# Learning Styles and Second Language Education

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INTRODUCTION

It is observable that learners attempting to master the intricacies of a foreign language differ in the rate of language acquisition as well as the ultimate level of proficiency. This phenomenon may seem to be strange, as humans develop their mother tongue skills at approximately the same time and along the same "natural route" (Ellis 1985). Research has proven that children acquire elements of their first language in similar stages, occurring at specified times during their early years of life, at least as far as the vernacular is concerned. Likewise, there appear to be certain regularities and universal principles in the progress an individual makes during foreign language acquisition. As Ellis (1985:63-64,278) put it, second language acquisition follows a natural *sequence* of development, understood as four general developmental stages: invariant word order, variant word order, morphological development and complex language structure. There is no variation in the sequence, as all learners are believed to use, for example, intonation questions before inverted questions, or external negation before internal negation. There may be, however, some minor variation within the *order* of development, which means that individuals differ as to the time when certain grammatical features appear in their interlanguage.

As there are universal similarities between the process of learning the first and the second language, the question arises as to the sources of the observed major variation in the speed and level of attainment of the latter. As Jonassen and Grabowski (1993:3) explain, several factors contribute to this phenomenon. First, there are differences in learning traits such as aptitude, willingness to learn and styles or preferences for learning, if the will to learn exists. Second, thinking processes differ depending on the learning content and task, as various learning outcomes require thinking in multiple ways. Finally, traits and thinking processes interact, leading to varied performance in individual students. Thus, individual differences play a significant role in the process of knowledge acquisition. Learning styles are invariably treated as unquestionably important features that have to be taken into account when studying individual differences.

The history of investigations into the topic of style can be traced back to the end of the 19th century, when it was noted that some people had a

predominantly verbal way of representing information in thought, whereas others were more inclined to represent the same information visually (cf. Riding 2000). Research into cognitive/learning styles has been continuous since then, although it gained true impetus in the 1940s, when it was spurred by interest in individual differences. It became fashionable during the 1960s, enjoyed popularity in the 1970s and re-gained respect from the teaching world in the late 1980s (Riding and Cheema 1991:194).

Innumerable learning style concepts have been offered for consideration and application. The element which has always been present in the research on styles is the description of the proposed concept or model with the rationale for its utility. A close scrutiny of the literature on the topic, however, reveals that apart from the major goal of learning style research, which has been the description and explanation of the differences learning styles make in education, the focus has been on two aspects. The first one has been the possible application of learning style models to the improvement of teaching and learning results. The second aspect has been the utilization of learning styles in the process of counselling young people in their professional choices and development.

This book provides the description of several learning styles whose significance for education, and especially for second language development, has been observed. In Chapter One, I define learning styles and compare and contrast them with learning strategies. In the subsequent chapters, I classify and group learning styles according to the number of their constituents. Thus, in Chapter Two only the simplest, dichotomous styles are described. Chapter Three focuses on two-dimensional learning style concepts, while Chapter Four presents more complex models of learning styles. Chapter Five is intended to show the practical applications of research on learning styles in an educational context by considering how language instruction may complement individual differences.

CHAPTER ONE

THE STATUS OF LEARNING STYLES
IN CONTEMPORARY RESEARCH

Styles manifest themselves in ways of acting or reacting. Initially, only cognitive styles were determined and subjected to empirical analysis. Currently, affective styles, styles of acting, styles of social interaction and many others are being investigated. Buss and Finn (1987) claim that in all kinds of behaviour it is possible to separate content and style. The content of behaviour reflects what a human being does, while the style reflects how he or she does it. The notion of learning styles as sources of individual differences in academic performance is introduced in this chapter.

1.1. Definitions of "style"

Learning styles are not equivalent to abilities, but they are related to them in the sense that they explicate how people prefer to use their abilities. Various theories of learning styles aim to account for individual differences in the speed and amount of absorbed knowledge that are not explained by abilities (Zhang and Sternberg 2000:469). Some researchers (e.g. Grigorenko and Sternberg 1995:205) prefer to see styles as interactions of intelligence and personality: "styles are not abilities, but rather how these abilities (and the knowledge acquired through them) are used in day-to-day interactions with the environment. Simply put, styles are not how much intelligence we have, but how we use it."

When discussing learning styles, the term "cognitive style" has to be introduced. The idea of cognitive style was proposed by Allport (1937) when he referred to it as a means of identifying distinctive personality types or types of behaviour. His view of styles was a consequence of Jung's (1923) theory of psychological types. Since its introduction, the term "style" has been modified, but its basic meaning – a habitual pattern or preferred way of doing something, consistent over long periods of time

and across tasks – has remained unchanged (Sternberg and Grigorenko 2001:2).

The cognitive style construct was developed by cognitive psychologists who conducted research into problem solving and sensory and perceptual abilities. It was a cover term to describe individual ways of perceiving, organizing and processing information. More recently, however, attention has been devoted to styles in education, and the term "learning style" has been introduced, both as a synonym and an alternative name for "cognitive style". The two terms (and more specifically, the differences and similarities between them) will be addressed below.

Cognitive styles have eluded unambiguous classifications because several researchers have proposed their own concepts and referred to them as such without acknowledging the existence of other types. Triantafillou, Pomportsis and Demetriadis (2003:89) claim that it is the preferred ways of thinking, perceiving and remembering that are the forms of activity constituting cognitive style. They add that it is one of personality dimensions, having influence on attitudes, values and social interaction. Also Harrison, Andrews and Saklofske (2003:44) see cognitive styles as representing psychological characteristics or traits of individuals, in contrast to learning styles, which focus on the interaction between learner characteristics, the nature of the task and the learning environment.

