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Language and Ageing – On the Role of Second Language in Cognitive Training in People with Dementia

DIPLOMA THESIS

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Declaration

I hereby declare that this diploma thesis is completely my own work and that no other sources were used for the preparation of the thesis than those listed on the works cited page.

Prague, December 2014 Katerina Smidova

Abstract

The thesis explores the influence of cognitive training carried out in a second language on the elderly suffering from dementia. Having described the basic anatomy of the nervous system, neurolinguistic theories as well as ageing and having dealt with cognitive aspects in relation to language learning, the thesis aims at performing an experiment that should help dementia clients to broaden their vocabulary in a second language. This is to be achieved through individual therapy-like units using worksheets created specifically for these purposes. The results indicate that cognitive training in a second language is beneficial to dementia clients and could be used more extensively.

Key words

ageing, dementia, language, cognitive training, neurolinguistics

Anotace

Diplomová práce se zabývá vlivem kognitivního tréninku v cizím jazyce u starších lidí trpících demencí. Po popsání základní anatomie nervového systému, neurolingvistických teorií a také stárnutí a kognitivních aspektů v souvislosti s učením se jazykům se práce zabývá uskutečněním experimentu, který by mohl pomoci klientům s demencí rozšířit jejich slovní zásobu v cizím jazyce. Toho má být dosaženo prostřednictvím individuálních terapeutických sezení s použitím pracovních listů vytvořených přímo pro tyto účely. Výsledky naznačují, že kognitivní trénink je u klientů s demencí prospěšný a mohl by být praktikován ve větší míře.

Klíčová slova

stárnutí, demence, jazyk, kognitivní trénink, neurolingvistika

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Introduction

The world´s population is getting older. Guglielman (2012) mentions that, according to The World Health Organisation, approximately 2 billion people will be over 60 years old by 2050, a fact that present-day society will have to learn how to cope with. Moreover, these conditions could lead to a variety of significant circumstances. As stated by The World Health Organisation (2002), low levels of education and illiteracy might later be connected with disability and death in people as they advance in years. Higher rates of unemployment can be counted as another negative resulting factor. Thus, education, as well as lifelong learning, should be the keys in helping older people maintain their independence.

Nevertheless, Guglielman (2012) discusses a great deal of complications to learning in advanced age – the essential one being the deterioration of brain functions. With increasing age, neurons[1] gradually lose the ability to create new synapses between them as reactions to external stimuli. Such an ability is crucial to mental functions like learning and memory. Numerous changes are caused by brain ageing, for instance the degeneration of cortical areas responsible for sensation, memory, cognition as well as motor control, a decrease in the amount of white and grey matter - cerebral atrophy[2] - and the metabolic decline of neurons (as cited in OECD, 2007). Another OECD publication (2002) shows that most cognitive functions deteriorate in individuals aged between 20 to 80 years. Such declines are particularly apparent in executive functions[3] and long-term memory. Among the most affected tasks are recognising letters, reading, computing, etc. On the other hand, some

[1] Neuron is a cell that carries messages between the brain and other parts of the body and that is the basic unit of the nervous system.
[2] Atrophy of any tissue means that it becomes weak due to the lack of use or lack of blood.
[3] A set of mental processes used to perform activities such as planning, organizing, strategizing, paying attention to and remembering details, managing time and space, etc.

increases in cognitive capacities can be found in the elderly including vocabulary, which widens with experience and general knowledge (as cited in Park et al., 2002).

Guglielman (2012) adds that based on the findings of neural sciences, it is now possible to prevent the deterioration of cognitive faculties and to preserve the functions of the brain to learn at an advanced age.

Educational trends say that learning should be lifelong. A relatively new branch of education, **geragogy**, has recently been established. For the purpose of this thesis, the focus is centred on the **cognitive benefits of learning languages**, especially with an emphasis on the elderly, as well as the **training of cognitive functions**. Attention is paid to the mechanism by which neural cells regenerate themselves or take over functions of a certain part of the brain. The key terms are **neurogenesis** and **neuroplasticity**, which are also scrutinised in the following chapters. For better understanding of these notions it would be useful to delve into the history of theories connected with brain functioning, the distribution of language centres and explain some of the basic concepts. Therefore, the most prominent **localizational** as well as **holistic theorists** are to be introduced. Special attention is given to the chapter on **ageing**, where **dementia** and **memory** are scrutinised in detail.

The practical part of the thesis is dealing with a specific **cognitive experiment** designed for the **"Domov Sue Ryder"** organisation. A number of worksheets created for this purpose forms an integral part of the thesis.

Theoretical Part

For better understanding of the following chapters on neurolinguistics, memory, as well as cognitive training and the neuronal changes happening in the brain due to ageing, a brief introduction to a basic anatomy of the nervous system and human brain is given.

1 Basic Anatomy of the Nervous System

1.1 The Neuron

Prior to the description of the brain itself, it is important to comment on the **neuron** (see Fig. 1), which is the basic building block of the nervous system. Koukolík (2005: 19) aptly states and gives a comparison: “as the house is made of bricks, the brain is made of neurons”.

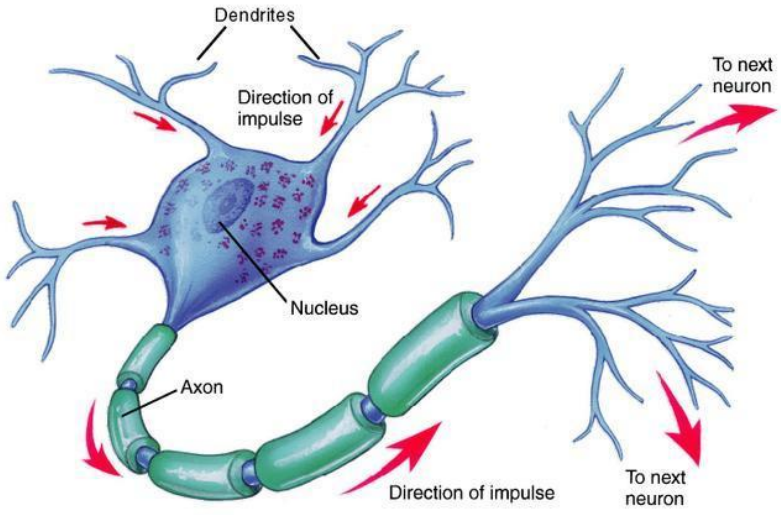

Figure 1 Neuron

The basic function of these cells is to receive signals from other neurons or specialised sensory receptors, e.g. the ones for touch, heat, pain, and transferring them on to other neurons or sense organs. The signals are further transmitted via **axons**, which are “thread-like” projections. The place, where neurons connect with

each other and transfer the signal, is called the **synapse** (see Fig. 2), a microscopic gap between them. Regarding the process of transferring the impulse, it is realised

by a chemical, **neurotransmitter**, which is “spitted” across the gap onto the receiving neuron (Hamilton, 2012: 303).

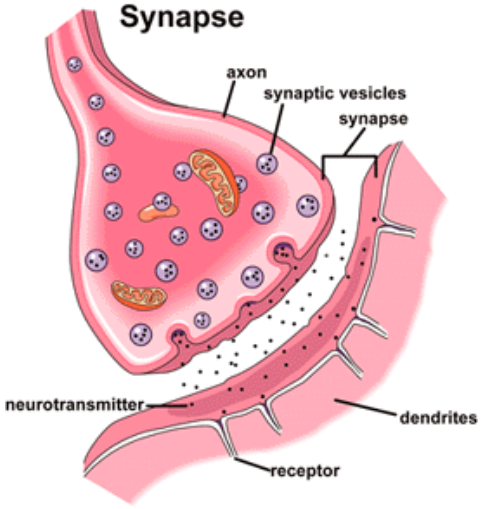

Figure 2 Synapse

1.2 Central Nervous System Anatomy

As stated by Hamilton (2012), the nervous system can be divided into the **central nervous system (CNS)** and the **peripheral nervous system (PNS)**. While the CNS consists of the brain and the spinal cord, the PNS is, in essence, nerve cells connecting the CNS to the rest of the body. The nervous system consists of approximately 100 billion neurons, the majority of which are situated in the brain.

The main function of spinal cord is to lead information between the PNS and the brain. Nevertheless, it can also employ a simple mechanism called the **reflex arc**, which makes the body respond to certain forms of stimulation. The vast majority of reflexes, including the well-known knee-jerk reflex, are produced this way.

As for the brain itself (see Fig. 3), the webpage of the Alzheimer's Association gives a reader-friendly description of its three main parts[4]:

1) The most prominent part is the **cerebrum**, which fills up most of the skull and is responsible for remembering, problem solving, thinking as well as feeling. Moreover, it also controls movement.

2) The **cerebellum** that is situated at the back of the head, under the cerebrum. It is the centre of coordination and balance.

3) The third part is the **brain stem**, which is located beneath the cerebrum in front of the cerebellum. It provides a connection from the brain to the spinal cord and is principally in charge of automatic functions, such as breathing, digestion, heart rate and blood pressure.

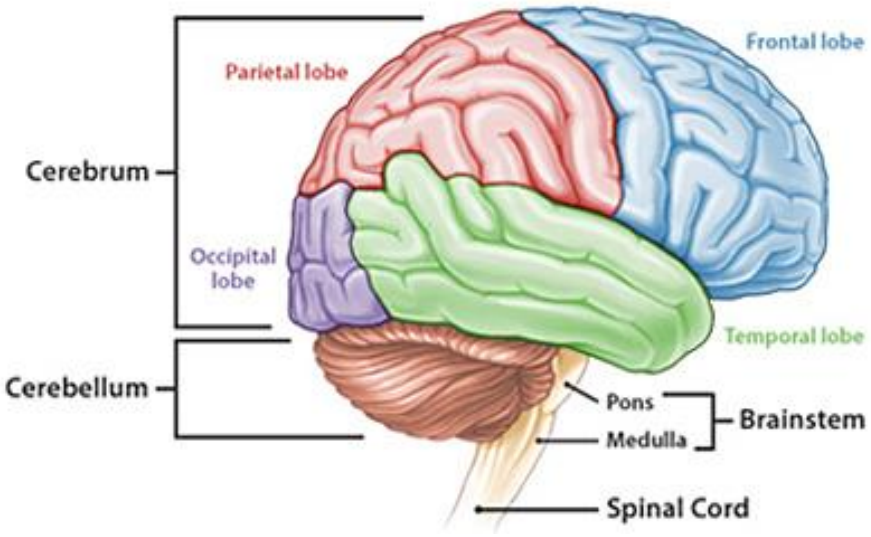

Figure 3 Brain

[4] The Brain Tour called “Inside the Brain: An interactive Tour” consists of 16 interactive slides explaining how the brain works and how Alzheimer's affects it. To see the rest of the slides, visit http://alz.org/alzheimers_disease_4719.asp

Further, it is essential to mention **the cerebral cortex** (frequently simply called „cortex“), which is "the wrinkled 'top' of the brain" (Hamilton, 2012: 304). This outer part of the brain is responsible for higher intellectual functions. The cortex is separated into two **hemispheres,** which are linked by a great deal of pathways, the most important of them being **corpus callosum** (on the specialised functions of individual hemispheres, see chapter 2.4). According to psychological functions which the cortex performs, it can be further divided into lobes (see Fig. 3). The **frontal lobes** stretch from the front part of the skull to the temples. They are responsible for planning actions, for instance producing sequences of movements, putting words or letters in the right order in speech and spelling, as well as socially appropriate behaviour. Regarding memory, the frontal lobes are involved in identifying which events happened recently and which, on the contrary, in the past. Other types are the **temporal lobes**, located in the positions of the right and left temples. Their fundamental task is in comprehending speech and print. They are also strongly involved in memory, specifically the long-term retention of information. At the rear of the brain, **occipital lobes** can be found. These structures are virtually responsible for all processing of visual information, e.g. reading, vision. Lastly, **parietal lobes** are situated at the top of the brain bordering with the other three lobes. They are also involved in reading; however, their primary function is object recognition, symbol interpretation as well as partial awareness of the body´s state and location (Hamilton, 2012).

2 Neurolinguistic Aspects: Theories & Facts

In the following chapter, various notions on neurolinguistics and its theories are introduced, including a brief history of aphasiology, which is the historical core of

neurolinguistics. The chapter is concluded with recent findings and conceptions regarding this field.

2.1 Localizational Theorists

For a long time, it was believed that there were regions or areas in the brain cortex that were entirely responsible for particular functions, such as hearing, vision, language, and so forth. These were the notions of the so called **Localizational Theory**. The early beginnings of neurolingustics, which, according to Miller, Vandome & McBrewster (2009: 26) “is the study of the neural mechanisms in the human brain that control the comprehension, production, and acquisition of language”, are predominantly grounded on this theory. Localizationalists belong to the first theorists attempting to explain the distribution of language centres.

2.1.1 Paul Broca

The middle of the 19th century was as a period which gave rise to the first scientific studies in patients with acquired language impairments.

In terms of the above-mentioned theory, one of the foremost representatives was a French neurologist **Paul Broca** (1824 – 1880). In 1861 he made a breakthrough at the session of Anthropological Society in Paris by presenting the first scientific approach towards aphasia and neurolinguistics (Stehlíková, 2011).

Firstly, Broca presented his thought that individual brain parts serve different functions resembling numerous faculties of mind, in which he acknowledged the connection to Gall´s phrenology, and therefore laid the foundations for cerebral localization (Serge, n.d.). Phrenologists made a similar claim in the beginning of the

19th century. They also thought that language was governed by the frontal part of the brain. Nevertheless, it was Broca who could first provide research evidence for such a relationship (Miller et al., 2009). Specifically, he provided a case study of a 51-year–old man named Leborgne who suffered from speech loss. As Stehlíková (2011) explains, this patient was able to understand language although he could not produce a single word with the exception of the syllable "*tan".* After his death, Broca was able to perform an autopsy[5] and found out that the speech loss was caused by a lesion[6] in the frontal lobe (Serge, n.d.).

Stehlíková (2011) adds that this region of the brain has later been known as **Broca´s area** (see Fig. 4). On the basis of this finding, Broca inferred that this part of the brain is responsible for the ability to speak.

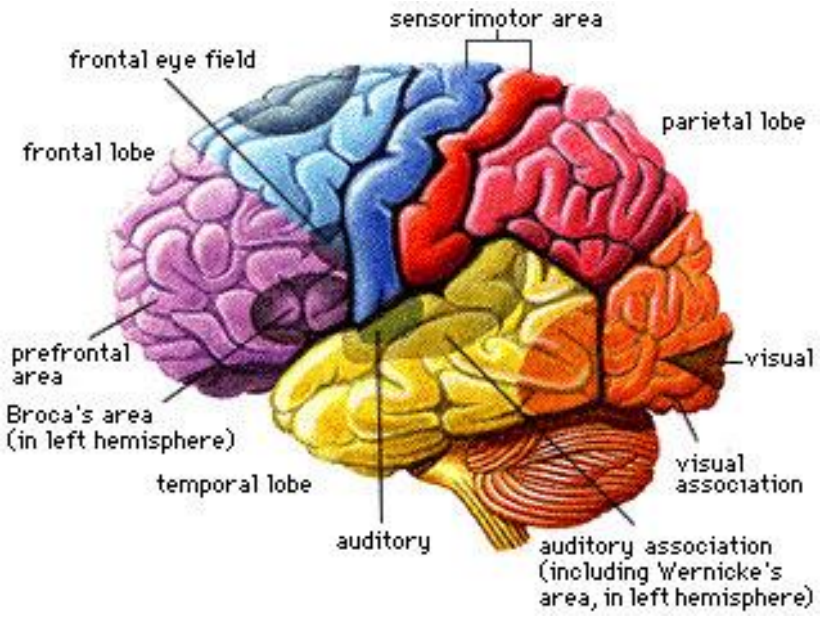

Figure 4 Brain Lobes

[5] Autopsy is an examination of the body after death usually with such dissection as will expose the vital organs for determining the cause of death or the character and extent of changes produced by disease.
[6] The term lesion describes an injured or diseased spot or area on or in the body.

Later, he published an article entitled *"Comments on the site of the faculty for speech, followed by an observation of aphemia"*[7] where the term aphemia (currently known as aphasia[8]) appeared for the first time. It was coined for "…particular kind of loss speech which represented neither a destruction of intelligence nor a paralysis of the articulatory muscles" (Serge, n.d.). Today we can classify several types of aphasia. In relation to Broca, the term Broca´s aphasia or motor aphasia is widely used. Such a type is also characterised by partial or total speech loss. Nevertheless, hearing comprehension as well as patients´ awareness of the problem are not affected, i.e. they know they suffer from this disorder.

