

The relations between marital status, loneliness and social abilities in healthy elderly: A pilot study

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Theoretical background

With the ageing of the worldwide population, the increasing number of persons living with dementia represents a trend to prevent, possibly, by working on the modifiable lifestyle factors¹. Specifically, the role of the social environment is gaining interest from the introduction of DSM-5 criteria for the major neurocognitive disorder².

The influence of the social environment on health and social interaction is captured in the concept of social health³.

The associations between cognitive decline and social health markers are robust. They indicate social support⁴, marital status⁵, loneliness⁶ and satisfaction concerning social relationships⁷, as aspects modulating the decline.

Such a relation is not surprising as most human cognitive activities (about 95%) are social. A specific term, Social Cognition, has been designed to define a multifaceted, complex domain resulting from the sum of different cognitive sub-functions. According to Frith⁸, Social Cognition is a life aspect that includes the processes of recognising and interpreting information acquired from the social environment (social perception), understanding own or other behaviours (social understanding), and modulating the way of thinking and acting related to the requirements of different social situations (social decision-making).

Aims and Hypotheses

In light of the robust protective role of the marriage⁵, the present project begins to investigate whether marital status tunes the cognitive skills operating within the domain of Social Cognition far before the emergence of cognitive decline.

In particular, social perception, social understanding and social decision-making⁸ are explored to be modulated by marital status, once this is controlled for perceived loneliness and social support, depression and cognitive impairments.

People with good social-relational status (married, low perceived loneliness and good social support) are expected to perform better in the three domains of social cognition.

Methods

Participants and sample:

Although 200 is the number of participants suggested to stabilise statistical correlations⁹<https://www.zotero.org/google-docs/?EwxcFq>, in line with the pilot study objective and its timeline constraints, we consider 60 the optimal number of healthy participants, aged between 50 and 80, who will be recruited. Exclusion criteria include histories of psychiatric, neurological, or neurocognitive disorders.

Tools

The task and questionnaires to administer are the following:

Experimental task: **Face emotion recognition**¹⁰ combined with **intensity rating** on a 9-points scale using self-assessment manikin¹¹ will test social perception; the **Story-based Empathy Task** (SET¹²) will test social understanding (SET-IA), and social-decision making (SET-EA); the **Perceived social support**- a 5-item questionnaire from the Health and Lifestyle Survey¹³ and the **Perceived Loneliness**, a 3-item UCLA scale¹⁴, will measure the related constructs.

The control questionnaires are the MOCA¹⁵, and Geriatric Depression Scale¹⁶.

Procedure

Participants will be recruited by advising the project through local associations via newsletters and personal meetings during which the researcher advises the project or lectures about project-related topics. People expressing interest are contacted by phone to meet the researcher at their homes or on the association's premises. Participants will be welcomed in quiet and illuminated rooms, where participants express their informed consent and demographic information (i.e., age, gender, education) and marital status (categorised into married/has a partner, widowed/divorced – from when - and never married) are collected. Participants will be then presented with the experimental and the control measures by using a laptop or a tablet for approximately 60 minutes. The experimental tasks are randomised among them; the same happens to the control questionnaires; however, the two blocks are kept ordered to have the experimental tasks to be ascertained before the control questionnaires. This protocol allows split in two testing sessions and, in the case of need, reprogramming another meeting.

Statistical analyses

Dependent data will be checked for normal distribution and equal variances. The assumption of sphericity will be assessed with ANOVA, and significance levels will be set at $p < .05$. Differences in group demographics will be examined for age, years of education, and gender.

Independent variables: Marital status (3 levels: married/with a partner, widowed/divorced, never married).

Covariates: gender, education, cognitive status, and depression are included as potential confounders for their established relationship with social health¹⁷. In the same manner, even perceived loneliness and social support are entered as covariates.

Dependent variables: the percentage of correct responses in the Face emotion recognition task, the emotion intensity rating at SAM and the SET scores. In particular, each SET level is calculated separately (IA, EA e CI). Each result is entered in Repeated Measures Analysis-Of-Variance with the participant's marital status as a between-subjects variable, gender, educational level, perceived loneliness and support, cognitive status, and depression as covariates.

Declaration of commitment to request ethical approval

A research protocol will respect the Declaration of Helsinki and be submitted to the Ethics Committee of Bologna University for approval. Once participants understand the project aims and protocol, they will provide informed consent.

Expected results and Implications

In general, social engagement has been demonstrated to tune burden-related aspects featuring cognitive decline in healthy older adults³. The project expects to yield differences in all the cognitive aspects, i.e., social perception, social understanding, and social decision-making, supporting social interactions in healthy elderly, between those who live in pairs or alone, and as a function of perceived loneliness and social support.

