Alzheimer Foundation London and Middlesex Scholarships in Alzheimer's Related Research

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Provide a summary of the research project (maximum 1500 words). Include a clear description of the present state of knowledge relevant to the project, the research objective(s), the questions or hypotheses, and the method of investigation. Comment on potential problems and outcomes. Clearly describe the significance of this research to our understanding of Alzheimer’s disease and other dementias.

The following criteria will be considered in the application review process:

* The applicant’s potential to contribute to knowledge about Alzheimer’s disease and other dementias
* The quality and feasibility of the applicant’s research proposal
* The capability of the applicant to undertake the research
* Recommendations by a faculty member who will supervise the applicant

The Alzheimer Foundation London and Middlesex Scholarship recipients will be selected by a committee of Western faculty leaders involved with graduate research, coordinated by the Director of Administration or designate in the School of Graduate and Postdoctoral Studies.

With the increasing prevalence of dementia and Alzheimer's disease in today's older population there is a growing need for easily implemented interventions that can enhance the cognitive vigour of aging adults. The use of music and music therapies in patients with dementia has been gaining popularity as a cost-effective method to improve quality of life. Recently, researchers have explored the cognitive benefits of music. Studies have shown that music listening engages large-scale networks within the brain that are associated with executive functioning like attention and working memory (cite), and regular music activities, like singing and instrument playing, are associated with enhanced cognitive functions (Bugos 2007, Hanna-Pladdy 2011, cite) in healthy older adults. A recent study by Sarkamo et al. (2014) investigated the cognitive benefits of music in early dementia and showed that singing and music listening improved general cognition in patients. However, the mechanism by which music works to affect cognition is unclear. The proposed project aims to better understand the relationship between music and executive functioning and ultimately to capitalize on the connection to create better interventions for those patients living with dementia and Alzheimer's disease.

My supervisors, Dr. Jessica A. Grahn and Dr. Adrian M. Owen, work with a series of web-based cognitive testing tools called *Cambridge Brain Sciences*. The tests are scientifically proven tools for the assessment of cognitive functions like memory, reasoning, attention, planning, and problem solving, (cite). The tests's accessibility make them well suited to use by participants young and old and can be easily modified to suit a variety of experimental needs. By manipulating music listened to before, during, or after the tests are taken we can begin to understand for example, what aspects of music (lyrics, instrumentation, affect etc.) are relevant to cognition or how familiarity of music affects executive functions. The results from a group of healthy older adults will direct how the research will be approached in older adults with dementia.

Hypothesis: familiar music will have the most effect (either it will be most distracting reducing scores OR it will be the most 'activating' and improve EF scores).

Results will likely depend on: music training in youth, amount of music listening to in daily life

Methods: online CBS with music vs. without (manipulating music along dimensions mentioned above, control familiarity – participant's own music?), older healthy adults (compared to undergrads?)

Group with music selected by us, group with their own music, group with no music