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Significance of Piano Education for the Elderly in China

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Abstract
Growing old is an inevitable cycle of life. Senior citizens are affected by diseases that are associated with old age. Those suffering from these diseases tend to face various problems in life. A decline in cognitive function and a comparatively lowered quality of life are among the issues faced by these senior citizens. Piano education is a 'go-to' choice for people who want to improve their overall cognitive functions and brain creativity. Piano education can help the elderly to expand their cognitive function and improve their quality of life.

Keywords: Piano education, elderly, cognitive function, quality of life

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1.0 Introduction

The main reason that contributes to the decision to do a research study on the topic of piano education towards the cognitive functions and quality of life in the elderly in China is that there is not much research that caters to the effect of music education on elderly. Most of the research that was done focused on the development of cognition of younger children who are exposed to music education. As such, it would be beneficial for a research study that helps determine whether piano education would help the elderly improve their cognitive functions and quality of life.

The world's population is ageing faster and faster. The demographic shift has created new concerns for today's societies, which must confront the barriers of ageing and develop tools that help guard against them. Piano education is one of these variables, as it includes many sensory and motor systems and various advanced cognitive functions. In 2018, among the 24.949 million older adults over 60 in China, moderate cognitive impairment (MCI) prevalence among those over 65 was 20.8%. Cognitive impairment has become a public health problem in China. Learning, memory, language, attention, social cognition, and other skills are all affected by this condition.

2.0 Literature Review

The world's population is ageing at an increasing rate. This demographic shift presents new concerns for today's societies, which must confront the obstacles of ageing (such as age-related neurocognitive impairment) and develop measures that help guard against these issues. In 2018, China had 249.49 million seniors over 60, with a prevalence of moderate cognitive impairment (MCI) of 20.8 per cent among those aged 65 and over (Jia et al., 2020). In China, cognitive impairment has become a public health issue (Jia et al., 2020). Individuals over 65 may have significant cognitive decline, impacting their life (Bishop et al., 2010).

Furthermore, the motor abilities of the elderly are impeded as a result of their advanced age (Mattay et al., 2002). According to research, the coordination between large-scale brain systems, subservient to higher-order cognitive functions, may also be reduced in elderly

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persons (Andrews-Hanna et al., 2007). In addition, there are compensatory processes in the ageing brain that may be able to delay the progression of cognitive decline. According to recent research, engaging in leisure activities and keeping an active mental lifestyle may assist in preventing cognitive deterioration (Gow et al., 2012). Music has the potential to activate the auditory cortex as well as other parts of the brain.

This research aims to:

a) study the effects of piano education and different genres of music on the level of cognition of the elderly.

b) study the significant changes to the overall mood of the elderly when exposed to piano education.

c) explore the methods in which piano education can be made more accessible to the elderly in China.

Across the board, the proportion of people over 60 is expected to jump from 10 per cent in 2000 to 21.8 per cent by 2050, with the most significant increase expected in urban areas (Lutz et al., 2008). As a result of this upward tendency, the prevalence of diseases such as Alzheimer's and Parkinson's, as well as other problems connected with ageing, will increase exponentially, which will have severe consequences (Norton et al., 2013). At least twice weekly participation in stimulating activities was shown to reduce the chance of acquiring dementia by 50% during a four-year follow-up study of an aged sample, according to Akbaraly et al. (2009). According to recent research, engaging in leisure activities and keeping an active cognitive lifestyle may prevent mental deterioration (Gow et al., 2012). Music has the potential to activate the auditory cortex as well as other parts of the brain. Learning to play an instrument is both enjoyable and challenging; since it requires the integration of numerous sensory systems (auditory, visual, and kinesthetic).

Multiple brain imaging investigations have shown structural distinctions between musicians and non-musicians in the brain's anatomical make-up. Compared to non-musicians, the auditory and visuospatial sections of musicians' brains are more densely packed with grey matter, have a more prominent asymmetry of their planum temporale, and have an extended corpus callosum (Gaser and Schlaug, 2003). according to Schellenberg's research (2004). Researchers found that structural brain changes related to increases in musically relevant auditory and motor abilities were seen in 6-year-old children who received 15 months of private piano tuition compared to a control group who did not get such training (Hyde et al., 2009). According to Lappe et al., even short-term musical education in adults may stimulate brain plasticity (2008). Participants in one group learned to play a piano sequence, while those in the control group just heard the music and judged it. After training, the Mismatch Negativity Potentials increased in the group that actively played the piano but not in the group that passively listened. Similar findings were obtained by the same team of researchers when they included a rhythm-focused exercise into piano training in their investigation (Lappe et al., 2011). A stroke patient's improved mobility and sensorimotor cortex reconfiguration demonstrated the benefits of music training after being treated with music-supported therapy (Rojo et al., 2011; Rodriguez-Fornells et al., 2012). Training programs have been shown to help older adults' brains become more flexible.