Since then "language faculty" became the centre of scientific attention. Broca´s further interest regarding the organisation of brain was connected with "brain lateralisation". In 1865 another important study of his[9] was published, the outcomes of which were that aphasia was evidently connected with left-hemisphere lesions. He deduced that the left hemisphere is responsible for language. This was in contrary to general biological findings which said that symmetrical organs, such as lungs, kidneys (both brain hemispheres included), etc. have identical functions. According to him, full recovery from aphasia could occur on condition that the right hemisphere would take over the function of the left hemisphere (so called neuroplasticity, discussed in later chapters). He also stressed that the incapability of patients´ recovery from aphasia might be caused by inadequate rehabilitation (Stehlíková, 2011: 26).

[7] Broca, P. (1861). Remarques sur le siège de la faculté du langage articulé; suivies d'une observation d'aphémie (perte de la parole). *Bulletins de la Société Anatomique de Paris*, *36*, 330–357.

[8] Aphasia is a medical condition in which a person is unable to use or understand some words, caused by damage to the brain.

[9] Broca, P. (1865). Sur le siège de la faculté du langage articulé (15 juin). *Bulletins de la Société d'Anthropologie de Paris, 6*, 377–393.

2.1.2 Carl Wernicke & Ludwig Lichtheim

Another important person regarding the development of aphasiology was a German neurologist **Carl Wernicke** (1848 – 1905). According to the medical dictionary Whonamedit[10], at the age of 26 years Wernicke published his findings in "Der aphasische Symptomenkompleks" in 1847. There, the first description of sensory aphasia was given, as well as agraphia[11] and alexia[12]. Wernicke treated a patient who could speak fluently. However, his verbal production was nonsensical. The patient suffered from stroke and could neither understand spoken nor written language. The lesion was in the region where parietal and temporal lobes meet (see Fig. 4)**,** currently known as Wernicke´s area (also known as Broadmann Area 22) (Stehlíková, 2011: 27). Phillips & Sakai (2005: 3) explain that this area is "responsible for decoding and storing auditorily presented language".

Apart from these two significant scientists, there are others who supported the Localizational hypothesis. One of them was **Ludwig Lichtheim** (1845 - 1928), a scholar of Wernicke´s, who greatly influenced the field of aphasiology. He is the third contributor to the so called **Broca-Wernicke-Lichtheim (BWL) model** introducing the indirect connection between sensory and motor language areas. These are called conceptual uses of language (see Fig. 5). The term **conduction aphasia** has been introduced describing the state when patients evince struggles with speech repetition. However, the production of casual conversational language is intact (Ingram, 2007).

[10] http://www.whonamedit.com/doctor.cfm/927.html
[11] The pathologic loss of the ability to write.
[12] Aphasia characterized by loss of ability to read.

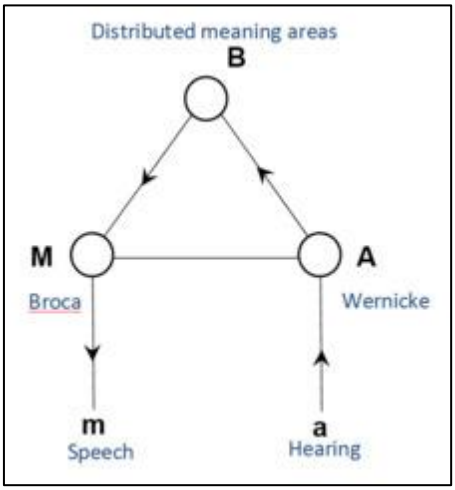

Figure 5 Broca – Wernicke – Lichtheim Model
A - acoustic word image center (Wernicke),
M - motor word image center (Broca),
B - word meanings (widespread ditribution),
a - auditory input, m - subcortical motor nuclei for speech

2.2 Holistic Theorists

Nevertheless, some experts do not adhere to the concept of language centres and their connections. They think the whole brain works as one unit and that there are more areas co-working in relation to language processing. Therefore, it is not possible to evaluate certain function only with regard to specific brain location. This is the so called **Holistic View**. One of the foremost representatives of this approach was a British neurologist **Hughlings Jackson** (1835 - 1911). He noticed the fact that "propositional speech"[13] was usually more impaired in comparison to automatic uses of language such as emotional expression, greetings, conversational phrases, which might stay preserved (Ingram, 2007).

Another non-localizationist was a Russian linguist **Roman Jakobson** (1896-1982), who in his work, published in 1941[14], defended a previously known notion that "ontogeny recapitulates phylogeny". He suggested that language breakdown in

[13] Intellectual, rational use of language for specific communication goals.
[14] Jakobson, R. (1968). *Child language: Aphasia, and phonological universals*, trans. A.R. Kuler, The Hague: Mouton. (originalwork published in 1941)

aphasia can be characterised by a regression towards a more primitive and infantile level of language (Ingram, 2007).

With the arrival of non-invasive brain imaging technologies such as fMRI[15], PET[16] and others, it is now easier to understand what specific areas are responsible for language processing. Firstly, there is no difficulty localising the damaged area of the brain shortly after the injury or accident. It is no longer necessary to wait for the autopsy. Secondly, techniques such as fMRI clearly indicate that apart from the main left frontal and temporal lobe areas, there is a presence of additional left-hemisphere language areas mainly located in the frontal, as well as the temporal lobes. Lastly, evidence has been found regarding a different role of classic language centres in non-language tasks. For instance, some studies have shown that Broca´s area is involved in cognitive tasks such as motor planning in addition to short-term memory tasks[17] (Phillips & Sakai, 2005).

2.3 Neurogenesis & Neuroplasticity

Earlier it was believed that the number of neurons in a human brain is finite at birth and that it gradually decreases throughout one´s life span. New imaging technologies seem to suggest different findings. Some scientists believe that certain mental circuits and connections within the brain are completed not only during

[15]Functional magnetic resonance imaging is a technique for measuring brain activity. It works by detecting the changes in blood oxygenation and flow that occur in response to neural activity – when a brain area is more active it consumes more oxygen and to meet this increased demand blood flow increases to the active area. fMRI can be used to produce activation maps showing which parts of the brain are involved in a particular mental process. - http://psychcentral.com/lib/types-of-brain-imaging-techniques/0001057

[16] Positron emission tomography uses trace amounts of short-lived radioactive material to map functional processes in the brain. When the material undergoes radioactive decay a positron is emitted, which can be picked up be the detector. Areas of high radioactivity are associated with brain activity.

[17] For more information, see one of the studies: http://www.cell.com/current-biology/pdf/S0960-9822%2812%2901074-3.pdf

childhood or adolescence, but they are formed even throughout the life cycle (OECD, 2002).

As stated by Wegschaider (2010), the fact that the brain has the ability to create new neurons even in adulthood is called **neurogenesis**. Brain functions can, therefore, be strengthened and developed throughout life. The research that brought about these findings started in the late 1990s. Among the influential scientists supporting the notion regarding the existence of neurogenesis are Erickson et al. (1998) and Kempermann (2002).

Concerning the term **neuroplasticity** or **plasticity**, it represents the process of building more nerve cell projections and, therefore, new synapses transferring the impulse. This is programmed due to both, internal (genetic) as well as external (any type of outer stimulation, e.g. cognitive training, studying) factors and helps the individual increase his/her brain capacity. According to Koukolík (2005), the human brain can change and use its plasticity even in individuals aged 90 years and over. There are similar rules concerning both the plasticity of brain cells and, for example, our muscles. The more stretched and strained they are, the more flexible and strong they stay. As it is known, healthy, trained 70-year-old women are faster running the same track compared to untrained 30-year-old females. To prove such a fact, it is convenient to watch, for instance, 5- and 10-kilometre races in Prague. The same rules can be applied to the human brain.

In accordance with Guglielman (2012), in the past neuroplasticity was connected with the term **critical period** which is the time when the human brain is predisposed to learn new skills very easily, e.g. to master a foreign language. The question of age and certain critical period in language development has long been at the forefront of scientific attention.

2.4 Language and Laterality

As mentioned earlier, Broca pointed out that both brain hemispheres have different functions. He also implied that the left hemisphere was responsible for language processing and production. However, today we cannot entirely agree with his notion of language organization of the brain, for laterality has to be taken into account. The term laterality generally expresses a person´s preference for one side of their body, for instance left-handedness/right-handedness and left/right-footedness. Nevertheless, laterality can be also characterised as a preference for eye winking and other voluntary or involuntary movements.

In most right-handers[18], the left – hemisphere of the brain is the dominant one. As it is clearly demonstrated in the picture (see Fig. 6), left-brain functions deal with tasks such as reasoning, logic, analytical and objective thinking, as well as language processing and production. The right hemisphere, on the other hand, is in command of tasks and abilities connected with creativity, reading emotions and intuition. Moreover, it is responsible for synthetic and analytical thinking, as well as spatial recognition, etc.

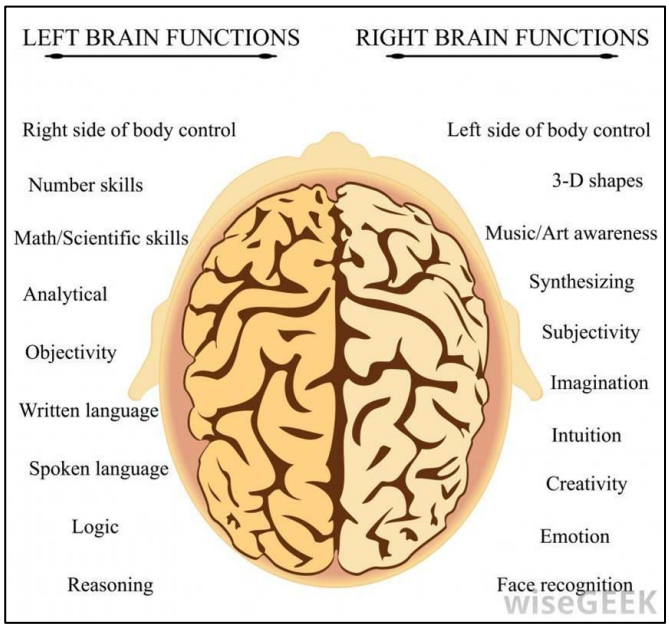

Figure 6 Brain Functions

Nonetheless, the language centre is not necessarily located in the left hemisphere. A German study (Knecht et al., 2000) clearly demonstrates

[18] Approximately 88% of humans are right-handers. Therefore, the above distribution of brain functions applies to most individuals.

the relationship between handedness and language dominance. It was found that in strong left-handers the percentage of right-hemispheric language dominance is about 27%. Regarding strong right-handers, the percentage of the right-hemispheric language dominance is about 4%. The relation seems to be linear – the greater the degree of left-handedness, the higher the preference for right-hemisphere language dominance. The results evidently show that left-handed individuals tend towards right-hemisphere dominance more than right-handers. In summary, according to this study, around 31% of individuals favour the right hemisphere for language functions. However, this number may vary. As stated by another study (Pujol, J., Deus, J., Losilla, JM & Capdevila, A., 1999) which worked with 100 healthy volunteers (50 of them left-handed, the other 50 right-handed), only 10% of them manifested preference for right hemispheric lateralization of language. Yet there was a group of 18% of individuals who showed a bilateral activation pattern (i.e., they were able to use both hemispheres for language tasks).

Bilateral and right-hemisphere lateralization for language is rather apparent in people who are **ambidextrous**. This means that they are able to use both the left and the right hands in tasks and activities such as writing, knitting, can – opening, etc.

2.5 Language and Bilingualism

Bilingualism is the ability to speak two languages. Besides the obvious advantages of this competence, such as being able to communicate with people from other countries or different parts of the world, there is even a more important one – being bilingual brings a positive effect to one´s cognitive functions that are not related to language. Moreover, it has been proved that bilingualism is a certain kind of

“protection” against dementia in old age or at least its early manifestations can be delayed.

For example, a recent study, conducted by a neuropsychologist Gollan and her colleagues (2011), of 44 elderly Spanish-English bilinguals reveals that people with a higher degree of bilingualism - measured by Boston Naming Test[19] in each language – evince higher resistance to the onset of dementia.

A different group of scientists (Alladi, S. et al., 2013) is even able to calculate the differences in age regarding the onset of dementia. The results demonstrate that bilingual patients developed dementia 4.5 years later than the monolingual ones. This fact can be also applied to patients with Alzheimer´s disease, which is the most common type of dementia[20]. Another interesting finding is that of the number of languages spoken - no additional benefits to speaking more than two languages has been found, i.e one does not need to be trilingual or multilingual to delay the onset of Alzheimer´s, bilingualism is just the “right amount”.

2.6 Language Centre for Second Language

Regarding the distribution of language centres in billinguals, it has been proved by a number of studies and authors that the right hemisphere is more dominant in second language learning. As stated by Heny (1998), acquiring a second language can alter cerebral dominance. To be more specific, dominance for the first language switches from the left hemisphere to the right one. Different authors (Wesche & Schneiderman, 1982) gathered findings concerning a similar topic – clinical studies of adults demonstrate the presence of residual language-related

[19] Boston Naming Test is a neuropsychological assessment tool for measuring word retrieval in individuals with aphasia, Alzheimer´s disease or other dementing disorder.
[20] It is estimated that it accounts for 60 to 80% of cases.

capacities in their right hemispheres. This fact shows that the right hemisphere is involved in the early stages of child, as well as adult, language acquisition.

Such findings on the importance of the right hemisphere in second language learning can be taken into account when choosing appropriate strategies for teaching. For instance, Pechou (1985) suggests to include music, which is lateralised to the right hemisphere (see Fig. 6), in second language teaching. She thinks that by employing music and techniques, such as the visualisation of what students are listening to, they might be more successful in second language acquisition.

3 Ageing

At the international conference on the plasticity of the brain and rehabilitation held in Prague on April 24, 2014, Olga Švestková mentioned an interesting fact – in the Czech Republic, there live about 1,100 people over 100 years old, of which approximately 920 are women. The total number seems surprisingly high. Nevertheless, it depicts today´s demographic situation and clearly shows that the presence of such mature people is nothing exceptional.

As the life expectancy is rising, the stages of ontogenetic development have to be reconsidered. Švestková (2014) mentions that, for example, in the United States of America, the developmental stages over the age of 50 years are classified as follows:

- 50 – 70 years = middle age
- 71 – 85 years = early maturity
- Over 86 years = late maturity

For some of us, it might seem unusual to talk, e.g. about a 65-year-old man as a middle aged person. Yet the upcoming trends in developed countries indicate different tendencies.

It is also important to be aware of the difference between the so called **chronological** and **biological age**. Whereas the first term refers to the current age of an individual (the years counted from one´s birthday), biological age relates to the state of the body and its organs. A healthy lifestyle, for example, can serve as a significant factor that can influence one´s chronological age in a positive way. For instance, when someone´s chronological age is 50, his or her body can still preserve the biological qualities of a 40-year-old body. Obviously it could also be the other way round – a young person in his/her 30s might have a body of a 40-year-old person due to unhealthy lifestyle which increases the rate of ageing of body cells.

On the whole, ageing is an inevitable process the effects of which are clearly demonstrated on the human body as well as the mind. In this chapter, first the impact of ageing on human brain is discussed. Secondly, we focus on the structure of language in advanced age and specific problems connected with language, for instance lexical or word retrieval.

3.1 Dementia

As mentioned earlier, the global population is gradually getting older and there are numerous diseases affecting the elderly. For the purpose of this thesis, attention is paid to dementia which is a common disorder with damaging effects.

According to Jirák & Koukolík (2004), dementia is a syndrome caused by chronic or progressive brain disease leading to the dysfunction of higher cortical functions, such as memory, thinking, understanding, counting, judgment, language or the ability to learn. It is usually associated with impaired comprehension and

occasionally preceded by the deterioration of emotional control, social behaviour or motivation. This syndrome occurs in Alzheimer's disease or other pathologies primarily affecting the brain. Apart from Alzheimer´s dementia, various types of this disease can be classified, for instance, frontotemporal, vascular or mixed dementia, dementia with Levy bodies, etc. Nonetheless, for the purpose of this study they will not be scrutinised in detail.

The most significant risk factor regarding dementia is obviously the age. The older the individual is, the more likely they are to have symptoms of the disease. For example, as stated by Bragdon & Gamon (2002), at the age of 65 only 2% of the elderly suffer from Alzheimer´s disease. However, with increasing age this number rises up to 20% for people who are 80-years-old. When we look at statistics for 90-year-old individuals, the number is even more shocking – 50% of them manifest the symptoms of dementia.

The consequences of such a fact might be horrifying – with an ageing population, there may not be enough people to look after patients with dementia in future who, in certain cases, require 24-hour supervision.

Another factor that might influence the outbreak of dementia, especially Alzheimer´s disease, is one´s genetic predisposition. According to the Alzheimer´s Association website (www.alz.org), two types of this dementing disorder can be distinguished – the first occurs at ages over 65 and represents the majority of cases. The other, however, has an early onset affecting up to 5% of individuals mostly in their 40s or 50s. Bragdon & Gamon (2002) claim that genes play a much more significant role in the latter type characterised by the early onset rather than by a later onset.

