



تأثير مرض الزهايمر على كيانات المعنى والشكل وآثاره اللغوية
The Impact of Alzheimer's Disease on Meaning_ Form
Entities and its Linguistic Implications

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Abstract

This study examines the cognitive implications of Alzheimer's disease on linguistic entities (form-meaning), which are the central mental structures that we use to express our communication outputs. The research explores how these mental structures and their components deteriorate or persist throughout the progression of AD. While prior studies have focused widely on the structural deficits of linguistic components as phonetic, semantic, and grammatical in verbal language, this study shifts the focus to the cognitive-semiotic scopes of underlying linguistic components (form-meaning) based on Ronald Langacker's (2008) model and by using the visual domain. The sample of study is the artist William Utermohlen, who suffered from AD. Utermohlen considered himself a living sample and recording of the progression of his illness, offering a more authentic portrayal of the stages of AD and the gradual loss of the mental structures it destroys, and by analysing his self-portraits from 1995 to 2001, by Ronald Langacker's (2008) model of "symbolic assemblies" of form- meaning, we can observe the phases of losing of FORM entities in comparison to MEANING and the concept of the face. This shows that the artist remained semantically aware of the concept of face even after losing form entities. This means that the patient did not lose the semantic stock, but rather the expressive or linguistic stock. Research has shown that the ability to express oneself through drawing continues longer than other cognitive skills. Although the study does not deal straight with neurological dimensions, its visual examination is construed in light of neuropsychological works (e.g., Chamberlain et al., 2014; Crutch et al., 2001). The results propose that whereas syntax elements of artist works shows deteriorates, the basic semantic cognizance of the concept of the face shows a kind of persistence. This visual path supports with neuroscientific results about the flexibility of drawing mental apparatuses in contrast to linguistic loss. The research paper concludes with some conclusions, specific findings.

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المخلص

تبحث هذه الدراسة في التداعيات المعرفية لمرض ألزهايمر على الكيانات اللغوية "الشكل والمعنى" والتي تمثل البنى الذهنية الأساسية التي يستخدمها البشر ومن خلالها يعبرون عن افكارهم ومشاعرهم واي مخرجات تواصلية اخرى ، يستكشف هذا البحث عن كيفية تدهور هذه البنى الذهنية وعناصرها أو استمرارها خلال مراحل تطور مرض ألزهايمر . وفي حين تركز الدراسات السابقة بشكل مكثف على العجز البنوي للمكونات اللغوية ، والصوتي، دلالية او النحوي في اللغة المنطوقة، تنقل هذه الدراسة بؤرة الاهتمام إلى أبعاد التحليل المعرفي-السميائي الكامنة تحت البنى اللغوية حسب نموذج رونالد لانغاك (2008). وتعمل الدراسة على تجربة الفنان "ويليام أوترمولين" كإنموذج لدراسة الذي عانى من مرض ألزهايمر؛ حيث اعتبر نفسه عينة حية وموثقاً لمراحل تطور حالته المرضية، ليقدّم التجسيد الأكثر صدقاً لمراحل ألزهايمر والتآكل التدريجي للبنى الذهنية التي يدمرها ألزهايمر . ومن خلال تحليل لوحاته الشخصية ما بين (1995-2001) استناداً إلى نموذج رونالد لانغاك (2008) لـ "تجمعات الرموز (Symbolic Assemblies)" بين الشكل والمعنى، وذلك من البدايات وحتى المراحل المتقدمة للمرض، لنصبح قادرين على رصد التآكل التدريجي لعناصر الشكل مقارنة بالمعنى ومفاهيم الصورة الشخصية للوجه؛ نظراً لأن الفنان كان واعياً بالفكرة من الناحية الدلالية (Semantically)، وهو ما يتجلى في استمرار تمسكه بمفهوم الوجه وفهمه له حتى بعد ان فقد القدرة على تجسيد بشكل صحيح . تمنحنا لوحاته نافذة معرفية كامنّة على المعجم الذهني المتصدع لمرضى ألزهايمر؛ إذ يحلل البحث كيف يؤدي اضطراب المستودعات الذهنية الأساسية إلى تغيير الواقع الداخلي للفرد وقدرته التواصلية غير اللفظية. وقد لوحظ أن القدرة على التعبير عن الذات من خلال الرسم تستمر لفترة أطول مقارنة بالمهارات الذهنية . وتختتم الورقة البحثية ببعض الاستنتاجات، والنتائج المحددة .

Table of Abbreviations

Abbreviation	Full Form
AD	Alzheimer's disease
CG	Cognitive Grammar
CL	Cognitive Linguistics
CS	Cognitive Semantics
fMRI	Functional Magnetic Resonance Imaging
GM	Grey Matter
I-language	Internal Language (Chomsky)
E-language	External Language (Chomsky)
3D	Three-Dimensional

1. Introduction

1.1 Background and Problem Statement

Researchers in the field of *Alzheimer's disease* have long focused on monitoring the decline and deterioration of language in patients, but the vital enquiry remains: after they lose the ability to express themselves verbally, is there still a semantic repertoire and deep-seated understanding stored deep within their brains after losing the means to express it?. Chomsky (1968) and Evans & Green (2006, p. 5) debated that language provides a window into the human brain's cognitive construction. This evidence extends beyond verbal language to include all semiotic systems, including visual art, which serves as a non-verbal language capable of encoding and embedding conceptual content through formal elements and principles such as colours, lines, and shapes (Cohn, 2012; Kress et al, 2002). The importance of exploring this relationship is increased when it deals with Alzheimer's disease (AD), which destroys cognitive functions such as memory, language, spatial reasoning, and, finally, affects the ability for semiotic expression (Klimova et al., 2015; Szatloczki et al., 2015).

One of the theories that focused on the underlying structures of verbal and visual outputs and their relationship with meaning is Langacker's (2008) in the field of *Cognitive Grammar*. Langacker (2008) coins the concept of *symbolic assemblies or form-meaning*

pairings that unite the "signifier" and the "signified" relying on Saussure (2017). These assemblies work through correspondence and integration apparatuses, forming hierarchical assemblies that range from basic components to complex expressions (Langacker, 2008; Evans & Green, 2006). This symbolic building covers visual signs, including icons, indexes, and symbols as Peirce's classifies them in the sign world (Saeed, 2016; Sebeok, 2001). The linguistic and visual areas meet at the mental level, where concepts are the mental sources of data that feed into semiotic expressions (Evans, 2009; Nemickienė, 2011).

Through AD phases, neural networks progressively dismantle; one of the signs is a decline in linguistic components in all its kinds (Klimova et al., 2015; Feyereisen et al., 2007; Stopford et al., 2012). However, this decline is slower in the artistic side, even with some AD patients keeping drawing skills well into the end of disease phases (Crutch et al., 2001; Baloyannis, 2020). This proposes that visual representational systems may depend on neural paths that are relatively unharmed in AD, mainly those backup visual memory (Chamberlain et al., 2014; Vaz et al., 2016). Brain structure reflects at the creative side, as in Vincent van Gogh's works, which reflect his epileptic condition (Baloyannis, 2020; Rustin, 2008), and the research sample of William Utermohlen (1933–2007) whose case is mainly important because, while his verbal ability declined quickly in the middle and late phases, his drawing skill kept up until the final phase of AD. (Crutch et al., 2001; Maurer & Prvulovic, 2004).

This study attempts to link CL field into the AD area, since most previous studies have focused on the impact of AD on linguistic abilities, as we explained in the section(2.11), or studies that focus on the impact of the disease on artistic production, as the study has explained in the section(2.6). Despite the existence of numerous studies on drawing, language and AD, there is still a clear gap remaining in the literature regarding the use of cognitive linguistics frameworks to study the impact of AD on conceptual linguistic levels, especially cognitive Grammar theories such as Langacker's (2008) symbolic assembly model, represent form-meaning pairing. While Utermohlen is a sample for many studies from artistic and scientific perspectives, they have not employed him in systematic CL analysis to examine the underlying linguistic patterns and conceptual ruin across his artistic production. These gaps offer a chance to use CL models with clinical neuroscience to give understand how AD affects form-meaning entities.

