adequada d'expressar-se oralment, i es consolida en el procés d'estandardització d'una comunitat de parla (pàg. 352). Pel que fa a l'ortologia, exposa una panoràmica resumida des de l'obra fabriana fins avui dia i aprofundeix en els àmbits d'actuació: l'escola i els mitjans de comunicació. Pel que fa a l'ortoèpia, descriu els aspectes més importants de les propostes de l'IEC *Proposta per a un estàndard oral de la llengua catalana* (I. *Fonètica,*1990: II. *Morfologia*, 1992).

La darrera part del llibre, constituïda per un sol capítol, continua aprofundint en les aplicacions de la fonètica: en fonètica forense, que treballa en la identificació de la veu en relació a causes judicials, en professionals de la veu (polítics, professors, conferenciants, artistes) i, finalment, en les tecnologies de la parla.

Després d'haver exposat el contingut que presenta el llibre, constatem que l'autor ens ofereix un manual complet amb la descripció del que són les ciències fonètiques, la caracterització fonètica del català i les aplicacions que se'n deriven. El plantejament ampli del llibre en què es vol tractar tot el que té a veure amb la fonètica, però, fa que alguns aspectes no siguin analitzats amb prou profunditat. Tot i així, podem afirmar que el manual dóna resposta a les preguntes i necessitats que es plantegen en relació a l'estudi dels sons de la parla, especialment, la catalana, i, evidentment, que és d'interès per als universitaris que vulguin ampliar els seus estudis de didàctica i de lingüística en general i de les ciències fonètiques, com també per als professors, per als correctors i assessors lingüístics i, en definitiva, per a qualsevol persona que consideri que la fonètica serveix d'alguna cosa, tal com deia l'autor al principi.

Dolors Font Rotchés
Universitat de Barcelona
dolorsfont@ub.edu

OCKE-SCHWEN BOHN and MURRAY J. MUNRO (eds) (2007): *Language Experience in Second Language Speech Learning: In Honor of James Emile Flege,* Language learning and language teaching monograph series, volume 17, Amsterdam, John Benjamins.

This edited volume gathers an impressive collection of papers by leading researchers in the field of second language (L2) speech learning, offering a comprehensive state-of-the-art view of the field. The study of second language

speech has advanced immensely since the publication of W. Strange's (1995) *Speech Perception and Linguistic Experience*, which reflected the state of the field at the time. Strange's (1995) volume included two widely cited chapters developing the main tenets of two influential theoretical models of L2 speech learning, Catherine Best's (1995) Perceptual Assimilation Model (PAM) and James E. Flege's (1995) Speech Learning Model (SLM). This new volume reflects the progress of the field in the last 15 years and will no doubt constitute a key referent for scholars and young researchers working in the field of L2 speech learning.

A broad range of empirical and methodological issues in L2 phonetic learning are investigated in depth through twenty chapters written by scholars whose scientific rigour in the empirical investigation of L2 speech owe a great deal to the groundbreaking work of James E. Flege, to whom this volume is dedicated on the occasion of his retirement in July 2006. The main topics in L2 speech research investigated include cross-language speech perception (Chapters 3, 4, 5, 11, 12, 18), accuracy in the production of L2 speech sounds (Chapters 9 and 10), overall degree of perceived foreign accent (Chapters 6, 7, 19), and pedagogically-oriented issues such as the effects of phonetic training on L2 speech learning (Chapters 4, 8, 14). The 20 chapters have been conveniently grouped into five parts: (I) The nature of L2 speech learning, (II) The concept of foreign accent, (III) Consonants and vowels, (IV) Beyond consonants and vowels, and (V) Emerging issues.

Part I constitutes an excellent introduction to the study of L2 speech. The introductory chapter by Munro and Bohn sets up the scene by briefly outlining the main outcomes of the L2 speech research carried out over the past few decades. Interestingly, the authors do not set out to offer a comprehensive survey of past research, but rather they acquaint the reader with all major areas of empirical inquiry in L2 speech research by very succinctly discussing the main findings of past research and relating those to the relevant chapters in the book, all of which represent important contributions to the main lines of research in the field of L2 speech learning: age-related effects, phonetic training and its pedagogical implications, accuracy in L2 sound production and perception, and foreign accent. The four chapters that follow address questions of theoretical and methodological importance in the study of L2 speech, such as the nature of the principles underlying L2 perceptual learning from the perspective of PAM and SLM (Chapter 2), quantitative vs. subjective evaluation of L1/L2 acoustic similarity of vowel systems (Chapter 3), and the roles of attention (Chapter 4) and linguistic experience (Chapter 5) in phonetic learning.