Some theorists (e.g. Entwistle 1981) treat cognitive and learning styles as interchangeable terms; others (e.g. Das 1988) consider them to be two different concepts. To Riding and Cheema (1991:194), the "main difference between them is the number of style elements considered: while cognitive style is a bipolar dimension, learning style entails many elements." Additionally, "learning style" is supposed to have emerged as a replacement for "cognitive style" in the 1970's; those applying the term "learning style" take cognitive style into consideration, but are more interested in practical applications of the research findings than in the theory underlying the distinction (Ibid.:194). Brown (1994:104-105) explains this phenomenon in the following way: "When cognitive styles are specifically related to an educational context, where affective and physiological factors are intermingled, they are usually more generally referred to as *learning styles*." As such, they "mediate between emotion and cognition" (Ibid.:105). One of the characteristic features distinguishing cognitive styles from learning styles is that the former operate as bipolar concepts, and the lack of a certain feature indicates the presence of its counterpart. Learning styles are more complex, and their elements are rarely described as opposites; instead, an individual may or may not possess any given element in his or her style. Moreover, in the

words of Keefe, learning style is seen as a broader construct, which includes cognitive along with affective and physiological styles (1987:6). This view is also shared by Willing (1988:47), who notes that

> The various notions of learning style put forward since the 1940's have all remained centred on 'mental' phenomena. Learning style, on the other hand, seeks to encompass the mental, the physical, and the affective realms, in order to account for individual differences in learning.

To Willing, the term "cognitive" refers to an invisible, attributed structure of mind, which may be tapped by asking the subject to perform tasks which bear little obvious relation to ordinary activities. "Learning style", on the other hand, is more visible and concrete, as well as observable during everyday activities. It is concerned with the "totality of psychological functioning as this affects learning" (Ibid.:50). This totality, apart from cognitive constructs, involves physiology, sensory channels, personality and affective differences.

1.2. The nature of style

Learning styles have been defined as "cognitive, affective and physiological traits that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment' and which 'reflect genetic coding, personality development, and environmental adaptation" (Keefe 1982:44). Ehrman and Oxford (1990:311) use the word "patterns" to refer to learning styles: they are "patterns of mental functioning and dealing with new information." They are "internally based characteristics, often not perceived or consciously used by learners, for the intake and comprehension of new information" (Reid 1998a:ix). They are retained despite the teaching methods and classroom atmospheres. New styles may also be acquired with time, while the old ones may be adapted to specific circumstances, especially when learners become aware of them. A degree of destiny intervention is also visible in the definition provided by Reinert (1976:161), who states that "an individual's learning style is the way in which that person is programmed to learn most effectively, i.e., to receive, understand, remember, and be able to use new information."

Sternberg (1994:174) believes that styles are not permanently determined at birth. In his opinion, they seem to be function of the environment, tasks and situations, and can be developed. They may also differ across situations and stages of life, but environmental reinforcement does play a role in their shaping:

Certain tasks are more optimally performed with certain styles. Rewarding students for using preferred styles on these tasks is likely to lead to greater display of the rewarded styles. More generally, a child's socialization into a value system will probably reward some styles more than others, leading to preferences for these styles. But the fact that some people retain less-rewarded styles despite environmental pressures suggests that socialization does not account fully for the origins of styles, and that there may be pre-programmed dispositions that are difficult to change (Sternberg 1994:174).

The question of learning style being biologically or environmentally determined has not yet been fully settled. Some research indicates that certain elements of learning style are outcomes of "genetic makeup," while others are influenced by life experiences. For instance, a person's preference for bright or dim light or the need for intake of food while studying is almost certainly biologically imposed. On the other hand, it can be speculated that a sociological preference for studying alone or in a group is affected by previous experience. To make the issue more complicated, research has shown that children can be more different from than similar to their parents in learning styles. Siblings also differ among themselves as far as learning styles are concerned (Dunn 1984:16-17).

As stated by Kinsella and Sherak (1998:87-88), learning styles are neither entirely innate nor unalterable, but they are reinforced by years of conventional classroom roles and norms. Thus, when asked in a questionnaire to voice their learning preferences, students will indicate those options they have been most often exposed to and with which they have experienced success, rather than those which they have not yet tried. This is because "culturally absorbed ways of acquiring and displaying knowledge are not readily 'unlearned'" (Kinsella and Sherak 1998:88). From the above definitions, it may be concluded that learning styles are extremely complex because they encompass the learner's overall approach to learning: they involve the typical and persistent ways of perceiving, absorbing, processing, responding to, and retaining new information and skills present in learning tasks. Their characteristic features can be described with three adjectives: natural, habitual and preferred (Kinsella 1995:171, Mariani 1996).

It is unfortunate that even though there exist so many referents of learning styles, no systematic attempts have been made by researchers to establish a hierarchy of learning style correlates from the most deeply rooted, inherent cognitive preferences to the most peripheral, superficial and whimsical reactions. Styles are usually grouped according to some commonalities among their components (e. g. into cognitive, affective,

physiological and psychological), but the distinguished types are treated as equally valuable. If they are put into any order, it is based on learners' perceptions and metacognitive assessment:

> A learning style…can run the range from a mild preference ("I'd rather learn by discovering patterns by myself.") through a strong need ("It interferes with my learning when I haven't mastered the grammar patterns first – I have trouble following the material that uses them.") to an out-and-out rigidity ("I have to see it before I can remember it; if I don't see it nothing sticks at all.") (Ehrman 1996:54)

This kind of approach to learning styles' classification has been criticised by Moran (1991:241), who states that there is no theoretical basis for equating a preference for eating a snack while learning with a person's emotional reasons for learning something.

Learning styles are hypothetical constructs helpful in explaining learning and teaching processes. In Keefe's opinion (1987:5), learning styles can only be recognized by observing an individual's overt behaviour, which is why they can be defined as consistent ways of functioning that reflect the underlying causes of learning behaviour. It seems, however, that apart from observation, self-reports may be used for the purpose of identifying predominant styles in learners. Many students are aware of their preferences for learning behaviours, which they tend to use if left to their own devices. The learning strategies the students find the most comfortable and easy to apply, typically reflect their learning styles (Oxford, Ehrman and Lavine 1991:2). Expanding on Lawrence (1984), Oxford (1990:439) sees learning style as encompassing four aspects: (1) cognitive style, as defined above; (2) typical attitudes and interests that influence the learner's choice as what to pay attention to in a learning situation; (3) an inclination towards seeking situations compatible with an individual's ways of learning; and (4) consistencies in choosing some learning strategies, as well as avoiding others.