This research is important because the findings have clinical significance, particularly for the potential of AD patients ' use of artistic production, such as drawing, as a means of communication for AD patients to express themselves after losing the ability to use verbal language in the middle phases of AD. Though calculating clinical interferences is not in scope of this study, the results highlight the importance of artistic activities to prove non-verbal communicative means for AD patients after language deterioration. Encouraging clinical studies to test if art treatment offers cognitive or psychological assistances in AD patients care. Linguistic theories can also be applied to provide a deeper understanding of AD and to study verbal and nonverbal phenomena.

For this purpose, the study uses Langacker's (2008) form-meaning model to examine the development of syntactic and semantic decline in William Utermohlen's self-portraits through his AD phases from 1995 to 2001. The study is a qualitative descriptive study that investigates self-portraits through AD phases: early (1995–1996), middle (1997–1999), and late (2000–2001). The analytical framework uses Langacker's (2008) and the art elements and principles that represent the syntactic pole of painting (colour, line, shape, texture, space, and so on), which function as Forms that carry the semantic pole (the meaning of self-portrait). This study relies on Saussure (1974) and Peirce (Saeed, 2016) concepts, where

meaning is part of sign systems that represent the FORM. The study also depends on (Chamberlain et al., 2014; Hickok et al., 2015; Schlegel et al., 2015; Vaz et al., 2016; National Institute on Ageing, 2024) to understand the neurocognitive scope of language and drawing and the impact of Alzheimer's on these skills.

1.2 Study Questions

To address this problem, the study evaluates the following questions:

1. How do the syntactic and semantic visual elements change in Utermohlen's self-portraits (1995–2001) by AD and can be reflected in form–meaning entities within Langacker's (2008) CG framework?
2. What CL implications does AD on semantic and syntax of visual elements in Utermohlen's self-portraits (1995–2001)?
3. What can the visual examination of Utermohlen's self-portraits show in terms of a divergence between syntactic and semantic entities through AD phases?

1.3 Aims of the Study

The primary objectives of this study are to:

1. Study how the syntactic and semantic changes in Utermohlen's portraits echo the decline of form–meaning entities pairings (Langacker, 2008) through AD phases.
2. Explore the CL implications of AD on syntactic elements(form), comparing with semantic recognition.
3. Examine the syntactic and semantic changes in Utermohlen's self-portraits through AD phases from 1995 to 2001.

1.4 Scope

1. This study is limited to the Cognitive Linguistics field, especially Ronald Langacker's (2008) model of form-meaning. As a qualitative limit case study, this study does not give generalizability to all AD patients; but it offers CL image of form–meaning decline as linguistic entities through the chronological study for Utermohlen's self-portraits (1995–2001)
2. The data is self-portraits of William Utermohlen (1995-2001).
3. The analysis focuses on visual entities in the composition form–meaning pairing in Utermohlen's self-portraits .

1.5 Significance of the Study

This study seeks to fill a gap by applying Langacker's Cognitive Grammar to study AD's effect on form-meaning entities in the visual language scope, by using Utermohlen as a new CL sample to track cognitive-linguistic deterioration beyond artistic or clinical views.

1.6 Procedures

1. Give the theoretical framework of the sign system, concept, artistic elements and principles, Langacker's meaning-form model and Alzheimer's disease.
2. Systematic analysis of syntactic and semantic changes through AD phases from 1995 to 2001 of William Utermohlen's self-portraits.
3. Discussing and assessing the analyses of syntactic and semantic changes of William Utermohlen's self-portraits from 1995 to 2001.
4. Inferring specific cognitive-linguistic results concerning the ability of painting and communication in AD phases and present recommendations for the field of cognitive neurolinguistics.

3.7 Limitations of the Study

It is vital to elucidate that this study is firmly a qualitative, CL, and semiotic study based on Langacker's (2008) CG context. The study does not deal with the primary neurological, neuroimaging (fMRI), or biological side. So, all neurocognitive information, such as brain

structures including grey matter or cortical degeneration, is concluded by theoretical clinical studies relying on (Baloyannis, 2020; Chamberlain et al., 2014; Crutch et al., 2001) not by empirical and clinical visual analysis.

2. Cognitive Linguistics Framework

2.1 Language and Mind

Noam Chomsky argues in his paper "Linguistic Contributions to the Study of Mind" that we should pursue focusing on linguistics as a window into the brain. Chomsky suggests that if we "study of language, may very well, as was traditionally supposed, provide a remarkably favourable perspective for the study of human mental processes". Chomsky adds that possession of human language is associated with a specific type of mental organization, not simply a higher degree of intelligence. And it seems to me that today there is no better or more promising way to explore the essential and distinctive properties of human intelligence than through the detailed investigation of the structure of this unique human possession.(Chomsky,1968).

Why is language important in our research? Because it is a package of tools, data, and mental mechanisms that use to convey a targeted message or meaning through communication Saeed (2016, pp.3-100). But more essentially, it helps us understand the mental processes and brain mechanisms that are reflected in language fabrication. Therefore, Evans and Green (2006, p. 5) have argued about this idea: the belief that "Language offers a window into cognitive function", gives insights into the nature, construction and organisation of thoughts and ideas. Hence, they believe that CL is very important because it vital way to the study of language, since it assumes that language "reflects certain fundamental properties and design features of the human mind"(ibid). This is what Chomsky emphasised in his paper Linguistic contributions to the study of mind"(Chomsky,1968). Since linguistic construction relies on several elements to convey sense in semiotics, and language is one of them, but not the only one, as Saeed (2016,p.5) has pointed out. Cohn (2012, pp. 167-192), on the other hand, claims that "Both drawing and language are fundamental and unique to humans as a species. Just as language is a representational system that uses systematic sounds (or manual/bodily signs) to express concepts, drawing is a means of graphically expressing concepts. "

2.3 The Conceptual base of communication means

2.3.1 Concepts

Evans and Green elucidate that "The meaning associated with a linguistic symbol is linked to a particular mental representation termed a **concept**". **Concepts** which stem and creating from percepts, for example, a fruit like an **apple**, diverse parts of the brain perceive its data as figure, color, texture, flavor, smell and so on to form its mental schema. This varied range of perceptual data deriving from the outer world and our body which integrated into a single mental image (a representation available to consciousness), which gives the concept of APPLE its features and mental form. When we use language and speak or utter the form of apple, this symbol matches to a mass of conventional meaning of the target entity, and so 'connects' to a concept rather than directly to a physical object in the outer world (Evans and Green, 2006,p.8). Nowadays, the term "concept" has become essential in the notional system of cognitive, semantic, and cultural linguistics. (Croft, 2004).In linguistics, *the concept*, in contrast to a word, has a more complex construction. The content of the concept is distributed into " *linguistic meaning* and *cultural sense*". It is often named as "a unit of knowledge, an abstract idea or a mental symbol"; Concepts as elements of consciousness are quite independent in the language. According to V. Evans, concepts are intermediaries between the words and extra-linguistic reality" (Evans 2009). Our cognitive

capabilities integrate raw perceptual data into a “coherent and well-defined mental image”. The target meanings the encoded by linguistic symbols will refer to our *projected reality* (Jackendoff, 1983): “a mental representation of reality, as construed by the human mind, mediated by our unique perceptual and conceptual systems”. The symbolic function of language works to encode and externalise our thoughts. We have unlimited conceptualisation ability, while language as a system of symbols has a limited number of units for expression of thought (ibid). Relying on Evans and Green (2006, pp.8), depending on (Fauconnier, 1997; Turner 1991), “language merely provides prompts for the construction of a conceptualization which is far richer and more elaborate than the minimal meanings provided by language” (ibid).

2.3.2 Image Schema

The question here is, after we receive this sum of data and input through our sensory networks from our outer world, which establishes our data store and forms the **concepts**, where and how is it stored in our brain?. There are mental constructs that serve as input stores called **image schemas**, which are stores for raw conceptual inputs. **Image schemas** are considered as foundational conceptual patterns, more basic, sensorimotor in foundation, and constructing on which richer, more specific concepts are built. In some frameworks, they are clearly categorized as a special subtype of concept or domain, but with unique properties (pre-conceptual, schematic, bodily grounded). Lakoff & Johnson’s theory elucidates that image schemas are assembled from our experiences and are part of the conceptual system that supports categories and metaphor (Clark, 2024, pp. 166 - 183). It also functions as a conceptual building block that underlies more complex concepts, metaphors, and other mental activities (Zhu, 2023). Other scholars define it as a recurring, dynamic pattern of perceptual interaction and motor programs that gives structure to experience (Hedblom et al. 2015, pp. 21-54). Image schemas are “mental colonies”, created and motivated by our knowledge. Mark Johnson (1987) in his book “The Body in the Mind” considers these entities crucial in “The Bodily Basis of Meaning, Imagination, and Reason”. Johnson portrays image schema as a dynamic structure that acts somewhat like the abstract assembly of an image and thereby links up a vast range of several “experiences that manifest this same recurring structure” (1987, p. 2). Saeed clarify that Johnson depicts image schemas as “gestalt structures” as they have chunks that “hang together” in a way that is motivated by experience (2016, p. 359).

