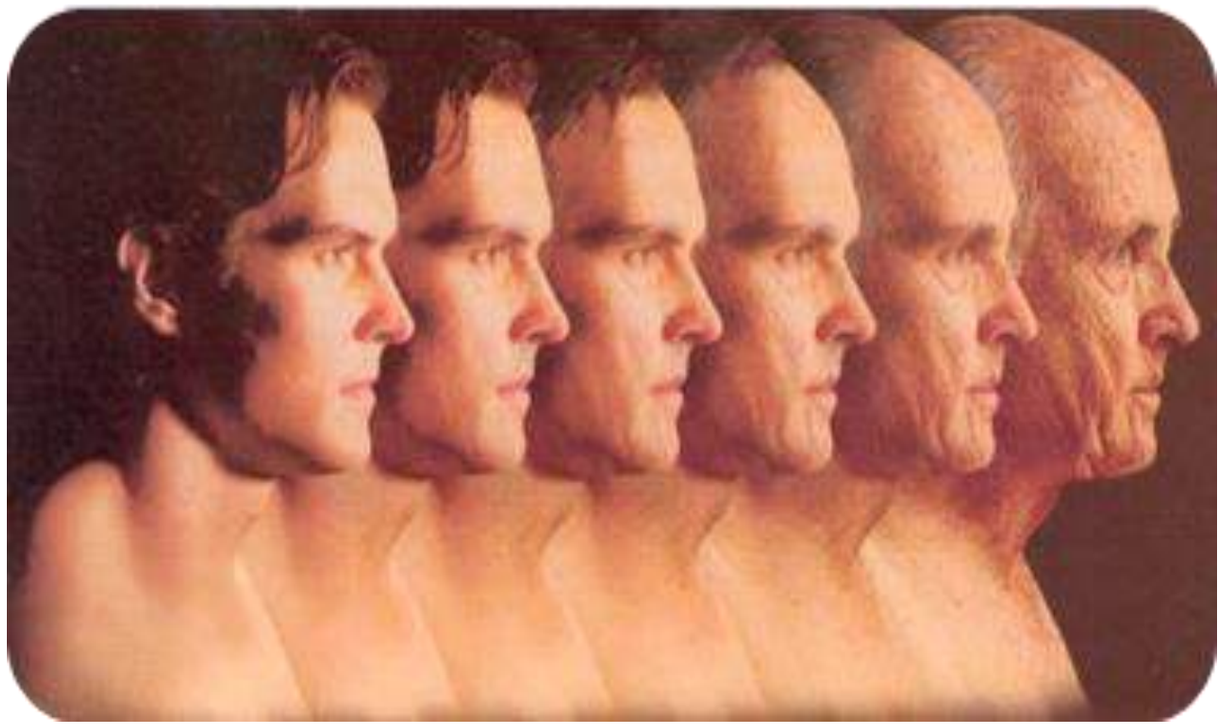
Living to 100: Centenarians as Models of Positive Ageing



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UNSW THE UNIVERSITY OF NEW SOUTH WALES

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- **Introduction**
- **Methods**
- **Results and discussion**
- **Conclusions.**

Ruth Richards, aged 104 years

Introduction

Doreen McPherson, aged 100

Australia's Centenarians

- **Centenarians (those ≥ 100 years old)**
- **Australia has the highest proportion of centenarians along with US, Norway, Sardinia**
- **75% women and 25% men**
- **In Australia, cents growing at a rate of 8.5% in Australia (Richmond, MJA, 2008).**

Lewis Le Compte, 100 years

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Australia's Centenarians

Census Year	No. of centenarians	% of total population
1901	50	0.0013
1911	64	0.0014
1961	131	0.0012
1971	184	0.0016
1981	443	0.0029
1991	1268	0.0073
2001	2297	0.012
2006	3154	0.16

(Richmond, MJA, 2008)

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Longevity Factors

Contribution to longevity:

- **Environmental Factors (70-80%)**
  - **Biological Factors**
  - **Psychosocial Factors**
    - **Personality**
- **Genetics (20-30%).**