Ellis (1985:100), in an attempt to systematize the host of terms and concepts present in the literature on individual differences, makes the distinction between *personal* and *general* factors. According to Ellis, *personal* factors are "highly idiosyncratic features of each individual's approach to learning a L2." Every learner to some extent also possesses *general* (modifiable and unmodifiable) factors. Both categories involve social, cognitive and affective aspects to some degree. Personality (one of general factors), for instance, is more affective in its nature than social or cognitive. Personal and general factors, being composed of complex social, cognitive and affective features, constitute each individual's

learning style. In a later publication, Ellis (2001:530) proposes a model of
L2 acquisition in which the relationship between learning styles (perceived
as one element of individual learner differences), situational factors,
learning strategies and learning outcomes is demonstrated (Figure 1-1):
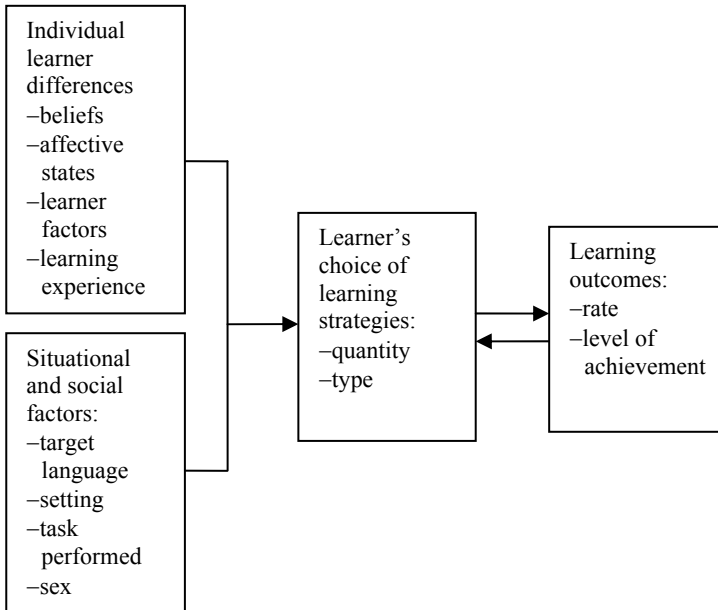
Figure 1-1. The relationship between individual learner differences, situational
factors, learning strategies, and learning outcomes (Ellis 2001:530).

    According to the proposed model, individual learner differences, which
include learning styles, together with such situational and social factors as
the target language being learnt or the formality of the setting, determine
the learner's choice of strategies. Learning strategies, in turn, affect the
rate of acquisition and the level of achievement. Reciprocally, the success
in language acquisition influences prospective choice of strategies leading
to ultimate achievement. In the model, learning strategies occupy a
mediating position between individual differences and learning outcomes.
It seems, however, that the three variables are intermingled in a more
complex way. Learner differences (for instance anxiety and motivation)
may have direct influence on language proficiency, achievement or rate of

progress, but they may also be affected by the experienced success or failure[1]. Similarly, the relation between individual differences and learning strategies may be of a mutual nature, successful application of a certain strategy can lead to enhanced motivation or reduced anxiety (Ellis 2001:474). The three sets of interrelating variables are demonstrated in Figure 1-2.

(1)
Individual learner differences
−beliefs about language learning
−affective states
−general factors
−general factors

Learning processes
and mechanisms

(2)
Learner
strategies

(3)
Language
learning
outcomes
−on proficiency
−on achievement
−on rate of
  acquisition
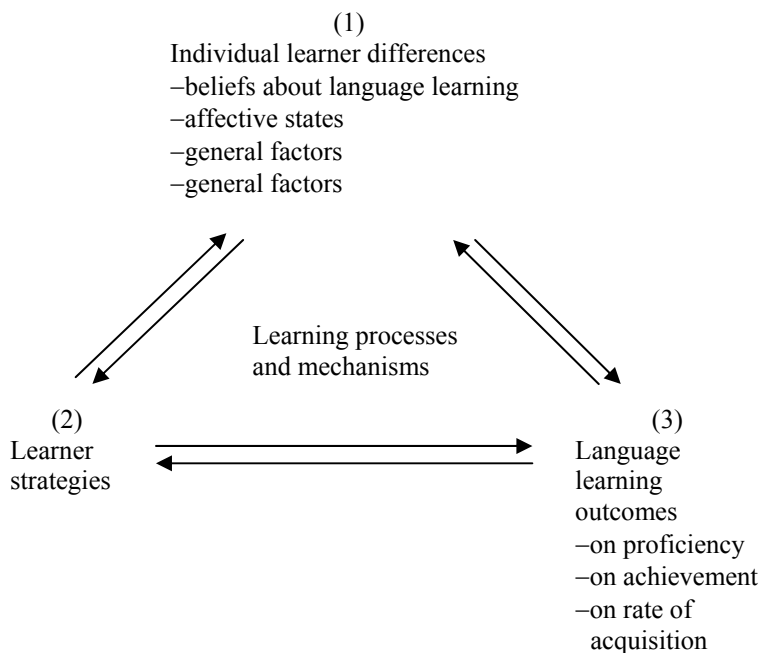
Figure 1-2. The relationship between individual learner differences, learner strategies and language learning outcomes (a framework for investigating individual learner differences, Ellis 2001:473).