In Chapter 2, Best and Tyler compare two types of listener groups, naïve monolingual listeners vs. experienced late L2 learners, with respect to the perception of nonnative speech contrasts. The former are defined as speakers lacking active language learning experience with a non-L1, whereas the latter are speakers actively involved in the process of learning an L2. The comparison involves a critical contrast of Flege's SLM, which has typically examined the perceptual ability of L2 learners in immersion settings, and Best's PAM, which has investigated the ability of functional monolinguals to perceive non-native phonetic contrasts. The comparison is an interesting one because sensitivity to phonetic variation in nonnative speech (both between and within phonetic categories) is related to the interactions between the native and nonnative phonetic systems as well as to language-universal perceptual tendencies and, as the authors point out, nonnative speech perception (i.e. perception of nonnative speech by naïve listeners) and L2 speech perception (perception of nonnative speech by L2 learners) have been assumed to be identical in that they reflect the same L1-based perceptual constraints. After reviewing the main tenets of SLM from a PAM perspective, the authors propose an extension of PAM, referred to as PAM-L2, and show very convincingly how it can be used to predict success in L2 perceptual learning by examining four possible cases of L2 minimal contrasts. Although the PAM-L2 predictions proposed will need to be tested empirically and a great deal of research remains to be done on the effect of linguistic experience on L2 perceptual learning, this chapter represents an important contribution to understanding key issues in perceptual learning. It also offers readers a very much needed explanation of the similarities and differences between SLM and PAM with respect to the kind of listener groups they examine and the assumptions underlying both research programmes.

Strange's paper (Chapter 3) describes recent methodological approaches in determining the acoustic and perceptual similarity of vowels across languages. It constitutes an essential reading for any researcher wanting to evaluate accuracy in the production of nonnative vowels and wishing to account for difficulties in perception and production on the basis of acoustic differences between native and nonnative vowels. Crucial methodological issues in the quantitative and subjective analysis of acoustic similarity among vowel systems are addressed on the basis of an analysis of American English, German and French vowels. The important methodological issues addressed include the development of adequate elicitation instruments that would avoid experimental context effects, the problem of speaker normalization, the relative weight of spectral and quantity differences in determining degree of cross-language acoustic similarity, perceptual assimilation task design, and statistical analysis of similarity judgement tasks.

Chapter 4 investigates L2 learners' ability to a attend to a novel perceptual dimension (tone) and the effect of orienting of attention on the perception of a novel contrast. Assuming that learner's failure to attend to a particular phonetic cue may be the cause of perceptual difficulties with L2 contrasts, Guion and Pederson show how learners can improve in the discrimination of a novel phonetic contrast if their attention is directed towards phonetic form, as opposed to sound-meaning correspondence.

In Chapter 5, Frieda and Nozawa address a crucial issue in L2 speech learning: the effect of linguistic experience, the importance of which is highlighted by the title *You are what you eat phonetically*. However, the scope of this study on the effects of linguistic experience on the perception of foreign vowels is severely limited by the authors' rather narrow definition of linguistic experience as *length of residence (LOR) in the L2 speaking country.* Other relevant factors, often confounded with LOR, that have been shown to be essential in shaping learners' linguistic experience such as amount of L1 and L2 daily use and the quality of the L2 input received are not considered (Flege, *in press*). In this study, as in most cross-language vowel perception studies, the result of a vowel identification task supplemented with goodness ratings yields L1-L2 assimilation patterns that are used to predict discrimination difficulties. Despite the excellent methodological design of the identification and discrimination tasks, in general, the assimilation data correctly predicted discrimination difficulties, but poor performance on some of the L2 contrasts could not be accounted for, showing the limitations of assimilation data in accounting for discrimination performance.