2.4 Signs system

Manik (2026), in his book “**Semiotics**” reveals that a sign denotes to whatever is used to signify or stand for something else. For example, the word “SEAT” is a sign used to designate the item that people sit on. Semiotics can be used across many fields. Art critics, for instance, use semiotics to analyze how artists use symbols connected to “femininity to communicate specific ideas about it”, in Psychologists to construe what patients mean while they refer to past experiences, and anthropologists may also use semiotics to investigate the meanings of folklore and rituals in particular cultures. A semiotic scheme is a organized way of communication that depend on signs and symbols to denote ideas, concepts, or data. These systems qualify persons to deliver meaning beyond direct verbal expression, “using a range of communicative forms such as text, images, body language, and sounds”.

Ferdinand de Saussure (1974) has argued that the investigation of linguistic meaning is a part of this general study of the use of sign systems. Semiotics is a science focuses on the relationship that may embrace between a **sign** and the **object** it represents, or in Saussure’s

terms between a **signifier** and its **signified**.” It can be a theory of signs and symbols that deals especially with their function in both artificially constructed and natural languages and comprises syntactic, semantics, and pragmatics (<https://www.merriam-webster.com>) , Semiotics “the study of the sign” or “the science of signs “Semiotics, which can be purely clarify as the study of signs and how signs generate sense as words, images, sounds, gestures, signs help individuals construe and reflect their experience(Sebeok, 2001). “**A semiotic system is a structured method of communication that relies on signs and symbols to represent ideas, concepts, or information. These systems enable individuals to convey meaning beyond direct verbal expression, using a range of communicative forms such as text, images, body language, and sounds**”.

C. S. Peirce clarifies the relation between **icon**, **index**, and **symbol** and **world**. **An icon** is where there is a similarity between a sign and what it denotes, as for instance, between a picture and its real life entities, or a drawing of a machine and the real machine. In **An index** group sign is closely related with its signified, regularly in a causal relationship; therefore smoke is an index of fire. Lastly, **a symbol** is where there is only a conventional connection between the sign and its signified, as in the use of grief is indicated by the wearing of black clothes in some cultures, and white clothes in others. In this taxonomy, **words would seem to be examples of verbal symbols**(Saeed 2016,p.5). Kerslake and Wegerif (2017, pp. 75-78) propose that figures which is belong to C. S. Peirce's icon, of which Emoji is one of its configurations, is a “Universal Language”. The researcher argues that emoji text can be adjunctive beside the original text or substitutive, reflecting wholly replacing the original text. According to Langacker's, symbolic units can be conveyed in diverse ways. In verbal language, the form is “phonological: a string of speech sounds. However, language relies not only upon speech sounds but also upon written symbols, or manual (Evans and Green ,2006,477).

2.5 language of color

The world of signs extends to include colours, as each colour has a specific meaning; it is the colorful physical form that pairing meaning, and this is what is discussed by Kress et al . (2002,p. 343) where he see that colours are also considered semiotic entities, which, like other modes, are multifunctional in their uses in the culturally located making of signs. Colours are also as non-verbal signs as Kauppinen (2005) clarifies, are a means of communication. The other type of signs have a close relationship with the meaning that they represent or reflect. Therefore, we can say that icons and indexes can provide a clear picture of linguistic mechanisms, especially icons, since we are trying to study our case through painting.

Relying on Amberg and Vause's (2009, pp.1-10) work” American English: History, structure, and usage,” they shed light on the **signs** world, they believe that, in a language community, there is a set of signs that convey meaning, which could be sounds or words or punctuation symbols on a page or even poses in a conversation. According to Amberg and Vause's , signs work on two different phases. **First**, signs indicate the phonic or graphic or visual physical medium that gives a language form, and then on the **second** level, the signs portray the message itself, which indicates a particular meaning. The signs within a language that convey meaning can be either **arbitrary** or **iconic**. An arbitrary sign doesn't possess any inherent connection with its meaning. In this vein, spoken language exhibits a random behaviour that causes the same concept of words may have a different form or even their sense from one language to another. For instance, the word **SNAKE** differs in English, Arabic, French, and so on in form and sometimes in meaning. The other type of sign, an iconic sign, works on a visual or auditory level to carry its meaning directly; for instance, the

picture of a SNAKE conveys the concept of a mouse to anyone who looks at it, no matter what the native language is (see Figure 2.3).

Arbitrary sign	Iconic sign
Culture-specific meaning	Universal meaning
Learned meaning	Obvious meaning
Example:	Example:
SNAKE	

Figure(2.3) shows Arbitrary signs vs. iconic signs(Amberg and Vause's (2009, p.7)

Kress and van Leeuwen (2002) suggest that colour functions as a semiotic mode that have a generative grammar equivalent to language. Refusing the opinion of colour as a just lexicon of fixed symbols, they claim that colour sense invoke from a system of distinctive structures , it have value, saturation, purity, modulation, differentiation, and kind. These “colouremes” job like phonemes, combining to create infinite meanings. Drawing on Halliday’s ,colour at the same time achieves ideational (denoting identity), interpersonal (affecting emotion and action), and textual (creating cohesion) parts. Similar language, colour has syntagmatic rules: “colour schemes” (for instance ,historic, modernist, postmodern) track principles that can be revealing underlying mental structures. Therefore, colour grammar reflects cognitive construction and social-semiotic processes (2002,PP. 343–368).Sudarwat and Zatalini (2019, pp. 134-146) claim that sign is a convey meaning entity which is construed as ‘standing for’ something other than itself. The sense can be quite diverse in some case depends on the situation given."Colour can be as a sign since people have a certain sense behind the colour they use," for instance. **Red** in some flags has a brave sense behind it, while **Red** in a traffic light means “stop”. In the Peircean Model concept , colour equivalent to icons signs . According to his study color reflects certain sense behind its presence and can serve several meanings.

2.6 Painting is the Open Window into Mental Structures

Visual art is a core of creative activity ,paintings are not only capture our fancy, but they can also reflect the nature of their painters which makes them in context of illness so revealing.People with problems in right hemisphere damage of the brain faces problems with the spatial arrangements between the parts of an image, while persons with left hemisphere damage of brain face to oversimplify sketches though keeping the overall spatial organization . this mixture of these depiction deficits has been witnessed in patients with AD (Crutch, et al.,, 2001.pp, 2129-2133).

Baloyannis (2020, pp.101-103) believes painting opens a window into brain disorders, and he shows that Painting is particularly a wide window viewing into human brain and soul, visualizing and projecting consequently a large number of functions and processes of the brain cortical and subcortical areas, uncovering many dysfunctions and brain disorders. as well as many interior psychological events of the artists, who endeavor to exteriorize themselves by visual art creations, allowing the observers to participate in their own interior phenomena and cognitive processes beside the aesthetic and cultural sense painting invoke from extensive neuronal circuits in the brain, which are extended widely at cortical and subcortical level. The centre of vision in the occipital lobe perceives the information of the picture and, collaborating with the temporal, parietal, frontal lobes and the thalamus, attempts to understand the meaning as well as the emotional and philosophical message of the artist. This is why in the field of Neurosciences, painting offers a valuable position in the

interpretation of the mental and psychic condition of artists who suffered from neurological or psychiatric disorders. In addition, painting reveals the cerebral lateralisation as well as the way that a neurological disease affects perception. add to that, symbolism may reveal feelings and thoughts of existential importance for the artist .The artist reflects what is suffer from even in the subconscious stage before the symptoms appear, as the brain was giving advance signals of what he was suffering from.