As for other risk factors, the influence of free radicals[21] on human cells can have a highly damaging effect. These particles basically kill cerebral cells by perforating the membrane. As a result, some essential substances leak, and on the contrary, some toxins take their place. The production of free radicals increases with advancing age (Bragdon & Gamon, 2002).

As stated in a study by Hekimi, Lapointe & Wen (2011), according to the **free radical theory of aging (FRTA),** organisms age due to the accumulation of damages caused by free radicals over a period of time. Subsequently, certain pathological changes can occur in one´s brain leading to mental disorders such as dementia, etc.

It has been observed that vitamins E and C play an important part in the protection of brain cells. Other positive effects can be induced by using Ginkgo biloba which is a natural substance highly used in Chinese medicine. Further, the influence of melatonin is greatly debated. This hormone[22] helps to regulate the circadian rhythms of the brain and its low amounts in advanced age is one of the reasons why the elderly sleep less. However, there is no scientific proof that this substance can be considered as an antioxidant[23]. The positive effects may be beneficial to people who do not yet suffer from dementia due to its presumably protective effects on neurons and the ability to support good sleep (Bragdon & Gamon, 2002).

3.2 Ageing and Mental Health

Besides physical changes in the elderly such as the deterioration of the functions of cardiovascular (e.g. heart attack), musculoskeletal (e.g. osteoporosis) or

[21] A molecule that has an extra electron and can react very easily with other molecules. Free radicals sometimes form in the human body and can cause cancer and other pathologies.
[22] A hormone is a natural substance produced in one´s body (e.g. Insulin). It is released into blood and controls the functions of other cells or organs.
[23] A substance that protects the living body from the deleterious effects of free radicals.

gastrointestinal (e.g. absence of teeth) systems, there is an even greater or comparable impact on mental functions.

Certain lucky individuals do not experience any rapid changes within the process of ageing. Especially in connection to mental function we can talk about "healthy ageing" or the changes that one would expect in the elderly. However, particular pathological changes might occur, which can lead to the onset of dementia or other mental disorders.

The following table clearly illustrates and compares the changes that are typical of advanced age with pathological signs of dementia:

Signs of Dementia	**Typical age-related changes ("Healthy Ageing")**
Poor judgment and decision making, e.g. when dealing with money	Making a bad decision once in a while, e.g. missing a monthly payment
Losing track of the date, the season or the passage of time; troubles understanding something if it is not happening immediately	Forgetting which day it is and remembering later
Difficulty having a conversation e.g. pauses in the middle of conversation with no idea how to continue. The patients may repeat themselves a lot or do not recall the right word for things (e.g. a "watch" can be called a "hand-clock")	Sometimes forgetting which word to use
Misplacing things and being unable to retrace steps to find them; accusing others of stealing; putting things in unusual places, e.g. a purse in an oven	Losing things from time to time
Memory loss - forgetting recently learned information; asking for the same information over and over again	Sometimes forgetting names or appointments, but remembering them later.
Difficulty completing familiar tasks, e.g. trouble driving to a familiar location or remembering the rules of a favourite game	Occasionally needing help to use the settings on a microwave or to record a television show
Vision problems – having difficulty	Vision changes related to the condition of

reading, judging distance or determining colour or contrast	the eyes
Withdrawal from work or social activities	Sometimes feeling weary of work, family and social obligations
Changes in mood and personality – might become confused, suspicious, depressed, fearful or anxious	Developing very specific ways of doing things and becoming irritable when a routine is disrupted

Table 1 Dementia Sings vs. Healthy Ageing, source www.alz.org

3.3 Memory

J. E. D. Esquirol (1772 – 1840), a great French psychiatrist of 19th century, once said: “Memory is our only treasure. Only when we lose it, do we become real beggars” (as cited in Koukolík, 2005: 65).

Memory can be categorised in many ways. As stated in Hamilton (2012), one such categorisation classifies memory according to the time for which it can retain information, i.e. when we can distinguish **short-term memory (STM), working memory** and **long-term memory (LTM).** Another method of classification is primary and secondary memory. The function of STM is to temporarily store events and information that happened quite recently, usually in terms of seconds or several minutes. STM, however, is very unstable; when no effort is made to restore the information, it is simply lost. Therefore, there is a close connection to working memory, which stores information to do certain activities and tasks, e.g. counting by heart (remembering numbers and operating with them), listening to other people talking and remembering their words. Some pieces of information are later transferred via memory traces to LTM, which, on the other hand, stores information permanently (e.g. one´s name, the capital of France, etc.). Nevertheless, if the information from LTM is not used frequently, it is replaced by another set of information from STM. People usually do not tend to forget information which is

repeated frequently, and, therefore, practiced. On the other hand, some facts can be lost from the memory, e.g. when people move, they are likely to forget old addresses or phone numbers.

Another classification of memory is the distinction between **explicit (declarative)** and **implicit (nondeclarative)**. According to a brief overview by The Dana Alliance for Brain Initiaves (2004: 2), explicit memory "can be recalled consciously and described verbally". It embraces facts, places, people as well as things that we deal with on a daily basis. As shown in the picture (see Fig. 7), declarative memory is a process involving mostly the hippocampus[24] and prefrontal cortex. Conversely, implicit memory deals with different functions. It is connected with the ability to learn skills and procedures, mostly motor skills, such as dancing or playing football. Mainly amygdala[25], as well as brain areas responsible for movement (cerebellum, motor cortex), play an important role in this process.

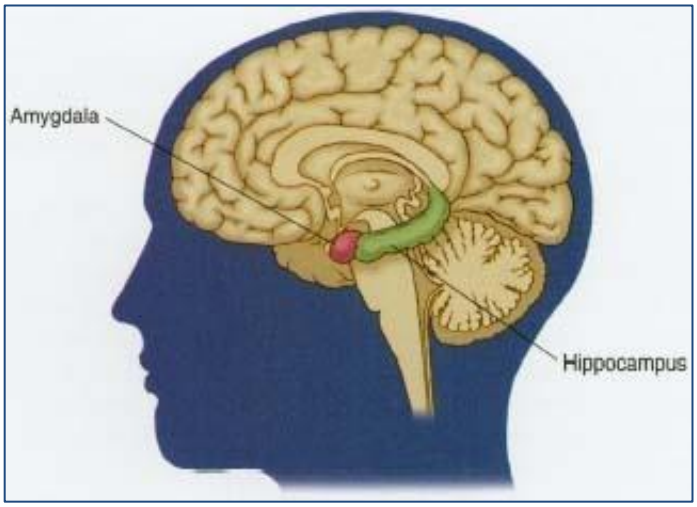

Figure 7 The Amygdala and Hippocampus

[24] Hippocampus is a curved elongated ridge consisting of grey matter covered on the front surface with white matter, and is involved in forming, storing, and processing memory.
[25] Amygdala consists of an almond-shaped mass of grey matter.

As stated in Hamilton (2012), a further system divides memories into **episodic** and **semantic**. Whereas the former deals with experiences of personal characteristics (i.e. **autobiographical memory**, referring to events specific to one´s personal life), the latter serves to store facts regardless of personal experience, such as general knowledge or academic learning.

The skills of planning and overseeing are peripherally connected to the above mentioned domains of memory. One of the most common reasons why memory is used is to remember to do something in the future, in other words **prospective memory**. Closely related to this is **metamemory**, which can be characterised as knowledge about one´s own memory, specifically what its capacity is, how best to remember things, etc.

Having, in brief, introduced some of the technical terms regarding memory, attention will now focus on the way ageing affects memory.

3.4 Ageing and Memory

A great deal of studies proved the gradual decline of functions in certain types of memories with rising age. For instance, in terms of short–term memory, Bromley (1958) focuses on tasks such as backward span procedure where the participant is supposed to repeat certain items backwards (e.g. the item to be remembered is 75123, however the participant must provide 32157). This experiment has shown that the elderly are considerably worse at this task.

A different study examined the processes in working memory and its correlation with age. Morris, Craik & Gick (1990) conducted a study, where young, as well as older participants, were given a common test for working memory in which they were supposed to perform two tasks. Firstly, the participants were to remember a sequence of short unrelated words; secondly, they were asked to verify a single or

complex sentence at the same time (e.g. “sparrows build their nests”). The following free recall of the words proved to be significantly worse in older adults compared to their younger cohorts. The difference was even more significant when working with a greater number of unrelated words. The explanation for such a phenomenon seems to be that in these tasks, younger individuals use not only their working memory, but also long term memory to “copy” the information and work with it when needed. However, the elderly do not possess such an ability, since either their LTM does not work effectively or the memory traces leading from working memory to LTM are lost (as stated in Hamilton, 1999).

On the contrary, several studies confirmed that there are no considerable age related differences proving a decline in implicit memory tasks (Craik and Jennings, 1992; Salhouse, 1991). As for autobiographical memory, its research is surrounded by several problems. First of all, the issue of reliability has to be taken into account. An older person might recall a picnic in 1936 held together with his/her now dead parents. Is it possible to objectively verify the accuracy of this recollection? The participant is presumably not deliberately lying. However, with each retelling of the story, some details might be changed to improve the flow of the narrative. Therefore, the retelling of a story five years after the incident could have the same plot as the retelling of the same story in fifty years' time, yet several details of the two narratives might differ (Barlett, 1932). This has been also confirmed in a recent study by Dijkstra and Misirlisoy (2009), who observed that identification of altered transcripts of autobiographical memories a year after their telling was more accurate regarding the main details but peripheral information was more imprecise (as stated in Hamilton, 2012).

3.5 Ageing and Language

It is apparent that ageing might be the cause of certain pathological changes in cognitive faculties. Let us now focus on language itself and its attrition in relation to old age.

An excellent source of information can be the study by Mira Goral (2004), which serves as a review of longitudinal and cross-sectional studies dealing with language processing in healthy ageing. She stresses that one language domain that demonstrates decline in advanced age is **lexical retrieval**. Several studies showed that older individuals have troubles in lexical retrieval during word production (Nicholas et al., 1985; Ramsay et al., 1999; MacKay, Connor, Albert, & Obler, 2002). Studies that have concentrated on word production usually used either picture-naming tasks or analysis of tip-of-the-tongue (TOT) states as a measure of lexical-retrieval ability. Certain cross-sectional studies, comparing groups of younger and older participants, showed that older participants performed significantly less well than younger individuals in their picture-naming tasks (Albert et al., 1988; Nicholas et al., 1985; Welch et al., 1996). For instance, Nicholas et al. (1985) assessed four groups of participants: individuals in their 30s, 50s, 60s, and 70s, who completed two sets of picture-naming tasks. The overall accuracy as well as responsiveness to cues, and error types were analysed. It was found that the overall accuracy was highly influenced by age. To be more specific, older adults made more errors than younger ones. Moreover, the group of 70-year-old participants demonstrated considerably higher error rates in comparison with all other groups in both naming tasks.

In addition to the overall performance, certain studies have analysed error types (Au et al., 1995; Nicholas et al., 1985; Ramsay et al., 1999) as well as

responsiveness to cues (MacKay & Connor, 2001). These features are crucial for determining 'where' in the process of lexical production the difficulty may be hidden. For instance, it has been verified that the majority of healthy older participants who have word-finding difficulties during picture-naming tasks are able to produce a circumlocution[26] response, i.e. they give semantic information about the item they cannot name. The experiments have also shown that the participants would profit from phonemic cues (i.e. the first sound or syllable of the target word). This suggests that it was phonological, rather than semantic, information that was inaccessible.

Concerning tip-of-the tongue measures, Burke et al. (1991) discovered that the number of TOTs was significantly higher in older adults. In particular, the proportion of TOTs for proper nouns was larger than for object names or abstract words for older and mid-age participants, however not for the young adults (as cited in Goral, 2004).

Ageing also causes **perception troubles** when the speech rate is accelerated. It has been proved that participants in later ages evince worse results in speech perception (Gordon-Salant & Fitzgibbons, 1999), comprehension (Wingfield, Peelle, & Grossman, 2003) and recall (Wingfield, Tun, Koh, & Rosen, 1998) compared to young adults. In their study, Gordon-Salant & Fitzgibbons (2001) found that in accelerated speech tiny segments of speech are eliminated at regular intervals, which leads to difficulties of perceptual processing by making temporary acoustic cues even shorter. This fact may be responsible for worse perception of compressed words by older adults.

In terms of **lexis**, it is known that older adults have a wider range of vocabulary than young adults (Kemper & Sumner, 2001). Nevertheless, despite this

[26] Circumlocution is characterised by the use of many words in order to say something that could be said more clearly and directly by using fewer words (e.g. "artistic thing for flowers" for "trellis").

fact people in later ages described that they can no longer spell words they once knew how to spell; moreover they experienced more difficulties than young adults in misspelling words they read or heard. By way of example, MacKay & Abrams (1998) found that the elderly had a tendency towards regular spelling of irregularly spelled combinations, i.e. calendar → calender. However, participants around 77 years of age had shown a tendency to misspell regularly spelled combinations, e.g. calendar → kalendar (as stated in Burke & Shafto, 2008).

It has been mentioned that eyesight, namely **visual acuity**, of most older people undergoes deterioration, and therefore it is counted as a major area of physical constraint caused by ageing. Such a fact has surely a negative impact on older people´s reading skills. According to Bell (1980), it is estimated that approximately 23 percent of community resident older people are not capable of reading normal print. An easy solution to this problem is to simply print books in larger fonts. For instance, in the UK the best known publisher of large print books is "Ulverscroft". However, several disadvantages arise for publishers like these. Firstly, the principal market is rather small – the target group are mostly the elderly since younger adults having troubles reading usually tend to use magnifying equipment to deal with regular sized fonts. A different drawback is that a small number of readers purchase large print books – most of them borrow books from the local library. Therefore, publishers favour "safe" mainstream fiction that will appeal to a great deal of readers, e.g. works written by James Herriot, Agatha Christie, Catherine Cookson, etc. Even though they are considered good writers, older adults are thus restricted in their choice of fiction and are happy with whatever is available for them.

Lastly, as large-print books are heavy, the elderly cannot take as many books from the library as when they were younger, simply because they are not able to

carry much. Another solution for the visually impaired old people might be talking books which are accessible on the market in great amount and varieties (as stated in Hamilton, 1999).

A different way of scrutinising language is through **syntactic structure**. Not much research has been done on this topic. However, one exception is the work of Kemper dealing with changes in syntactic processing in the elderly. In one of her studies (Kemper, 1986) a group of younger and older adults were to imitate sentences by creating new ones with the same syntactic structure. Kemper discovered that the older participants were able to consistently imitate only short sentences. Long sentences, on the other hand, particularly ones containing many clauses, were the hardest. Such syntactic decline is also present in everyday spontaneous language. Kynette & Kemper (1996) stress the fact that the diversity of syntactic structures deteriorates with age. For example, an increase in errors, such as the omission of articles, and the use of incorrect tenses occur frequently.

An excellent source of exploring this deterioration and gradual change are diaries. Kemper (1987a and b) scrutinised six diaries kept by people throughout their adult lifespan. Taken from museum archives, she found that the language in the diaries became simpler over the writers lifetime. First and foremost, sentence length decreased, and so did the complexity of syntax. For instance, the number of subordinate clauses decreased. Simultaneously, the complexity of the narrative simplified and gradually events were described as lists of facts rather than as a narration resembling a story (as stated in Hamilton, 1999).

Last of all, it is worth mentioning a Finish study conducted by Pietilä (1989). She investigated the influence of age on the acquisition and use of a second language in Finnish-American immigrants. She found through evaluating native

speakers that the English of retired immigrants showed less proficiency, e.g. in terms of fluency as well as comprehensibility compared to younger immigrants. Further, both immigrant groups were compared in the same manner to second–generation Finish Americans. Not surprisingly, the results manifested significantly lower ratings for the first–generation immigrants. This suggests that the English of elderly immigrants sounded less native-like irrespective of the fact that both groups of fist-generation immigrants had come to live in the USA at approximately same age. Moreover, it is evident that acquiring a second language in childhood would lead to native-speaker proficiency more easily than learning a second language later in life.

Apparently, people with dementia exhibit similar or even worse deterioration regarding language structures and their processing as mentioned above. In addition, they experience frequent problems with memory, specifically converting any new memories into permanent long term memory, which has an impact not only on language but, most importantly, on the person as a whole (perception, experiencing, etc.).

4 Cognitive Aspects

In the following chapter I deal with cognitive functions and their training. Since recent research suggests there are cognitive benefits arising from language learning, this topic will also be mentioned. Another interesting term that is closely connected with the topic of this chapter is the concept of cognitive or brain reserve, which is scrutinised in detail.