The second part of the book groups together three foreign accent studies. Chapter 6 examines the pronunciation of a group of English learners of French, at the segmental level through an instrumental analysis of vowel duration and VOT, and globally through native judges' ratings of degree of foreign-accented (on a five-point scale). The study reveals that some nonnative speakers (about 10%) were judged to be native-like, in support of the SLM's postulate that L2 speech learning abilities remain intact across the life span (Flege, 1995), but only some weak unsystematic correlations were found between the segmental analysis and the foreign accent ratings. Despite the limitations in task design and choice of phonetic dimensions examined, the results of the study reveal the need for further research into the individual characteristics of successful late L2 speech learners, including motivation and specific types of linguistic experience such as phonetic training. The following chapter by Fox and McGory represents an original contribution to the study of foreign accent in that they set out to investigate whether L2 learners of American English of a single L1 background (Japanese) are capable of acquiring

dialectal differences in vowel quality between Standard American English (SAE) and Southern American English (SoAE). Contrary to the authors' expectations, however, the results of a production and a perception study provided no support, for the SLM's prediction that non-native speakers would acquire the phonetic features of the ambient dialect. These findings, as the authors point out, suggest that sociolinguistic variables such as the learners' wish to adhere to a standard dialect of the L2 and the amount of SoAE input may have received on a daily basis may have played an important role. Indeed, foreign accent studies need to control for sociolinguistic factors affecting the linguistic experience of L2 learners. The paper by Jongman and Wade (Chapter 8) reports on very interesting research investigating the nature of nonnative accented speech. One outcome of the research presented in this chapter is that Dutch-accented English is processed more efficiently by Dutch learners of English than by native English speakers, lending support to the *mismatched interlanguage speech intelligibility benefit* proposed by Bent and Bradlow (2006). Another significant finding, because of its pedagogical implications, is that perceptual learning is affected by the higher degree of acoustic variability present in nonnative speech for those L2 learners who are primarily exposed to L2-accented speech. A training study controlling for acoustic variability in vowels produced mixed results in the sense that a high-variability treatment did not always enhanced perceptual learning; for difficult contrasts only a minimal-variability treatment had a positive effect. This finding is particularly interesting from a pedagogical perspective because it suggests that in order to enhance the acquisition of difficult sound contrasts phonetic training with prototypical realizations of sounds may be more effective than phonetic training using high variability stimuli, contrary to the long-held assumption that exposure to highly variable stimuli enhances phonetic learning (e.g. Pisoni and Lively, 1995).

The third part of the book (*Consonants and vowels*) contains three papers focusing on the production (Chapter 9) and perception (Chapters 11 and 12) of consonants, and Chapter 10, focusing on the temporal patterns of English stop-vowel syllables produced by Mandarin speakers of English. Thus, unless it refers to mutual contextual coarticulatory effects between vowels and consonants, the heading of this section is misleading, since it does not contain any study focusing on vowel perception or production. A title making reference to the segmental nature of the sound units under study in this section would have probably been more appropriate, as Part IV, which is titled *Beyond consonants and vowels*, focuses on the cross-language study of non-segmental aspects of speech.

The study by R. McAllister (Chapter 9) focuses on the production of the English /s/-/z/ contrast by native speakers of Swedish as a means of empirically testing the

feature hypothesis (McAllister, Flege and Piske, 2002), according to which a feature used to signal a phonological contrast in the L1 may facilitate the perception and production of a contrast in an L2 that makes use of that feature. Swedish exploits durational (quantity) differences in phonological contrasts but lacks the /s/-/z/ contrast. In English, /z/ is devoiced in word-final position and the /s/-/z/ contrast is phonetically realized through duration differences in the preceding vowel, which is significantly shorter before /s/ than /z/, a phenomenon known as pre-fortis clipping (Wells, 2000: 149). The prediction by McAllister is that despite the fact that Swedish lacks the /s/-/z/ contrast, Swedish speakers of English will be able to master the realization of this voicing contrast through vowel clipping because quantity differences are exploited phonologically in their L1. These expectations, however, are not borne out by the results, apparently contradicting the *feature hypothesis*: only two of the 17 subjects exhibited an English-like realization of the contrast with respect to duration, and these failed to devoice /z/. It would have been informative to be able to inspect the mean duration of the fricatives analysed underlying the results presented in Figures 1 and 2 and compare these with the mean durations obtained from a native speaker control group to be able to estimate the size of the difference between L1 and L2 mean duration for word-final /s/ and /z/. The presentation of the results in terms of successful vs. unsuccessful realizations of /z/ does not provide the reader with enough information about the nature of the data analysed, particularly considering the small size of the group of participants from which the production data was obtained and the *unexpected* results derived from the data analysis. Despite its limitations, this study suggests that the use of quantity-based contrasts in the L1 does not directly translate into an advantage when it comes to producing durational differences in the L2 for sound contrasts that do not exist in the L1; future research is therefore needed to further test the *feature hypothesis*.