Self-portraits are considered among the most important personal works of an artist because they simply reflect how he sees or perceives himself, as Kesner et al. (2028, pp. 125, 88-99) . According to Rustin,(2008,p.1) , talented artists with psychiatric disorders portrait themselves and their emotional distress through their works. Many specialists in the field of psychology have acknowledged the importance of portraiture as a diagnostic tool. Muri (2007, pp. 331-339.) in his work clarifies that Self-portraiture is one of the main ways to self-reflection; he claims that "Self-portraiture is a very beneficial means with many client populations". He argues that this is what we observe in the works of Vincent Van Gogh, whose self-portraiture reflects his depression as figure (2.4) shows .Vincent van Gogh has suffered an epileptic himself, whose life was full of commitments of self-mutilations, described in his pictures the epileptic face and the epileptic perception, "painting in brilliant colors, well arranged, resplendent" He used to have several types of epileptic crisis including grand mal attacks and temporal lobe epileptic phenomena . Once, when Van Gogh was in post ictus condition cut off his auricle and few weeks later in January, 1889, he started painting his self-portrait, showing obviously his disfigurement with his right ear bandaged, whereas in reality he mutilated his left ear (Baloyannis, 2020,pp. 101-103.).It seems that Van Gogh's talent stemmed from his struggle with epilepsy, reflected in his paintings. The evolution of his condition is evident in his brushstrokes and colour choices, which appear vibrant compared to his known suicidal state. . Epilepsy is a neurological disorder arising from anomalies of the electrical activity in the brain, causing an abnormal surge of synchronised electrical discharges in the brain's nerve. Must the patient suffer from a usual background brain rhythm, sometimes creating a continuous electrical storm(Jiruska,2013,pp. 787-797; Detti et al., 2020, p. 846.).



Figure (2.4) A portraits that reflect different psychological states of Vincent Van Gogh(Wu,2020, January 21).

AD doesn't just affect language; it extends to skills like drawing. According to the National Institute on Ageing (2024), "Alzheimer's disease is a brain disorder that slowly destroys memory and thinking skills, and, eventually, the ability to carry out the simplest tasks". AD has three different phases: mild, moderate, and severe. In the Mild phase, patients lose concentration and memory, while in the Moderate phase, the disease will then extend to the cerebral cortex, causing an increase in memory loss,they will lose control of their instincts, and the patient grows with reduced language and has trouble reading, writing, and speaking, adding to that visual-spatial deficits. Also, there is the onset of apraxia, making

it difficult for the patient to carry out serial activities. In the severe phase, the AD will have damaged the majority of the brain; this will lead to death as Figure (2.8) has shown (Prabhu, 2023, pp. 1- 14; National Institute on Ageing, 2024; Vaz et al., 2016, pp. 121-132). The core problem with this disease is the loss of the ability to communicate and use language, which in turn, will suffer the same phases of decline; according to Klimova, in this phase, communication, recognition, and understanding will be very difficult at this stage (2015, pp. 1401-1408).

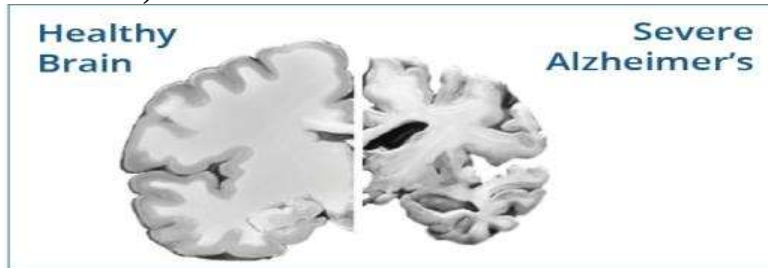


Figure (2.8) show AD case (National Institute on Ageing,2004).

AD patients are affected by delusions and demonstrate spatial errors and defective colour perception in the course of the disease; in addition, most of them have an incapacity to draw the face and give a proper emotional expression. Thus, the face frequently has a childish appearance, as it is clearly seen in the paintings of Carolus Horn (1921-1992), a well-known German graphic artist and illustrator, who collaborated with AD and continued to work for a long time before his death, though the artworks became very simple, the colours were faint or pale, and the images became progressively two-dimensional. The same colour and shape alterations are seen in the paintings of Willem de Kooning (1904- 1997), who simplified his art ability tremendously as the disease advanced. In the case of William Utermohlen (1933-2007), his paintings were oversimplified in the advanced stages of AD, showing a marked lack of symmetry, proportion and perspective Baloyannis (2020, pp.101-103).

2.7 Symbolic Assemblies

The model that we will use in our study is Langacker (2008), which represents the basis for conveying meaning using linguistic and non-linguistic entities.

One essential role of human language is to express our thoughts, feelings, and ideas. Language helps us to “encode and externalise our thoughts”. In the Cognitive Grammar of Ronald Langacker, language does this by linguistic entities called **symbols**. Symbols are bits of as dis- as in dislike, entire words as (bee, eat, now), or text or sentences for instance, (he can play music well) This group of symbols comprise of **forms**, which include “spoken, written or signed, and **meanings** “with which the forms are conventionally paired”. Ronald Langacker calls this type of relation between **form-meaning pairing** a **symbolic assembly**, which is conventionally associated (Langacker 1987,2008);(Evans and Green ,2006, pp .6-7). A form can be a speech sound, as in [b_t] or written form as bat, or a sign; on the other side, “ meaning is the conventional ideational or semantic content associated with the symbol”. A symbolic assembly of form and meaning is signified in Figure (2.6):



Figure (2.6) signifies the meaning conventionally paired with the form, which represents Evans and Green (2006, pp .6-7)

It is essential to clarify that the in Figure () represents the idea of a Cat as the meaning conventionally paired with the form [k_t] in the English language; this relation between the meaning and symbols “linked to a particular mental representation termed a concept”(2006, pp .6-10). As we explained previously, a concept is a mental construct formed from all the data entered into the brain related to an entity, creating a mental image that carries a certain meaning, which is later used to be paired with symbols as needed, whether it be a word, image, or idea.

2.7.1 The Mechanism of Symbolic Assemblies

Ronald Langacker argues that symbolic assembly constructions rely on CG: “it holds that grammar and lexicon form a continuum residing exclusively in assemblies of symbolic structures” (Langacker, 2008, p. 161). According to Ronald Langacker, symbolic assembly structures follow a mechanism that begins with the underlying mental structures and progresses towards more complex assemblies. According to him, when we produce or conceptual sentences, linguistic entities will “physically and conceptually merge into higher-order units”. This procedure relies on organised mechanics as follows (Langacker, 2008, pp. 161- 538).

1-Form-Meaning Pairings: Every constituent in an assembly consists of pairing form with a conceptual assembly (meaning) with a symbolising can be (sound or written form).

2-Correspondence (Integration): Langacker argues that the manner of the pairing process of creating symbolic assemblies follows the conceptual relationship when it combines, where one element often acts as the trajectory (the primary figure/subject) while the other will be the landmark (the reference point/object). In these mental underlying levels, linguistic entities will be involved in “Semantic and Form Integration”.

3-The Component-Composite Hierarchy: Assemblies have a hierarchical nature, starting with simpler, smaller constructions which are integrated to make composite assemblies, which can then “act as building blocks for even higher-level expressions”.

4-Constructions as Assemblies: A "construction" I nthis stage creat is an assembly of symbolic constructions connected by correspondences and behaviour. According to Langacker, this is because all stages of language exist in these assemblies: “traditional syntax and the lexicon form a seamless whole”.

5-Constructional Schemas: Assembly entities are evoked from language usage. Abstracted from using language, they form (schemas) that speakers use to comprehend and form new expressions.

6-Elaboration and Profiling: "During assembly, one structure often "elaborates" on the schematic part of another" so in these advanced stages, components are linked to other related components to increase clarity and meaning within the semantic networks. For instance, ("the dog" add into the schematic slot of "barked")

Significantly, this form–meaning pairing context works as the analytical model for this study, helping for a systematic analysis of how AD progress step by step disrupts the combination of form and conceptual meaning in both linguistic and visual expressions.

2.8 Syntactic and semantic of paintings

Carter (1976) has argued that painting as language has a pictorial syntax of shapes (pp, 111-118) . Gathercole (2019), through his analysis of Anthony Hill's Paintings, clarifies that paintings can reflect syntactics, semantics and pragmatics meaning with in its details. Gathercole (2019) and Markey et al. (2019, pp. 58-66) see the goal of drawing, like language, is to convey meaning; therefore, syntax, semantics and pragmatics work together and play an important role here. The semantics of paintings is meaning and symbolism,

which represent the relation between the artwork's internal structure and the external world. It translates the visual syntax into a conceptual message. In the art and semiotics fields, the syntactic and semantic scopes refer to how paintings can be structured and how they transfer the target meaning. Syntactics, on the one hand, refers to the structural organisation and formal grammar of visual entities, while semantics, on the other hand, deals with the content, symbols, and the messages or senses that the artwork conveys to the viewer (Gathercole, 2019).