4.1 Cognitive Benefits of Learning Foreign Languages

As mentioned earlier, bilingualism can delay the onset of dementia (Alladi, S. et al., 2013). Language learning can serve as a certain way of preventing the cognitive pathological changes. Moreover, different cognitive benefits of learning foreign languages can be observed. Regarding the age group of young learners, T.S. Caccavale, president of the National Network for Early Language Learning, stated in an interview that "studies have shown repeatedly that foreign language learning increases critical thinking skills, creativity, and flexibility of mind in young children. Students who are learning a foreign language out-score their non-foreign language learning peers in the verbal and, surprisingly to some, the math sections of standardized tests"[27]. She also commented on a research in Canada that has been conducted on young bilingual children. As has been proved, bilingual children develop the concept of "object permanence" earlier. It means that an object remains the same, although it has a different name in another language, i.e. a foot continues to be a foot whether it is an English word (*a foot*) or a French one (*un pied*).

With regard to the category of older learners, unfortunately, not a great deal of study has been carried out until recently. However, a study by Kay Ohly (2006) focused on learners of age 50+ and tried to concentrate on the strategies that older people use when learning a second language, i.e. in this specific case it was a group of English native speakers trying to learn German. The findings of the study prove that there was a difference in strategy use depending on the language skill used. More specifically, in reading and writing, a great deal of learners applied varieties of cognitive and metacognitive strategies. Regarding speaking and listening, the range of strategies was much narrower, and the number of strategies applied was lower.

[27] The content of the whole interview is accessible at www.tip.duke.edu/node/866

Another study conducted by Logan, Sanders, Snyder, Morris & Buckner (2002) focused on cognitive mechanisms in connection with age-related memory difficulties. Special attention was paid to the frontal cortex region which is responsible for higher-level intellectual processing. The researchers used fMRI to measure the activity of the frontal cortex in individuals while performing certain tasks. For the purpose of the study, a number of younger adults in their 20s, as well as older healthy adults in their 70s and 80s, were recruited. At first, both groups of participants were introduced words and asked to try to remember them later. So far, they did not receive any strategic support. The results showed that the older adults did not employ the critical frontal regions as much as the younger adults. However, in the second experiment, words were presented one at a time. The subjects were asked to decide what category the word fell in, e.g. whether it was abstract or concrete. During this part of the study, the fMRI images of the older participants showed increased activity in the frontal regions. Moreover, their memory performance improved as well. In other words, the frontal regions held the potential to solve the tasks. Unfortunately, it seemed that the older adults were not able to use them fully when left to self-initiated memorization strategies. Nevertheless, if supplied with the right stimuli, the older participants responded positively, engaging more of the frontal areas to process memories effectively at levels approaching those of young adults (as stated in Wegschaider, 2010). Such findings are helpful in employing strategies in older individuals, for example, in vocabulary learning or revising.

As mentioned earlier, education of the older generation is the aim of **geragogy**. Unfortunately, it is not well known and is usually considered as **andragogy**, i.e. the teaching of adults. However, there certainly exists a difference between methodological strategies applied in teaching, for instance, of a 40-year-old

person and a 70-year-old person. One example is the difference in attention span, which has to be taken into consideration. Another comparison could be made with regard to pre-school education, which is considered as an important and essential part of educational process. Though not being compulsory in most of the countries[28], it is much more widely recognised compared to the recently established geragogy.

4.2 Cognitive Brain Reserve

Languages, apart from other cognitive faculties, can serve as a function of cognitive or brain reserve. According to Stern et al. (2005), the brain reserve hypothesis is a highly influential and frequent concept used in neurosciences and cognitive ageing. From the point of view of history, the hypothesis has been connected with particular anatomical views of reserve (larger brain, more neurons and greater reserve). However, with the recent introduction of functional neuroimaging technologies, the reserve is viewed rather as a dynamic network (as stated in Craik & Salthouse, 2008). In other words, individuals that use a brain network more efficiently, or are more capable of building alternative brain networks or cognitive strategies in response to increased demand, can have a greater cognitive reserve (Stern, 2002).

In addition to Stern (2002), the author distinguishes cognitive reserve as being **passive** as well as **active**. Whereas the concept of a passive reserve is built on a quantitative model concerning the brain volume and the number of neural connections, the latter works with a different notion. It is the **active reserve** which can be further classified into **cognitive** and **compensation**. The cognitive reserve is more concentrated on the “software”, meaning more effective task processing. As

[28] Before reaching the age of six, there are only 11 European countries where certain type of pre-school education is compulsory, namely Bulgaria, Cyprus, Latvia, Luxemburg, Hungary, Poland, Rumania, Greece, Switzerland etc.; for more information see http://clanky.rvp.cz/clanek/c/p/8063/POVINNE-PREDSKOLNI-VZDELAVANI-V-ZEMICH-EU.html/

opposed to the passive model, it focuses more on what is left rather than on what is lost. In other words, active cognitive reserve requires anatomy variability on the level of brain networks, while the passive cognitive reserve focuses on the quantity of neurons. Compensation is the involvement of alternative brain areas in a damaged brain, i.e. it is not a reaction of an intact brain when experiencing difficulties (as stated in Steinová & Štěpánková, 2009).

Different authors, Fratiglioni & Wang (2007: 11), characterise the concept of the brain reserve in the following way: "the ability to tolerate the age-related changes and the disease related pathology in the brain without developing clear clinical symptoms or signs". Several studies provided evidence in what may play an important part regarding this reserve. It is education, social networks, work complexity, as well as leisure activities that cause the optimal functioning of cognitive faculties in a later age. Other epidemiological studies suggest that intellectual challenges experienced across one´s entire lifetime might contribute to a greater brain reserve and, therefore, be essential to the onset of dementia symptoms later in life. To summarise, adult-life occupational work complexity, a higher level of education and a mentally or socially integrated lifestyle in late life may delay the onset of clinical dementia and AD. As for the effects of physical activity, it is questionable since it is mostly also connected with social and mental stimulation. What seems to be the most beneficial are leisure activities with all three components, i.e. physical, mental and social.

On the other hand, authors like Salthouse (2006) are not entirely convinced that brain reserve or sufficient cognitive activity is such a good prevention of dementia. He argues that there is no clear scientific proof for the popular hypothesis "use it or lose it", however, neither is there any evidence against it. Studies only show

that there is no point in saying “You cannot teach an old dog new tricks”. Such a notion had to be reconsidered. To verify the notion of the long-term efficiency of cognitive training in the prevention of dementia, more longitudinal research has to be done to clarify the relation between the level of activity and the level of cognitive functioning. Nevertheless, people want to believe that they can be in charge of their cognitive functions. By practising cognitive training, the elderly are at least engaged in activities that are enjoyable and by doing so, they know they have not lost this ability yet.

As for the long-term effects of cognitive training, however, Willis et al. (2006) summarise the outcomes of the ACTIVE[29] study carried out in the USA from 1998 – 2004, which are very positive. The intervention was focused on three areas: verbal episodic memory, judgement, as well as the speed of processing of visual input. Each intervention programme has led to the immediate improvement in the area trained. The positive effects were apparent even after five years. The most significant long-term effect has been measured in the training of the speed of processing.

The same authors also comment on the short-term effects of cognitive training measured before and after the intervention. The results prove to be promising in the following areas – speed of processing, memory as well as judgement.

4.3 Cognitive Intervention Programmes

As stated by Klucká & Volfová (2009), in the treatment of dementia as well as other traumatic brain injuries, pharmacotherapy and behavioural therapy are employed. However, neither of these treatment procedures can prevent the gradual deterioration of cognitive functions. Regarding long-term treatment, both types of therapies complement each other.

[29] Advanced Cognitive Training for Independent and Vital Elderly

This diploma thesis will be dealing only with behavioural therapy generally comprising means such as cognitive training, motivation, activisation, creative occupation, etc.

Regarding the prevention of dementia from the point of view of behavioural therapy, the key activities to remaining mentally active are cognitive training, knowing new things, being interested in what is happening, as well as an overall pro-active way of living (Klucká & Volfová, 2009).

According to Belleville (2008), cognitive intervention programmes used in working with the elderly can be classified into the following categories:

- **Cognitive stimulation** – involvement in group activities, which are meant to support and develop cognitive as well as social functioning in a non-specific way. This can be realised through discussions, leisure activities that are supervised, memorising of lists without any specific support and other activities, including reality orientation and reminiscence.[30]

- **Cognitive Training** – it usually involves professionally guided therapy aimed at reflecting certain cognitive functions, such as memory, attention, problem solving (executive functions). The improvement of one´s metacognition[31] and self-efficacy[32] is the anticipated result of cognitive training.

[30] The process or practice of thinking or telling about past experiences, a therapeutic method frequently used while working with the elderly.
[31] Awareness or analysis of one's own learning or thinking processes.
[32] The awareness of being in control of one´s own cognition.

- Wilson (2002) adds another type of cognitive intervention programme, in particular **cognitive rehabilitation** – it is an individual approach to help aimed at people with a certain type of impairment or disorder involving the cooperation of patients and their relatives with medical staff to identify relevant aims and build strategies to achieve them.

Klucká & Volfová (2009) offer a different characterisation. They describe cognitive training as a way of "exercising" cognitive functions in healthy individuals who are, therefore, activated with the exercising itself being a way of preventing involutional changes[33]. As follows from the term itself, cognitive training is not aimed at correcting deficits; rather it aims at the strengthening of existing functions. Cognitive rehabilitation, on the other hand, is described as a restoration of impaired functions.

4.3.1 Cognitive Training

When working with the elderly as well as people with other brain conditions, such as autism, traumatic brain injury, etc., cognitive training is used rather frequently.

Cognitive training is often, though not correctly, considered as a drill exercise. However, such an approach is usually demotivating and dissuades the client from cooperating. The key concept of positively motivated cognitive trainings is entertainment and lightness of practice, both through games and also through natural competition (Klucká & Volfová, 2009).

[33] Involution comprises the regressive alterations of a body or its parts characteristic of the ageing process (e.g. skin changes such as wrinkles or age spots).

According to Lippertová-Grünerová (2005), cognitive training and cognitive rehabilitation starts with exercises focusing on simple attention practice and the improvement of psychomotor speed. Then it continues with exercises in spatial imagination, speech, counting, visual perception as well as memory. Further, the practice is aimed at training higher and more complex cognitive functions, e.g. logical task solving and the practice of executive functions. Lastly, it is convenient to end the session with a focus on the affective depth of the clients´ experience, i.e. their self-assessment, behavioural patterns, etc.

4.3.2 The Structure of Cognitive Training

The length of cognitive training may vary. However, it usually takes 45 to 60 minutes. As stated in Klucká & Volfová (2009), 45 minutes can be compared to the duration of a school lesson and it is the length during which the majority of people have no trouble concentrating.

Concerning the size of the group, it should include 7 – 10 people. Of course, the size is not strictly limited; it could be extended up to 15 participants and can still fulfil its function. Cognitive training can be also easily used in a form of an individual session with one client. The reason for the group being so small is to imitate the social contact of daily living. Since the majority of our lives is lived in small groups, such as family, friends, and work colleagues it is, therefore, the most natural environment for us. Similarly, each cognitive training session should ideally employ both verbal and written tasks as well as drawing activities. This is based on the assumption that in everyday life we also have to be able to cope with requirements to process a specific task, either in written/verbal form or by drawing it.

Lastly, it is crucial to stress several important principles. Each session, for example, should start with a greeting, introducing oneself (especially in group

therapies with people suffering from dementia). It is essential to support mutual communication. It has been proved that if clients in homes for the elderly actively meet on a regular basis to know each other and communicate together, it brings about positive effects in slowing down the decline of cognitive functions. The clients are consequently capable of living a higher quality life.

Before the beginning of the training, it is advisable to set the clients in time and reality, i.e. remind them of the date and the aim of the meeting.

Further, it is extremely important to support communication within the group. For example, a therapist talks with the clients about their personal preferences and hobbies, which is stimulating. Regarding questions about facts, they should be asked in a playful manner since it is not crucial for the client to know the correct answer, but to activate his/her thinking.

Next comes the part of cognitive training that should be rich in a variety of tasks. Again, it is crucial to stress a relaxed, playful atmosphere, which contributes to the feeling that the clients only try something out of curiosity. The clients must not have the feeling that they are being examined. The therapist should be there to help the clients overcome possible obstacles, give support and praise.

When working with competent clients, a self-assessment part might be employed as well. The individual members of the group can share both good as well as bad feelings with the others, evaluate their own progress, and so forth. The therapist gives positive feedback and motivates clients to improve their future performance. Lastly, the cognitive training session is terminated by saying goodbye to others (Klucká & Volfová, 2009).

4.3.3 **The Process of Cognitive Training**

In the following short overview, I deal with several principles connected with cognitive training, i.e. how to lead the session, how to motivate clients and create a positive working atmosphere, etc.

According to Klucká & Volfová (2009), it is advisable to adhere to the following tenets:

- We respect mutual relationships of the clients as they arise in the institution/home for the elderly and support positive interactions.
- We motivate the clients by emphasizing the long-term effect and the consequent gains, e.g. clients get to know themselves better, the capacity of their memory improves, they should feel more independent, etc.
- We accept the client as a unique being with his/her present abilities employing an individual approach[34].
- We put reasonable and achievable requirements on the clients.
- We try not to compare clients in front of each other.

Further, the therapist should accept the fact that it is not possible to expect positive outcomes after a short period of cognitive training. Rather, the effect itself would be and can be "only" slowing down the cognitive decline and strengthening of social interactions.

Lastly, even clients who do not want to cooperate from the beginning and say, for example: "I´m 90 years-old, I don´t need it anymore" or "I feel very tired for that" should undergo cognitive training either in groups or individually. On the one hand, the clients´ statements could be relevant, however, cognitive training can be useful

[34] Inspired by C.R. Rogers´ "Person Centered Approach".

not only to improve on their cognitive functions, but to also represent a chance to meet other people and share joy and success from the therapy (Klucká & Volfová, 2009: 26).

Practical Part

The following part of my thesis concentrates on the presentation of an experiment – the piloting of the worksheets and subsequent findings. Firstly, the "Domov Sue Ryder" institution, where the experiment was conducted, is introduced. Secondly, the focus is centred on the individual informants – two elderly ladies suffering from dementia who participated in the study. Lastly, I deal with the experiment itself – the methodology, findings and suggestions for further research.

5 "Domov Sue Ryder"

"Domov Sue Ryder", located in Michelský dvůr, Prague, is a non-governmental organisation founded in 1998. Its main aim is to provide social care services for the elderly.

As stated on the website of the organisation (www.sue-ryder.cz), Sue Ryder currently provides two main social services, residential care and personal assistance, in addition to two related services, counselling and equipment rental. The nursing department, which offers 52 places, is aimed at elderly clients suffering from chronic conditions, handicaps, recently suffered injuries, needing a period of rehabilitation, or who have found themselves in a difficult social situation, such as the death of a life partner. The most frequent diagnoses include cardiovascular diseases, arthrosis, dementia as well as post-stroke conditions associated with impaired movement. The average age of the client is approximately 86 years.

Sue Ryder is part of a group of centres established in 12 European countries and South Africa. The Sue Ryder Foundation was founded in 1953 by Lady Sue Ryder of Great Britain where this organisation is most active and offers social and health care at a community level.

Financing is secured by several means. “Domov” obtains income from the clients who pay for accommodation, meals and optional activities. Selected expenses are covered by health insurance companies. Further, Sue Ryder generates income from sales and fundraising, such as revenues from the charity shops[35], the restaurant situated in Michelský dvůr, entrance fees from cultural events as well as donations from individuals and companies. The organisation is clearly dependent on subsidies and grants from the government, namely the Ministry of Labour and Social Affairs, as well as the Ministries of Defence and Culture. Prague City Hall is another regular benefactor of grants.

5.1 Activities for the Elderly in Sue Ryder

Since the aim of this institution is to keep the clients active as long as possible while developing their skills and abilities, there are several activities that help them in doing so:

- Occupational therapy for individuals[36]
- Creative techniques[37]
- Speech therapy
- Music therapy & Singing
- Baking
- Dance/Movement therapy
- Reborn doll therapy[38]

[35] In Prague, six charity shops are in operation at present. These shops sell items donated by individuals or companies – products such as clothes, fashion accessories, books, gift items, toys, small furniture, pictures, etc.
[36] A therapy whose aim is to support self-sufficiency in daily tasks.
[37] The process of making arts and crafts, such as gift boxes, pictures, greeting cards, etc. The main aim is to exercise the functions of hand (mainly grip, finger movements).
[38] A doll, which is a perfect copy of a new born, creating pleasant feelings and relief from stress in female clients with dementia/Alzheimer´s disease. If interested, see an on-line article: http://ezinearticles.com/?Alzheimer-Patients-and-Reborn-Dolls&id=2777224

- Physiotherapy
- Reminiscence[39]
- Multi-sensory stimulation[40]
- Cognitive/Memory training

  etc.