Larsen-Freeman (2001) refers to individual differences using the notion of *learner contributions*, and among them distinguishes three categories. The first category is defined as *attributes*, and consists of descriptions of learners in terms of who they are. This category contains such variables as age, aptitude, personality, learning disabilities and social

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[1] Cf. Kamińska (2012:131-139) for the discussion of success and failure attribution and the concept of locus of control.

identities. Larsen-Freeman named the second category *conceptualization* since it refers to how learners perceive and conceptualize second language acquisition. It includes such learner factors as motivation, attitude, cognitive style and beliefs. The third category is called *actions*, because it denotes what learners actually do to learn the language. Larsen-Freeman locates learning strategies within this group of contributions.

A considerable body of literature has been devoted to learning styles. However, possibly because of the plethora of terms, models, applications and focal points, the available sources on the topic do not allow for simple comparisons among research outcomes. Riding (2000:316) summarises the problems plaguing the field in the following way:

> Workers in this area have been remiss in that they have: generated a large and bewildering array of labels purporting to being different styles, used ineffective and questionable assessment methods, not made a clear distinction between style and other constructs (…), and have been slow to demonstrate the practical utility of style.

Some of the problems mentioned above may be geographically determined. As Hickcox (1995:27) remarks, "there is a distinct difference between North American learning style research and Australian and European learning style research." In the North American research tradition, learning style concepts have been developed from backgrounds in psychology and cognitive psychology, emphasising psychometric considerations from the outset, whereas European and Australian researchers have usually adopted an approach that assumes detailed observations of learning behaviours of small numbers of learners as a basis for constructing theoretical models. The difficulties in learning style conceptualizations stemming from the two different approaches to research have been numerous, one of the major ones being "the confusion of definitions surrounding learning style concepts and the resulting wide variation in scale or scope of behaviour claimed to be predicted by various models" (Ibid.:28). For instance, some conceptualizations aim at predicting a student's choice between individual or group study, while others claim to be identifying pervasive and habitual response irrespective of the learning context, such as reflectivity/impulsivity.

The above admonitions may have been well conceived, but at the same time some of them may not present real problems. For example, it is a disputable question whether the diverse array of definitions relating to learning styles has actually added to the body of knowledge on styles or simply blurred the picture. As Doolan (2004:29) argues, pioneering learning-style researchers developed their own constructs and instruments,

which differed in foci, approaches and populations being investigated. Thus, it was virtually impossible for the proposed models not to differ. Nevertheless, these differences do not diminish their value.

1.3. The relationship between styles and strategies

Apart from the blurred distinction between cognitive and learning styles, there are other conceptual problems stemming from difficulties related to defining style as a theoretical construct. One of these problems is the differentiation between styles and strategies. As many researchers use the terms interchangeably, Sternberg and Grigorenko (2001:3) suggest making a distinction at a very basic level – by looking at the degree of consciousness involved in them. They believe styles operate within individuals without them being aware of the process, while strategies are characterised by a conscious activity, which is a choice of alternatives. As they put it, "strategy is used for task- or context-dependent situations, whereas style implies a higher degree of stability falling midway between ability and strategy". To Entwistle (1988:93), a learning style is the general tendency to adopt a particular strategy. Oxford claims that strategies are conscious steps or behaviours employed to enhance the acquisition, storage, retention, recall and use of new information, thus they are much more specific than styles (1990:439). Strategies can be changed and taught, while styles, although considered to be malleable by some, cannot be described as teachable. Ehrman is of the opinion that styles are realized by specific learning strategies (1996:49). Most students can discover their learning styles by reflecting upon their strategies. In the same vein, teachers can make hypotheses about their students' styles by observing the strategies they employ.

Carver (1984) has proposed a taxonomy of language learning methodology where the highest category is *learning style*. In his words, learning style "is concerned with the learner's preferences for ways of organising his learning, and with the interaction between his personality and his situation as a learner" (Ibid.:124). Learning styles produce *work habits*, such as leaving work until the last moment, working through the night or consulting colleagues. Equally important, albeit frequently omitted by learners, are *plans*. Learner plans are believed to be strategy-generative and autonomy promoting. They contain such elements as a statement of objectives and time scale, materials to be used, techniques to be employed and techniques for monitoring and evaluating progress (Ibid.:128). Learning strategies constitute a lower level category, and are described as overt, covert, conscious or unconscious behaviours. When

learning strategies are the outcome of learning styles and work habits mediated by conscious plans, they are potentially more effective and satisfying for the learner. However, if they arise directly from learning styles and work habits, with the stage of planning omitted, they tend to be "adventitious and unplanned," thus possibly less efficient than they could be (Ibid.:125).

Mariani (1996) embeds learning styles within a hierarchic framework containing learning strategies, too. His model, however, includes what he calls "the very general basic individual character structure," that is, personality. Learning styles are subordinate to personality, as they reflect a person's ego. A learning style, understood as a consistent and preferred learning approach exhibited in various (not only school) contexts, affects the choice of learning strategies a person makes. Learning strategies, in turn, consist of a number of techniques or tactics, which are the only observable phenomena within the framework.

The framework proposed by Mariani indicates personality as the most general and the least (if at all) modifiable personal quality. Moving down the taxonomy, the features become less stable and more specific. Learning strategies are more susceptible to change than styles, and tactics are not as fixed as strategies. Quoting Mariani's example, a specific technique of recognizing affixes is relatively easy to introduce. It is, though, contained within a more general strategy set, as the application of this technique in the classroom may require inference and deduction, as well as brainstorming previous knowledge of a topic and using context. Thus, tactics are the most specific and modifiable components of the model.

There seems to be a general agreement that both styles and strategies exist, can be identified, labelled and researched. In this light, it is interesting to note a contrastive view by Riley (1990), who undermines the rationale for classifying learning styles as opposites in the following words:

> Such models aim to categorise learners on the basis of permanent psychological traits: but the learning strategies used by learners vary both in time and according to a complex set of factors including, of course, the task in question, but also motivation, fatigue etc. In other words, we need descriptive tools for **categorising learning activities, not learners** (Riley 1990:54).

