
Cognitive Changes: The Case Study Of Very Old Age

The chosen issue for this paper is cognitive changes in very old age. Navarro, Menacho, Alcalde, Marchena, Ruiz, & Aguilar (2009) defines cognition as obtaining knowledge through cultural experiences, and communication in relationships leads to reinforced positive languages. The age range for this case study is 80 years and above. This case will examine cognitive function and consider reasons for cognitive decline in very old age. Jung & Haier (2007) Parieto-Frontal Integration theory will research studies of human intelligence and reasoning. Christensen (2001) defines crystallized intelligence and examines a longitudinal study of 887 participants aged 70 – 93 years. These participants were examined in 1991 for crystallized intelligence, speed, and memory of four aged groups in Queanbeyan, Canberra. The results of crystallized intelligence, speed, and memory will follow. Kail & Cavanaugh (2014) will define plasticity in individuals. Ball, Berch, Helmers, Jobe, & Leveck (2002) examine the plasticity of brain changing over time. Miyake, Friedman, Emerson et al. (2000) as cited in Zelinski et al. (2011) defines executive control. Cicerone, Berch, Helmers, Jobe, Leveck (2006) Explain operations of executive control. Nararro (2009) examines whether computer programs assist very old people to improve cognitive functioning. Christensen (2011) Studies consider whether poor health is related to cognitive decline in very old people. Anstey & Christensen (2000) Longitudinal studies measure the impact of health and disease has on very old people as causes of cognitive change. Christensen (2001) researched three studies of the association between poor health and cognitive decline. Earles & Salthouse (1995) Examines the role health has on cognitive speed of older people. Singer, Verhaegen, Ghisletta, Lindenberger, & Verhaegen (2003) Study of the Berlin Aging Study will examine perceptual speed, memory, and fluency of individuals aged between 70-100 years. Finally, the conclusion highlighting the causes, transitions, and reasons very old people have changes in cognition.

The next three parts relate to Jung and Haier (2007) and reviewed by Cabeza & Nyberg (2000). Jung & Haier (2007) developed Parieto-Frontal Integration Theory which is based on 37 neuroimaging studies with 1557 participants testing the intelligence and reasoning in individuals. This involves the cerebral cortex in the brain interacts with the parietal lobe (sensory area) and frontal brain region (control panel of being able to communicate). Jung & Haier (2007) When this is linked with white matter (nerve fibres) this causes individual differences in reasoning in humans. This relates to very old people as their intelligence and reasoning have declined due to the sensory area (visual, auditory) and control panel (being able to communicate) are working at a slower speed, and nerve fibres have deteriorated. This results in very old people's intelligence to decline, communicate at a slower speed, and coming to conclusions at a slower speed.

Cabeza & Nyberg (2000) as cited in Jung & Haier (2007) reviewed work brain function from cognitive neuroimaging of brain activity by lobe at the Brodmann areas (visual cortex/visual information). It is predicted humans process relevant cognitive data through auditory and visionary means. The temporal (process emotion, language) lobes and occipital lobes (visual processing) are significant to the early processing of sensory information. The sensory, perceptual processing moves towards the parietal cortex (part of the cerebral cortex), mainly the supramarginal (portion of the parietal lobe), superior parietal (visual and sensory input) where important imagery, concepts and ideas occurs. This relates to very old people as once their

vision, and hearing deteriorates this affects their senses. The processing of information is then affected and thus effects their perception, thoughts and ideas on their individual experiences.

Cabeza & Nyberg (2000) as cited in Jung & Haier (2007) hypothesises the parietal cortex (language processing) interacts with the frontal regions (control panel), this is then used to examine results to a specified problem. The anterior cingulate is responsible for limiting response selection and other competing responses. This process relies on the reliability of white matter to allow fast and error-free transmission of data from posterior (input from a collection of sensory areas) to frontal brain (control panel) regions. Hale et al. (1987) as cited in Jung & Haier (2007) found age is associated with white matter (nerve fibres) and cognitive decline and thus relates to brain processes slowing down. This relates to people very old age; age is a major factor in the decline and slowing of cognitive processes.

Christensen (2001) Defines crystallized intelligence is the ongoing learning of an individual over their lifespan. Christensen (2001) Memory is divided into short-term and long-term memory, procedural (long-term) memory and declarative (short-term) memory. Christensen (2001) Procedural memory is defined as memory that doesn't need to be recalled from an experience, such as skill-based learning. Such as walking. Christensen (2001) Declarative memory is information that is recalled by an individual from conscious awareness. Such as facts or events.

Kail & Cavanaugh (2014) Plasticity is defined as skills individuals acquire or improve on through repetition of tasks. The age range is from very young babies to very old people. Ball et al. (2002) as cited in Navarro et al. (2009) found plasticity is the brain's ability to change throughout life. This relates to this case, as it supports very old people can learn new abilities throughout their lifespan, such as training to improve perception. Zelinski et al. (2011) defines working memory as the temporary storage of memory for short- term use and manipulate information. Zelinski and Lewis (2003) as cited in Zelinski et al. (2011) working memory is responsible for lists of words, speech, reasoning plus much more. As working memory declines, so does the tasks that operate them, words, speech, and reasoning. Goldstein (2007) reasoning is the process used for an individual to form a conclusion.