The Wang and Behne's study on the syllable internal timing of word-initial syllables in the interlanguage of Mandarin speakers of English represents an excellent original contribution to the study of cross-language differences in the production of oral stops, a much researched area in cross-language phonetic acquisition studies (e.g. Bohn and Flege, 1993; Caramazza *et al,* 1973; Flege, 1991; Flege and Eefting, 1987; Flege and Hillenbrand, 1984; Flege and Schmidt, 1995; Flege *et al,* 1996, 1998; Schmidt and Flege, 1995, 1996; Volaitis and Miller, 1992; Williams, 1977, 1979). The originality lies in the temporal measures obtained and the subsequent data analysis; whereas past research has mainly focused on cross-language VOT differences, Wang and Behne also measure the duration of the stop closure and the following vowel, which offers the possibility of

a cross-language comparison of overall syllable duration differences and the relative weight of each of its timing components. The results confirm the findings of previous studies investigating cross-language duration differences in stop consonants, suggesting that late learners of English do exhibit phonetic learning of the acoustic and temporal properties of non-native stop consonants, thus supporting one of the postulates of the SLM, namely that the mechanisms underlying the acquisition of the L1 sound system *remain intact over the life span* (Flege, 1995: 239).

Chapter 11 presents the results of a perception task performed by 20 monolingual native speakers of English who were asked to label 18 Korean syllable-initial consonants in three vowel contexts according to English consonantal categories and rate them for similarity along a 5-point scale. The results of this study, together with the results of a previous study by the same author (Schmidt, 1996) where native speakers of Korean were asked to label English syllable initial consonants, suggest that L2 listeners' perception of L2 sounds according to L1 phonetic categories is conditioned by the cross-language use of acoustic cues, producing asymmetries in the labelling of certain sounds by speakers of different L1s. The perception study in the following chapter by Wayland examines, from a methodological perspective, the results of an identification and discrimination task designed to investigate the effects of stimulus presentation conditions in the cross-language perception of Korean and Thai consonants. The results suggest that identification and discrimination tasks have to be carefully designed so that they form a consistent pair in terms of the demands they make on listeners. For example, a single stimulus presentation identification task involving labelling at the phonemic level should be paired with a similar oddity discrimination task. Wayland shows that stimulus presentation format affects the labelling of stimuli and that results obtained through identification tasks are better predictors of discrimination difficulties if both identification and discrimination tasks make use of the same presentation format.

The four papers in Part IV focus on non-segmental aspects of L2 speech learning (tone in particular) from a variety of perspectives and represent innovative approaches to cross-language speech research, which in the past has mainly focused on the acquisition of L2 segmental units and features. Gottfried (Chapter 13) explores the effect of musical ability on L2 speech learning by assessing the ability of conservatory and non-conservatory students to correctly identify, discriminate and imitate Mandarin Chinese tone glides. As expected, conservatory students outperformed non-conservatory students on these tasks, suggesting that musical ability and training facilitates the perception and production of Mandarin

tones. The study by Sereno and Wang (Chapter 14) offers an interesting insight into the acquisition of tone using functional magnetic resonance imaging (fMRI). They do not only show that there are hemispheric differences between native speakers of Mandarin Chinese and American English speakers with respect to the processing of tone and the perception of tonal contrasts, their study also provides evidence of cortical changes during tone learning as a consequence of training with tone as well as significant improvement in production. These findings strongly suggest, in accordance with SLM claims, that the brain retains plasticity over the course of the lifespan as far as L2 speech learning is concerned. In Chapter 15 Burnham and Mattock present an interesting discussion of tone vs. phone perception based on hemispheric differences found in the processing of tone. Tone is processed in the left hemisphere (the same as other linguistic information) by tone language speakers for whom tone expresses phonemic contrasts and in the right hemisphere by non-tone language speakers. The last chapter in this section focuses on prosodic aspects of native American English and non-native Japanese-accented American English. Based on duration and F0 range data obtained from the American English spoken by native Japanese adults and children, Aoyama and Guion show that native Japanese speakers make use of differences in pitch to signal lexical stress in English, suggesting that prosodic aspects of speech are also subject to the cross-language interactions that characterize the segmental phonology of the interlanguage of L2 learners.