In the study by Carson and Longhini (2002), the analysis of a learner's diary indicated that the subject was aware of both her learning styles and learning strategy preferences, but she was more conscious of the latter and probably for this reason managed to manipulate them. Furthermore, the

subjects' strategies were affected by her learning styles. Even though she realised that she needed to spend more time memorizing difficult language forms, she did not take to utilising this strategy, as her intuitive orientation inclined her towards "picking up" the language. The learner found communication with people she did not know well difficult. Such communication also made her anxious even though she knew she might benefit from such encounters. One reason for these feelings might have been her introverted personality. Additionally, being diagnosed as an analytic person may have explained why she strongly preferred metacognitive strategies. Among the conclusions the authors draw on the basis of the diary analysis is that because of the overriding influence of learning styles on the utilised strategies, the latter may not be as susceptible to modification as they were thought to be for several years (Carson and Longhini 2002:434).

Dörnyei (2005:123) summarises the problems in defining and separating styles from strategies concisely:

> [Learning styles are] elusive, "halfway" products: They refer to preferences, but these can be of varying degree; they are related to learning strategies but are somewhat different from them as they fall midway between innate abilities and strategies; they appear to be situation-independent but they are not entirely free of situational influences; and some style dimensions are also listed as major components of personality.

Irrespective of what definitions of style and strategy are adopted, the relationship between them seems to be of the chicken-and-egg kind. It is not clear whether strategies stem from styles, or conversely, whether styles are labels given to specific types of strategic behaviours. In either case, however, styles and strategies appear to be inextricably intertwined.

1.4. The rationale for researching learning styles

There are three major issues, which, over the years, have constituted the basis for research on learning styles still remain valid. The first one is the classification of learning styles as constructs influencing interindividual language development; the second is the question of their measurement; the third is the recommended approaches that teachers might adopt to learning styles of their students. Each of these issues, however, has both given rise to and suffered from theoretical and methodological difficulties.

The first assumption, that of individual differences in learning a second language, although reasonable and of enormous interest to researchers since 1960s, has generated a substantial amount of conceptual confusion.

There is no agreement as to what individual variables should be taken into account while discussing their influence on learning outcomes. Stern (1996:360) states that the most often-investigated issues include: the optimal age for starting the language learning process; language learning aptitude; motivation and attitude towards the target language and culture; qualities of personality which may help or hinder progress in language development; and learning or cognitive styles. As far as styles are concerned, the suggested individual differences vary from environmental likes, such as the preferred temperature while studying, to complex psychological descriptors drawing from the science of psychology, such as type of temperament. This book constitutes an attempt at presenting various concepts and classifications in a systematic way, and in this manner supports the assumption that learners differ consistently from one another in their preferences for certain modes of processing information.

Coupled with the excess of terms and learning style classifications is the multiplication of learning style tests. Their authors often claim that their creation was based on their own experience, pilot research and several validation studies, but many tests have simply been based on common sense and observation of students. The fact that numerous tests have undergone improvement and modifications is further proof that they are rarely adequate indices of style from the moment of their inception. Various tests and questionnaires will be presented and discussed as an accompaniment to the concepts presented in the subsequent chapters. These sources support the second major assumption of learning styles research, that individual differences are measurable.

The third assumption is that a match or mismatch between teaching and learning styles has serious pedagogical consequences. As Stern (1996:360) notes, practitioners and administrators would be content to organize teaching in accordance with the suggestions from research on individual differences, and "make allowance for learner aptitude or personality factors in the planning of language classes or in teaching methodology." Unfortunately, few definite guidelines on how to approach learning style differences have been provided so far. Two conflicting views are apparent: some researchers believe that a match results in knowledge gains, while others favour a mismatch. The existing data do not allow for formulating a final conclusion on which standpoint is correct. Furthermore, the conflict has spread and nowadays there are multiple directives available on either matching instructional techniques to the learners' styles, or stretching learners' styles to help them benefit from the contemporary methodology. Apart from these two opposite pieces of advice, some less-widely acknowledged ways of dealing with a variety of

styles also exist. These differing recommendations will be discussed at length in Chapter 5.

A number of learning style definitions and models exist. The definitions involve perception, cognition, conceptualization, affect and behaviour. Curry (1983, in Riding and Cheema 1991:195) proposes that all these measures should be grouped into three categories, or "strata resembling layers of an onion", in which the layers of the onion represent "layers" of learning style. Thus, the cognitive personality style forms the core. This is an individual's relatively stable personality dimension expressed indirectly in their approach to input. Cognitive personality style is visible only when the person's behaviour is observed across many learning tasks. Information-processing style forms the second layer. It is the person's intellectual approach to assimilating information, modifiable by learning strategies. Instructional preference forms the third and outermost layer. It refers to the individual's choice of environment in which to learn. At this level of preference, the learner is exposed to external factors. This is the least stable as well as the most easily influenced level of measurement in the learning styles area.

Claxton and Murrell (1987, in Eliason 1995:19), in their definition of learning style, use an extended version of Curry's onion metaphor. They add social interaction characteristics as a third layer between information processing and instructional preferences. As in Curry's model, the core represents the most persistent characteristics, while the successive layers are more amenable to change, the fourth one being the most flexible. The traits described at the different levels are not discrete, and they tend to influence those located on the subsequent levels (Hashway 1998:48). However, the question of how many components a person's learning style profile should consist of remains unanswered. The proposed models may include only one aspect of personality, such as extroversion/introversion (Myers and Briggs 1987), or take into consideration tens of variables; Keefe's (1979a) list consists of 32 components.