Len James, aged 100

Source: Perls et al., 1999

Positive Ageing

- **Centenarians tend to escape or delay diseases**
- **“Compression of morbidity” hypothesis = burden of illness may be compressed into a short period just before death**
- **New England Centenarian Study - 88% of female and 100% of male centenarians had functioned independently until 92 years old (Perls et al., 1999).**

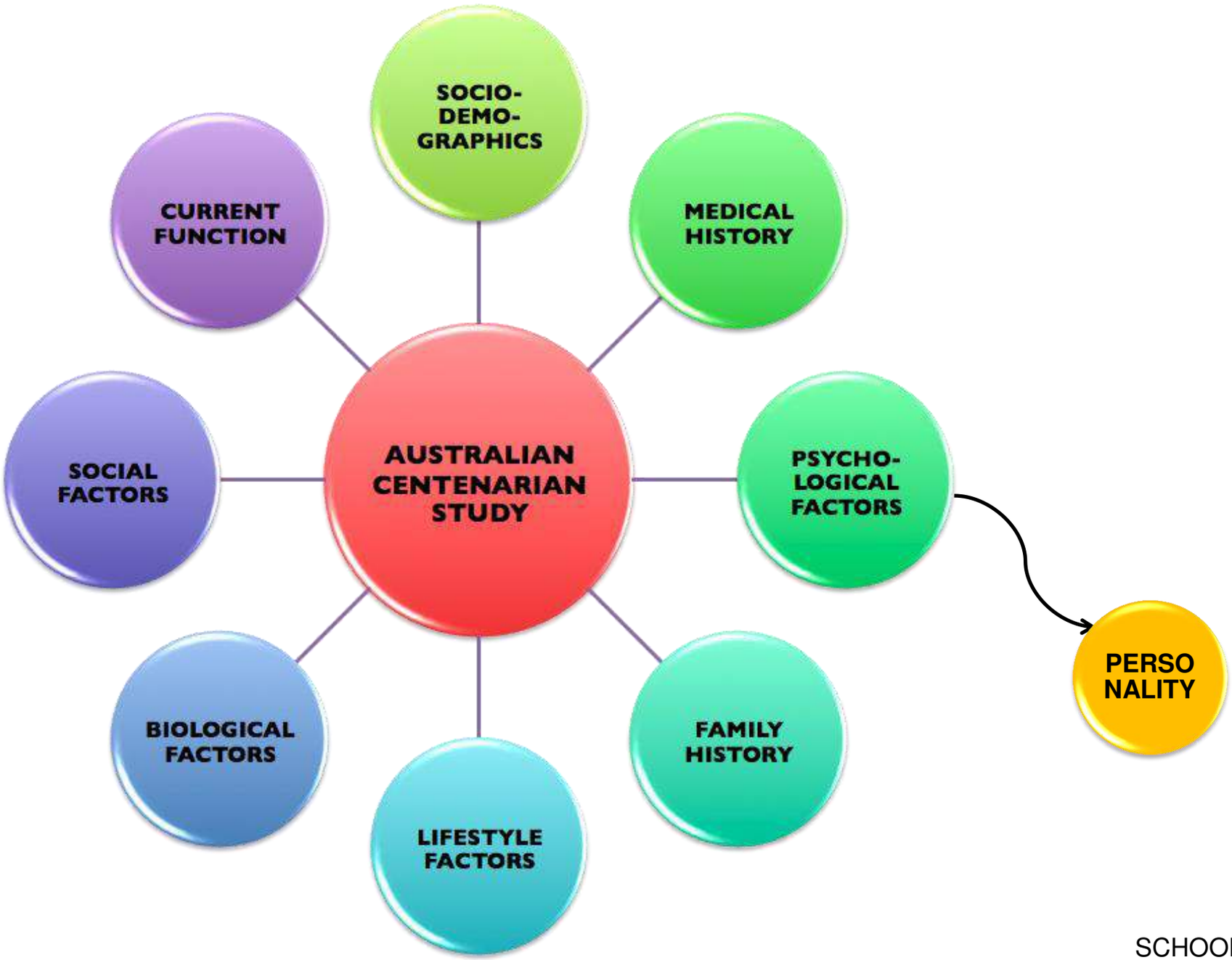
Personality and longevity

- From Centenarian Studies
  - Centenarians are able to cope with loss and deal with stress (Perls et al., 1999)
- *Hypothesis:* Centenarians have positive personality traits which, in part, explain their exceptional longevity.