Miyake, Friedman, Emerson et al. (2000) as cited in Zelinski, Dalton, & Hindin. (2011) executive control is the ability an individual has to process and act on incoming information. This includes updating, changing of thoughts and actions. Cicerone, Levin, Stuss et al. (2006) as cited in Zelinski et al. (2011) found executive control these operations are important in the ability to plan, monitor, activate, switch and control competing responses and manipulate information in awareness. Salthouse (1996) as cited in Zelinski et al. (2011) Processing speed is defined as the time it takes for a person to gain insight and apply a decision, this declines with age. Cicerone, Levin, Stuss et al. (2006) as cited in Zelinski et al. (2011) Processing speed, working memory, and executive control are important processes in cognitive function mentioned earlier decline with age. This means very old people are slower in processing new information such as visual, language, and movement. Very old people are slower at; Associating lists of words, speech, drawing to their own conclusions, processing and acting on new information.

Navarro et al. (2009) Research found computer programs are used by elderly people to improve their cognitive function such as attention, language, perception and memory. Kawashima (2005) as cited in Navarro et al. (2009) developed a Brain Training Program. This relates to people in very old age as computer programs can improve elderly people's cognitive ability in attention, language, perception and memory. Navarro et al. (2009) argued there are three ways to

maintain cognitive functions in the elderly. These are, elderly people are physically, and mentally active, and have a good self-concept. This relates to people who are very old in age to try and remain or be as physically and mentally fit as they can be to slow the effect of cognitive decline in attention, language, perception and memory.

Christensen (2001) In a longitudinal study of 887 participants aged 70 – 93 years old, were examined in 1991 for crystallized intelligence, speed and memory. The study was conducted in Queanbeyan, Canberra with four aged groups. Christensen (2001) Cognitive speed and memory performance was found to decline with age. Crystallized intelligence in all four groups had high levels of functioning throughout their lifespan. Christensen (2001) Crystallized intelligence did decline slightly in the four groups, including the groups of participants older than 85 years. Christensen (2001) Memory declined considerably and the rate increased at older ages, cognitive speed declined considerably in all age groups. This relates to this case of people very old aged, cognitive speed and memory performance were found to decline with age. Yet crystallized intelligence in very old people was found to be at high functioning levels but declined slightly from 85 years old. Memory in very old age was found to decline with age.

Past research by Anstey & Christensen (2000) as cited in Christensen (2001) reported on eight longitudinal studies the impact of health and disease has on ageing. The measures were elderly people reported on their poor health and cognitive change. Two out of eight studies found health reasons for cognitive changes. Anstey & Christensen (2000) as cited in Christensen (2001) lung function, glucose tolerance, atrial fibrillation, and cardiovascular disease were factors in the declining of cognition. Anstey & Christensen (2000) as cited in Christensen (2001) the results are poor health is associated with cognition declining at a faster speed, but poor health may be responsible for part of the cognitive decline.

Christensen (2001) Research three studies of ageing individuals did not find any real association between individuals that rated on having poor health and cognitive decline. Christensen (2001) One of these studies reports poor health predicts there is a link to cognitive decline. Christensen (2001) Another study of the three reports individuals reported high in health was related to cognition improving. Christensen (2001) Of these there was a convincing connection between lung function and poorer cognitive outcome. This relates to this case of very old age people, as this information supports there is no link between poor health and cognitive decline in ageing individuals.

In contrast, Salthouse & Earles (1995) as cited in Christensen (2001) examined the role health has in the effects of cognitive speed on ageing people. The measures are statistics from individuals who rated themselves on their health beforehand and afterwards. Salthouse & Earles (1995) as cited in Christensen (2001) the results from individuals that rated themselves are 15% and 20% related to changes in their cognition. Which means health reasons were not the main reason for individuals declining cognitively. This relates to this case of very old aged people, that perhaps health issues are not completely the reason for cognitive decline.

In concluding, the evidence suggests individuals very old in age cognitive abilities decline as a natural part of the ageing process. Jung & Haier (2007) Parieto-Frontal Integration Theory proves individuals very old in age, have a decline in intelligence, and reasoning due to parietal lobe and frontal brain region slowing down, and white matter deteriorates. Jung & Haier (2007) also prove through their theory Parieto-Frontal Integration Theory of very old people, their intelligence decreases, communication process works at a slower speed, and concluding is

processed at a slower speed. Christensen (2001) supports crystallized intelligence stays at high levels and declines slightly from the age of 85 years. Christensen (2001) supports cognitive speed, memory performance declined with age. Anstey & Christensen (2000) as cited in Christensen (2001) evidence of two out of eight studies found there were health reasons for cognitive changes. Anstey & Christensen (2000) as cited in Christensen (2001) evidence of lung function, glucose tolerance, atrial fibrillation, and cardiovascular disease affected cognitive decline. Anstey & Christensen (2000) as cited in Christensen (2001) the results are poor health is associated with cognition declining at a faster speed, but poor health may be responsible for part of the cognitive decline. Christensen (2001) supports there is no link between poor health and cognitive decline in ageing individuals. Salthouse & Earles (1995) as cited in Christensen (2001) This relates to this case of very old aged people, that perhaps health issues are not completely the reason for cognitive decline.

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