5.2 The Structure of Cognitive Training in Sue Ryder

For the purpose of this thesis, special attention is paid to cognitive training, in particular, by closely looking at the structure of cognitive training and categorising individual subtasks and stages. The presented structure of cognitive training is the one used in Sue Ryder; other social institutions or non-governmental organisations may employ different structures, time-lengths, etc.

As stated on the Sue Ryder website[41], the number of clients participating in cognitive training sessions usually varies between 5 and 8. These clients may be divided into two groups, according to the progression of dementia, so as to give everyone appropriate opportunities to be involved. The therapist strives to treat each client equally, to give the same amount of attention to each and every one of them, and to evoke a friendly atmosphere while leading the therapy in a playful way.

The therapist works with chosen themes, e.g. according to the season ("spring", "summer") or in relation to the clients´ interests ("sport", "travelling"). Each theme is divided into 4 topics that are dealt with for approximately one month. After the initial greeting, the clients are asked questions to orient themselves with the actual time: What day of the week is it? What is the date? Whose name day is it? Do they remember any anniversaries connected with that day? Etc.

[39] A therapy using memory and recall to keep the clients mentally active.
[40] Suitable primarily for clients with severe dementia as it combines elements of music/dance therapy, sensory stimulation through visual, auditory, olfactory and tactile input, relaxation etc.
[41] http://www.sue-ryder.cz/trenovani-pameti-domov-pro-seniory.html

What follows then is the thematic programme itself which is divided into several categories trying to accomplish certain aims. Let us look at the topic “spring”, for example, which I had the opportunity to observe:

- **Short-term and working memory training:** The clients are supposed to remember a certain number of objects/pictures and are asked about them later, e.g. either during or at the end of the session. This task is usually connected with the initial orientation regarding name days or birthdays of significant others, e.g. a picture of Hugo Hass is presented and the clients are asked to remember it for later questions.

- **Logical thinking abilities:** These tasks are usually connected with choosing the odd one out in terms of certain categories, matching word pairs (synonym – antonym), or counting in relation to dates or years. For example, the therapist says that it is Milan Kundera´s birthday today and that he was born in 1929. She asks about his age and lets the clients find the answer on their own.

- **Long-term memory training:** This part of the cognitive training programme is based on associations with sayings or weather proverbs, e.g. the clients are asked to recall proverbs regarding spring. If problems occur, the therapist helps them with prompts (“Březen – za kamna vlezem”). At the end of the session, there is usually a reminiscence part in which clients share their past life experiences in relation to the topic discussed (“Is spring your favourite season or not? Why?”).

- **General knowledge & Categorising:** Regarding the topic of spring, the clients might be asked which flowers they are familiar with. When they finish enumerating individual flowers, clients are asked to sort out, or categorise them, according to certain criteria, e.g. “What yellow flowers do you know?”

- **Word formation:** The clients try to think of as many words starting with a particular letter which fall into a certain thematic category. For instance, the whole group works with the Czech word “narcis”. First, they are supposed to think about words starting with the letter “n”, to give specific names of Prague neighbourhoods, such as “Nové Město”, “Nusle”, etc. Then comes the letter “a” which represents the category of cities (“Aš”, “Amsterdam”), followed by “r” for animals (“Rys”, “Ropucha”), etc.

At the end of the session, clients might be asked about the pictures presented to them earlier. They also assess the therapeutic unit by saying how they liked it, what they have learned, etc. The training finishes with mutual “good byes” and the clients are escorted back to their rooms.

With an emphasis on communication, clients are encouraged to share ideas connected with the topic at any point during the training with everyone having the opportunity to speak. To ease the information flow for the clients, the therapist often uses a hand-held device to find suitable pictures for the topic, in this case flowers, and illustrates them in a visual way. She walks among the clients and waits for everyone to see. Another “activity” which could be involved is refreshment – the clients are, for instance, served various types of tea or cakes. The reason for its

includion is that taste is one of the senses deeply connected with past memories and associations. Even the most severely impaired clients with dementia suddenly feel such sensory input and are stimulated for a short period.

6 Methodology

In this chapter, I describe the experiment itself, the circumstances leading to the decision to choose Sue Ryder, the selection of the participants, the process of data collecting, and its processing and analysis.

6.1 Research Approach

The aim was to work with clients in a similar way as the Sue Ryder therapists while performing cognitive training. The major difference concerned the language used, which was English. For this purpose, eight worksheets were created and piloted in the institution. Another distinct feature was the number of participants. While cognitive training in “Domov” is a group activity, I had to choose an individual approach for the reasons already mentioned above. Therefore, the content of the session was adjusted for one client only.

From a neurolinguistic point of view, the main aim was the stimulation of both hemispheres due to their dissimilar function and the distribution of language centres for L1 (first language/mother tongue) as well as L2 (second language). However, from an educational perspective, the experiment was also focused on the client´s vocabulary range. A specific aim was to broaden the client´s vocabulary range in certain semantic fields, in particular “Arts” and “Food”. Therefore, the main research question was formulated as follows: How does cognitive training help elderly female clients with dementia to broaden their vocabulary in a second language?

6.2 Data Collection & Analysis

For the purposes of data collection, interviews were chosen as the best form. This choice was obvious as each cognitive training unit was an oral activity. Moreover, each cognitive training unit was recorded. The aim was not to disturb the fluency of speech while the clients were talking. It was also a great deal easier for the researcher not to make notes, while performing the activity, but to assess training in retrospect later. After each of the training units, I made notes regarding the way it was perceived by the clients, commenting on their mood and planning future adjustments. Certain data, such as the grammar tests, were collected in a written form, i.e. the participants filled in the aswers on a sheet of paper.

6.3 Research Ethics

An “Agreement of Confidentiality” was signed by the two parties, i.e. the institution “Domov Sue Ryder” and me, as a volunteer (gathering her data for diploma thesis). It was stated in the agreement that I would not share any internal details regarding the institution, the clients, etc. with the outside world. The two eligible clients willing to take part in the experiment were to be treated as anonymous participants.

Before the intervention, the two ladies had been explained what the purpose of our meetings was. It was explained to them that I am a university student gathering certain data for my diploma thesis called “Language and Ageing”. They also agreed to the fact that they were being recorded.

6.4 Selection of the Institution and the Participants

One of the requirements of the experiment was to find informants with similar conditions, i.e. age, sex, diagnosis or level of English. Having considered clients with aphasia first, this idea was consequently abandoned due to the lack of participants. It was not possible to find suitable clients with the exact type of aphasia, which was a crucial criterion, since different types of this disorder could manifest completely dissimilar symptoms. For that reason, attention was shifted towards elderly clients with dementia, who, in general, fulfil at least some of the requirements – age and diagnosis – and the clinical manifestations are likely to be more comparable no matter what type of dementia they suffer from. The sampling approach in this study was purposive sampling. To be more specific, criterion-based sampling, which "involves searching for cases or individuals who meet a certain criterion, e.g. that they have a certain disease or have had a particular life experience (Palys, n.d.)."

To find suitable clients, I contacted the "Domov Sue Ryder" organisation via email because I had worked there during a short placement when I was studying occupational therapy. I was allowed to enter the institution once a week as a volunteer provided I wore a clearly visible lable with my name on it so as not to confuse the clients or the staff.

The selection of the clients was done for me since there were only two willing English-speaking ladies who suffered from dementia and were able to cooperate. Thus, the participants fulfilled three similar conditions – age, diagnosis and sex. However, the participants differed in their knowledge of the English language, which will be scrutinised later.

6.5 The Frequency & the Number of the Trainings

We agreed that Monday would be the most suitable day for my visits. Surprisingly, the ladies had a very busy schedule and I was lucky that we could find a small “gap” for me to intervene. Specifically, I was to see them between 1 and 3 pm. Our meeting point with client N. was at the restaurant where the lunch is served and with lady D. we met exclusively in her room. Therefore, there were two distinct sessions; each of which lasted approximately 50 minutes. The length of the session was determined by the time given. After a month had passed (4 sessions), there was a change in the ladies´ programme so it was possible to reschedule our meetings on Tuesdays. This was more convenient, especially for Mrs. N. because from that moment we could meet in her room, where there were more suitable conditions for the training rather than in a noisy restaurant. We met a total of 11 times distributed over a period of 2.5 months from March to June 2014.

6.6 The Initial Assessment

The aim of the first visit was to know the ladies and establish a personal relationship. We talked about the topic of “Family & Friends” which served as a way of sharing certain personal information and familiarising ourselves.

On my second visit, both clients were presented with a placement test to establish the level of their English. They were given the same set of tests twice, i.e. once before and once after my intervention, i.e., piloting of cognitive training worsheets. While the aim of the first testing was to determine the level of their English, the second testing had evaluative value – it determined whether there was any improvement in English during my intervention. However, this was not considered as a major aim since the main purpose was the stimulation of both the

hemispheric functions, in general, and the attempt to broaden the clients´ vocabulary in a second language.

The grammar test that was chosen for the purpose had been conducted by Swan & Walter (1997). There were three sets of tests, each representing different level - “basic points”, “intermediate points” and “advanced points” (see Appendix 6). Each test consisted of 30 sentences; it was a multiple choice task with more than one correct answer. The tests were administered in accordance with the result page in the textbook. Further, the individual points were counted and expressed in percentages. Since the results of the grammar test for one participant could have been considered borderline, i.e. it was not clear whether the client belonged to intermediate or advanced students, she was presented with another test on the following visit.

The results for Mrs. N, who filled in the test “basic points”, which could be relevant to A1/A2 level[42], were 20 points out of 30, or 66.7 % correct. For this reason, the client´s level was considered as pre-intermediate.

As for the results of Mrs. D., she obtained a score of 26 points out of 30 (86.7%) which was close to the maximum. Therefore, a test focusing on advanced students was also given to her and she scored 16.5 points, or 55%. Therefore, she was classified as “intermediate/upper-intermediate” corresponding to levels B1/B2.

Before the cognitive training intervention, the clients were also presented with two pictures that summarised the vocabulary they would be dealing with in the following month. Both pictures were displayed on a computer screen to maximise

[42] Michael Swan does not provide any characteristics of the three tests at the beginning of his book as to which level they correspond. However, we can roughly distinguish that test number 1 correlates to “elementary/pre-intermediate”, test number 2 represents "intermediate/upper-intermediate” and the last test corresponds to the “advanced“ level. Neither does the author provide any comments or recommendations regarding the categorisation of the results, e.g. what does it mean if learners achieve 20 points out of 30.

the size of the picture so the clients could see them properly. The cognitive training was divided into two thematic parts – “Arts” and “Food”. In accordance with the way the therapists in Sue Ryder do it, each of the topics was dealt with for a month – one main topic consisting of four subtopics, one subtopic per week, which made four cognitive trainings in a month.

During our third meeting, the ladies were presented with an overall picture consisting of 36 small pictures on the topic of “Arts” (see Appendix 1). They were asked to give the English equivalents for as many pictures as possible. After a month-long experiment, which will be scrutinised later, they were asked to do the exactly same thing. The aim was to ascertain if there was an increase in their vocabulary range after such a period. Secondly, the clients were given another overall picture dealing with the same amount of pictures; however, this time the topic was “Food” (see Appendix 2). The following procedure was the same – after a month, they were shown the same picture and the number of objects they were able to name in English was measured once again.

6.7 Case study

In the following section, both female clients are introduced in the forms of case studies – their names, age, diagnoses, as well as brief biographic overviews. A case study, chosen as the research strategy in this thesis, “provides a unique example of real people in real situations, enabling readers to understand ideas more clearly than simply by presenting them with abstract theories and principles (Adelman, 1980).”

As for the client names, only initials were used to maintain their anonymity. Regarding their diagnoses, these were indicative only, for two reasons. Firstly, full access to the medical documentation was denied as it was private and held by the medical staff. What had been provided was limited access to documents reporting on

the assessment of cognitive functions called the Mini Mental State Examination *(*MMSE)[43]. No other tests, for instance, on verbal or phonemic fluency had been performed. Secondly, the process of diagnosing a certain type of dementia was complicated since individual types may be easily interchanged. Therefore the ones that evinced similar clinical symptoms were to be compared and, consequently, a correct diagnosis was to be determined[44].

6.7.1 **Case Study No. 1**

Mrs. N.

Age: 84 years

Diagnosis: dementia, most probably Alzheimer´s dementia

Mrs. N. has been a resident in "Domov Sue Ryder" for 5 years. She has her own room and always likes visitors. Once in a while, a native English speaking lady comes here and leads conversations with her to practise her English. Regarding the activities at Sue Ryder, she regularly attends creative techniques, which ranks as her favourite, together with baking, physiotherapy, reminiscence and cognitive training. Mrs. N. is a friendly person who loves the company of other people. When left alone for a period of time, she gets easily depressed. She also experiences feelings of hopelessness when she realises she was better at doing something in the past compared to her present skills/results (e.g. level of her English). As for her physical condition, she is currently using a wheelchair since her pacemaker[45] is not working

[43] The functions examined are attention and calculation, memory & recall, language, ability to follow simple commands, orientation, etc.
[44] In medicine, such a process is called a differential diagnosis.
[45] An artificial medical device placed under the skin near the heart to help control abnormal heart rhythms.

properly; Mrs. N. refused to have the battery changed in the device. Otherwise she is perfectly capable in doing hygienic and other self-care tasks.

Mrs. N. has led an interesting life. Having studied dramaturgy and literary management, her attitude towards films was positive. In the 1940s and 50s, she starred in several movies. Later on in her life, Mrs. N. started writing her own books and became a writer, mostly for children, and later was active as a journalist. She also produced several theatrical plays. Concerning her personal life, she has been married twice with no children. Mrs. N. spent several happy years with her second husband in London, where he had been working at the Czech embassy as a consul. In Britain, she became fluent in English and has retained this ability to a certain degree.

6.7.2 **Case Study No. 2**

Mrs. D.

Age: 83 years

Diagnosis: Mixed dementia

This lady has been a resident in Sue Ryder since 2001. Having fallen at her home, she needed proper rehabilitation and moved to this place permanently. At the moment, she is perfectly capable of walking and moving around independently. As for her mental condition, she has experienced troubles with short-term memory and disorientation in time and place. At “Domov” she has been attending similar activities as Mrs. N. along with singing occasionally. Mrs. D. is a moody person – she can be enthusiastic and pleasant, and other times, she just wants to lie in her bed, talk to no one and sleep. What makes her happy is when she feels needed and can help others.

Her life prior to the placement in Sue Ryder had been very active. Since her childhood, she has been fascinated by figure skating, in which she later became very popular and won several awards. Her daughter was also very successful in this discipline, especially in pairs ice dancing. Mrs. D. remained faithful to figure skating even after having finished her career as a professional athlete – she became an international judge in this discipline. Moreover, this experience gave her an opportunity to practise languages – besides English, she could also speak Bulgarian, French, Russian as well as German. In addition to her sports career, she graduated from Charles University, her fields of study being the above mentioned English and Bulgarian. Later in her life, she became a teacher and had been teaching both in schools as well as privately until recently. For instance, she had conversation and grammar lessons with her daughter-in-law in the recent past. This was an important factor since it gave her the feeling that she was still needed and fulfiled her professional and social role.

6.8 The Cognitive Intervention – the Structure & the Worksheets

Each intervention had a similar structure as the cognitive trainings led by the therapist in Sue Ryder only with the exception that it was in English. The general structure has been dealt with earlier.

Now I am going to present the worksheets that were created in order to lead the cognitive training in L2. They consist of six parts each of them dealing with a different purpose:

1) Firstly, there is always the reminiscence part where I asked the clients what they were doing last time, etc.

2) Secondly, I presented a picture connected with the topic and asked related questions.

3) Further, there was the general part which consisted of a series of questions related to the topic (questions on facts, personal preference questions, etc.) or a quotation or an English idiom/saying.

4) The following part was dealing with categorising – the clients were supposed to narrow the topic, to present certain categories and also to give specific examples.

5) This part dealt with word formation – the task for the clients was to think of a number of words starting with a particular letter within a certain thematic category. Examples of such categories are as follows: sports, body parts, fruits, vegetables, animals, adjectives, verbs, city names, country names, jobs & occupations, science, food, furniture, cars, house & household, clothes, arts, flowers, musical instruments, continents, etc.

6) Lastly, the intervention was finished with a feedback regarding what the clients have learned, what they liked about the training, etc.

In the worksheets, I called myself “therapist” since as mentioned earlier, I tried to do what the therapists do and the materials may also consequently be used either for individual or group cognitive training for clients who speak English. Regarding the part “Possible Answers”, these were suggested to give hints in case the clients did not know any examples. In reality, we might have been talking about completely different examples proposed by the clients. However, certain participants´ answers were implemented in the final version of the worksheet presented in this thesis. As for the time suggested for each section, it is indicative only since actually we might have been dealing with one part for 20 minutes instead of 15 and consequently with the following part 10 instead of 15 minutes. Everything depended on the clients´ ideas, their well-being, level of attention, and so forth.