Methods

Francis Ward aged 100 and Ruth Richards aged 104 years

Study Background of the Australian Centenarian Study



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Study Design

- ***Ethics:*** Approved by UNSW Ethics Committee
- ***Study Design:***
  - Cross-sectional survey
  - Convenience Sampling
  - Questionnaire (by interview) + Biological Measurements
  - Usually two interviews.

Lola Woodcock, 100

Study participants

- ***Inclusion*** criteria
  - Aged 100 years or more
  - All ethnicities (with interpreters)
- ***Exclusion*** criteria
  - Severe cognitive impairment
  - Severe hearing PLUS visual impairment.

Data Collection

- ***Sampling:*** Convenience sampling
- ***Recruitment:*** Participants identified through:
  - Aged care facilities (e.g. nursing homes)
  - Aged care support groups (e.g. Meals on Wheels, 100 Up Club in Bris)
  - Health Professionals (e.g. Division of GPs)
  - News items (national, state, local papers).
- ***Researchers:*** 5 medical students and 5 Master of Public Health students

Research Instruments

Stage 1

Socio-demographic data, Medical & Family History, Quality of Life, Social and Community Participation, Katz Index of Independence in ADLs

Stage 2

Psychological Assessments including **NEO-FFI, CD-RISC, LOT-R,** Hospital Anxiety & Depression Scale

Stage 3

Biological Assessments including Blood Pressure and Cholesterol measurements

Research Instruments:
psychological measures

- Questionnaire (by interview)
- Well-established psychological assessment tools

Personality Inventory	**NEO Five-Factor Inventory (NEO-FFI)**	**Connor-Davidson Resilience Scale (CD-RISC)**	**Life Orientation Test Revised (LOT-R)**
Number of Items	**60**	**25**	**10**
Personality Traits Measured	**Neuroticism Extraversion Openness Conscientiousness Agreeableness**	**Resilience**	**Optimism**

Example of a NEO-FFI item

Francis Ward aged 100

"I like to have a lot of people around me"

Strongly Agree

Agree

Neutral

Disagree

Strongly Disagree

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Example of a NEO-FFI item

"I like to have a lot of people around me"

