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Preliminary Findings of a Longitudinal Study Investigating the Language Attrition of Older Multilinguals in Malaysia

Navilashini Rajasekar[1]*, Po Ling Chen[1], Yvonne Leung[2,3,4], Leela Koran[5], and Jessica M. Price[1]

[1]School of Psychology, Faculty of Science and Engineering, University of Nottingham Malaysia, Jalan Broga, 43500 Semenyih, Selangor, Malaysia
[2]School of Psychology, Faculty of Science, University of New South Wales, Sydney, SW 2052, Australia
[3]Neuroscience Research Australia (NeuRA), Randwick, NSW 2031, Australia
[4]UNSW Ageing Futures Institute, University of New South Wales, Sydney, NSW 2052, Australia
[5]Faculty of Languages and Linguistics, University of Malaya, 50603 Kuala Lumpur, Malaysia

ABSTRACT

The main aim of this longitudinal study is to explore language attrition among older multilinguals in Malaysia. As part of the study, it also examines gender differences in psychological well-being and language performance, adjusting for cognition and age to understand how these factors may influence patterns of language use over time. Over a 1.5-year period, 111 cognitively healthy older adults (baseline: N = 111, M_{age} = 65.98, 50.5% females) were assessed at three waves. Data included basic demographics, language history (LHQ-3.0), verbal fluency tests (COWAT, VFT), psychological measures (GDS, SWLS), and cognitive function tests (MoCA, MAC-Q). Baseline cross-sectional analysis indicated that increased age and lower education levels were linked to poorer language performance, while higher life satisfaction was associated among women compared to men. Changes over three phases revealed significant declines in the verbal fluency across phases, with greater declines between Phase 1 and Phase 3. Findings emphasise the complex interplay of cognitive, psychological, and sociolinguistic factors in language attrition, underscoring the need for interventions promoting psychological well-being and active language use to preserve cognitive health in aging multilingual populations.

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E-mail addresses:
hpxnr1@nottingham.edu.my (Navilashini Rajasekar)
Chen.PoLing@nottingham.edu.my (Po Ling Chen)
yvonne.leung@unsw.edu.au (Yvonne Leung)
leelako@um.edu.my (Leela Koran)
Jessica.Price@nottingham.edu.my (Jessica Price)
* Corresponding author

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INTRODUCTION

Language attrition refers to the progressive deterioration of competency in a previously acquired language, resulting from decreased usage, alterations in linguistic contexts, or

reduced exposure (Schmid & Bot, 2011). Research on the language attrition has extensively examined the decline of L1 proficiency among individuals immersed in a second language (L2) environment particularly when individuals adopt a language in new social or cultural contexts. It has also explored the attrition of foreign languages in bilingual settings as shifts in language dominance occur. This process of attrition can impact multiple linguistic domains and manifest in both first (L1) and subsequent languages (L2, L3) (Gallo et al., 2021). Schmid and Köpke (2019) found that reduced exposure to L1 and increased use of L2 can lead to significant changes in language dominance and proficiency. Biological, cognitive, and external factors can also play a role (Köpke, 2007), with extralinguistic variables such as proficiency, age, attitude, motivation, language contact, and use being particularly important in language attrition (Mehotcheva & Köpke, 2019). A different angle could be explored in this sociolinguistic context as the consequences of the recent COVID-19 pandemic. With lockdowns restricting social interaction, there is a higher likelihood of intergenerational communication necessitating the use of L1 within households especially among the older population, reducing opportunities to use their L2 or L3. This situation presents a shift in the language dominance emphasising L1 over previously dominant L2/L3. Changes in linguistic environments can result in changes in dominance, illustrating that dominance is significantly context-dependent and can affect linguistic processing in brief intervals (Köpke & Genevska-Hanke, 2018). Study suggest that bi/multilingualism may contribute to cognitive reserve, potentially delaying or reducing the risk of late-life cognitive impairment (Perquin et al., 2013). Bialystok (2021) highlights the relationship between the language attrition and cognitive reserve among bilinguals. She suggests that sustained bilingual language use is integral in maintaining cognitive resilience, as it involves effortful cognitive processes such as attention and executive control (Bialystok, 2021). Cognitive reserve refers to the brain's capacity to adapt and discover alternative strategies to accomplish a task, enabling certain individuals to exhibit greater resilience to brain impairment than others (Stern, 2002). The attrition of a language could therefore diminish some of the cognitive benefits, potentially impacting brain health. Malaysia has a multi-ethnic population comprising Malays (63.5%), Chinese (20.1%), Indian (5.9%), other citizens (0.7%), and non-citizens (10.0%) according to the DOSM Department of Statistics Malaysia's Population Table (2024). Malay is the official national language, but English functions as a prevalent second language, especially in urban regions. Other common languages include Mandarin, Tamil, and other regional or heritage language. This distinctive situation offers a chance to examine changes in the language dominance, usage, and attrition during communication.