According to Gathercole (2019) syntax is the interior “plastic logic of an artwork”. It emphasizes the way visual elements can be joined grounded on composition rather than what they represent. These visual elements' behaviour can be summarised as :

1. Composition & Balance: The way and style that painters use “lines, shapes, and volumes” and arrange them across the painting to monitor the viewer’s eye.
2. Colour Theory & Palette: How the painter uses the primary, secondary, and tertiary colours to make it interact, create contrast, or establish mood.
3. Texture & Brushwork: The physical presentation of paint (e.g., impasto vs. flat washes), which generates structural rhythm on the surface of the painting.
4. Spatial Syntax: “The positioning of figures and objects, overlapping, perspective (linear or atmospheric), and how depth is established within the 2D frame”(Markey, 2019, pp.58-66).

From the above, it is clear that drawing has the same linguistic structure as spoken language, but in the visual dimension, albeit in a different way. It is a type of form that pairs with meaning to convey concepts or target content in a physical, visible way.

2.8.1 How can we analyse painting syntactically and semantically

The syntactic scope analysis means "The "How" or the grammatical structure and formal arrangement of visual elements in paintings. Here we focus on how the artist constructed and created the paintings by using the basic artistic elements. This process of analysis includes (Markey et al. 2019, pp. 58-66):

Line & Contour: In this scope, the analysis process focuses on the direction and weight of the lines within paintings. Diagonal and crosswing lines form a sense of “movement or tension”, while on the other side, parallel lines arouse stability (Carter, 1976, pp.111-118).

Colour & Value: In this type of analysis, the contrast between light and dark is the key (chiaroscuro); the artist her use them to unify the composition or guide the eye of viewers (Dewey, 2016).

Texture: Test the physical style of application of paint (impasto) and how the artist applies material by brush or the illusion of texture (Study.com).

Composition & Space: examine the spatial organisation, as a focal point, balance of elements (symmetry vs. asymmetry), viewpoint, and how the canvas is alienated to generate depth (Wonderslate, 2026).

On the other hand, Markey et al. (2019, pp. 58-66) claim that Semantics focuses on the sense of artwork and links the syntactic elements (the brushstrokes and colours) to what they reflect and the connotations

2.9 Communication regions in the Brain

2.9.1 Brain regions responsible for language

Brain regions responsible for language involve both hemispheres:

1. Broca's area and the left frontal lobe: As shown in or “anterior speech cortex” Responsible for motor planning of speech, formulation of grammatical rules, and structural composition of sentences. In cognitive linguistics, it plays a role in processing connectives and sequential relationships (Hickok et al ., 2015; Yule, 2022, pp.154-165).

2. Wernicke's area and the angular gyrus: The left temporal and parietal lobe is the main center of the mental lexicon, where Wernicke's area is associated with understanding the

meanings of words, while the angular gyrus performs a crucial function in (form-meaning pairing) and converting written visual symbols into understandable linguistic representations (Hickok et al., 2015), It is important for speech comprehension and language ability (Yule, 2022, pp. 154-165).

3. White matter and connecting bundles: Arcuate Fasciculus represents the primary neural bridge that connects comprehension networks to language production to ensure rapid processing of auditory and verbal feedback (Hickok et al., 2015); (Yule, 2022, pp. 154-165).

When the word is heard and comprehended via Wernicke's area, the signal will be transferred via the arcuate fasciculus to Broca's area, to create a spoken version of the word. A signal is then sent to part of the motor cortex to physically articulate the word (Yule, 2022, pp. 154-165).

2.9.2 Brain regions responsible for drawing

Drawing requires a complex synergy between the two parietal lobes; the right parietal lobe is responsible for processing spatial relationships, perspective, proportions, and dimensions of shapes on the surface, while the left parietal lobe is involved in programming motor planning for the use of tools such as brushes and pencils (Schlegel et al., 2015). Regarding the effect of these two hemispheres on drawing skills, Chamberlain et al. (2014, pp. 167-173) have shown in a study that extended into three years to make a survey of 44 art and non-art students, for locate regions of the brain that are responsible of drawing skills and the importance of grey and white matter. The researchers find that increased GM and WM were related to drawing ability in the left anterior cerebellum and the right medial frontal lobe, corresponding to the supplementary motor area (SMA). Higher drawing skill ability is connected with increased grey matter density of brain in the left anterior cerebellum and right medial frontal gyrus (areas related to fine motor control and procedural memory). Artistic training (art students vs. non-students) is interrelated with increased grey matter in the right precuneus (related with visual images). Results propose drawing skill relates to motor/procedural constructions, while training can enhance "imagery-related areas". The results were confirmed by fMRI evidence.

Based on the passage, there is no direct spatial overlap in brain regions between them; language is concentrated in the left hemisphere (Broca's for speech, Wernicke's for comprehension), while drawing requires extended motor and visual areas (left anterior cerebellum, right medial prefrontal cortex/SMA, and right sphenoid). However, the brain functions as a network, as evidenced in language processing. Signals travel from comprehension (Wernicke's) through the arcuate fascia to articulation (Broca's) and then to the motor cortex for execution. This independent networking explains why, when the articulation area (Broca's) is damaged, the comprehension area (Wernicke's) remains intact, meaning we do not lose the ability to comprehend even if we lose the ability to speak (Yule, 2022, pp. 154-165).

2.10 Previous studies

I have noticed a scarcity (or even absence) of scholarly literature on CL studies that address the impact of AD on conceptual structures. Therefore, this section reviews the relevant literature that has examined the impact of AD on linguistic production in general, since language is one means of communication in the semiotic world, as previously mentioned, in order to highlight the research gap that this study seeks to fill. Most previous studies have focused either on the impact of AD on language, on art productions or the effect of the disease on the brain and its mechanisms. Bayles et al. (1982), Forbes-McKay et al. (2013), Fyndanis et al., 2013; Lee, 2012; Szatloczki et al. 2015) explore how AD affects

human language abilities in the five domains of language: phonetics and phonology, morphology, lexicon and semantics, syntax, and pragmatics. AD patients are confused about tense and aspect and show clear linguistic difficulties with tense senses and marking it with different aspects. In general, the loss of grammatical structures worsens during the advanced stages of the disease. On the vocal level, symptoms such as voice distortions and speech disorders increase phonetically, patients of AD show a range of phonological irregularities, as "inter-protrusive prolongation", add to that clear vowel and consonant lengthening, with substitution, in many occasions addition, sound distortion, sound modification attempts, resistance, and inversion" (Souza (2025, pp. e48722-e48722).

What concerns us primarily here is the semantic aspect, given that verbal and artistic production share the same conceptual basis based on Evans and Green (2006). Semantically, AD affects lexical access and verbal fluency. Amongst the first indicators of AD, the patient face challenges in naming as things, people and places. This sign indicates that AD impacts the assembly of semantic networks, make difficult to access data that has been stored for a shorter period (Stopford et al. 2012, pp. 429–446; Luotonen et al 2024, pp. 27–38). Szatloczki et al. (2015, pp.1- 8) depend on Juncos-Rabadán et al., (2010) find that, in the lexical, Semantic, and Pragmatic domains, a reduction in meaningful words and repetition of "empty" words (such as thing, it, or stuff). Both the semantic content and syntactic structures are deficient; this deficiency also occurs in fluency and naming processing levels, and comprehension of texts and production of meaningful narrative speech. Szatloczki et al. (2015, pp.1- 8), drawing on Feinberg and Farah (1997), clarify that AD also affects the distinctive semantic attributes of concepts.

Pragmatic and Discourse-Level Deterioration are also deficits with different degree according to the stages of AD, which effect discourse coherence, cohesion, and pragmatic inference. (Feyereisen, Berrewaerts, & Hupet, 2007, pp. 1- 17). Ferris et al., (2013, pp. 1007-1014) clarifies language impairment occurs in AD because of a decline in semantic and pragmatic competence of language processing. Phonologically, the patient of AD show slower rates and more pauses and the hesitation number will increase by time, and be worsen with disease progression, and the mental lexicon is even more hard to access (Hoffmann et al., 2010, pp.29–34).