According to several studies, music instruction in later life may help to mitigate the harmful effects of ageing on the brain (Wan and Schlaug, 2010). Musical training has also been proven effective in avoiding age-related delays in neuronal timing and hearing loss (Parbery-Clark et al., 2012). To summarise, older persons who participated in private piano lessons for six months showed improvements in executive functioning and working memory (Bugos et al., 2007). However, not all these benefits lasted after a three-month follow-up evaluation.

Research has been done on the impact of music on the mood and QOL of the elderly. As we age, depression problems become more widespread, yet they are generally underdiagnosed and undertreated (Kiosses, 2013). According to previous research, musical instruction may boost brain plasticity, delay cognitive decline, and improve mental wellness. The conclusions that can be formed regarding the long-term effects of music teaching can only be derived from a limited number of studies. Many studies were correlational and included older people who had previously played a musical instrument as a sample. In addition, longitudinal research tended to focus on children or young adults.

The authors acknowledged that music is a well-known tool that can make an impact on the emotional state of the human body while also can be motivating at the same time. The scientists intended to study the specific effects of musical training on the impact of other leisure activities on the elderly. For that purpose, they aimed to evaluate the impact of piano training on cognitive function, mood, and quality of life (QOL) in older adults. It is a known fact that older adults are the ones that tend to suffer from weakening in their motor senses in their body (Mattay et al., 2002). In the research, the respondents would be asked to undergo piano lessons that comprise daily training for a total duration of 4-months. After doing numerous different tests and analyses such as the Spatial Span Forward and Spatial Span Backward test, Trail Making Test Part A (TMT-A) and B (TMT-B) test, The Beck Depression Inventory, and The Profile of Mood States are examples of tests that had been applied to determine the neuropsychological tests followed by the questionnaire. It must be noted that these results are also varied by the fact that the participants are also allowed to conduct other types of activities alongside music and piano practising (Seinfeld, Figueroa, Ortiz-Gil & Sanchez-Vives, 2013). The test also suggests that the hypothesis that piano learners can see improvements in their cognitive domains was only partially supported by test results that indicated minor improved performance (Bugos et al., 2007). There is a noticeable improvement in the overall quality of life and mood (Andrews-Hanna et al., 2007). On the QOL aspect, the results from the study reflected that piano education does certainly allow the enhancement of air and certain parts of the QOL among these participants (Kiosses, 2013).

There will be 400 million Chinese people over 60 by 2040, according to Tatlow (2012), who predicted that China would have 220 million people over 60 as of 2015. (Zhang & Goza, 2006, p. 152). In education policy, lifelong learning (particularly for Third Agers) has been a critical notion since its conception in the 1960s, reflecting the shifting demographics (Ding & Yang, 2012). To "build a lifelong education system and a learning society in which everyone would seek long-term learning to accomplish one's overall development," the 16th National Congress of the Communist Party of China said in 2002. (Jiang, 2002). In Confucian education, the 'ethical power' music is essential for creating a good disposition in pupils of all ages (Law & Ho, 2009). At the same time, learning Western instruments and Confucianism "had a dramatic revival" (Deng, 2011). People in China started investigating music's impact on the elderly's lives. Older

adults' visual and aural talents and capacity to recall information may be improved by studying the piano. Participation in learning activities and the subjective well-being of the elderly are linked, according to Fan et al. (2017). This research did not examine piano learning and emotional well-being in the elderly but did demonstrate that learning activities and well-being are linked. In a study by He et al. (2018), it was observed that older people who took part in piano lessons reported higher levels of happiness than those who did not. According to a study by Wu et al. (2019), people who like studying music tend to be more outgoing.

3.0 Methodology

This research is done by adopting several qualitative methods to ensure that all the research objectives can be achieved. Firstly, qualitative research is beneficial as the topic covered research on piano education which is very complex and detailed simultaneously (Potter, 1996). Qualitative methods are helpful as they can provide more comprehensive and detailed information that can be utilised to tackle difficult issues (Hammarberg, Kirkman & de Lacey, 2016). The method is also flexible and adaptable. Next, it is much more cost-effective and does not sacrifice the efficiency of the results in the end.

The research was conducted by selecting 30 different senior citizens, who ranged from 65 to 79 years old and did not have prior experience in playing the piano or obtaining any music education before this. The piano program is free as long as the participants are someone with a high interest in learning piano and time available for practice and, most importantly, fit into the demographic for this study. Of the 30 participants, 26 are between the ages of 65 and 75, while the rest are from 76 to 79. It is helpful because there can be much more variation in the results and as an effort to ensure a universal impact.