The final section, *Emerging issues*, is one of the most interesting features of the book. It contains 4 chapters each dealing with a topic that is likely to raise interesting questions about the nature of L2 speech learning and second language acquisition. These chapters are also thought-provoking and a source of new ideas for further research. Piske's discussion of the implications of L2 speech learning research for the foreign language classroom (Chapter 17) highlights the need to expand the scope of L2 speech learning research to investigate speech learning in non-immersion formal instruction contexts, a learning context that is largely under-researched at the moment with respect to the acquisition of L2 sound systems. Several factors, some of which have also been found to be success variables in studies of second language acquisition in immersion contexts, are identified as leading to successful foreign language acquisition in a formal instructional setting: early-starting age, extensive exposure to the L2, high-quality input and perceptual and productive phonetic training. In Chapter 18 Walley focuses on the relationship between speech perception (phonological representation and processing) and the ability of non-native speakers to recognize spoken L2 words (lexical representation and processing) pointing out similarities between SLM and her Lexical Restructuring Model (LRM) with respect to shared predictions about the effect of

age and language experience. Bent *et al.* (Chapter 19) examine the relationship between L2 segmental production accuracy and intelligibility and their findings suggest that word-initial errors appear to have greater effect on intelligibility than errors appearing in other word positions. The relationship between production accuracy and perceptual dimensions of non-native speech constitute a very interesting unexplored area of research. Although there is an extensive literature on foreign accent (e.g. Flege and Fletcher, 1992; Flege, 1988; Flege *et al,* 1995; Magen, 1988; Major, 2001; Munro, 1995) and research investigating native-speakers' ratings of degree of foreign-accentedness in non-native speech has occasionally been concerned with correlating subjective evaluations with objective measures of segmental accuracy (e.g. Flege and Eefting, 1987), further research is needed to explain the relationship between segmental accuracy and other dimensions of non-native speech such as fluency, intelligibility and comprehensibility (but see Derwing and Munro, 1997; Munro, 1998; Munro and Derwing, 1995a, b, 1999). The book ends with a chapter that challenges traditional views about phonological representations (the notion of phone and phonemes) by arguing that alphabetical writing plays an important role in shaping the structure of the phonological patterns of speech and their representation because they share the property of discreteness. The discussion by Port is very interesting but it could be more stimulating if it provided empirical evidence relating the importance of alphabetical writing to the main findings of empirical research in L2 speech learning.

This brief review of the papers in this new volume on L2 speech learning suggests that many of the core themes investigated in James E. Flege's work still need further methodological development and refinement and call for further research. On the whole this volume contains an excellent collection of articles that offer the reader new empirical findings that will surely stimulate new research in L2 speech learning.

References

BENT, T. and A. R. BRADLOW (2003): «The interlanguage speech intelligibility benefit», *Journal of the Acoustical Society of America,* 114, 3, pp. 1600-1610.

BEST, C. (1995): «A direct realist view of cross-language speech perception», in Strange, W. (ed.): *Speech Perception and Linguistic Experience: Theoretical and Methodological Issues.* Timonium, MD, York Press. pp. 171-204.

BOHN, O. and J. E. FLEGE (1993): «Perceptual switching in Spanish/English bilinguals evidence for universal factors in stop voicing judgments», *Journal of Phonetics,* 21, pp. 267-290.

CARAMAZZA, A.; G. E. YENI-KOMSHIAN; E. B. ZURIF and E. CARBONE (1973): «The acquisition of a new phonological contrast: the case of stop consonants in French-English bilinguals», *Journal of the Acoustical Society of America,* 54, pp. 421-428.

DERWING, T. and M. MUNRO (1997): «Accent, intelligibility, and comprehensibility: Evidence from four L1s», *Studies in Second Language Acquisition*, 19, pp. 1-16.

FLEGE, J. E. (1988): «Factors affecting degree of perceived foreign accent in English sentences», *Journal of the Acoustical Society of America*, 84, pp. 70-79.

FLEGE, J. E. (1991): «Age of learning affects the authenticity of voice onset time (VOT) in stop consonants produced in a second language», *Journal of the Acoustical Society of America,* 89, pp. 395-411.

FLEGE, J. E. (1995): «Second-language speech learning: theory, findings and problems», in Strange, W. (ed.): *Speech Perception and Linguistic Experience: Theoretical and Methodological Issues,* Timonium, MD, York Press, pp. 229-273.

FLEGE, J. E. (in press): «Language contact in bilingualism: phonetic system interactions», in J. Cole and J. I. Hualde (eds): *Laboratory Phonology, 9,* Berlin, Mouton de Gruyter.