On the other hand, the impact of disease on artistic production is a field of many studies, as Baloyannis (2020, pp. 101- 103); Crutch et al., (2001) focus on the impact and reflection of AD on the artistic output of artists on as Carolus Horn (1921-1992); Willem de Kooning (1904- 1997), and William Utermohlen (1933-2007).

Another group of researchers focused on the impact of AD on patients' brain structures and its effects on communication. The researchers found that, it affects language and memory. They lose the time of thoughts and are unable to express them in words, since it destroys the short- and medium-term memory that is affected, as the short- and medium-term memory act as temporary workspaces. Data in these stages is either actively processed and moved to long-term memory or deleted to prevent overloading the brain with unnecessary details. This justifies that sometimes this person can start speaking his/her native language which s/he did not use for a long. In this final phase, "all nerve cells of the brain apart from the grey matter, which controls motoric and visual functions, are damaged." (Klimova et al., 2015, pp.1401-1408; Eyigoz et al., 2020).

3. Methodology

3.1 Research Design

On the basis of Cohn's (2012) cognitive model of drawing, which argues that drawing systems share a cognitive architecture with language, this study employs a qualitative research design that applies Ronald Langacker's (2008) Cognitive Grammar; Symbolic

Assemblies model as an analytical tool to examine the syntactic and semantic degradation of visual elements in William Utermohlen's works through his Alzheimer's phases.

3.2 The Adopted Model

The adopted model of this descriptive qualitative study of self-portraits from (1995-2001) by artist William Utermohlen is Langacker's (2008) of **form-meaning pairing** that calls a **symbolic assembly**, which is conventionally associated (Langacker 1987, 2008); (Evans and Green, 2006, pp. 6-7). The reason behind adopting this model is since the basis of meaning is one, which is the **concept** that serves as the fountain of data, the **form** will represent **signs** that can be verbal or non-verbal. This creates space for us to study the visual aspect based on linguistic modal, as we mentioned previously in Section 2.

3.3 Research Sample

The sample of this descriptive qualitative study depends on a chronological series of self-portraits of the American painter from (1995-2001) William Utermohlen (1933–2007). Utermohlen was diagnosed with AD in 1995 at the age of 61, followed by a progression of progressive cognitive impairment, including spatial disorientation, dysgraphia, and anomic aphasia; also, his verbal material functions through Alzheimer's phases were especially affected, and difficulties in word retrieval and calculation. His neuropsychological evaluation proposes that he has a mildly asymmetric form of AD "with relative preservation of visual memory". On the suggestion of one of the nurses who was treating him after his diagnosis with AD in 1995, he continued to paint until 2001 when he lost his ability to paint completely as figure (3.2) shows. Utermohlen's self-portraits constitute an extraordinary longitudinal visual memoir of AD decline, serving as an ideal analytical sample for cognitive semiotics. Because the artist's biological "language organ" and broader cognitive functions underwent documented, progressive decay (Chomsky, 1968; Pitt, 2018), his sequential artwork provides an empirical, externalised record of shifting underlying mental structures. The inclusion criteria for the analysed artefacts require that each piece be a self-portrait definitively dated within his post-diagnosis period, tracing his transition from complex oil painting compositions to rudimentary pencil drawings. It is worth mentioning here that language skills were among the first to deteriorate, and the artist completely lost them in the later stages of the illness. However, he maintained his ability to communicate through drawing until the later stages of the AD (Crutch, et al., 2001, pp. 2129-2133; williamutermohlen, 2026). It is worth mentioning here, Utermohlen's initial artistic style depends on expressionism school and Pop Art features and vivacious colours. The central subjects of his works friendships, his wife, social and human emotions and psychology (Vaz et al. 2016, pp. 121-132).

The artist's clinical path, spatial confusion, and conceptual decline are clinically confirmed by neuropsychological assessments through studies of (Crutch et al., 2001; Maurer & Prvulovic, 2004; Vaz et al., 2016). These clinical results work as an external objective standard against which to measure the visual and symbolic decline in Utermohlen's work.

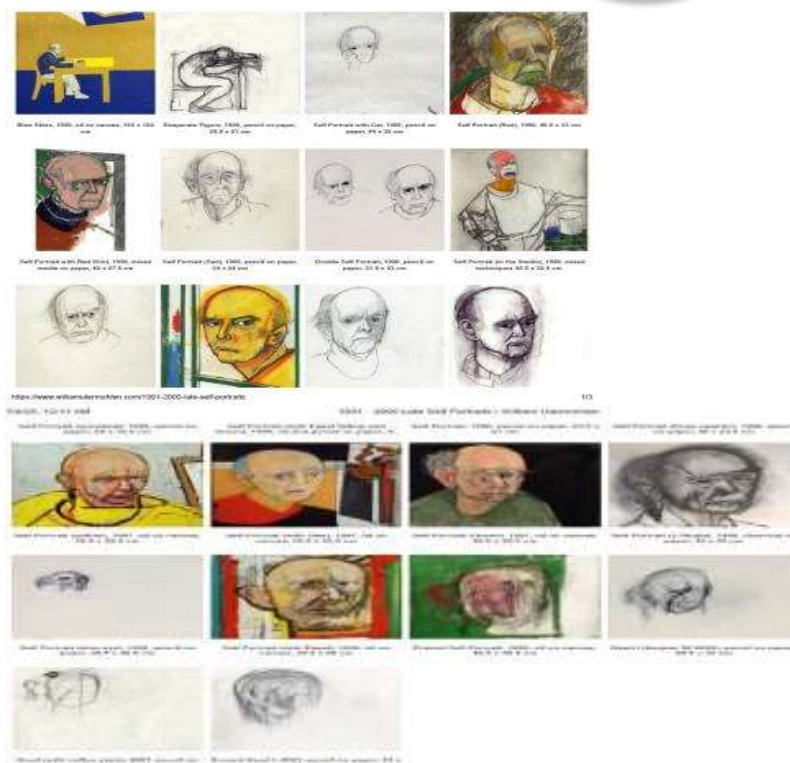


Figure (3.2) represents a series of paintings by between 1995-2002 after being diagnosed with AD (Estate of William Utermohlen, 2026)

3.4 Theoretical Framework of the Study

Given that the semiotic basis of the entities of language is one, according to Saussure (1974), where linguistic meaning is the study of the use of sign systems and the relationship between a sign and the object it represents. Signs can be verbal and non-verbal language, as C. S. Peirce clarifies, where signs are (icon, index, and symbol) (Saeed 2016,p.5). Signs represent the form that will pair with meaning in the Langacker model (Langacker 2008) of symbolic assemblies, which represents the basis for conveying meaning using linguistic and non-linguistic entities. The pole of form in the form -meaning pairing in this study is the artistic elements and principles that appear in the paintings of Utermohlen between 1995 and 2002. From what was mentioned previously, this research paper will attempt to study and analyse these paintings and examine the phases of deterioration of the artistic elements that appear in the self-portrait paintings of Utermohlen that are equivalent linguistic elements, and the loss of form elements that represent the carriers of meaning in the symbolic assemblies in Langacker's model, gradually as the AD progresses.

3.5 Data Collection

The data includes the self-portrait paintings that are created by Utermohlen from the diagnosis phase with AD in 1995 to 2002, as a late phase of AD, as shown in Figure (3.2) as data to be analyzed based on the Langacker (2008) model and the principles and elements of art.

3.6 Method of Analysis

The selected canvases are analysed as qualitative data as :

1. Syntactical that represent (FORM): involves how the structure of visual elements and principles in paintings are arrangement of (Markey et al. 2019, pp. 58-66). We here focus on how the artist constructed and created the paintings by using the basic artistic elements and principles during the different phases of AD from (1991-2002).

2. Semantically that represent (MEANING) : focuses on the sense of the artwork and how the syntactic elements and principles have been able to reflect this meaning during the different phases of AD from (1991-2002).

3.7 Reliability and Trustworthiness Procedure

The study relies on Lincoln & Guba (1985) to ensure analytical reliability and reduce subjective construal in this single-researcher. A clinical and Theoretical method is used. The Utermohlen's self-portraits have been submitted to analysis depending on clinical, neurological, and psychiatric assessments through the work of (e.g., Crutch et al., 2001; Baloyannis, 2020; Vaz et al., 2016) to support the linguistic/semiotic coding with medical diagnoses to clarify that the artistic changes have revealed neurological deterioration.