Duration of a piano training program that lasts about five months would be offered to the elderly participants, managed by a professional piano teacher known as Ms Wang Yin. The experimental group of 30 participants all received the same piano instruction. They are asked to attend group piano lessons, lasting one hour and a half, given in a community centre weekly by the same music teacher who designed the program. Classes combined essential theoretical knowledge about music notation and theory with the practice of piano playing. All the participants have been told not to conduct any private piano lessons for this period to ensure the accuracy of the results in the survey. During the first piano lesson, the participants must continue practising based on the sequence eight times with their dominant hand and an additional eight more times with their non-dominant hand.

Then in the subsequent lesson, they would be asked to re-practice the piano based on the taught during the first lesson with guidance. In the fifth lesson, the participants would be asked to play the piano based on the previous studies without guidance. Observations are made as to the performance of the participants each week. These sequences are repeated during the entire five months of piano lessons. However, there would be a slight increase in difficulties for each interval of the piano lessons. The participants are required to complete each of the phrases within two weeks. The final week, week 20, would be allocated to phrase nine as well since the participants would be expected to be able to play the entire song themselves, and this time is further given for data collection purposes. After five months have elapsed, the participants will be given a set of detailed questionnaires to answer, and their feedback will be recorded within the same day. Then, all the input will be gathered and analysed thoroughly to obtain a finalised result.

On the other hand, document analysis is also one of the qualitative methods used in this research. Document analysis involves using existing data from existing documents without the need to go through questionnaires, interviews, or observations of the subjects (Bowen, 2009). In addition, it is also essential to gather a diverse number of human issues from different backgrounds to create more accurate results that reflect the society in that province.

The main goals of these piano lessons are to prove that there is an improvement in cognitive function and the quality of life of older adults. To be specific, the methodology is also designed to hopefully promote motivation to each of the participants when they are involved in the piano training program. Each phrase of the piano lessons is specifically picked to achieve these goals and the research objectives. The results from the piano program would also be expected to answer all the research questions listed above. The level of difficulty of the piano program increased gradually.

Despite these limitations, the qualitative methods appear to be the best choice for this research study. The methods used are interviews, questionnaires, observations, and data analysis. Regarding discussions, this is the most widely used and flexible way to gain qualitative information about human subjects as it involves information regarding people's experiences, views, and feelings (Jamshed, 2014). This method is helpful to tackle one of the research objectives: to study the significance of music and piano education towards the thinking ability of senior adults.

4.0 Findings

Research indicates that music instrument training is all about the overall sensory-motor experience of the human. Music is known to be a powerful tool in causing an emotional impact on the mood and feelings of individuals. Neuroimaging studies have shown that the influence of music also portraited a significant change in the non-musical basic emotions, including the orbitofrontal cortex, reward system, hippocampus, and amygdala (Koelsch, 2010; Trost et al., 2012).

Cognitive functions of the brain include phonemic awareness, reading ability, language, executive functions, verbal memory, visual attention, processing speed, intelligence, and creativity. Musical training may aid with conflict identification and resolution since it incorporates online processing and integration of musical components and the formation of musical predictions and expectations. Music training over a long period has been linked to improvements in working memory (George and Coch, 2011). The revisions led by the musical

practice are a great indication of the capabilities of music to secure the potential improvements that the elderly have reduced the impact of cerebral ageing on the overall cognitive functions and developments.

Through musical training, it is possible to discover new techniques for fighting cognitive deterioration caused by ageing and illness. Researchers found that those who had received musical training had faster auditory brainstem response times. The musical training improved other skills such as brain memory and swiftness in motor actions.

As for the effect on the QOL aspects, the results from the study reflected that piano education does certainly allow the enhancement of mood and certain parts of the QOL among these participants (Kiosses, 2013). An example shows a significant reduction in depression symptoms among the participants (Chan et al., 2010; Erkkilä et al., 2011). There seemed to be an additional increase in the emotional benefits of the participants over any other types of leisure activities. This is also evident by the finding that there was a further decrease in the level of fatigue and psychological distress among those in the piano group.

Quality of life (QOL) itself is a complex concept. The simplified meaning of the term includes an evaluation of all positive and negative aspects of living as a human. The element of QOL can be further derived from many smaller contributing factors such as work culture, neighbourhood, social circles, type of education, and many other relevant environmental factors (He, 2002). As medical and public health advances have led to cures and better treatments of existing diseases and delayed mortality, it was logical that those who measure health outcomes would begin to assess the population's health not only based on saving lives but also in terms of improving the QOL (Felce, & Perry, 1995)

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