Strongly Agree

Agree

Neutral

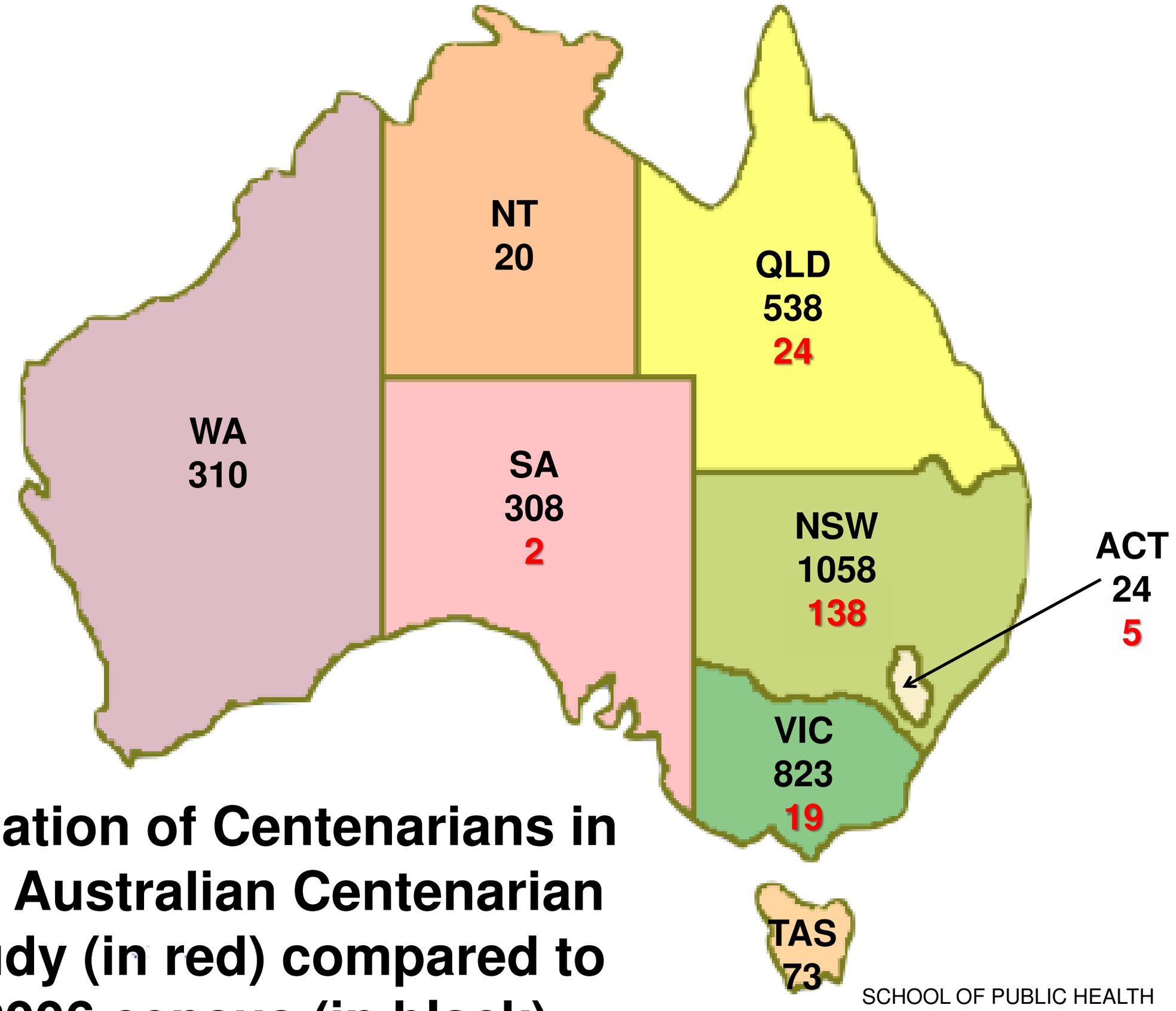
Disagree

Strongly Disagree

Cents asked to reflect back to when 30-50 years

Results and Discussion

Raymond Smith, 100



Location of Centenarians in the Australian Centenarian Study (in red) compared to 2006 census (in black)

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Demographics

	Australian Bureau of Statistics	Australian Centenarian Study
Number of centenarians	3154	188
Mean age (years)	N/A	101
Females (%)	75	81
Males (%)	25	19
Born in Australia (%)	66	70

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ACCOMMODATION OF CENTENARIANS

Living arrangement	%
Nursing home	54
Hostel	21
Retirement village	9
Private dwelling	15

MARITAL STATUS OF CENTENARIANS

Marital status	%
Widowed	**85**
Married	**5**
Separated/divorced	**1**
Single (never married)	**8.5**

HIGHEST QUALIFICATION OF CENTENARIANS

Highest qualification obtained	%
No qualification	43
Secondary school	15
Vocational education and training	33
University degree	5
Other	4

