies, both developmental and acquired, in each chapter. In addition, we have invited authors to briefly consider the actual or potential influence of their particular specialist area on mainstream theories and descriptions of language, in line with our expanded definition of clinical linguistics above.

The handbook is divided into three parts: I: Discourse, Pragmatics and Sociolinguistics, II: Syntax and Semantics and III: Phonetics and Phonology.

Part I, Discourse, Pragmatics and Sociolinguistics, considers speech, language and communication impairment from the perspective of language *use*. In particular, it examines how the choices involved in language production and comprehension are influenced by underlying linguistic and cognitive abilities and also by the communicative context, including factors such as the age, sex and socio-cultural background of the interlocutors, their relationship, relative status and degree of shared knowledge, their interactional agendas, and the physical, social, cultural, institutional and political parameters of the interaction

itself. The focus on use and context is a relatively recent development in clinical linguistics, which has been more traditionally concerned with the form and structure of speech and language. However, the vitality of this burgeoning area of the discipline is evident in the range of different theoretical approaches and methodological paradigms represented in the nine chapters of part I.

In the opening chapter, Müller, Guendouzi and Wilson review the application of Discourse Analysis (DA) in its various guises to the study of communication disorders. They focus in particular on Kintsch and Van Dijk's model of macrostructure and microstructure, on story grammars, and on socio-cultural approaches such as Critical Discourse Analysis, Discursive Psychology and Social Construction Theory. In addition, Speech Act Theory, which is also mentioned in several other chapters (e.g. chapters 4 and 5), receives its main treatment in this chapter. Two further theories of pragmatics – Conversational Implicature and Relevance Theory – are covered in chapters 2 and 3. Ahlsén examines how Grice's cooperative principle and conversational maxims can be used as a framework for elucidating communication impairment, and in particular focuses on ways in which the principle and maxims appear not to be adhered to for various reasons. Problems with world knowledge, cognition, language comprehension and language production can all affect the use of implicature, and she examines the impact of each on individual maxims. In chapter 3, Leinonen and Ryder review the clinical application of Relevance Theory (RT). The use of RT by clinicians has so far been fairly limited, though the authors argue that an account of pragmatic impairment in terms of cognitive processing, as proposed in RT, is of more explanatory value than description of behavioral symptoms alone. RT has proved to be particularly illuminating in the analysis of individuals with autism, and it is argued that RT itself is supported by studies of pragmatic impairment.

Rather than take pragmatic theory as its starting point as in chapters 2 and 3, Stemmer's chapter on 'neuropragmatics' – a recently coined term meaning the study of the neural substrates of pragmatic behavior – provides an overview of research which aims to identify links between a range of neurological impairments (e.g. right-hemisphere damage, traumatic brain injury, dementia and developmental disorders) and behaviors which have an impact on pragmatic competence, such as problems with inferential reasoning, interpretation of irony, sarcasm and jokes, and recognition of others' emotions and executive functions (e.g. attention, planning and problem solving). Perkins in chapter 5 likewise focuses on factors which underlie pragmatic impairment, but from a broader perspective. His 'emergentist' theory of pragmatics views pragmatic impairment not as a discrete phenomenon in its own right but as the complex outcome of interactions between semiotic, cognitive and sensorimotor systems during the process of communication. It extends the neuropragmatic account by (1) viewing phenomena such as cognitive processing and language use as inherently interpersonal, (2) seeing the relationship between underlying deficit and consequent behavior as being mediated via a process of compensatory adaptation, and (3) characterizing pragmatics as a multimodal rather than an

exclusively linguistic phenomenon. The interpersonal dimension of language use is also highlighted by Wilkinson in chapter 6 from the perspective of conversation analysis (CA) – a variety of discourse analysis which focuses on the way in which conversation comes into being through a collaborative process of turn-by-turn construction in real time by both participants. Wilkinson examines how CA has been used to analyze interactions involving individuals with acquired and developmental communication disorders, and shows that such disorders are not the exclusive responsibility of individuals but are to a considerable degree the manifestation of jointly negotiated agendas.

In chapter 7, Damico and Ball examine the wider sociolinguistic context of communication disorder from the perspective of the variationist paradigm originally developed by Labov. They note, for example, the importance of being aware of the accent, dialect and socio-cultural features of the client's speech community which otherwise might be interpreted as evidence of impairment when compared to standard varieties/norms, and the necessity of setting ecologically valid remedial targets. They also discuss the way in which power relationships are negotiated between clinician and client, and the notion of literacy as a socio-political construct. Ferguson and Thomson (chapter 8) also take a sociolinguistically oriented view of communication impairment, but from the perspective of Systemic Functional Linguistics (SFL), a theory of language use developed by the British linguist Michael Halliday, in which syntax, semantics, phonology and pragmatics are all integral. They provide an outline of the theory, and of how it lends itself to clinical linguistic analysis, arguing that rather than simply providing a checklist of items for assessment or intervention, the value of SFL lies in its provision of a meaning-based conceptual and analytical paradigm which affords unique insight into the nature of communication impairment.

The final chapter in part I, by Hua and Wei, examines how cross-linguistic variation and bilingualism intersect with pragmatics, discourse and sociolinguistics in the context of clinical linguistics. There is still a relatively small literature on non-English speaking people with communication impairments, and within this literature discourse, pragmatics and sociolinguistics are the least researched topics. Hua and Wei point out that cross-linguistic and multilingual research in these areas is important not just in order to understand the nature of the impairments themselves and the extent to which they are influenced by the properties of specific languages and sociocultural factors, but also in order to provide effective assessment and treatment.