4. Analysis of Data and Discussion of Results

The researcher tracks the self-portraits of William Utermohlen, were reflected his three AD phases through the Early Phase (1995–1996), the Middle Phase (1997–1999), and the Late Phase (2000–2001), which target the brain's structure and functions and impact the core "meaning- formal " that bridges mental concepts with external expressions.

Table(3.1) shows the changes in paintings through the AD three phases from 1995 to 2001.

Years	Syntactically (artistic elements and principles)=FORM	Semantically(MEANING)	Diachronic Changing
The Early Phase (1995–1996)	-Blue Skies, 1995, oil on canvas, 152 x 122: The color structure of the entire portrait is simple, just yellow and deep blue; with white and the bright yellow table reflecting his old work(Utermohlen,2012). The syntactical building is still good, with a complex composition; the painter sits himself in a room with clear levels and vertical axes. -Desperate Figure, 1995, pencil on paper, 28 x 21:The artist used a pencil without colours, which are one of the essential elements in his works and serves as a sign of the start of its loss. -Self Portrait with Cat, 1995, pencil on paper, 44 x 32 cm :Using a pencil and not completing the elements of the portrait. -Self Portrait (Red), 1996, 46.5 x 33 cm : Red and green are the central colours while yellow and orange start to fade . The same	1. All portraits in this era semantically focus on the idea of self-portraiture, reflecting his facial features or psychological state. 2. The artist admitted that this painting expresses his feeling of loneliness (Crutch, et al.,, 2001.pp, 2129-2133). 3-At this stage of his illness, the artist was aware of his physical and mental state and his surroundings, as evidenced by the presence of context and background in his paintings, as is the case with the painting " Self Portrait with Cat, 1995, pencil on paper, 44 x 32 cm " 4.At this stage, the psychological state had a greater impact than the AD itself, and this	1.At this stage, the artist possessed a sense of space and time, as well as kinetic and artistic abilities, and still retained his artistic style despite the psychological symptoms. He used a variety of artistic materials, including oil paints, charcoal, and mixed media. 1. Complex linear perception and rich, varied color styles. 2.In this phase, a spatial error emerges. The paintings show some features, such as arms, are awry; even he

	two colours “indicate illness and pain in the late paintings of Vincent van Gogh”(Utermohlen,2012). -Self Portrait with Red Shirt, 1996, mixed media on paper, 42 x 27.5 cm :The painter uses balancing green and red to build light and shadow, indicating an unbroken artistic chromatic grammar.The red tones indicates pain, green refers to illness, as in Vincent's canvases. (Utermohlen,2012).The use of these colors is an initial indication of his feeling ill(Baloyannis, 2020,pp. 101-103.). -Self Portrait (Sad), 1996, pencil on paper, 34 x 24 cm :The use of colours became less, and the portrait became incomplete and faded; on the other hand, lines are accurate and vivid. Anatomical constructions, such as the neck and facial features, are careful sketch and volume. -Double Self Portrait, 1996, pencil on paper, 31.5 x 43 cm : The ability to use colours became less than before, and the portrait became incomplete and faded. Self Portrait (in the Studio), 1996, mixed techniques 45.5 x 32.5 cm : During this stage, the artist used the pencil excessively in his works and in a style different from the artist's usual style; its elements and dimensions are irregular, and only the tip is colored, and even this coloring is incomplete and unprofessional. -Self Portrait (scowling), 1996, pencil on paper, 28 x 19.5 cm: The ability to use colours	is evident in his paintings, which are dominated by sadness and pain.	admits that there was a problem with the sketch, but he couldn't know what it was or how to correct. In the later paintings show thicker brushwork and rougher surfaces. There are problems with the sense of proportion, as with the ear. 3. Abstract background; in the early paintings, there was interest in the background, but this is absent in later paintings. 4. The lines begin to become simpler. The colours disappear from the canvas or appear inconsistent due to unprofessional brushstrokes.
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	became less than before, and the portrait became incomplete and faded. -Self Portrait (with Easel Yellow and Green), 1996, oil and pencil on paper:In this canvas the realistic shapes, organized color and detailed outlines ,Utermohlen here put his image in frame as metaphor of being present and refers to the reality of living with AD, reflect his feeling of seeing the world trapped behind bars (Crutch et al., 2001) At this stage, he hasn't totally lost his talent for drawing, as he is in the early stages of AD, which typically sees a slight decline in artistic abilities compared to his verbal memory, which is the area most affected. -Self Portrait, 1996, pencil on paper, 29.5 x 21 cm :The ability to use colours became less than before, and the portrait became incomplete and faded. -Self Portrait (three-quarter), 1996, pencil on paper, 46 x 33.5 cm :The ability to use colours became less than before, and the portrait became incomplete and faded.		
The Middle Phase (1997–1999). This collapse in spatial structure and percentage directly resembles the neuropsychological evaluations that have been shown by Crutch et al. (2001) and	Self Portrait (yellow), 1997, oil on canvas, 35.5 x 35.5 cm :The painter used a single color, yellow, and the dimensions of the head are irregular, which is not a conscious stylistic flaw if you compare his style in this painting to his older works. Self Portrait (with Saw), 1997, oil on canvas, 35.5 x 35.5 cm :The later images show heavier brushwork and rougher surfaces. In this portrait,	The artist still possesses the Semantic ability to distinguish what he draws a (self-portrait)and is fully aware of the details he wants to depict, such as his face, ears, eyes, and background. Even if he falters in some aspects, sometimes loses the ability to draw them, or tends toward simplification,	1-Difficulties in perceptual and spatial abilities: weak visual and perceptual sensory abilities and difficulty in determining the location of points and the relative position of objects.This leads to a more abstract style (Crutch et al

Baloyannis (2020), who note clear visual-spatial deficits and parietal lobe dysfunction in artists during this phase.	finds the earliest signs of trouble in perfectly representing his facial features, both in terms of their structure and their spatial relation to the rest of the face. -Self Portrait (Green) , 1997, oil on canvas, 35.5 x 35.5:shows the asymmetrical features, with the extended right ear; he loses the sense of proportion, and the absent of background or context . This colour refers to sadness, anxiety, and the feeling of weakness. The black background signifies the end. Self Portrait (2 Skulls), 1998, charcoal on paper, 45 x 33 cm :Charcoal drawing without colors Self Portrait (shut eye), 1998, pencil on paper, 35.5 x 46.5 cm :A pencil drawing with no clear dimensions, color, or features; the only elements are a circle for a head and dots symbolizing an eye. Self Portrait (with Easel), 1998, oil on canvas, 35.5 x 25 cm : Green and red colours are central in this piece. While red signifies pain, green refers to illness, as in Vincent's canvases. This is the last recognisable self-portrait for him(Utermohlen,2012). Her the artist keeps the realistic shapes, with clear, structured colour and detail. In this canvas, Utermohlen fixed himself as if he were in prison (Crutch et al., 2001). -Erased Self Portrait, 1999, oil on canvas, 45.5 x 35.5 cm : The picture reflects blurred or strangely disjointed facial features.the artist faces difficulty in using oil paints. As his senses are weakening, the artist has removed all sense parts	he remains aware of the essence of what he wants to draw. This contrasts with the language he has lost at this stage.	, 2001.pp, 2129-2133). 2-At this phase of AD , the changes that appear in his style are the result of mental decline, not a change in artistic style(Crutch, 2001, pp. 2129-2133.). 3-A two-dimensional, flat spatial representation with non-uniform outlines
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	from his head. The eyes and mouth, while eyes are faint, only a painful red ear still shows on the left. The white smear on the forehead possibly denotes the spreading protein atrophying the brain, and again has uses red (pain) and green (illness) (Utermohlen, 2012).		
The Late Phase (2000–2001). The change toward abstraction style and dependence on simple line structures reveals the preservation of prime motor machines in the grey matter compared with a decline in language regions, as clinically shown by Chamberlain et al. (2014) and Vaz et al. (2016).	Head I (August 30 2000), pencil on paper, 40.5 x 33 cm :In this phase, Utermohlen use only a pencil in his work and draws only the basic components of the face, making his work Looks like Picasso style (ibid)(Crutch, et al., 2001). In this canvas the painter conveyed the difficulty in finding points or position of the object, as the nose or eye which is absent (Vaz et al. 2016, pp. 121-132). Head (with coffee stain), 2001, pencil on paper, 21 x 29.5 cm :A pencil drawing of a head without features, except for lines suggesting an ear. Erased Head I, 2001, pencil on paper, 24 x 16 cm :A pencil drawing of a head without features, just swirls of lines indicating bewilderment	Memory for verbal may show decline more than memory for faces; the preservation of visual memory's function may be because of the ability of painting (Crutch, et al., 2001, pp. 2129-2133).	1-The clear collapse of the visual-lexicon. Utermohlen no longer paint, uses only pencil in drawings, and no clear face features, reflecting severe visual problems. In Last painting 2001, the skill to make any coherent art has faded. 2.The last of Utermohlens' works were without oil paints and Used only in pencil. 3. Only the basic elements of the face are recognisable, and the division of the face produced by the extension of the jaw line The final portraits are more abstract in nature. 4. This portrait Offers a more primitive sight. 5. There is sign of decline in the skill

