INTRODUCTION

Verbal communication is the highest level of communication in which the speaker encodes a message according to a given symbolic program that pairs sound to meaning i.e. language *(Kotby, 1980).* Language permeates our thoughts, mediates our relations with others and even creeps into our dreams. Most of human knowledge and culture is stored and transmitted in language. Without it, however, society as we now know it would be impossible.

Language, cognition and communication are interrelated and interwoven. Any attempt to deal with language without taking cognition into account is superficial, while any attempt to deal with language without considering its communicative intent is weak and liable to distortion *(Bowerman, 1973).*

Memory capacity is not fixed but dynamic. The more you know, the more you remember. According to *Baddeley (2003),* the most important thing about memory is not storage of past experience but rather retrieval of relevant information. If information is not retrievable, the function of memory is not served.

There is an increasing appreciation of the role of the lexicon in language development and the acquisition of literacy abilities. Difficulties in accessing the lexicon are likely to compromise children's communication and their ability to acquire academic skills. Such problems

raise challenges for clinical assessment and for intervention *(Best, 2005).*

Most, if not all, developmental language disorders are characterized by delayed vocabulary acquisition. Therefore, to identify the causal mechanisms in developmental naming disorders, it is necessary to assess the related components of the language system for specific types of lexical difficulties *(German, 2000a).*

In simple terms the expressions "word-retrieval problem" or "word-finding difficulty" imply that the person knows and understands the word, and has used it correctly before. However, they have difficulty retrieving such known words at times. Children and adults with language disorders are frequently found to have word-retrieval difficulties.

Word-retrieval difficulties sometimes occur in isolation, but they are often accompanied by problems in other areas of language function, all of which can be addressed once they are properly identified *(German, 2000a).*

Leonard et al. (1983) discussed two possible underlying causes for word-finding problems in children. The first, the "storage" hypothesis, proposed that the child has not learned the names for lexical items adequately (poor storage of lexical items in long term memory), and this is therefore less accurate and slower at naming. The second hypothesis focuses on "retrieval"; the claim here is the stored lexical

representations are comparable to those of children with normal language development but that the information or names are less accessible.

Word–finding difficulties have been identified among children with learning disabilities, children with reading difficulties (dyslexia) *(McBride-Chang and Franklin, 1996)* and children with specific language impairments (SLI) *(Lahey and Edwards, 1999).*

A word-finding problem can affect a child's reading performance because he can not recall the word fast enough to reach an appropriate reading speed and smoothness to insure reading comprehension and has an impact on a child's narrative ability either in written form or orally *(Naremore, 2001).*

Children with word-finding difficulties also produce unique responses that usually indicate some knowledge of the target word's meaning or form (sounds). They, thus provide insights as to potential disruption points in the lexical process that may underlie child's word-finding errors. They may also produce secondary characteristics which often indicate a learner's knowledge of a target word's meaning and/or a target word's form. Typically, two types are observed: gestures and extra verbalizations *(McGregor, 1997).*

Word-finding problems among adults with neurological

disorders have been widely documented. The complaint of 'word-finding difficulty' covers a wide range of clinical phenomena and may signify any of a number of distinct pathophysiological processes. Healthy adults also often complain of word-finding problems affecting their communication skills *(Warren et al., 2003).*

Canter (1972) stated that the word-retrieval disturbances are the most consistent problems observed in the various syndromes of adult aphasia. Word-finding difficulty generally presents a diagnostic controversy when it occurs as a leading or apparently isolated symptom, most often as the progressive aphasias *(Rohrer et al., 2007).*

Recent literature and empirical investigations have centered on the definition, characteristics, prevalence, assessment and intervention of word-finding problems. Assessment by a qualified speech and language professional is strongly advised. Assessment comprises a full speech and language test battery administered by a phoniatrician / speech-language pathologist. Among other components, the ideal battery includes standardized measures of receptive and expressive vocabulary, as well as informed observations of conversation skills (discourse) and narrative *(German, 2000b).*

The Arabic-Test of Word-Finding (A-TWF) is intended to assist speech and language pathologists, learning disability teachers, school psychologists, otolaryngologists, neurologists and special educators in assessing word-finding skills in children.

Although word-finding assessment should include information from many sources (diagnostic tests, home and classroom observations, etc.), information obtained from the A-TWF enhances understanding of a child's word-finding skills and thus aids in determining the most appropriate educational program for children with word-finding difficulties.