The worksheets might be used for participants of various levels of English. For instance, the parts “Categorising” as well “Word formation” can be adjusted to the clients´ needs, e.g. when categorising vegetables, this might be done either from the botanical point of view (“Gourd” or “Allium” vegetables) or according to different criteria (“vegetables of orange colour”). The first option is obviously suggested for more advanced clients, the latter one, on the other hand, suits clients less skilful in terms of vocabulary.

In the following section, the individual worksheets used for cognitive training will be presented. They are arranged in the order in which they were discussed with the clients:

Topic No. 1

ARTS & CULTURE
1) The therapist asks the following questions: What were we doing last time?/What day is it today? – **2 min.**
2) The therapist presents a picture of a ballerina and waits for the client to recognise it. She asks follow up questions regarding the picture - **2 min.**
3) General Part: 15 min.
○ The therapist asks the following questions:
○ What is art? What do you consider as forms of art? Do you like modern art? Do you enjoy visiting (art) museums? Have you ever been to any famous (art) museum? Why is art important? Do you have a favourite painting? If yes, what is it? Do you enjoy listening to music? Do you play any musical instrument? What is your favourite book/writer?
○ Do you agree with the famous quote by Pablo Picasso: “The purpose of art is washing the dust of daily life off our souls.” Why/Why not?
4) Categorising: 15 min.

○ The client is once again asked what forms of arts she knows.
○ Later, the client is supposed to categorise arts in the following categories – music, poetry & literature, architecture, theatre, dance and list several examples. The therapist chooses one category and waits for the client to present her ideas. In case the client does not know any terms, the therapist gives hints in Czech, e.g. “Vojna a ....”, after that they translate the name/title together.
○ The client is supposed to come up with either Czech or English term.
Possible Answers:
○ **Music:** Karel Kryl (“Bratříčku, zavírej vrátka”) , Waldemar Matuška (“Jó, třešně zrály”, “To se nikdo nedoví”), Marta Kubišová (“Modlitba pro Martu”), Karel Gott (“Zvonky Štěstí”, “Včelka Mája”, “Kávu si osladím”)
○ **Poetry & Literature**: Ernest Hemingway (“The Old Man and the sea”, “For Whom the Bell Tolls”), Leo Tolstoy (“War and Peace”), Karel Čapek (“Válka s mloky”, “Dášenka čili život štěněte”), Alexander Dumas (“The Three Musketeers”)
○ **Architecture:** Dancing Building, Charles Bridge, Prague Castle, Eiffel Tower, Cathedral Notre Dame, Sagrada Familia
○ **Theatre:** Shakespeare, Samuel Becket (“Waiting for Godot”), Oscar Wilde (“An Ideal Husband”, “The Importance of Being Earnest”), Václav Havel, Jan Werich & Jiří Voskovec
○ **Dance:** Fred Astaire, Michael Jackson, Vlastimil Harapes, Swan Lake, Cinderella
5) Word Formation: 15 min.
○ The client is asked whether she remembers what was in the picture at the beginning of the training. The therapist waits for her reaction and consequently presents the picture (picture of a ballerina). Later, the therapist works with the word “BALLERINA” - the client is supposed to list as many words starting with a particular letter in a certain category, e.g. fruits, vegetables, body parts, job and occupation, etc. Each letter from the word discussed is dealt with only once.

B – badminton, baseball, basketball, bowling, boxer, bronze medal, bicycle
A – ankle, arm, artery, abdomen, adrenal glands, Achilles tendon, anatomy
L – leek, lentils, lettuce, lemon, lime, legume
E – eager, easy-going, embarrassment, emotional, enchanted, enraged, enthusiasm, excited
R – rhino, rooster, rabbit, rat, reindeer, rattlesnake, robin
I – Iceland, Iraq, India, Ireland, Italy, Israel
N – NewYork, Nairobi, Norimberk, Náchod, Neratovice, Nová Paka
6) Final Assessment & Goodbye – 1 min.
o Feedback

Topic No. 2

MUSIC
1) The therapist asks the following questions: What were we doing last time?/What day is it today? – **2 min.**
2) The therapist presents a picture of a conductor and waits for the client to recognise it. She asks follow up questions regarding this profession. - **2 min.**
3) **General Part: 15 min.**
o The therapist asks the following questions:
o What kind of music do you like? Is there any kind of music that you hate? Do you enjoy music videos? What is your favourite band/singer? Have you ever tried singing karaoke? Do you consider yourself a good dancer? Did you use to go dancing often when you were younger? Have you ever been to a concert, e.g. an orchestra concert? What was your favourite music 10 or 20 years ago? How has your musical taste

changed? Why is music so important to people and cultures? Do you think music can heal sick people? Who is the most famous musician in our country?
○ Do you agree with the quote by Friedrich Nietzsche: “Without music, life would be a mistake.” Why/Why not?
4) **Categorising: 15 min.**
○ The client is asked what kinds of music she knows.
○ Later, the client is supposed to categorise music in the following groups – classical music, opera, pop, rock & rock´n´roll, jazz & blues & swing and list examples of singers/songs, etc. The therapist chooses one category and waits for the client to present her ideas. In case the client does not know any names, the therapist gives hints in Czech, e.g. “Kouzelná ....”, then they translate the name/title together.
○ The client is supposed to come up with either Czech or English terms.
Possible Answers:
○ **Classical music:** Bedřich Smetana (“Vltava”), Ludwig van Beethoven (“Symphony No. 9”), Antonio Vivaldi (“The Four Seasons”), P.I. Tchaikovsky (“The Swan Lake”)
○ **Opera**: Antonín Dvořák (“Rusalka”), Wolfgang Amadeus Mozart (“The Magic Flute”), Giuseppe Verdi (“Aida”)
○ **Pop:** Beatles (“Yellow Submarine”), ABBA (“Dancing Queen”), Olympic (“The Turtle”), Karel Zich
○ **Rock & Rock´n´Roll:** Rolling Stones, Elvis Presley (“Love Me Tender”), Nazareth (“Love Hurts”), Katapult
○ **Jazz & Blues & Swing:** Louis Armstrong, Jimi Hendrix (“I feel Good”), Eva Pilarová (“Tam za vodou v rákosí”), Ondřej Havelka (“Jen pro ten

dnešní den”)
5) Word Formation: 15 min.
○ The client is asked whether she remembers what was in the picture at the beginning of the training. The therapist waits for her reaction and consequently presents the picture (picture of a conductor). Later, the therapist works with the word “CONDUCTOR” - the client is supposed to list as many words starting with a particular letter in a certain category, e.g. fruits, vegetables, body parts, job and occupation, etc. Each letter from the word discussed is dealt with only once.
C – colour, ceramics, crayon, collage, composition, clay, chisel
O – ocean, organism, ornithology, organ, oxygen, observatory
N – napkin, nectarine, nut, nutmeg, noodles, nutrition/nourishment, nibble
D – daffodil, daisy, dandelion, date palm, deciduous
U – understand, unlock, undress, unfasten, utter, urge
T – trombone, trumpet, tuba, triangle, tambourine
R – radish, rhubard, raspberry, raisin
6) Final Assessment & Goodbye – 1 min.
○ Feedback

Topic No. 3

FILMS
1) The therapist asks the following questions: What were we doing last time?/What day is it today? – **2 min.**
2) The therapist presents a picture from the old film “The Grandmother” and waits for the client to recognise it. She asks follow up questions regarding the film –

the actors, the plot etc. – **2 min.**
3) General Part: 15 min.
○ The therapist asks the following questions:
○ What other films do you know? What is the best film you have ever seen? Why did you like it? What is the worst film you have ever seen? Why did you dislike it? Do you have a favourite film which you have seen more than once? What film have you seen most recently? Talk about it. Who is your favourite actor (Czech/foreign one)?
○ The therapist presents the client a different set of pictures taken from the film “Vesničko má středisková”, she waits for the client to recognise it, and then they comment on the characters, plot, and so forth, together.
4) Categorising: 15 min.
○ The client is asked what film genres she knows
○ Later, the client is supposed to categorise films in the following categories – drama, comedy, horror, thriller, romance, detective films, musicals, fantasy, documentary films, children´s films & fairy tales etc. The therapist chooses one category and waits for the client to present her ideas. If the client does not know, the therapist gives hints regarding the plot. The client is supposed to come up with a Czech title which is later translated in English.
Possible Answers:
○ **Drama:** Kmotr, Přelet nad kukaččím hnízdem, Zlatí úhoři, Kladivo na čarodějnice, Bílá tma

○ **Comedy:** Světáci, Ostře sledované vlaky; Hoří, má panenko; Vrchní, prchni, S tebou mě baví svět
○ **Horror:** Psycho, Ptáci, Mlčení jehňátek, Čelisti, Osvícení
○ **Romance:** Rozmarné léto, Prázdniny v Římě, Starci na chmelu, Léto s kovbojem
○ **Musicals:** My Fair Lady, Vlasy, Starci na chmelu, Kabaret, Zpívání v dešti
○ **Fairy tales:** Šíleně smutná princezna, Tři oříšky pro Popelku, Byl jednou jeden král, Dívka na koštěti, Honza málem králem
5) Word Formation: 15 min.
○ The client is presented the same picture as at the beginning of the training (picture from the film “The Grandmother”) and asked what the name of the film was. Later, the therapist works with the word “GRANDMOTHER” - the client is supposed to list as many words starting with a particular letter in a certain category, e.g. fruits, vegetables, body parts, etc.
G – goat, gorilla, grizzly bear, guinea pig, gull, goose, goldfish
R – relax, regret, realise, return, rule, recommend, receive, rescue
A – aerobics, athletics, archery, arrow, arena
N – nose, nostrils, neck, nerve, navel, nipple
D – dancer, dentist, doctor, designer, disc jockey, diver, driver, doorman
M – Moskva, Milán, Most, Mělník, Mariánské lázně, Mikulov, Mimoň
O – orange, olive, onion
T – temperature, thermometer, tissue, terrestrial, toxin
H – herbs, ham, hamburger, hot dog, hazelnut, honey, hummus
E – Egypt, Ecuador, Eritrea, Estonia, Ethiopia

6) Final Assessment & Goodbye – 1 min.
○ Feedback

Topic No. 4

SHAKESPEARE & THEATRE
1) The therapist asks the following questions: What were we doing last time?/What day is it today?/ Do you know anyone famous whose birthday or name day it is? – **2 min.**
2) The therapist presents a picture of Shakespeare and waits for the client to recognise it. She explains that it is Shakespeare´s birthday today. She asks: Who was he? – **2 min.**
3) General Part: 15 min.
○ The therapist asks the following questions:
○ What plays written by Shakespeare do you know? (Possible answers: Romeo and Juliet, Hamlet, King Lear, Richard III, Julius Ceasar, A Midsummer Night´s dream, Othello.) What plays written by him have you read/seen? Can you describe the plot of one of the plays?
○ Do you enjoy going to the theatre? When was the last time you visited a theatre? Do you remember the title of the play? Could you briefly describe its plot? Who is your favourite playwright? Who do you consider the greatest playwright of all times?
4) Categorising: 15 min.
○ The client is supposed to categorise Shakespeare´s plays in the

following categories – comedies, tragedies, histories.

Possible Answers:

- **Comedies:** Taming of the Shrew, The Merchant of Venice, Much Ado about nothing, As you like it, The Tempest, Twelfth Night
- **Tragedies:** Hamlet, Julius Ceasar, King Lear, Macbeth, Othello, Romeo and Juliet, Antony and Cleopatra
- **Histories:** Richard II, III, Henry IV, V, VI
- In case the client does not know any plays, the therapist gives hints in Czech, e.g. “Zkrocení....”, then they translate the name of the play together, or the therapist might present famous quotations, such as “To be or not to be..” and wait for the client´s reaction.

5) Word Formation: 15 min.

- The client is presented the same picture as at the beginning of the training (picture of Shakespeare) and asked who this person is. Later, the therapist works with the word “SHAKESPEARE” - the client is supposed to list as many words starting with a particular letter in a certain category, e.g. fruits, vegetables, body parts, job and occupation, etc. Each letter from the word discussed is dealt with only once.

S – spinach, sweet corn, sweet potatoes, soy beans, shallot, strawberry

H – head, hair, hand, heart, hip, hamstring

A – Africa, America (South/North/Central), Antarctica, Asia

K – Canada, Congo, California, Colorado, Cambodia, Costa Rica

P – parrot, peacock, pig, puma, prawn

R – rose, rhododendron, root

E – ecologist, electrician, engineer, editor, economist, emperor, entrepreneur

6) Final Assessment & Goodbye
○ Feedback

Topic No. 5

FOOD & CUISINE
1) The therapist asks the following questions: What were we doing last time?/What day is it today? – **2 min.**
2) The therapist presents a picture of a hamburger and waits for the client to recognise it. She asks follow up questions regarding the picture, etc. - **2 min.**
3) General Part: 15 min.
○ The therapist asks the following questions:
○ What kinds of food do you like eating? Do you usually have breakfast? What do you have for breakfast? How many meals do you usually have every day? What is your favourite meal? What did you have for lunch yesterday? Do you eat dairy products? Do you eat sausages or salami? Do you like sweets? Do you like cooking? What is the last meal you cooked for someone else? When was the last time you visited a restaurant? Do you remember the name of the restaurant? What food have you tasted that you will never forget for the rest of your life? What is the most expensive meal you have ever eaten?
4) Categorising: 15 min.
○ The client is asked what types of food/cuisine she knows. What is her favourite one?
○ Later, the client is supposed to list examples of specific meals, spices or

other things connected with a particular cuisine
○ The therapist chooses one category (one national cuisine) and waits for the client to present her ideas.
Possible Answers:
○ **Chinese:** rice, (rice) noodles, chopsticks, soya sauce
○ **American:** hot dog, hamburger, French fries, Coca Cola, muffin, apple pie
○ **British:** fish & chips, vinegar chips, cottage pie, ginger biscuits, British breakfast
○ **French:** French cheeses, French wine – Champagne, Bordeaux; pancakes (crêpe), croissant, frog legs, oyster
○ **Italian:** pizza, pasta – spaghetti, penne, lasagne, ravioli, risotto, Mascarpone, mozzarella, parmesan, coffee
○ **Spanish:** tapas, paella, gazpacho, sangria
○ **Czech:** beef/pork goulash, schnitzel, fruit dumplings – strawberry, apricot, plum, etc., beef sirloin in cream sauce, Czech roast pork with dumplings and sauerkraut
5) Word Formation: 15 min.
○ The client is presented the same picture as at the beginning of the training (picture from the movie "...") and asked what it was. Later, the therapist works with the word "HAMBURGER" - the client is supposed to list as many words starting with a particular letter in a certain category, e.g. fruits, vegetables, body parts, etc.
H – Harrachov, Horažďovice, Hluboká nad Vltavou, Havířov, Havlíčkův Brod,

Hamburg, Hanoi
A – snaconda, albatross, alligator, ant, ape, antelope
M – milk, meat, mango, minced meat, mustard, mushroom, mutton, marmalade
B – bed, bunk bed, bed table, bench, bookshelf, bookcase, bar stool
U – Uganda, Ukraine, United Kingdom, United States, United Arab Emirates, Uruguay
R – red light, registration, ramp, road(way), roundabout, rush hour, rest stop, railroad crossing
G – garlic, ginger, gourd, green beans, grapes, grapefruit, guava
E – electricity, experiment, element, energy, evolution, earthquake, endangered
R – ranger, rancher, receptionist, real estate agent, reporter, researcher, retiree
6) Final Assessment & Goodbye – 1 min.
○ Feedback

Topic No. 6

FRUITS
1) The therapist asks the following questions: What were we doing last time?/What day is it today? – **2 min.**
2) The therapist presents a picture of a watermelon and waits for the client to recognise it. She asks follow up questions regarding the picture etc. - **2 min.**
3) General Part: 15 min.
○ The therapist asks the following questions:
○ What kinds of fruits do you like eating? What is your favourite fruit? What is your favourite fruit meal? Do you think that fruits are good for your health? Why or why not? What is the meaning of the saying: "An apple a day keeps the doctor away?" Do we have a similar saying in