			to deal with spatial relations among features and objects of paintings , and proportion and perspective. 6.Backgrounds become simpler and vanish. 7.Brushwork shows more coarse. 8.The artist tends to use pencil line drawings. These are elementary skills that reflect the loss of more developed skills. 9.The style become a more abstract theme. 10.Collapse of facial elements and became more simple .
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4.1 Discussion

1-The Early Phase (1995–1996), at this phase, there are no radical changes in the artistic structure of the paintings; rather, the style has changed, the painter has shoed tendency to use pencil and paper, and sometimes to focus on the red and green colors , which are psychological signs. In the (Erased Self Portrait, 1999, oil on canvas, 45.5 x 35.5 cm) painting, he began to erase his features, he was in a subconscious state, depicting what was happening inside his mind. We have previously(by Baloyannis, (2020,pp. 101-103.). discussed how patient artists reflected their condition through their paintings, even unconsciously or before their diagnosis.

2-The Middle Phase witness paintings with two-dimensional plane,as Self Portrait (Yellow) (1997) and Self Portrait (Green) (1997), the backgrounds of canvas become more heavy, simplified .Utermohlen starts use thick, harsh outlines to distinct his figure and elements of canvas from the background. The configuration of his work shows early signs of spatial neglect. In Self Portrait (with Saw) (1997) and Self Portrait (1998), the facial structures appear as to drift, losing their symmetrical alignment.

3-Late Phase (2000–2002)The paintings have witnessed to simplification, as In Head I (August 30, 2000), the painter has reduced syntactical elements to the essential ones. The syntax elements become elementary as a head is replaced by a simple circle and dashes as eyes, nose, and mouth. Colour is completely lost. Utermohlen use only pencil on paper, with scribbled, uncoordinated gestures. In the last painting in the group, Erased Head I (2001), the

skill to draw shapes or keep spatial margins has collapsed. The lines are faint, detached, and unable to form a coherent edge or figures .

4-The data show a decline in the ability to signify spatial relations between features and objects, and proportion and perspective. Backgrounds may or may not be present and become rougher .The artist uses pencil line drawings more .

5- His inability to express the dimensions and fundamentals of the painting and to process perceptual and spatial data is of primary importance in accounting for the changing of artistic style.

6-Visual memory is stronger than verbal memory; This may return because of a factor in Utermohlen's continued ability to paint.

7-Despite his deteriorating mental state, he continued to draw, producing more abstract works despite his initial artistic style was marked by expressionism, . his use of abstract style may be for its simplicity and does not require adherence to specific rules. of forms, colours, proportions, angles.

8-His continued ability to draw in the later stages of AD may be attributed to his previous artistic skills and his motivation to resist his condition.The creation of novel works may also reveal the vetal of right hemisphere constructions in the skill of painting, add to that, neuropsychological valuation suggests that the artist has a mildly asymmetric form AD with relative preservation of visual memory(Vaz, et al. 2016,pp.121-132.).

9- The problem in the left cerebral hemisphere has been reflected in his decline in maintaining spatial relationships between the elements of canvas while the decline in right hemisphere remake the object with spatial distortions between the parts or removes one of them (Crutch, *et al.*, 2001; Maurer,& Prvulovic, 2004).

10-Studies have shown that verbal language is the first to be affected during the decline AD phases ,but language is a member of the semiotic family, where **icons** and **indexes** can still be used as alternatives to symbols. Given that, as we have shown, the semantic repertoire continues to exist into the later stages of AD, the patient may still be able to communicate in alternative ways, and drawing is one example of this.

11-The painter's tendency to choose colours like green, red, and yellow stems from problems of prolonged visualisation of negative colours, which arises from posterior cortical atrophy in brain, which can notes in patient with AD. Therefore, colour in paintings and drawings of patients with AD is modified with specific colours style , as can be seen in Utermohlen's paintings in figures (3.2) in which the artist chooses vivacious basic colours green, red, and blue and the color spectra that derived from them, such as , magenta and yellow, respectively (Vaz et al 2016,p.129).

12-The artist's inclination to use pencils and basic materials used in the early stages of learning to draw may be due to the fact that in the early phase, AD affects short- and medium-term memory and they can no longer access them, but only in long-term memory Klimova (2015, pp. 1401-1408).

5. Conclusions and Recommendations

5. 1Conclusions

1- From a cognitive-linguistic perspective, a symbolic assembly represents the pairing of a semantic concept (meaning) and a phonological/graphic carrier (form). In Utermohlen's canvases, the syntax elements and principles of paintings represent **FORM**, which witnesses systematic breakdown through AD phases.

2- In the early phase, the form-meaning pairings remain intact. Most of the elements, principles, and colours of the paintings are present and clearly reflect the artist's style, but they disappear in one painting and reappear in another.

3-In the middle phase, the symbolic assembly structures begin to fracture; the colors have become one-dimensional and monochromatic, and the painting lacks dimensions and artistic elements.

4-Late Phase: Complete conceptual attrition in last canvases; the graphic form can no longer support the concept of a human face.

5-The linguistic components of the form and meaning are damaged, and in the early stages, the patient loses the ability to name things. However, the patient retains some semantic cognitive abilities even in later stages, even after losing the verbal ability, as demonstrated as Vaz et al. (2016, pp. 121-132) and Crutch, et al. (2001, pp. 2129-2133) who have noted in their studies that the artist remained aware of the idea that he was painting a portrait or self-portrait even after he lost the ability to represent it.

6-Since the first stage of the illness does not affect the areas responsible for skills such as drawing and the use of its elements, as we explained previously, we observe that the artist maintained his style and use of colors, and remained aware of his surroundings. His paintings contained artistic elements that reflected his environment, such as a cat. The occasional shift towards darker colors and increased use of pencil in his work are more likely due to his psychological state than to the illness itself.

7-These changes in the cerebellum and SMA occur solely due to practising drawing as a skill and are entirely independent of whether the person has formally studied art.

8-Semantically, he realises that he is drawing a self-portrait even in the later stages of Alzheimer's, meaning that his semantic repertoire is delayed in being affected, while the problem is that he has lost his artistic syntax of elements and colors, meaning that he has lost the ability to use the appropriate form.

9-Although language abilities are lost in the middle phase of AD disease, compared to visual materials, experience earlier deterioration, skills such as drawing remain until later phase of AD. This is because they are located in two different areas of the brain (Crutch, et al., 2001, pp. 2129-2133; Klimova et al., 2015, pp. 1401-1408; Eyigoz et al., 2020). Review of the current evidence from artists with brain damage suggests that artistic talent, skill and creativity are supported by wide brain areas and are greatly resistant to brain damage (Zaidel 2010, pp. 177-183). Therefore, learning drawing skills is beneficial because it improves memory and delays the symptoms of Alzheimer's disease. Especially if these skills are learned from a young age, they remain in memory, since intermediate memory is lost in the middle phase of AD, and the patient reverts to using things from long-term memory (Klimova et al., 2015, pp. 1401-1408; Eyigoz et al., 2020).

10-As Chamberlain et al in their study "Drawing on the right side of the brain: a voxel-based morphometry analysis of observational drawing". The actual practice and mastery of drawing lead to structural changes in two specific brain regions (2014, pp. 167-173).

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