# بسم الله الرحمن الرحيم


MONA MAGHRABY


# شبكة المعلومات الجامعية

# التوثيق الالكتروني والميكروفيلم

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# جامعة عين شمس

# التوثيق الإلكتروني والميكروفيلم

# قسم

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***MONA MAGHRABY***

# Dyslexia among Arabic Speaking Egyptian Children with Unilateral Cochlear Implant

*Thesis*

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*By*

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***Shereen Alaa El Din Taha***

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# List of Abbreviations

| Abb. | Full term |
|---|---|
| ARST | Arabic Reading Screening Test |
| CIs | Cochlear Implants |
| DRC | Dual Route Cascaded |
| DSM | Diagnostic and Statistical Manual of Mental Disorders |
| EOI | Executive-organizational-integrative |
| HA | Hearing Aid |
| HL | Hearing Loss |
| IQ | Intelligence Quotient |
| PA | Phonological Awareness |
| PDP | Parallel distributed processing |
| PLS-4 | Modified Preschool Language Scale |
| STM | Short Term Memory |
| TH | Typical Hearing |
| WHO | World Health Organization |
| WM | Working Memory |

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# INTRODUCTION

Hearing loss affects millions of people around the world and is estimated to be the fourth leading cause of disability globally ***(Cunningham and Tucci, 2017).*** WHO estimates in 2008 found that 360 million people worldwide live with disabling hearing loss, including 32 million children ***(WHO, 2012).*** Hearing aids provide benefits for the majority of people with hearing loss, those with more severe hearing loss may benefit more from cochlear implantation ***(Barnett et al., 2016).***

Cochlear implants (CIs) have offered restoration of hearing to people with severe to profound hearing loss. Restoration of hearing with CI causes changes in the sound inputs which are processed in the brain, which does not only include the auditory cortex, but also it involves other areas such as visual cortex ***(Stropahl et al., 2017).***

Communication skills of children with hearing loss can be improved with the use of cochlear implants. At school, both normal and hearing-impaired children are taught to read and write the same curriculum, but when evaluating the classroom skills of hearing-impaired children, several differences in their reading skills can be found compared to their normal-hearing peers ***(Tiryaki, 2014).***

Reading skills are necessary for educational development in normal hearing children, many studies have shown that

children with hearing loss often experience delays in reading ***(Rezaei et al., 2016).***

Hearing impaired children follow the same semantic process when acquiring the same group of skills compared with their normal hearing peers when their reading skills are examined. However, as a result of the insufficiency of the sound stimuli reaching the brain during the speech and language development, hearing loss can negatively affect the reading skills of hearing-impaired individuals ***(Tiryaki, 2014).***

Reading is the ability to transform written language into spoken information and extract its meaning in an efficient manner ***(Horowitz-Kraus et al., 2014).*** Reading fluency is defined as the ability to read accurately and quickly ***(Katzir et al., 2016),*** is based on language, visual processing and higher-level (executive functions). Executive functions are the general core cognitive mechanisms used to adjust and facilitate various cognitive processes, such as planning and organization ***(Horowitz-Kraus, 2016).***

The reading process includes corresponding sounds with abstract graphemes (phonological process), identifying the words or word-parts (orthographic process), and extracting the meaning of the information (semantic ability) ***(Horowitz-Kraus, 2016).***

In normal hearing children, phonology is very essential for reading acquisition, so we need to know whether phonological processing and representations can develop in deaf children in the absence of an adequate auditory capacity ***(Domínguez et al., 2019).*** CI has a direct effect on speech perception and on the development of phonological representations of words ***(Domínguez et al., 2019),*** so we should consider that; phonology is not only auditory, but also audiovisual for hearing and deaf people ***(Bayard et al., 2014).*** The role of CIs which greatly improve auditory perception is to improve deaf children auditory information that should help in the development of phonological representations of speech and facilitate reading acquisition ***(Johnson& Goswami, 2010).***

Another point of view suggests that reading acquisition follows the same path in deaf and hearing children, so there is an important association between phonology and reading, so reading difficulties are considered as phonological deficits in case of both deaf and hearing children ***(Bochner & Kelstone, 2016).***

Assessment of reading abilities in cochlear implant children has been an issue to discuss as these children need urgent intervention to help them catch up with their normal peers. CI children are rarely assessed for their reading skills in Egypt, so integration of learning assessment in their general evaluation and during follow up should be considered for early intervention.

# AIM OF THE WORK

This work aims to assess reading abilities in cochlear implant school children in order to highlight their dyslexia profile, and to consider such problems in earlier years of life. This would subsequently improve their expected academic delay.