The A-TWF requires the learner to retrieve target words in several single word naming contexts, using accuracy and response time to define word-finding difficulties. It provides guidelines for analyzing child response errors, and includes a comprehension assessment of target words that were named incorrectly. The comprehension assessment helps examiners differentiate between children whose naming errors are due to general vocabulary deficits from those children who have word-finding problems in the presence of good comprehension of the target word**.**

At the end of the A-TWF, a profile is indicated for the child to be one of the following:

- Profile A, Fast and Inaccurate Namer;
- Profile B, Slow and Inaccurate Namer;
- Profile C, Fast and Accurate Namer (no word-finding problems on the A-TWF); and
- Profile D, Slow and Accurate Namer.

There are few well-controlled research studies investigating therapy for word-finding problems. Studies have focused on comparisons between intervention techniques (e.g. semantic versus phonological approaches). Whilst there are some methodological concerns in each case, the results of such studies combine to suggest that therapy can improve word-finding abilities in children and adults *(McGregor, 1997).*

AIM OF THE WORK

The aim of this work is to present a review about the causes of word-finding difficulty (WFD) in children and adults as well as assessment and management of this condition. It also aims at proposing a designation of an Arabic test for WFD in children that can be standardized in future studies in order to facilitate assessment of this phenomenon.

THE NATURE OF WORD-FINDING DIFFICULTY (WFD)

Word-finding difficulties are typically defined as reduced ability to retrieve and /or produce a specific word in response to a stimulus or situation. Such difficulties impede oral communication and reading, both of which require efficient retrieval of words from mental lexicon *(Faust et al., 1997)*.

Manifestations of Word-Finding Difficulties

When unable to find a form, children with word-finding difficulties tend to provide responses related to the target in meaning, sound or both. They may also circumlocute, talking around the word or say 'I don't know'*(Faust et al., 1997)*.

In storytelling, *German (1987)* found children with word-finding problems produced significantly more of several response types: reformulations, repetitions, fillers (e.g. 'um'), and empty, words (e.g. 'thing') than chronological age controls. It is important to note that normally developing children also make errors when trying to find words. For Example, 7-year-olds with normally developing language made 10% semantic errors on naming a set of common items and did not tend to make sound (phonological) errors.

We all experience difficulty in finding words, which are in our vocabulary from time to time. However, for some children with impaired language, this problem is severe. These children may be unable to find words to name things, to express their feelings, to answer questions in class, or to label abstract concepts. Such difficulties occur in conversation, narrative and structured tasks and have implications for the child's overall well being *(McGregor and Appel, 2002).*

An inability to find the right words when you know what you wish to say has long term implications for self-esteem, social development and educational attainment. For example: 'I was about to say porcupine, um what is it ..., not apple juice, oh ... the fruit with the funky hairdo', said Marie trying to find the word 'pineapple' *(McGregor and Appel, 2002).*

Since our receptive vocabularies are larger than our expressive vocabularies and more important throughout development and indeed in adulthood; all children may experience word-retrieval difficulties to some extent *(German, 1987).*

McGregor and Appel (2002) emphasize the importance of looking at both lexical comprehension and naming skills relative to age norms and classify two groups of children as having word-finding problems:

(1) Children whose lexical comprehension skills are age appropriate but whose naming skills are not.

(2) Children whose lexical comprehension skills are below age norms and whose naming skills are further below these skills.

In clinical practice, finding that a child struggles to retrieve words which they appear to understand (e.g. correctly responding to word-to-picture matching using semantically related foils or to forced-choice questions about the items) further suggests genuine word-retrieval problems over and above the wider vocabulary-learning difficulties that often form part of a language impairment.

Thus, the criterion of 'comprehension superior to production with respect to controls' is useful in assessing whether a child has word-finding problems. Once this is established, the situation for individual lexical items can be assessed. Whilst this is of obvious clinical and educational interest, it may not be easy to determine. Two reasons for this are as follows;

(1) Children's naming may vary across occasions, even on the same day (within the field of acquired language disorder variability across occasions) and this can be taken to suggest a problem with *access* rather than *storage.*

(2) Comprehension is not 'all or nothing', in particular, normally developing children are often able to produce words for which they have only partial semantic knowledge. In addition, the degree of semantic knowledge is related to ease of retrieval *(McGregor et al., 2002).*

Clinical consensus suggests that difficulty in finding words may occur as part of wider cognitive and expressive language impairments or in relative isolation. A recent survey *(Best, 2003)* of speech and language therapists working with children suggested impairments in semantics, auditory memory span, expressive language and phonology can co-occur with word-finding problems. Areas of relative strength included verbal comprehension and strengths in visual processing.

The problem is not uncommon*; Dockrell et al. (1998)* found that, of children in language support services, 23% were identified as having word-finding problems. *Best (2005)* reported that around one-quarter of children attending language support services have difficulty in retrieving words.