PROBLEM STATEMENT

As people get older, the probability of experiencing language attrition rises due to age-related cognitive impairment, decreased language usage, and other factors associated

with aging (Köpke & Schmid, 2004). The pandemic did significantly affect social interactions, potentially affecting language use due to reduced social engagement, limited opportunities for language practice, and increased psychological stress. This study seeks to explore potential correlations with cognitive function, psychological well-being, and language usage.

RESEARCH QUESTIONS

This research seeks to address key questions concerning language attrition in older multilinguals in Malaysia. It investigates language usage patterns among older adults and examines whether the after-effects pandemic has had long-term impact on these patterns over time, leading to measurable attrition. Additionally, it seeks to analyse the gender specific relationships between language attrition, cognitive performance, and psychological well-being, while considering the role of sociolinguistic factors in shaping these interactions over time.

METHODOLOGY

The study consisted of three phases of assessments over a 1.5-year period (1st phase in March, 2022). Data was collected when the recovery phase begun after the Movement Control Order (MCO) was implemented. Cognitively healthy older adults aged 60 and above (baseline: N = 111, M_{age} = 65.98, 50.5% females) were recruited and re-assessed every six months with the same measurements. Demographic data including age, gender, education, occupation status, and medical history. A comprehensive measurement for language ability, cognition, and psychological well-being were employed in this sequence: 1) language history questionnaire (LHQ-3.0) obtaining their language proficiency, language dominance, usage, and mixing; 2) verbal fluency tests (Controlled Oral Word Association-COWAT, Verbal Fluency Test-VFT); 3) psychological well-being measures (Geriatric Depression Scale-GDS, Satisfaction with Life scale-SWLS); 4) physical function assessment (Instrumental Activities of Daily Living-IADL); 5) subjective cognitive decline (Informant Questionnaire on Cognitive Decline in the Elderly-IQCODE); and 6) cognitive performance tests (Montreal Cognitive Assessment-MoCA, Memory Assessment Clinic-Q-MAC-Q). Ethical approval was obtained from the University of Nottingham Malaysia Ethics Committee (NR300422).

RESULTS

Baseline Cross Sectional Findings

Correlational analysis from the baseline data showed increasing age and lower years of education were significantly associated with poorer language performance. Subjective

memory complaints were correlated with higher depressive symptoms and lower educational levels. Regression analysis from the baseline data revealed higher life satisfaction was associated with better language performance, especially among women, (refer to Figures 1 and 2). Life satisfaction was positively associated with the proficiency, frequency of usage, and frequency of mixing of first (L1) and third languages (L3), with significant gender interactions showing stronger effects in females.