It is not certain whether research on learning styles should be conducted in such a fragmented way if there may be as many as 32 possible elements that constitute a person's learning style. The established test instruments have not cleared up the confusion over what characteristics are most important in determining an individual's learning style. Usually, they focus only on a limited number of aspects of those that may influence a student's distinct approach to absorbing, processing and retaining new information. In some cases, only one aspect is considered. Moreover, the classifications and instruments exploited in the research on learning styles are often not derived from a theory-based rationale and,

consequently, may stem only from their authors' experiences. According to Hashway (1998:48-9), it is possible that the tools for measuring styles need to be changed depending on the "layer" one wants to investigate. The farther removed the traits are from the core, the more difficult it is to choose or design reliable instruments. Ehrman (1996:57) has proposed a distinct new way of thinking about learning styles, which allows users to arrange various style elements in an orderly way. She suggests that learning style models be viewed as "simple" or "compound", depending on how many dimensions they include. For example, dichotomous scales of field dependence/independence or reflectivity/impulsivity could be treated as simple ones with two opposite poles. On the other hand, Ehrman describes models consisting of two intersecting continua (dimensions) each as compound. Taking Ehrman's idea further and, at the same time, exploiting the terminology borrowed from linguistics, some models of learning styles, such as the ones by Dunn, Dunn and Price (1975) or Felder and Silverman (1988) can be referred to as "complex", as they contain more than two dimensions, and their elements may or may not be bipolar. Keefe (1982) has used the term "comprehensive instruments" for learning style models and instruments that assess more than one style domain (e.g. cognitive together with affective) and several of the dimensions. Ehrman's approach to learning style classification has been adopted in this book as the most straightforward, systematic and justified approach.

CHAPTER TWO

SIMPLE LEARNING STYLE MODELS

This chapter provides an overview of theory and research applicable to dichotomous learning style models. These models can be perceived as continua, with every individual being more inclined towards one or the other end of the scale. In common with the subsequent chapters, the discussion of implications for learning in general (and second language development where possible) follows the description of each model[1].

2.1. Convergent / divergent thinking

The concept of convergent-divergent thinking was proposed by Guilford (1967) when he introduced his model of the intellect. The convergent thinker is described as able to deal with problems requiring only one answer or solution to be provided, provided that the answer or solution is evident from the available information. This kind of person excels at multiple-choice questions, where one correct answer is hidden among several choices. Other types of tests that indicate "convergent thinking" ability are the ones based on figural, verbal and/or numeral input (e.g. as in traditional intelligence tests).

The divergent thinker, on the other hand, is skilful at solving problems demanding several equally acceptable responses, with no single correct solution. The ability to generate multiple original and varied answers on open-ended tests certifies high divergence. This ability is problematic as far as its measurement is concerned as, contrary to convergent thought, there is no simple and straightforward answer to be evaluated, but a variety of possibilities (Biggs and Telfer 1981:399). Consequently, the thinking process, rather than product, has to be assessed. Guilford's *Uses*

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[1] Sections 2.6, 2.7 and 2.8 have been substantially reprinted from Kamińska's *Aspects of Personality in the Development of a Second Language* (2012) with the consent of the original publisher, Wydawnictwo Naukowe Uniwersytetu Szczecińskiego.

of Objects Test is one of the instruments applied for this purpose. The test taker is to invent as many possible uses for common objects (e. g. a paper clip or a brick) as possible. The number of responses (the fluency score) and the number of the provided categories of uses (spontaneous flexibility) are calculated to produce a score on divergent thinking. Another method of assessment of the same test is calculating the originality of the responses, i.e. giving more points for those suggested uses that nobody else, or few other people, provided. It is interesting to find that highly divergent people give more humorous and witty responses, but their suggestions may also express aggressiveness (such as when a brick is used as a weapon). However, not all tests of divergent ability are verbal. One of the instruments designed by Guilford consisted of 20 identical incomplete drawings, which are to be completed in different ways, and still represent identifiable objects. The more objects are produced, the higher the score of divergent ability is (Biggs and Telfer 1981:399-402).

On the basis of the responses' analysis divergent subjects can be described as the ones demonstrating fluency (the ability to produce many responses), flexibility (the ability to change categories, but maintain relevance) and originality (inventing novel responses rather than settling for existing ones). But divergence requires a balance between all these components: limits need to be imposed on flexibility. To quote Biggs and Telfer (1981:403), "this would appear to require a generic, easy-access, code system, which would also appear to be a prerequisite to high-level *convergent* functioning". Thus, divergence and convergence are not opposite ends of the same dimension, but two separate dimensions. According to the *threshold theory*, a person can only become properly divergent after he or she is sufficiently convergent. In other words, convergence is essential for divergence, and a person with a high degree of divergence is also highly convergent (ibid.).

As Riding and Cheema (1991:200) suggest, the two above thinking styles have far-reaching educational implications. Logical, highly-structured presentations encouraging convergent thinking are omnipresent in subject areas such as mathematics and science, while certain teaching strategies promoting divergent thinking, such as asking students to prepare projects based on their study of the area, are commonplace in the arts and humanities. Convergers opt for those tasks that are structured, formal and can be solved by applying logic, while divergers prefer open-ended problems. On the affective side, convergers are more inhibited and like to have different aspects of their lives structured, while divergers are more open emotionally and dislike order. By oversimplification, it can be stated

that convergent thinkers are perfectionists, while divergent thinkers can be described as ingenious.

2.2. Levelling / sharpening

Although the researcher who coined the terms *levelling* and *sharpening* was Wulf (1938), it was Holzman and Klein (1951, 1954) who sought to define the levelling-sharpening dimension. According to Vick and Jackson (1970:262), "poles of this dimension were defined in terms of two opposite hypothetical modes of perceptual and memory organization, having relevance to consistent individual differences in cognition and personality." The distinction between these terms is based on how the visual task is perceived: some people oversimplify their perceptions (levelling), while others perceive the task in a complex and differentiated fashion, demonstrating little assimilation (sharpening). The dimension is measured by the test in which, following a period of dark adaptation, subjects are required to judge the sizes of squares of light of increasing size. There is a general tendency to underestimate the sizes of squares as new ones of increased size are added (Goldstein and Blackman 1978:8). Those who make greater underestimates are labelled levellers, while those who make smaller underestimates are called sharpeners. The difference in the perceptual process between the two is that levellers make the judgment based on the relationship of the stimulus to its neighbours in a series, as they are susceptible to "halo effect", while sharpeners make each judgement afresh (Biggs and Telfer 1981:384). By way of extension, levellers tend to use many memories from the past in an attempt to clarify and categorize newly acquired information, whilst sharpeners treat the new events more discretely from those already stored. The levelling style manifests itself as a tendency to condense and simplify information, and the sharpening style as a tendency to caricaturise inconsistencies in information (Riding and Cheema 1991:202).