Czech? Are you or would you like to be vegetarian? How often do you drink fruit juice? What kind of fruit juice do you drink? What are the most common fruits in the Czech Republic?
4) Categorising: 15 min.
○ The client is asked about the types of fruits she knows.
○ The therapist chooses one fruit category and waits for the client to give specific examples
Possible Answers:
○ **Citrus fruits:** lemon, lime, orange, pomelo, grapefruit
○ **Plum fruits:** plum, prune, (sour) cherry, peach, apricot, nectarine
○ **Berries:** strawberry, blackberry, blueberry, cranberry, raspberry
○ **Fruits of red colour:** apple, strawberry, raspberry, cherry, pomegranate, rose hips
○ **Fruits of orange colour:** orange, peach, apricot, mango, pawpaw/papaya, physalis
5) Word Formation: 15 min.
○ The client is presented the same picture as at the beginning of the training (picture of a watermelon) and asked what it was. Later, the therapist works with the word “WATERMELON” - the client is supposed to list as many words starting with a particular letter in a certain category, e.g. fruits, vegetables, body parts, etc. Each letter from the word discussed is dealt with only once.
W – whale, wasp, wild cat, wild pig, wolf, worm, white tiger, weasel
A – apple, apricot, avocado, asparagus, artichoke

T – tailor, taxi driver, tax collector, teacher, technician, translator, travel agent, typist, truck driver
E – eye, eyebrow, eyelashes, eyelid, elbow, ear, esophagus
R – Rakovník, Ralsko, Rumburk, Rožnov pod Radhoštěm, Roudnice nad Labem, Rokycany
M – microbiology, meteorology, measure, mineral, mass, matter, marine
L – ladder, lamp, laundry (room), lawnmower, library, light (switch), living room, lock
O – omelette, olive, oil, oat (flakes), orange, oyster
N – Nigeria, Norway, North Korea, New Zealand, (the) Netherlands, Namibia, Nepal
6) Final Assessment & Goodbye – 1 min.
○ Feedback

Topic No. 7

VEGETABLES
1) The therapist asks the following questions: What were we doing last time?/What day is it today? – **2 min.**
2) The therapist presents a picture of a cauliflower and waits for the client to recognise it. She asks follow up questions regarding the picture - **2 min.**
3) General Part: 15 min.
○ The therapist asks the following questions:
○ What kinds of vegetables do you like eating? What is your favourite vegetable? What is your favourite meal with vegetables? Do you think that vegetables are good for your health? Why or why not? Could you explain the meaning of the idiom: "As cool as a cucumber"? What does

it mean to be a “couch potato”? Do we have similar expressions in Czech? Is a watermelon fruit or vegetable? What are the most common vegetables in the Czech Republic?
4) Categorising: 15 min.
○ The client is asked about the types of vegetables she knows.
○ The therapist chooses one vegetable category and waits for the client to give specific examples
Possible Answers:
○ **Allium vegetables:** garlic, leek, onion, shallot
○ **Brassica vegetables:** broccoli, cabbage, cauliflower, turnip
○ **Gourd vegetables:** cucumber, (water)melon, pumpkin, squash, zucchini
○ **Legumes:** soy, pea, chickpea, beans, (green) beans
○ **Vegetables of orange colour:** carrot, pumpkin, sweet potatoe, paprika/pepper
○ **Vegetables of red colour:** beetroot, chilli/hot pepper, cabbage, tomatoes, radish
5) Word Formation: 15 min.
○ The client is presented the same picture as at the beginning of the training (picture of a cauliflower) and asked what it was. Later, the therapist works with the word “CAULIFLOWER” - the client is supposed to list as many words starting with a particular letter in a certain category, e.g. fruits, vegetables, body parts, etc.

C – coconut, cherry, current, cranberry, citrus/cabbage, celery, cauliflower, carrot, corn, cucumber
A – Albania, Afghanistan, Angola, Argentina, Algeria, Armenia, Austria
U – unknown, untidy, unusual, unwilling, upset, useful, ugly, uncomfortable
L – Liberec, Lázně Bohdaneč/Kynžvart/Bělohrad, Libochovice, Lipno nad Vltavou, Lednice
I – inform, imagine, impress, influence, insist, interrupt, invite, iron
F – fireplace, floor, fence, front door, furniture, family room
L - leg, liver, ligament, lobe, lungs, larynx, lip, limb, little-finger
O – octopus, ostrich, orca, orang-utan, otter, owl, oyster
W – waiter(ess), warden, watchman, watchmaker, woodcarver, writer, welder
E – ecology, embryology, epidemiology, ergonomics, ethnology, evolutionary biology
R – race, rafting, referee, ride, rink, rock climbing, roller skating, rowing, rugby, running
6) Final Assessment & Goodbye – 1 min.
○ Feedback

Topic No. 8

MEAT & FISH
1) The therapist asks the following questions: What were we doing last time?/What day is it today? – **2 min.**
2) The therapist presents a picture of seafood and waits for the client to recognise it. She asks follow up questions regarding the picture - **2 min.**
3) General Part: 15 min.

- The therapist asks the following questions:

- What kinds of meat do you like eating? What is your favourite meat? What is your favourite meat meal? Is meat healthy? What types of meat are considered healthier? Why? Do you agree with the quotation by Leo Tolstoy: “A man can live and be healthy without killing animals for food; therefore, if he eats meat, he participates in taking animal life merely for the sake of his appetite.” Why or why not? What is the most common meat in the Czech Republic?

- Do you eat fish? If yes, what is your favourite type? Have you ever tasted seafood? Have you ever tasted sushi? Did you like it?

4) Categorising: 15 min.

- The client is asked about the types of meat she knows.

- The therapist chooses one meat category and waits for the client to give specific examples. Afterwards, they talk about the topic of fish and seafood

Possible Answers:

- **Poultry:** chicken, goose, duck, turkey

- **Venison:** deer, fallow deer, wild pig, hare, mouflon

- **Meat of domestic animals (excluding poultry):** beef, veal, pork, goat, mutton, lamb

- **Fish:** carp, pike, trout, eel, salmon

- **Seafood:** prawns/shrimp, lobster, crayfish, oyster, mussel, jellyfish/squid/calamari

5) Word Formation: 15 min.
○ The client is presented the same picture as at the beginning of the training (picture of seafood) and asked what it was. Later, the therapist works with the word “SEAFOOD” - the client is supposed to list as many words starting with a particular letter in a certain category, e.g. fruits, vegetables, body parts, etc.
S – scarf, shoe, shirt, shorts, slippers, stockings, suit, sweater, sunglasses
E – entire, easy, educated, elementary, empty, essential, every, experienced
A – apple, avocado, asparagus, artichoke, apricot
F – foot/feet, face, finger, fingernail, forehead, forearm
O – offer, observe, obtain, occur, offend, open, order, own
D – dessert, dairy, dip, dish, dough, doughnut, dressing
6) Final Assessment & Goodbye – 1 min.
○ Feedback

6.9 The Findings

As mentioned earlier, the ladies were supposed to recognise and give English equivalents for as many pictures as possible. First, they were dealing with the topic “Arts”.

The initial assessment prior to one-month-cognitive-training intervention brought the following results:

Mrs. D.: As a former teacher, her results proved to be reasonably high. She recognised 29 out of 36 words. The ones she experienced troubles with were the following words: “LP record”, “Amphitheatre/Arena”, “Conductor”, “Flute”, “Trumpet/Trombone”, “Triangle” and “Violin”.

Regarding Mrs. N., her level of English was lower than that of Mrs. D. and the outcomes of the initial testing demonstrated this. She was able to identify only 10 out of 36 words, namely: “Dancer”, “TV camera”, “Writer”, “Book”, “Theatre”, “Actor”, “Bridge”, “Piano”, “Guitar” and “Director”.

Secondly, the clients were supposed to do the exactly same thing regarding the vocabulary focused on the semantic field of “Food”. They were presented the food pyramid and were to name the objects they saw. Again, each of them had different results:

Mrs. D. was able to give English translations for 28 out of 36 words. She did not know the following items of vocabulary: “Cauliflower”, “Cabbage”, “Prawns”, “Oyster”, “Hotdog”, “Leek”, “Pumpkin” and “Cucumber”.

The other participant, Mrs. N, unfortunately, performed poorly – she knew only 5 words out of the total amount. These were: “Apple”, “Fish”, “Milk”, “Lemon” and “Hamburger”.

The cognitive training itself has brought the following results:

For Mrs. D., in relation to the category of “Arts”, there has been only a slight change – she was able to recognise one more word: “Violin”. Otherwise, she remembered the same words as one month ago. Therefore, her score was 30 words out of 36.

Regarding the topic of “Food”, the improvement in the rise of vocabulary was slightly higher – the participant named four more words: “Hotdog”, “Pumpkin”, “Cucumber” and “Prawns”. However, she missed one word that she had mentioned a month ago, namely “Radish”. In total, her score was, therefore, plus three words, i.e. 31 out of 36 words.

As regards Mrs. N. in the category of “Arts”, she performed differently from her previous results. In summary, there was a slight improvement. Even though she did not mention the words “Guitar” and “Director” as in the initial testing, she was able to name a few more different pictures, such as “Library”, “Flute”, “Singer” and “Conductor”. Therefore, the total score for her was plus two words after a month of cognitive training, i.e. 12 out of 36.

Lastly, to comment on her performance in the category of “Food”, there has been a minor improvement as well. Mrs. N. identified the following words “Chicken”, “Peach”, “Strawberry” and “Onion”, which were not in her vocabulary range a month ago. However, she forgot to label “Lemon” even though she previously did. Therefore, her score was 8 out of 36 points.

It is also important to mention their development on the grammatical level. The participants were given the same set of tests during our last meeting, i.e. Mrs. D. obtained a test in the form of tasks for intermediate as well as another one for advanced students. Mrs. N., on the other hand, was again presented the test on “basic points”. However, it is difficult to draw any conclusions from the results since these were similar to the ones taken two months ago. To be more specific, Mrs. N. scored 21 points out of 30 (70%) which is only one point more compared to her previous answers. As regards Mrs. D´s. score, she filled in the intermediate test with 26.5 points out of 30 (approximately 88.3%), which was very close to the 26 points she got after the first assessment. In the second test (advanced level), she obtained 15 out of 30 points (50%). That proved to be even less, compared to the previous results (i.e. 16.5/30).

7 Discussion

As mentioned earlier, when working with the elderly, one should not expect any significant improvement, especially after a short period of intervention. The common aims are to activate one´s thinking and strengthen existing functions (Klucká & Volfová, 2009) as everyone has his/her limits that are approached at the productive adult phase. With ageing, bodily, as well as, mental, functions slowly deteriorate and it is usually impossible to design a cure for such physical/mental difficulties and prevent their further decline. This experiment had as its main aim cognitive training with an increase in English vocabulary in the participants´ vocabulary range. Moreover, it also tried to provide certain psychological/mental support for the participants through the use of activities they once did in their productive adult lives. In specific terms, the common means of these activities was the English language.

Mrs. D., as a former English teacher, had a close relationship to English. She considered the language as something familiar to her. At our first encounter, however, it seemed she would not be willing to cooperate. She probably thought that I came there to ask her to teach me English. Mrs. D. replied that she had made a personal decision to stop with her profession and that she was retired and wanted to relax. Fortunately, after a few moments together, she changed her mind and said she would like to see me again if that was any help for me. Nonetheless, it happened several times that when I came to visit her in her room, she pretended she was sleeping. Therefore, I was forced to come on a different day, usually the next day, to perform the cognitive training. There were also times when she mistakenly put herself in the role of the teacher and tried to teach me or involve me in the topic while performing the cognitive training. She completely ignored me as the one in the role of

a therapist. For that reason, I sometimes had to pretend that I needed help from her as regards the English language. Another example was her unwillingness to fill in the grammar/placement test as she did not want to be tested since it was obvious she knew English well. Therefore, she acted as a troublesome participant from time to time. For all that, we managed to fulfil the time-schedule and the cognitive training plan. Her results were satisfactory, although the improvement after one month was not significant.

Mrs. N., on the other hand, was an obedient participant. She was appreciative of my company as well as for the fact that she could practice English. Mrs. N. always repeated she forgot everything regarding the language. However, her performance was not that poor. The thing she needed was extra time and patience. For her, English conversations reminded her of the time when she lived with her husband in London back in the 1960s. She considered this period of her life as one of the happiest and English served as a means to remind her of that time. Thanks to the cognitive training, her vocabulary showed slight improvement. The participant had a significantly greater range of vocabulary regarding the field of “Arts” in comparison with the “Food” category. A possible explanation might be that, as a former actress and writer, she had a closer relationship to arts.

Another fact drawn from the findings is the huge difference in the participants´ results. After the first assessment had been done, it was obvious that Mrs. D. had a broader vocabulary range in both fields compared to the other participant. The two of them were unequal participants and it would not be realistic to expect similar results in both of them. An apparent reason was the fact that Mrs. D´s English was, all in all, better from a grammatical, as well as a vocabulary, point of view. A different explanation might be offered by the type and progress of dementia. In the case of

Mrs. N., her way of thinking was greatly affected by dementia, mainly in terms of memory. For example, she confessed that she was not able to read books or listen to audiobooks since it was very complicated for her to remember the plot. Actually, she only remembered things that happened in the past minute or two, so when she was, for instance, reading a page in a book, she would forget what was on the top of the page after she had reached the bottom of the page. As regards vocabulary, she experienced troubles with finding the right connotations for words even in her mother tongue, let alone in English. Therefore, any cognitive training for her served mostly to support the functions she had still been holding. In certain types of dementia, as in this case, success was measured by the fact that her mental functions were not deteriorating rapidly.

I sometimes actively participated and helped Mrs. N with daily tasks, such as taking her to toilet, giving her a hand getting out of her wheelchair, transporting her by wheelchair to the restaurant where she used to have lunch. Unfortunately, this usually happened in the middle of the cognitive training, e.g. the need to go to the toilet, which took the lady typically around 10 minutes. As a result, we did not have enough time to go through all of the points in the worksheets that I had prepared or I had to adjust our time and do less of one part in order not to exceed the time provided for the experiment.

On the whole, the experiment was very time-consuming, including the preparation of the worksheets and other materials, the time spent in Sue Ryder both with the local therapists as well as with the clients, the processing of the outcomes, etc. As described earlier, each of the clients were different. Not only regarding their grammatical and lexical knowledge of the second language, but also as dictinct personalities – one being a friendly, cooperative person, the other rather reserved

and moody. This shows that a therapist or professional working with the elderly should be very flexible; often in need to improvise and change their plan to motivate the clients. Nevertheless, when clients are persuaded, any cognitive training or teaching contributes to the stabilisation of their mental functions and a measure of prevention of their near decline. Such demands on the therapist could be considered as one of the weaknesses of the experiment.

Another fact that should be taken into consideration are the circumstances and the environment for the research. As for Mrs. N., approximately half of our sessions were held in a noisy restaurant during lunchtime. Had there been more suitable conditions, the experiment might have been more effective and successful, i.e. the lady could have learned and remembered more words. The same fact could have been applied to Mrs. D. Here, we experienced struggles when I came to visit the client and she was sleepy having just woken up. Therefore, she could not concentrate properly on the cognitive training.

A different limitation of the experiment was that little emphasis on logical thinking activities had been placed. We were mostly working with word formation and categorising activities, yet counting or numbers were not highlighted in the training, e.g. birth/namedays of famous people, their age, important anniversaries, etc.

In conclusion, I would like to mention that I enjoyed working with both clients in spite of the fact that we experienced times of uneasiness, sadness or lack of enthusiasm. The thing that mattered was also the social aspect of my visits. I dare say that the time we spent together had more of a therapeutic dimension; however, I do believe that perhaps even more crucial was the human aspect.

As mentioned in the “Introduction”, the world´s population is ageing; therefore, in the near future we will be dealing with a great number of elderly people in society.

Dementia is a disease whose occurrence increases with advancing age. Thus, the demand for professionals who are qualified to work with the elderly will also be rising. It is a prospective field, which is still highly underestimated. In the Czech Republic, I believe the health, social and community services for the elderly are on a good level since the huge institutions for dozens of people were transformed into smaller places, such as homes for the elderly, etc. Each big city or town offers many services for peole at an advanced age. The question is how sustainable will this situation be in the coming years? Regarding the field of education, the elderly do not have many opportunities to study, apart from the academies of the third age, active ageing clubs or universities of the third age in several cities. Therefore, the demand for geragory professionals will also be rising rapidly.

Conclusion

This diploma thesis explored the influence of ageing on second language. It tried to measure the effects of cognitive training on a person´s vocabulary in a second language. Due to its interdisciplinary character that combined an educational, as well as therapeutic, approach, the thesis included materials that were created specifically for its purposes. In the future, these materials might be used by the therapists in “Domov Sue Ryder” or other therapists working with the elderly who speak English. They may also be used by geragogists or other educational staff.

Regarding the two specific clients in Sue Ryder, the experiment helped them support their cognitive functions through the use of activities that were close to them, i.e. conversations in English. They had undergone an extra training in addition to the usual cognitive therapy in groups. In this way they were provided with more stimuli than the regular clients, which was beneficial for the participants. The experiment came to similar general conclusions as other studies (e.g. Nicholas et al., 1985; Klucká & Volfová, 2009).