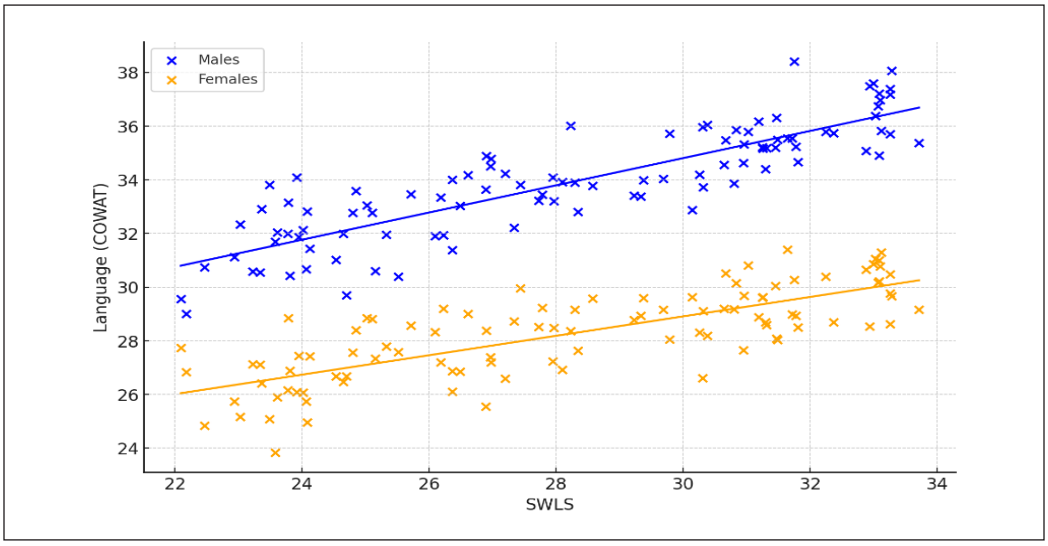

Figure 1. Interaction effect of SWLS and gender on language (COWAT) scores

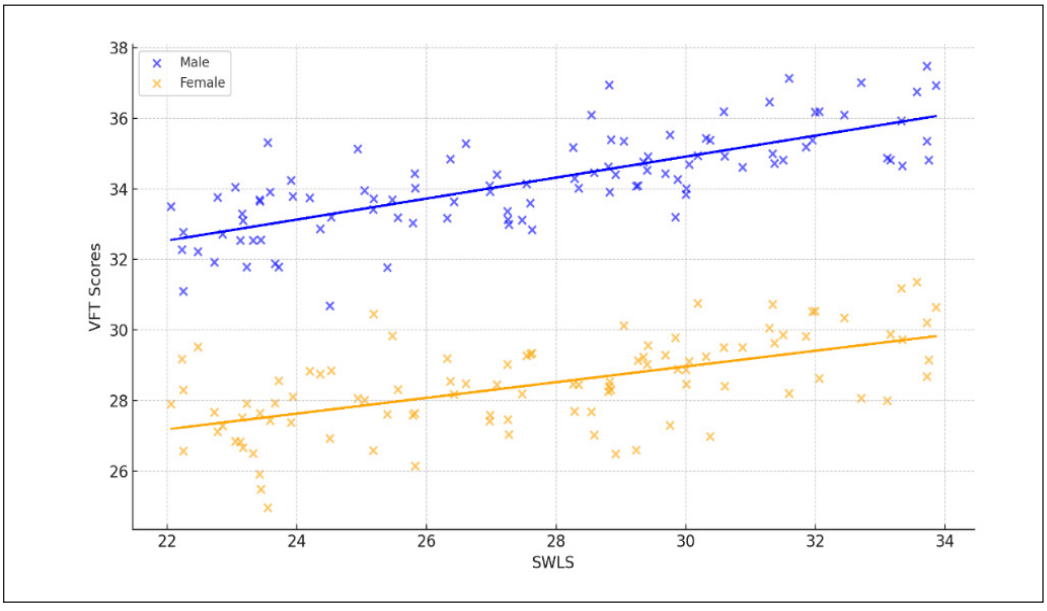

Figure 2. Interaction effect of SWLS and gender on language (VFT) scores

Longitudinal Findings

Repeated-measures of ANOVA on 75 participants who completed all the three phases revealed significant main effects of phase on the verbal fluency tests, with post-hoc analysis indicating a significant decline in verbal fluency from Phase 1 to Phase 3 and Phase 2 to Phase 3 (Figure 3). The COWAT scores showed significant changes across the three phases ($F = 21.55$, $p < .001$). Post hoc comparisons using the Tukey HSD test indicated that the mean score for Phase 3 was significantly lower than Phase 1 ($p=.05$) and Phase 2 ($p=.04$). For the VFT scores, there was also a significant main effect of phase, ($F=3.63$, $p=.03$) with scores decreasing from Phase 1 and Phase 2 to Phase 3. Post hoc comparisons revealed that the mean score for Phase 3 was significantly lower than Phase 1 ($p<.001$) and Phase 2 ($p<.001$), with no significant difference between Phase 1 and Phase 2 ($p=1.0$).