Part II is dedicated to syntax, morphology and semantics in the clinical domain. Whereas part I is concerned with language use in its various guises, the chapters in part II deal with formal aspects of language: sentence structure, word structure, and lexical meaning, traditionally considered core areas of both mainstream and clinical linguistics.

Chomsky's theory of generative grammar has been a dominant paradigm in theoretical syntax for roughly half a century. Clahsen's chapter (10) gives an overview of applications of generative grammar to issues in clinical linguistics.

Traditionally, favorite areas of application were aphasia and Specific Language Impairment (SLI), since, in these disorders, impairment appears to be specific to linguistic systems, while other cognitive domains remain more or less unimpaired. Clahsen outlines several approaches to the deficits observed in agrammatic aphasia: feature and trace deletion, Tree Pruning, and Under-specification of T/INFL, the former two being framed within Government and Binding Theory, the latter within the Minimalist Program. In the application of Chomskyan grammar to SLI, Clahsen discusses two types of approaches: those that identify quite broad syntactic impairments, and those that attempt to find specific linguistic markers for SLI. Chomskyan theory has thus far not been widely applied to broader developmental disorders that involve a broader range of cognitive and linguistic impairments, such as Down's syndrome. Clahsen discusses difficulties with pronoun comprehension, anaphoric binding and passivization that have been analyzed within this framework.

The topic of Wray's chapter (11) is formulaic language. Characteristics of formulaic sequences are that they appear to be stored and retrieved whole, rather than spontaneously created or analyzed at the point of use. Findings on the occurrence and nature of formulaic language in aphasia, Alzheimer's disease and autism are reviewed. Wray discusses dual systems models of language processing ('holistic' and 'analytic' processing), and contrasts them with a model of the lexicon as composed of different subunits on the basis of function.

Marinis (chapter 12) discusses syntactic processing in developmental and acquired language disorders, focusing on SLI and aphasia. He identifies as a major issue the question whether language disorder results from an incomplete language system (either incompletely developed, or affected by brain insult in acquired disorders), or from processing limitations. The chapter reviews literature investigating real-time syntactic processing, and compares differences in insights provided by on-line and off-line tasks.

In chapter 13, Penke surveys how inflectional systems are affected in language disorders. The factors identified as influencing errors with inflectional morphology are typology and complexity of inflectional systems, inflection type, regularity, frequency, and morphosyntactic specifications and markedness. Penke reviews theories that aim to account for deficits in inflectional systems, such as the role of mental lexicon versus that of mental grammar, and accounts based on problems with perception and production of inflectional affixes. Under the heading of the relevance of inflectional impairments for linguistic theory, the author discusses the implications of findings of selective deficits of regular and irregular inflections across a number of languages, differential impairment of different inflections with the same or similar surface forms, and the status of inflectional morphemes in the mental lexicon.

Kahlaoui and Joannette (chapter 14) give an overview of the neurological structures underlying word semantics, focusing on the specific contributions of the two cerebral hemispheres. The chapter surveys research on hemispheric asymmetries in semantic processing in normally functioning brains, as well as

in studies of brain damage with a variety of etiologies (left-hemisphere lesions, right-hemisphere lesions, Alzheimer's disease). The authors conclude that semantic processing in the right cerebral hemisphere is unique, enriching and complementing processing by the left cerebral hemisphere.

Frisch, Kotz and Friederici (chapter 15) present research on the neural correlates of normal and pathological language processing at the sentence level. Their survey begins with the classical models of language as a neurological and psychological function, developed from the second half of the nineteenth century onwards. The chapter discusses the timing issue in language processing, as investigated via reaction-time experiments, event-related potentials (ERP), and neuroimaging methods that allow a high spatial resolution (positron emission tomography and functional magnetic resonance imaging – fMRI). The authors discuss ERP and fMRI research into semantic integration and syntactic processes (word category integration, processing of morphosyntactic information, and syntactic repair analysis). They present a model of differential sequential phases of sentence processing, with the caveat that this is a very dynamic area of research and that therefore models are in a state of flux.

The main focus of de Jong's chapter (16) is on specific language impairment (SLI) in bilingual children. A brief discussion of aphasia in bilingual adults is included for comparative and contrastive purposes. Diagnostic concerns in bilingual SLI mirror major research questions, namely how to map the boundaries between language disorder and normally developing speakers of two or multiple languages with varying acquisition patterns (simultaneous or sequential, for example). The question of what constitutes bilingual SLI and how it differs from monolingual SLI is approached via a composite of group comparisons featuring bilingualism and/or SLI.

Crago, Paradis and Menn (chapter 17) offer cross-linguistic perspectives on impairments of syntax and semantics. The two populations focused upon are children with SLI, and adults with acquired aphasia. A key focus of cross-linguistic research in SLI has been the question of the extent to which clinical markers are language-specific or show tendencies across languages, with investigations of inflectional morphology dominating, while research on syntax or lexical semantics is thus far underrepresented. The authors conclude that while there are no universal cross-linguistic characteristics of SLI, there are characteristic tendencies, in particular within language families. The discussion of cross-linguistic research on aphasia begins with reviews of research on the comprehension of syntax and word-string interpretation studies, before moving on to production studies. The chapter concludes with a brief section on bilingual aphasia.

Black and Chiat's chapter (18) on interfaces between cognition, semantics and syntax focuses on verb argument structure, its impairments and linguistic analyses. A summary of deficits in verb argument structure in SLI and aphasia is followed by a review of thematic role analysis, in which each verb is categorized as having a specified thematic structure paired with a syntactic sub-categorization frame. This permits an account of patterns of mapping between