Morgan (1997) speculates that sharpeners are likely to do better academically as they have more accurate identifications of new knowledge. Additionally, sharpeners can relate recently acquired material to old material with more specificity thanks to their ability to selectively classify and store pieces of memories as well as to carefully differentiate associations between past experiences. By contrast, levellers inaccurately blend features of memories together and then either oversimplify or wrongly categorise the new material. They are more prone to missing distinguishing features among similar, yet not identical, objects, which leads to the formation of ambiguities in the acquired knowledge.

2.3. Transfer / interference

One of the major tasks a second language learner must face is to resist the overwhelming influence of mother tongue habits, as they may turn out to be inappropriate for the developing foreign language system. The native language is believed to be a highly overlearnt set and a stronger habit than the language being learnt. Thus, the successful learner needs to bring the weaker habit to the foreground and suppress the stronger one. He or she has to make adequate use of the mother tongue, drawing on the knowledge of its aspects when appropriate, but to resist its influence and interference when necessary. The inability to inhibit irrelevant or contradictory stimuli coming from the mother tongue is referred to as interference proneness (IP). This concept, referred to as the constricted-flexible control dimension in cognitive psychology, may be illustrated and measured by the *Speed of Color Discrimination Tes*t (Messick and Fritsky 1963), which is one version of the *Stroop Colour-Word Interference Test*. Naiman et al. (1978:67-68) describe the proceedings of this test as follows:

> (...) the subject is first faced with a number of pages with samples of patches in four different colors – red, blue, green, and orange. (...) the subject must print under each sample the first letter of the color's name. In the second part of the test the items consist of the names of the four colors printed in different colored inks. For example, the name "orange" is printed in either blue, red, green or orange ink. This second part is the conflict situation.

When there is an incongruity between what colour the term designates and the colour it has been printed in, it is much more difficult to name the colour than in those cases when the ink is demonstrated as a colour patch. As Wolitzky (1970:350) explains, high-interference-prone persons find it hard "to avoid or deny an insistent but dissonant cognition in their efforts to maintain cognitive consistency; those less subject to interference (flexible subjects) should be more facile in this respect". With reference to the *Speed of Color Discrimination Test* it is assumed that a low IP subject, when shown a card with the word "green" printed in red, will be able to disambiguate the contradictory stimuli more quickly than a high IP subject, who will be puzzled and confused by the intrusive ambiguities.

Another test which Stern (1996:373) considers to be a measure of interference proneness is the *Spelling Clue* subtest of the *Modern Language Aptitude Test* (*MLAT*, Carroll and Sapon 1959). In its typical task, the meaning of words is to be inferred despite disturbing spellings; for instance:

kataklzm = (1) mountain lion
                (2) disaster
                (3) sheep
                (4) chemical reagent
                (5) population (Stern 1996:374).

Interference proneness (and its opposite, transfer) has not been extensively researched in the context of second language learning due to the fact that it has not been derived from any theoretical assumption of what cognitive processes are involved in this kind of learning. Moreover, the distinction between interference and transfer is often perceived to be a cognitive ability rather than a cognitive way of processing information. Nevertheless, the inclusion of the construct in the present work has been motivated by the fact that it seems to reflect what happens in a real classroom in terms of mother tongue interference and students' approaches to it. Additionally, inference proneness was once hypothesised to influence the success in language learning (cf. Naiman et al. 1978).

2.4. Broad / narrow categorization

The fourth distinction in cognitive style to be discussed is based on categorizing behaviour. Initially known as "equivalence range", and later labelled "conceptual differentiation", the way in which people sort objects into classes or groups constitutes a dimension of individual difference in cognitive structures. As early as 1953, Gardner stated that "persons are characterized by consistent differences in what they will accept as similar or identical" (Ibid.:229). It was observed that when given an array of objects or concepts and asked to sort them into categories based on their own judgement, people used different criteria and provided varying numbers of categories. The numbers of groups created were as high as thirty, and as low as four. Consequently, Pettigrew (1958) made the distinction between persons high in conceptual differentiation (hence referred to as "of narrow equivalence range" or "narrow categorizers") and low in this dimensional principle of cognitive control ("broad categorizers").

Conceptual differentiation can be measured with free-sorting tasks, in which "the subject imposes his own organization upon the stimulus array" (Warr 1970:53), and may use an unspecified number of dimensions. Other measures are intended to indicate how the subject uses a single dimension provided by the investigator. The latter type of category usage measurement has been labelled "band width" or "category width" (Ibid.:54). The width of categories that people assign to events may be narrow, medium or broad, depending on individual perception. Their

consistency in classifying items can be measured with *Pettigrew's Category-Width Scale Estimation Questionnaire* (Pettigrew 1958, 1970). In this questionnaire, which consists of twenty multiple-choice items, the subject is presented with category average values and has to decide upon the limits for them. He or she is required to indicate their choice of one of the four upper and one of the four lower extremes. The values zero, one, two and three are assigned to the four degrees of discrepancy from the mean, and the total score is the sum of the forty values. A sample item with the assigned values (from Pettigrew 1970:133) follows:

> 13. When all of the world's written languages are considered, linguists tell us that the average number of verbs per language must be somewhere around *15,000*. What do you think
>
> (a) is the largest number of verbs in any single language ...
> | | | | | | |
> |---|--------|-----|---|--------|-----|
> | 1. | 21,000 | (1) | 3. | 50,000 | (3) |
> | 2. | 18,000 | (0) | 4. | 30,000 | (2) |
>
> (b) is the smallest number of verbs in any single language ...
> | | | | | | |
> |---|--------|-----|---|--------|-----|
> | 1. | 1000 | (3) | 3. | 5,000 | (2) |
> | 2. | 13,000 | (0) | 4. | 10,000 | (1) |

There are no right or wrong answers, but by setting boundaries the subject accepts all eventualities within them. People are believed to respond to the questionnaire in a fairly consistent manner, and either accept a wide range of events as belonging to a given category, or restrict their range in the real world. Broad categorizers, who approve of a wide category of events, are likely to perceive the world in an all-encompassing fashion. They are not afraid to risk the inclusion of instances that do not really belong to the category, as their priority is the inclusion of all relevant instances. Narrow categorizers, on the other hand, perceive the world in a more constricted manner, and opt for the exclusion of valid items rather than the inclusion of the invalid ones (Pettigrew 1970:127, Naiman et al. 1978:68-69). Moreover, it has been speculated that narrow categorizing is related to the sharpening and low risk-taking dimensions, while broad categorizing may be associated to levelling and high risk-taking (Pettigrew 1970).

In language learning, broad categorizers are those people who have a tendency to overgeneralize a rule, for example, they assume the use of the *-ed* ending with all Past Simple verb forms. They may create generalizations under which they subsume examples that do not fit or are only partially related. Narrow categorizers, conversely, are those who apply a rule only to the context in which they first encountered a linguistic item, or make distinctions to the extent that "every example has its own

rule" (Naiman et al. 1978:69). As Stern (1996:374) put it, neither extreme is helpful in language development, as learners need both to take risks and apply a rule in a new context, and to seek the limits or exceptions to the rule. He further noted that "if we view language learning as one of hypothesis making, hypothesis testing, feedback, and revision, the language learner is constantly involved in the kind of rule-making and rule-changing behaviour that demands judgement about the application of categories". Quoting Naiman et al. (1978:69), the most successful language learner is a "middle-of-the-roader", being able to categorize broadly or narrowly according to the specific circumstances. This sort of learner is "reasonably precise but risks broadening his rules in order to simplify learning" (Ibid.). This claim, however, has not been supported by any statistical data, as no relationship was found between category width and success in French as a second language, as measured by a listening comprehension and an imitation test in Naiman et al.'s study.

2.5. Field dependence / independence

The concept of field independence/dependence is one of the earliest and best known theories about cognitive styles, and is assumed to be one of the variables playing an important role in learning. Its introduction is attributed to Witkin et al. (1954). In broad terms, it can be defined as a cognitive style influencing people's perception and processing of information, as well as their interaction with their environment (Chapelle and Green 1992:48), and it depends on to what extent they perceive themselves as part of the surrounding field. Most people fall somewhere between the two extremes: test results forming a continuous distribution indicate that there are individual tendencies of varying strength degrees towards one mode of perception or the other (Witkin et al. 1977:5-7).

The *Group Embedded Figures Test* (Witkin et al. 1971) is one of the most commonly used instruments. It consists of a booklet containing 18 illustrations of "complex figures" within which "simple figures" are embedded. First, the subject is shown the simple figure, which is then removed. Next, the subject is shown the complex figure and asked to locate the simple figure within it. The ability to discriminate the simple figure from the surrounding visual framework within the allotted time indicates the degree of field-independence. The person taking the test receives one point for each correctly identified figure, so the closer the result is to the maximum (18 points), the more field-independent the person is (Chapelle and Roberts 1986:33).

Field independent people are those who approach problem solving analytically, perceiving patterns and not getting lost among omnipresent stimuli. The reliance on internal, as opposed to external, referents was the original definition of the field independence/dependence continuum. Since the 1981 publication by Witkin and Goodenough, though, it has been one of the three major constructs involved in defining the components of field independence/dependence. The second component is cognitive restructuring skills, and the third interpersonal competences (Witkin and Goodenough 1981:49). Thus, field independent subjects are likely to be better at those tasks which require taking an element out of its original context and fitting it into a new, restructured context, as in the task which forced the subjects to take the pliers out of their standard context and use them as a stand support (Witkin et al. 1977:8). They can be characterised by taking a participatory approach, making use of hypothesis testing, analyzing and structuring (Carter 1988:21). They also opt for autonomous, self-reliant modes of processing (Chapelle and Green 1992:50), and have the tendency to be self-confident and competitive (Brown 1994:106). The ability to work independently of the external field manifests itself in certain intellectual tasks, such as imposing structure on a disorganised field, providing structure different from the imposed one. They may also be perceived as cool, aloof, individualistic, task-oriented, as well as in need of psychological distance from others (Hansen and Stansfield 1982:264). Because they have a tendency to experience their inner self as a separate identity with a great deal of internal differentiation and complexity, their self-esteem does not depend on the opinions of others (Willing 1988:49).

In contrast, field dependent individuals may encounter difficulties when trying to select relevant cues from context, particularly when the cues relevant in one context are useless in another (Carter 1988:21). They also display more passive, approving, spectator-like strategies to acquire information: they rely on the imposed organisation of material and do not opt for restructuring it (Hansen and Stansfield 1982:264). It does not mean, however, that field dependence is a negative quality. It means approaching problems in a more global, holistic way, perceiving the full picture in a given situation. Field dependent people are likely to be more attentive to prevailing social frames of reference: they look more at other people's faces to discover their feelings or thoughts and are interested in what others say or do. In Brown's (1994:106) words, they can be qualified as perceptive of the feelings and thoughts of others, and customarily counting on others for information and approval (Chapelle and Green 1992:50). They also treat facial cues in the faces of people surrounding