FLEGE, J. E. and W. EEFTING (1987): «Production and perception of English stops by native Spanish speakers», *Journal of Phonetics,* 15, pp. 67-83.

FLEGE, J. E. and K. FLETCHER (1992): «Talker and listener effects on degree of perceived foreign accent», *Journal of the Acoustical Society of America*, 91, pp. 370-389.

FLEGE, J. E. and J. HILLENBRAND (1984): «Limits on pronunciation accuracy in adult foreign language speech production», *Journal of the Acoustical Society of America,* 73, pp. 708-721.

FLEGE, J. E. and A. SCHMIDT (1995): «Native speakers of Spanish show rate-dependent processing of English stop consonants», *Phonetica,* 52, pp. 90-111.

FLEGE, J. E.; E. M. FRIEDA; A. C. WALLEY and L. A. RANDAZZA (1998): «Lexical factors and segmental accuracy in second language speech production», *Studies in Second Language Acquisition,* 20, pp. 155-187.

FLEGE, J. E.; M. MUNRO and I. MACKAY (1995): «Factors affecting degree of perceived foreign accent in a second language», *Journal of the Acoustical Society of America*, 97, pp. 3125-3134.

FLEGE, J. E.; A. SCHMIDT and G. WHARTON (1996): «Age of learning affects rate-dependent processing of stops in a second language», *Phonetica,* 53, pp. 143-161.

MAGEN, H. (1998): «The perception of foreign-accented speech», *Journal of Phonetics*, 26, pp. 381-400.

MAJOR, R. C. (2001): *Foreign Accent: The Ontogeny and Phylogeny of Second Language Phonology,* Mahwah, New Jersey, Lawrence Erlbaum.

MCALLISTER, R.; J. E. FLEGE and T. PISKE (2002): «The influence of L1 on the acquistion of Swedish quantity by native speakers of Spanish, English and Estonian», *Journal of Phonetics,* 30, pp. 229-258.

MUNRO, M. (1995): «Nonsegmental factors in foreign accent: Ratings of filtered speech», *Studies in Second Language Acquisition,* 17, pp. 17-34.

MUNRO, M. (1998): «The effects of noise on the intelligibility of foreign accented speech», *Studies in Second Language Acquisition*, 20, pp. 139-154.

MUNRO, M. and T. DERWING (1995a): «Foreign accent, comprehensibility, and intelligibility in the speech of second language learners», *Language Learning*, 45, pp. 73-97.

MUNRO, M. and T. DERWING (1995b): «Processing time, accent, and comprehensibility in the perception of native and foreign-accented speech», *Language and Speech,* 38, pp. 289-306.

MUNRO, M. and T. DERWING (1999): «Foreign accent, comprehensibility, and intelligibility in the speech of second language learners», *Language Learning*, 49, pp. 288-310.

PISONI, D. B. and S. E. LIVELY (1995): «Variability and invariance in speech perception: a new look at some old problems in percpetual learning», in Strange, W. (ed.): *Speech Perception and Linguistic Experience: Theoretical and Methodological Issues,* Timonium, MD, York Press, pp. 433-459.

SCHMIDT, A. (1996): «Cross language identification of consonants. part 1: Korean perception of English», *Journal of the Acoustical Society of America,* 99, pp. 3201-3211.

SCHMIDT, A. and J. E. FLEGE (1995): «Effects of speaking rate changes on native and non-native production», *Phonetica,* 52, pp. 41-54.

SCHMIDT, A. and J. E. FLEGE (1996): «Speaking rate effects on stops produced by Spanish and English monolinguals and Spanish/English bilinguals», *Phonetica,* 53, pp. 162-179.

STRANGE, W. (1995) (ed): *Speech Perception and Linguistic Experience: Theoretical and Methodological Issues,* Timonium, MD, York Press.

VOLAITIS, L. and J. MILLER (1992): «Phonetic prototypes: influence of place of articulation and speaking rate on the internal structure of voicing categories», *Journal of the Acoustical Society of America,* 92, pp. 723-735.

WELLS, J. C. (2000): *Longman Pronunciation Dictionary*, Harlow, Longman.

WILLIAMS, L. (1977): «The perception of stop consonant voicing by Spanish-English bilinguals», *Perception and Psychophysics,* 21, 4, pp. 289-297.

WILLIAMS, L. (1979): «The modification of speech perception and production in second language learning», *Perception and Psychophysics,* 26, pp. 95-104.

Joan C. Mora
Universitat de Barcelona
mora@ub.edu