Participants living in significant relationships are expected to manifest better perceived social support and lower reported loneliness and to better perform at the social cognitive tasks (both emotion perception and SET-IA and SET-EA) compared to participants who were never married or reported intense loneliness. Such a trend is expected to be gender-dependent.

The expected results would clarify the role played by marriage: the novelty introduced in the study, which concerns the accounting of both reported loneliness and social support as covariates of the level of marriage, would foster the development of further investigations aimed at understanding the complexity featuring the intricate interaction between social cognition and cognitive decline.

References (Nature Style)

1. Prince, M. *et al.* Recent global trends in the prevalence and incidence of dementia, and survival with dementia. *Alzheimers Res. Ther.* **8**, 1–13 (2016).
2. *Diagnostic and statistical manual of mental disorders: DSM-5.* (American Psychiatric Association, 2013).
3. Vernooij-Dassen, M. & Jeon, Y.-H. Social health and dementia: the power of human capabilities. *Int. Psychogeriatr.* **28**, 701–703 (2016).
4. Murata, C., Saito, T., Saito, M. & Kondo, K. The association between social support and incident dementia: a 10-year follow-up study in Japan. *Int. J. Environ. Res. Public Health* **16**, 239 (2019).
5. Hakansson, K. *et al.* Association between mid-life marital status and cognitive function in later life: population based cohort study. *BMJ* **339**, b2462–b2462 (2009).
6. Sutin, A. R., Stephan, Y., Luchetti, M. & Terracciano, A. Loneliness and Risk of Dementia. *J. Gerontol. Ser. B* **75**, 1414–1422 (2020).
7. Kuiper, J. S. *et al.* Social relationships and risk of dementia: A systematic review and meta-analysis of longitudinal cohort studies. *Ageing Res. Rev.* **22**, 39–57 (2015).
8. Frith, C. D. Social cognition. *Philos. Trans. R. Soc. B Biol. Sci.* **363**, 2033–2039 (2008).
9. Schönbrodt, F. D. & Perugini, M. At what sample size do correlations stabilize? *J. Res. Personal.* **47**, 609–612 (2013).
10. Ma, D. S., Correll, J. & Wittenbrink, B. The Chicago face database: A free stimulus set of faces and norming data. *Behav. Res. Methods* **47**, 1122–1135 (2015).
11. Bradley, M. M. & Lang, P. J. Measuring emotion: the self-assessment manikin and the semantic differential. *J. Behav. Ther. Exp. Psychiatry* **25**, 49–59 (1994).
12. Dodich, A. *et al.* A novel task assessing intention and emotion attribution: Italian standardization and normative data of the Story-based Empathy Task. *Neurol. Sci.* **36**, 1907–1912 (2015).
13. Bowen, R. C., Dong, L. Y., Peters, E. M., Baetz, M. & Balbuena, L. Mood Instability Is a Precursor of Relationship and Marital Difficulties: Results from Prospective Data from the British Health and Lifestyle Surveys. *Front. Psychiatry* **8**, (2017).
14. Russell, D. W. UCLA Loneliness Scale (Version 3): Reliability, validity, and factor structure. *J. Pers. Assess.* **66**, 20–40 (1996).
15. Santangelo, G. *et al.* Normative data for the Montreal Cognitive Assessment in an Italian population sample. *Neurol. Sci.* **36**, 585–591 (2015).
16. Galeoto, G. *et al.* A psychometric properties evaluation of the Italian version of the geriatric depression scale. *Depress. Res. Treat.* **2018**, (2018).
17. Huang, J., Van den Brink, H. M. & Groot, W. A meta-analysis of the effect of education on social capital. *Econ. Educ. Rev.* **28**, 454–464 (2009).

Plan of activities

Project activities

- Measures preparation and recruitment
- Project Protocol administration
- Continuous data monitoring and analysis
- Drafting scientific paper/conference abstract
- Writing the final report

Training activities,

- Deepening the relationship among marital status, social cognition and cognitive decline
- Improving statistical skills
- Supervision for scientific writing of papers and conference abstracts

timing of activities

	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Ethical Clearance												
Agreements with associations												
Measures task preparation												
Participant recruitment												
Project Protocol administration												
Continuous data monitoring, cleaning and analysis												
Drafting scientific paper/conference abstract												
Writing the final report												

Feasibility of the project

The project requires a solid commitment to the associations and clubs participants belong to. A necessary action to prevent the risk of participant withdrawal requires the research team to intertwine formal agreement together with arising in the possible participants' vivid interest in the research question and other ageing issues. Furthermore, the project requires that any research team components manifest a good knowledge of the Italian language as part of the project involves interactions with Italian people with dementia.