Pathophysiology of Word-Finding Difficulty

Leonard et al. (1983) discussed two possible underlying causes for word-finding problems in children. The first, the 'storage' hypothesis, proposed that the child has not learned the names for lexical items adequately, and is therefore less accurate and slower at naming. The second hypothesis focuses instead on 'retrieval'. The claim here is the stored lexical representations are comparable to those of children with normal language development but that the information or names are less accessible.

These possibilities do not fit well with more recent models of speech production where there is a distinction

between storage of lexical semantic information and storage of phonological form. Considering such a model, where conceptual information accesses semantic information which in turn accesses phonological information for production, one can envisage at least four possible deficits:

(i) In storing lexical semantic information (used for comprehension and production).

(ii) In accessing lexical semantic information for production.

(iii) In storing phonological information for production.

(iv) In accessing the phonological form for production.

Messer and Dockrell (2004) claim that the most common view in the literature is that semantic representations in children with word-finding difficulties are less complex and that this makes retrieval inaccurate, slow or unsuccessful. Evidence in support of this comes from the finding that these children tend to name digits and letters as well as controls *(Dockrell et al., 2001).*

Furthermore, *McGregor and Waxman (1998)* investigated children's responses to questions designed to elicit different levels of semantic information. The word-finding group were less likely to produce subordinates and more likely to produce 'don't know' responses and to accept the wrong label.

In addition to semantic and phonological explanations for word-finding difficulties, there exists a more general 'processing

speed' account. Children with word-finding deficits have been found to be slow to find names *(Stackhouse's, 1993).*

Constable et al. (1997) argue that the semantic store is accessed with little or no difficulty and problems occur in accessing the phonological specification. In contrast, others have posited a weakness in lexical storage or semantic representations. It is often suggested that children with word-finding difficulties have less elaborate representations of words in their mental lexicon than non-delayed children.

Definition tasks have been used both to assess vocabulary knowledge *(Ralli, 1999)* and to understand the organization of concepts in semantic memory *(Anglin, 1977).* There are both quantitative and qualitative changes in children's word definitions as they get older *(Nippold, 1995).* As children get older there is a tendency to include more than one characteristic in their definitions. Moreover, prior to 7 years of age children's definitions are simple, often focusing on perceptual or functional information and lacking in superordinate terms. In contrast children over the age of 7 produce definitions that are more precise, include conventional social information and gradually include superordinates *(Watson, 1995).*

In summary, the jury is still out on the cause of word-finding problems in children. This lack of consensus probably results from studies using different populations varying from 'language disabled' *(Faust et al., 1997)* through children with SLI *(Lahey and Edwards 1999)* to groups with tightly defined

word-finding problems *(Dockrell et al. 2001).* It is important to be aware that word-retrieval difficulties are likely to have different causes in different children.

Impact of Lexical Factors on Word-Finding Difficulties (WFDs)

Research on adult perception and production of spoken language has suggested that lexical factors such as target word frequency, age of acquisition (AOA), perceived word familiarity, neighborhood density and phonotactic probability impact lexical access. Although most of this research has focused on how these factors influence lexical access during perceptual tasks *(Luce and Pisoni, 1998)*, a few studies have examined the influence of these factors on children's production and how such effects may change during development and maturation *(German and Newman, 2004).*

Children's lexicons have fewer neighbors than do words in adult lexicons and thus should not be easily confused. This ease of discriminability would allow children to use more holistic, rather than segmental, strategies for recognizing words *(Charles-Luce and Luse, 1995).*

Metsala (1997) has suggested that the developmental change from holistic to segmental representations may continue into early school years. Moreover, the point at which these changes occur may depend on lexical factors such as similarity with other known words. These findings suggest that there may

be changes over the course of development in how lexical factors influence lexical access.

1. Word frequency

Each word stored in memory has a frequency assignment based on its usage in our language. Research in speech perception indicates that high-frequency words tend to be recognized more quickly and identified more accurately *(Dirks, et al., 2001)* than are low-frequency words. Similarly, high-frequency words are produced more quickly, are less likely to be involved in speech production errors and result in fewer tip-of-the-tongue states in both young and elderly speakers *(Vitevitch and Sommers, 2003)* as well as in speakers with aphasia *(Gordon, 2002).*

Frequency has also been shown to predict naming for read words *(Andrews, 1989),* perhaps as a result of the connection strength between orthographic and phonological representations. Finally, children (both those with word-finding difficulties and those who are typically developing) have greater success naming words that are more common in the language (*German and Newman, 2004).*

2. Age of Acquisition (AOA)

Judgments regarding the age at which a particular word is acquired have been shown to correlate with performance on a number of language tasks. Words rated as having been learned