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Results
N=188

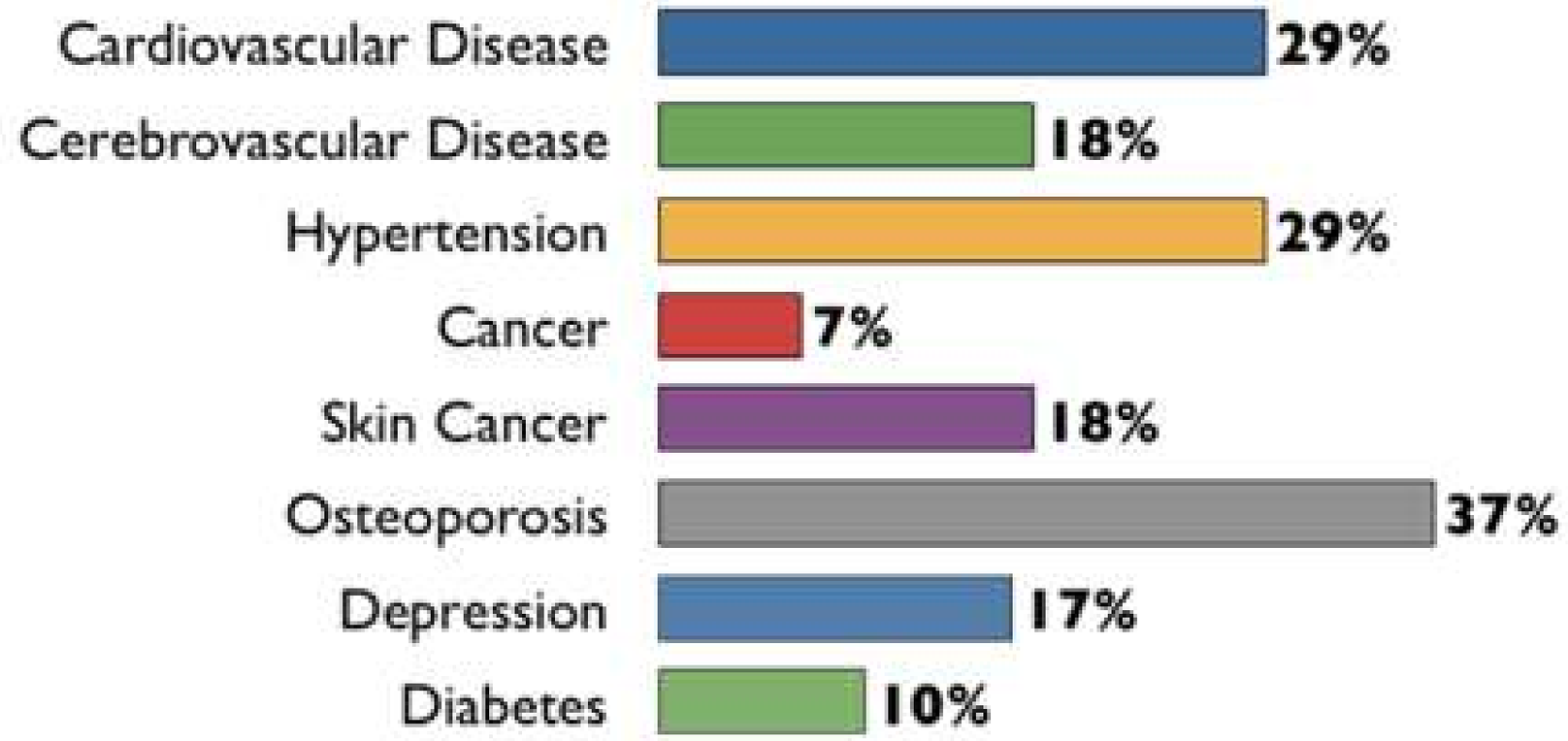
Lifestyle

- **Alcohol**
  - **49% were current drinkers**
  - **38% had never consumed alcohol**
  - **Nil had risky alcohol use**
- **Only 2 current smokers**
- **28% were former smokers**
- **60% currently physically active (mostly walking)**
- **Nil obesity**
  - **Consistent weight throughout life (as in Okinawan cent study).**

Results
N=188

Medical History

- **Medical history was generally good**
- **Age of onset typically between 85-95 years old**