Future recommendations might regard more intensive training – one cognitive training unit per week seems not to be sufficient. It could be interesting to design a similar experiment, yet with an emphasis on grammar rather than on vocabulary. In relation to healthy elderly adults and geragogy, one could scrutinise the options for education in the Czech Republic on local levels and assess what educational approaches, methods and techniques are most suitable for such people. These might be suggestions for further research or other thesis topics.

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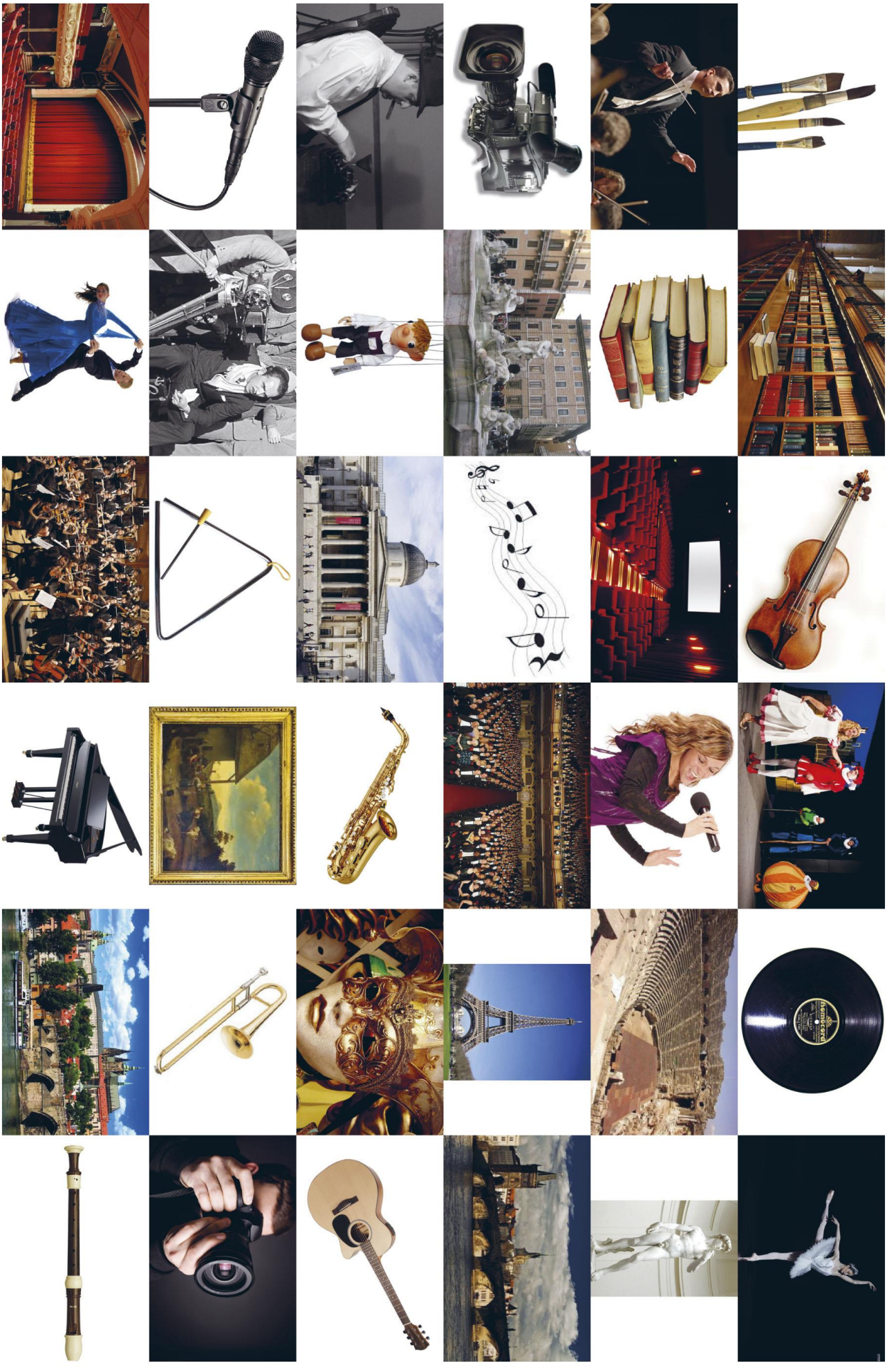
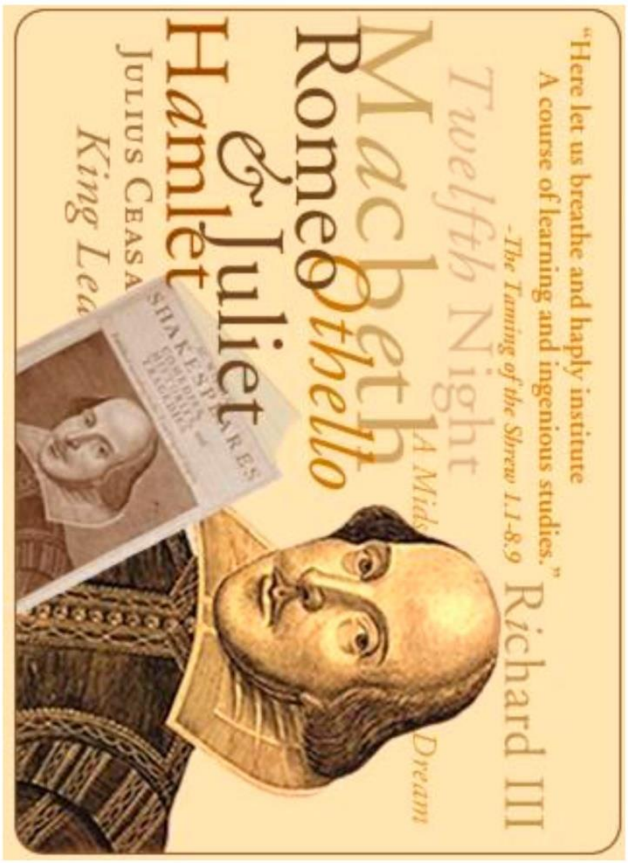
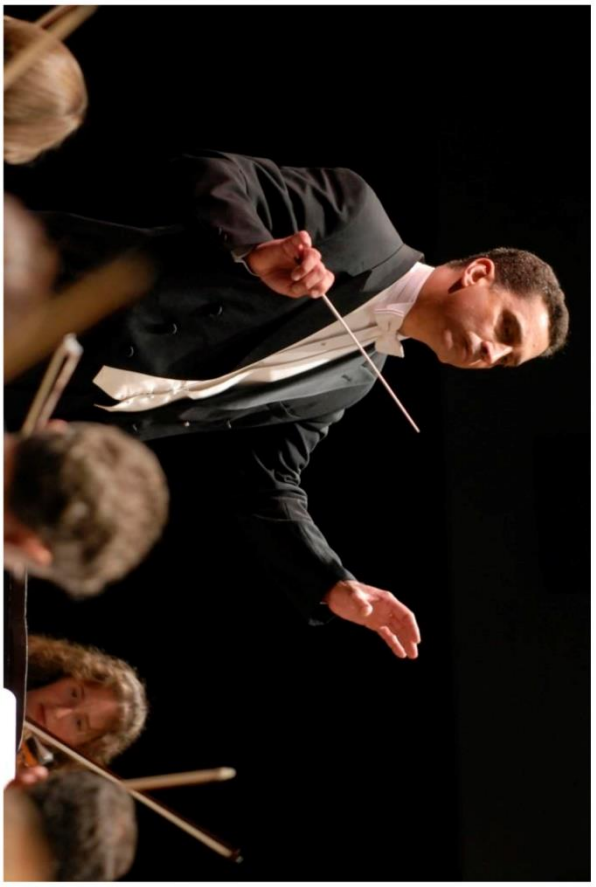
Appendix 1: Art Related Vocabulary



Appendix 2: Food Related Vocabulary

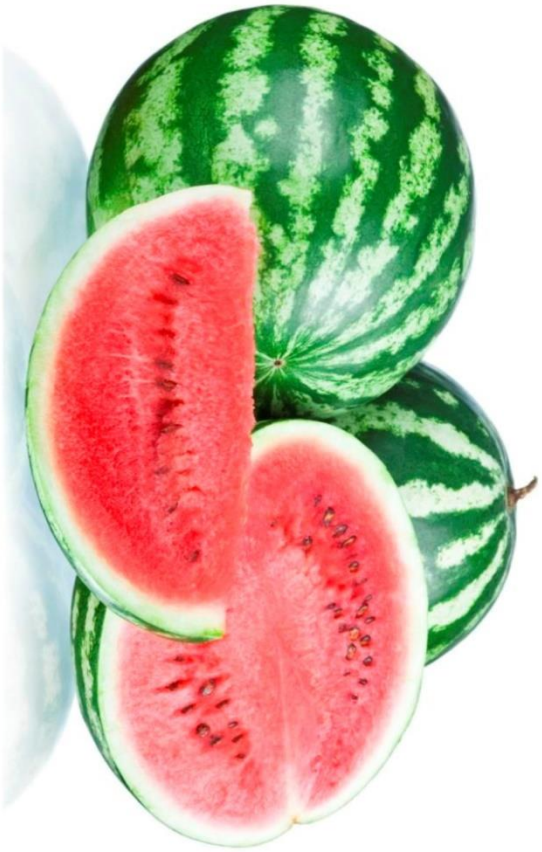
Appendix 3: Illustrative Examples of Pictures Employed in Cognitive Training - Arts





Appendix 4: Illustrative Examples of Pictures Employed in Cognitive Training – Films

Appendix 5: Illustrative Examples of Pictures Employed in Cognitive Train



Appendix 6: Grammar Test by Swan & Walter (1997)

Test yourself: basic points

Choose the correct answer(s). One or more answers maybe correct.

1 She´s ... university teacher.

A a B an C the D one

2 I like ... small animals.
A the B – (=nothing) C every D all

3 Is this coat ... ?
A yours B yours C the yours

4 Is Diana ... ?
A A friend of yours B a your friend C your friend

5 Who are ... people over there?
A that B the C these D those

6 ... is your phone number?
A Which B What C How

7 Could I have ... drink?
A other B an other C another

8 There aren´t ... for everybody.
A chairs enough B enough chairs C enough of chairs

9 They´re ... young to get married.
A too much B too C very too

10 Most ... like travelling.
A of people B of the people C people

11 Ann and Peter phone ... every day.
A them B themself C themselves D each other

12 It´s ... weather.
A terrible B a terrible C the terrible

13 *The plural of car* is *cars*. *Which of these are correct plurals?*
A journeys B ladys C minuts D sandwichs E babies

14 *Which of these is/are correct?*
A happier B more happier C unhappier D beautifuller

15 This is ... winter for 20 years.
A the more bad B worse C the worse D worst E the worst

16 She´s much taller ... me.
A than B as C that

17 He lives in the same street ... me.
A that B like C as D than

18 Her eyes ... a very light blue.
A are B have C has

19 ... help me?
A Can you to B Do you can C Can you

20 You ... worry abou it.
A not must B don´t must C must not D mustn´t

21 It ... again. It ... all the time here in the winter.
A ´s raining, ´s raining B rains, rains C rains, ´s raining D ´s raining, rains

22 I ... she ... you.
A think, likes B am thinking, is liking C think, is liking D am thinking, likes

23 Who ... the window?
A open B opened C did opened

24 Why ... ?
A those men are laughing
B are laughing those men
C are those men laughing

25 What ... ?
A does she want B does she wants C she wants

26 I didn´t he was at home.
A to think B think C thinking D thought

27 ... hole in my sock.
A There´s B There is C It´s D It is E Is

28 I´ll see you ... Tuesday afternoon.
A at B on C in

29 What time did you arrive ... the station?
A at B to C -

30 We´re going ... the opera tomorrow night?
A at B - C in D to

Test yourself: intermediate points

Choose the correct answer(s). One or more answers maybe correct.

31 I went out without ... money.
A some B any

32 He´s got ... money.
A much B many C a lot of D lots of

33 “Who´s there?” “... .”
A It´s me B It is I C Me D I

34 Although he felt very ..., he smiled ... .
A angrily, friendly B angry, friendly C angry, in a friendly way

35 I ... to America.
A have often been B often have been C have often been

36 Mo mother ... my birthday.
A always forgets B always is forgetting C forgets always

37 You look ... a teacher.
A like B as C the same like

38 How many brothers and sisters ... ?
A have you got B do you have C are you having

39 Good! I ... work tomorrow.
A mustn´t B don´t have to C haven´t got to

40 I ... smoke.
A - (= nothing) B use to C used to

41 Andrew ... to see us this evening.
A will come B comes C is coming

42 Alice ... have a baby.
A will B shall C is going to

43 I knew that he ... waiting for somebody.
A is B was C would

44 ... Gloria last week?
A Have you seen B Did you see C Were you seeing

45 She´s an old friend – I ... her ... years.
A ´ve known, for B know, for C ´ve known, since D know, since

46 We met when we ... in France.
A studied B were studying C had studied

47 As soon as she came in I knew I ... her before.
A have seen B saw C had seen

48 This picture ... by a friend of my mother´s.
A is painting B is painted C was painting D was painted

49 Can you ...?
A make me some tea B make some tea for me C make for me some tea

50 Try ... be late.
A not to B to not

51 I went to London ... clothes.
A for buy B for to buy C for buying D to buy

52 You can´tlive very long without ... .
A to eat B eat C eating D you eat

53 I enjoy ... , but I wouldn´t like ... it all my life.
A to teach, to do B teaching, doing C to teach, doing D teaching, to do

54 Her parents don´t want ... married.
A her to get B her get C that she get D that she gets

55 I´m not sure what ...
A do they want? B do they want. C they want.

56 The policeman ... me not to park there.
A asked B said C told D advised

57 I ... you if you ... that again.
A hit, say B ´ll hit, ´ll say C hit,´ll say D ´ll hit, say

58 It would be nice if we ... a bit more room.
A would have B had C have

59 If you ... me, I ... real trouble last year.
A didn´t help, would have been
B hadn´t helped, would have been
C hadn´t helped, would be
D didn´t help, would be

60 There´s the man ... took your coat.
A which B who C that D -

Test yourself: intermediate points

Choose the correct answer(s). One or more answers maybe correct.

61 My family ... thinking of moving to Birmingham..
A is B are

62 We watched a ... on TV last night.
A war film B war´s film C film of war

63 He was wearing ... riding boots.
A red old Spanish leather B old leather red Spanish
C old red Spanish leather D Spanish red old leather

64 ... he gets ... .
A The richer, the more friends he has
B Richer, more he has friends
C Richer, more friends he has
D The richer, the more he has friends

65 It´s ... if you take the train.
A quicker B the quicker C quickest D the quickest

66 He ... very annoying.
A ´s B ´s being

67 That ... be Roger at the door – it´s too early.
A can´t B mustn´t C couldn´t

68 At last, after three days, they … get to the top of the mountain.
A could B managed to C succeeded to D were able to

69 It was crazy to drive like that.You ... killed somebody.
A may have B might have C could have D can have

70 I wonder if John ... this evening.
A will phone B phones

71 Who ... you that ring?
A ´s given B gave

72 He ... quite different since he ... married.
A is, has got B has been, has got C is, got D has been, got

73 This is the first time I ... a sports car.
A ´ve driven B ´m driving C drive

74 On her birthday ... .
A she was given a new car B a new car was given to her

75 We can´t use the sports hall yet because it ... .
A is still built B is still building C is still being built

76 I look forward ... you soon.
A seeing B to seeing C to see

77 If you have trouble going to sleep, try ... a glass of milk before bedtime.
A drinking B to drink C drink

78 This is my friend Joe. I ... met, have you?
A don´t think you´ve B think you haven´t

79 How ... !
A he works hard B hard he works

80 Which of these sentences are correct in spoken English?
A Car´s running badly. B Seen Peter?
C Can´t come in here, sorry. D Careful what you say.
E Lost my glasses. F Have heard of her.

81 Nobody phoned, did ... ?
A he B she C they D it E he or she F anybody

82 If you were ever in trouble, I would give you all the help you ... .
A will need B would need C need D needed

83 My wife will be upset ... .
A if I don´t get back tomorrow B unless I get back tomorrow

84 Tell me at once ... Margaret arrives.
A if B when C in case

85 It´s time you ... home, but I´d rather you ... here.
A go, stay B went, stayed C go, stayed D went, stay

86 I wish I ... more time.
A had B have C would have D will have

87 John Hastings, ... , has just come to live in our street.
A that I was at school with B I was at school with
C with who I was at school D with whom I was at school

88 She keeps tapping her fingers, ... gets on my nerves.
A which B what C that which

89 Can you finish the job ... Friday?
A till B until C by D for

90 There´s a supermarket ... our house.
A in front of B opposite C facing