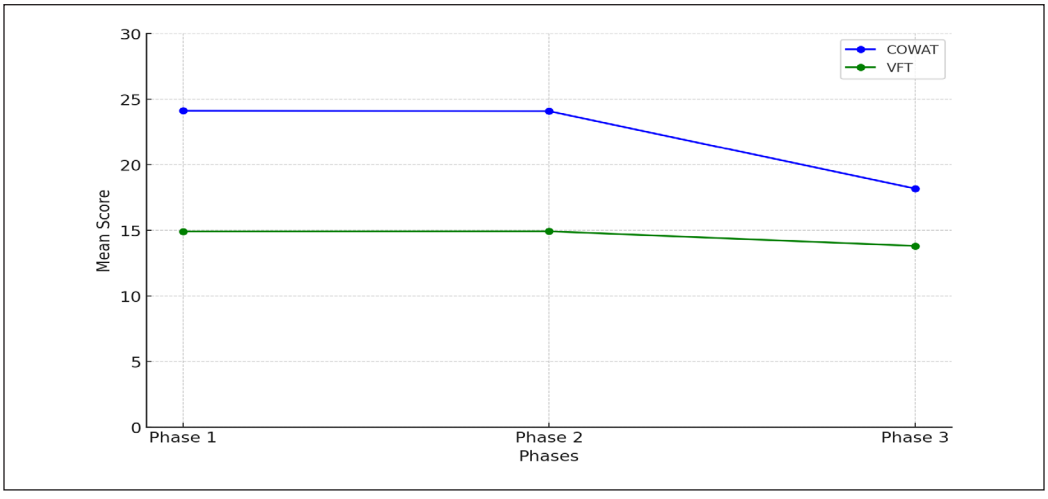

Figure 3. Decline in VFT scores across phases

DISCUSSION

Cross sectional findings revealed that age and education levels were associated with language performance, older age, and lower education correlated with poorer language performance. Higher education seems to mitigate changes in cognitive performance, allowing them to better withstand the effects of aging on the cognitive functions (Stern, 2013). While education was associated with language performance, this was included as a covariate to control for its potential influence. The primary focus remains on examining the relationships between psychological well-being, cognition, and gender differences in language performance. Aging is associated with slower processing speed, reduced working memory capacity, and neurobiological changes which impair executive functions critical for language proficiency (Salthouse, 2010). Additionally, reduced

language usage could have weakened neural pathways, particularly when older adults revert to using their dominant L1, limiting opportunities to practice L2 or L3 (Köpke & Schmid, 2004). Declines in verbal fluency among older multilinguals emphasise the vulnerability of lexical access to aging. This aligns with research showing that verbal fluency, dependent on lexical retrieval and executive function, is one of the cognitive abilities most susceptible to age-related decline (Birdsong, 2006). The regression analysis further revealed higher life satisfaction, moderated by gender, with a stronger relationship observed in women compared to men. This finding underscores the role of psychological well-being significantly contributing to cognitive resilience, especially in women, who often engage more in social activities that involve language use (Diener et al., 1999; Smith et al., 2017). Depression and reduced life satisfaction are strongly associated with lower language performance, suggesting that emotional and psychological states may impact language abilities (Wu et al., 2024). Longitudinal analysis would be required to determine whether these factors such as cognitive performance and psychological well-being contribute to language decline over time.

CONCLUSION

Overall, this study emphasises the complex relationship between psychological well-being, cognitive abilities, and sociolinguistic factors to mitigate language attrition in older individuals who speak multiple languages. These findings collectively suggest that interventions aimed at improving psychological well-being and encouraging active language use could be effective strategies for maintaining language abilities and cognitive health in an aging multilingual population.

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