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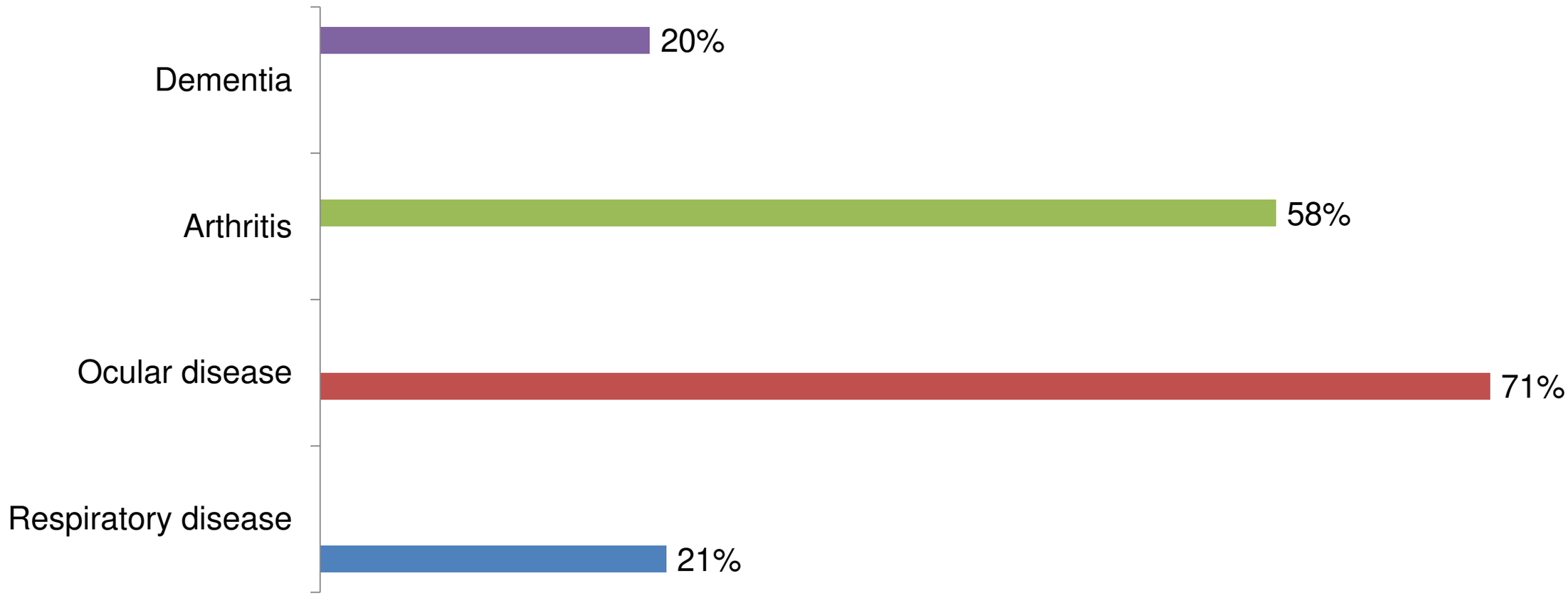
Medical History cont



Results
N=188

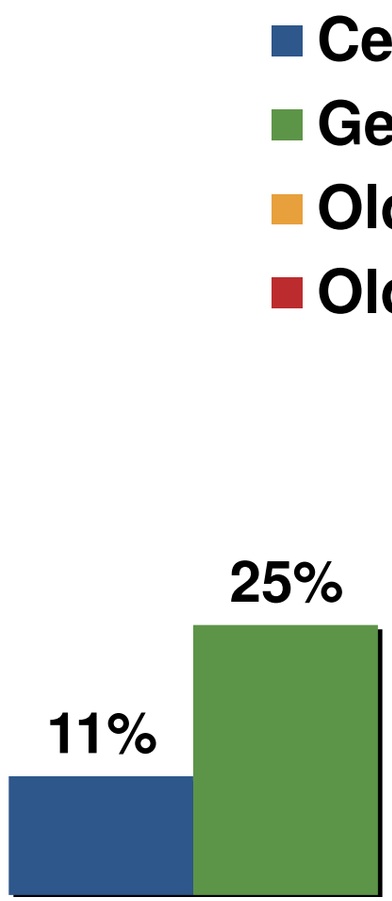
Mental Health of centenarians

- 17% had depression (*M*=4.16)
- 11% had anxiety (*M*=3.21) on the Hospital Anxiety and Depression Scale (HADS)
  (0-7 is normal)
- Similar to Italian centenarian study.

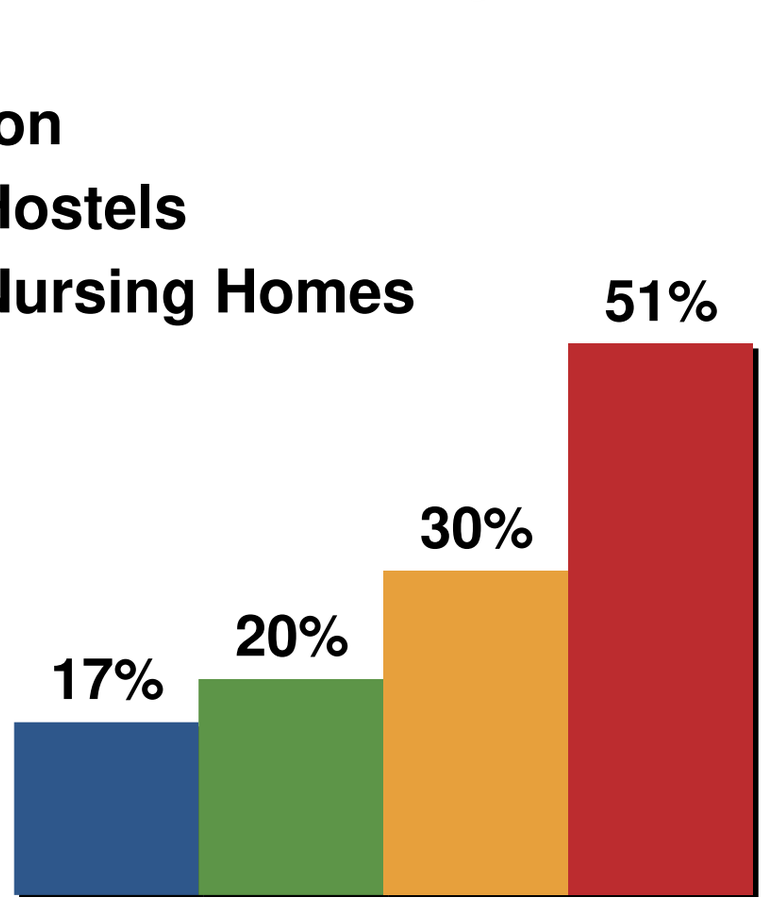
Lorna Brownbill, aged 100

Results
N=188

Anxiety and depression among centenarians compared to the wider community



Anxiety



Depression

Source: Beyondblue, 2009

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Results
N=188

Cognitive Function

- **MMSE score was 21.14 on average**
  - **Close to normal for 85 year olds**
- **Cognitively intact into their mid-90s**

Adam Liston, aged 100

Results
N=188

Physically active and socially connected

Centenarians were physically active

- 3.7 on Activities of Daily Living Score indicates moderate to poor functional impairment (0 = high dependence, 6= independence)
- 88% had family contact at least 1-2 times weekly
- 26% had daily contact with their family
- 76% participated in organised group activities on a regular basis
- 71% believe that social connectedness contributes to their health and longevity.

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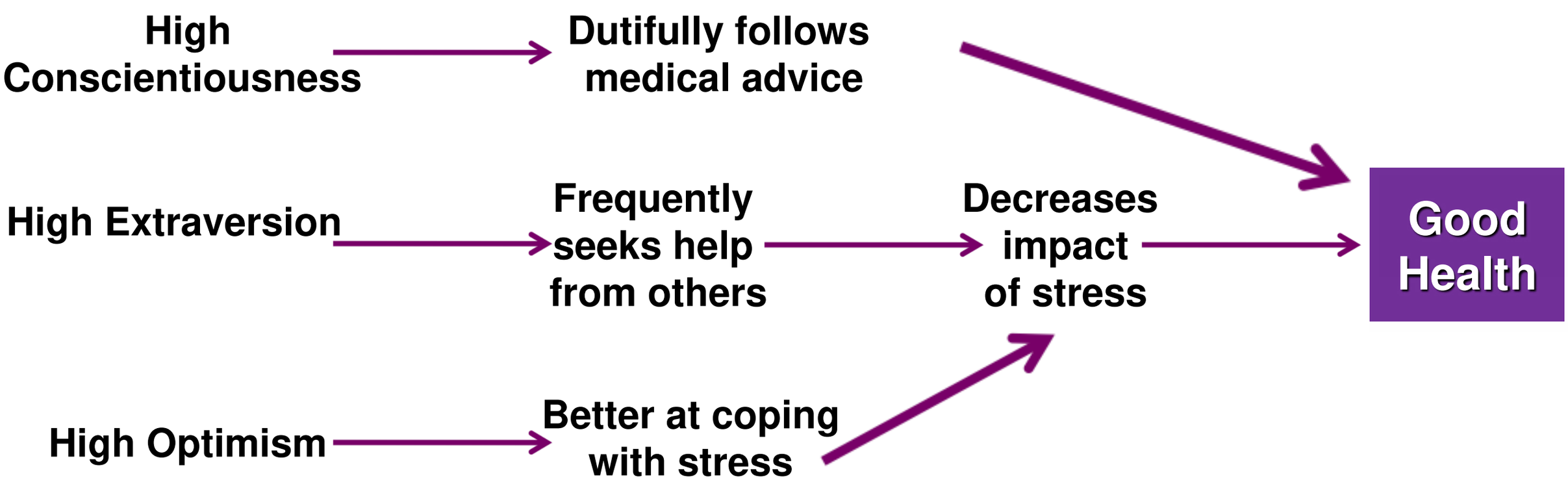
Centenarian Personality

- Centenarians in ACS
  - Low extraversion, low openness, low resilience and low optimism
- However, when reflecting on past behaviour, compared to the general adult population:
  - Low neuroticism (males only)
  - High extraversion
  - High conscientiousness
  - High openness to change
  - Similar to US Georgia Study, NECs, Japanese & Italian centenarian studies.

Personality related to good health



Sources: Tokyo Centenarian Study, 2006 and 2008; NECS, 1999.

Conclusion

Queenie Kent, aged 103

Why have they lived so long?

Many variables explain the complexity of achieving longevity but the key findings are:

- **Avoid smoking and (heavy) consumption of alcohol**
- **Maintain healthy weight all their lives**
- **Keep physically and mentally active**
- **Maintain social networks and invest in solid relationships**
- **Develop stress reduction strategies (exercise)**
- **Personality – low neuroticism, adapt to change**
- **Good genes.**

Australian Chris Muller marks 100th birthday from towering heights

The peak, the climb, victory!

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Centenarian study	Country	Personality inventory	Sample size (number)	Characteristic traits of centenarians
Martin et al. (1992)	United States (Georgia)	16-PF	165	Dominance (high) Suspiciousness (high) Imagination (high) Intelligence (low) Emotional stability (low) Conformity (low)
Martin, Long, & Poon (2002)	United States (Georgia)	16-PF	55	Suspiciousness (high) Intelligence (low) Stress (low)
Martin et al. (2006)	United States (Georgia)	NEO-PI	285	Neuroticism (low) Extraversion (high) Competence (high) Trust (high)
Shimonaka, Nakazato, & Homma (1996)	Japan	Bortner Pattern A Behaviour Scale and the Bem Sex-Role Inventory	82	Type B personality (high) Femininity (high)
Perls, Silver, & Lauerman (1999)	United States (New England)	NEO-PI	60	Neuroticism (low)
Masui et al. (2006)	Japan (Tokyo)	NEO-PI Japanese version	70	Openness (high) Conscientiousness (only high in women) Extraversion (only high in women)
Tafaro et al. (2009)	Italy (Rome)	State-Trait Anxiety Inventory	40 (personal communication with researcher)	Anxiety (low) Optimism (high)