

Biological Research: Biosocial Research Framework

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Biosocial Research: Some methodological considerations

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Society Biomarker Team

Methodological considerations

- Biosocial research framework
- Biological data quality issues
- Missing data in biosocial research

What is biosocial research

- <https://www.youtube.com/watch?v=LxUEXc8ylzU>
- Professor Michaela Benzeval

Methodological considerations

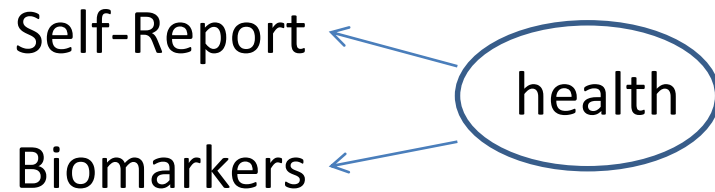
- Methodological issues relevant methods in biosocial research are the same as in biological or social science research
- Some standard methodological issues get highlighted in particular because of the nature of biosocial data

Why combine biological and social data?

- 1) Using biomarkers as an objective measure of health, physical functioning and illness
- 2) Using biomarkers to understand the pathways by which social factors are associated with health
- 3) Using biomarkers to understand how the biological factors such influence social outcomes
- 4) Using biomarkers to understand gene-environment interactions

Some biosocial frameworks

1) Objective marker of health



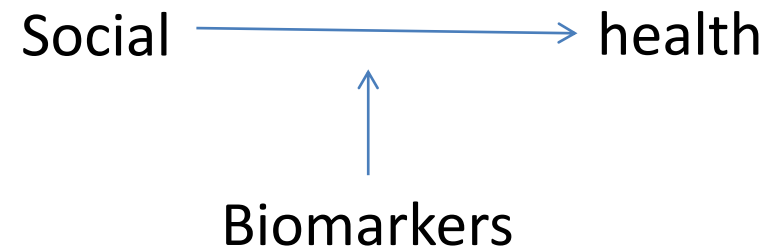
2) Pathways to health



3) Biomarkers as causes



4) Biomarkers as effect modifiers



Using biomarkers as an objective measure of physical functioning, health and illness

- Biomarkers and self reported health data may differ considerably
- Self report bias
- Perceptions of health
- Awareness of illness/disease

Measuring stress: Self-Report

How stressed are you feeling?

Very/Some/A little/Not at all

Biomarkers related to stress

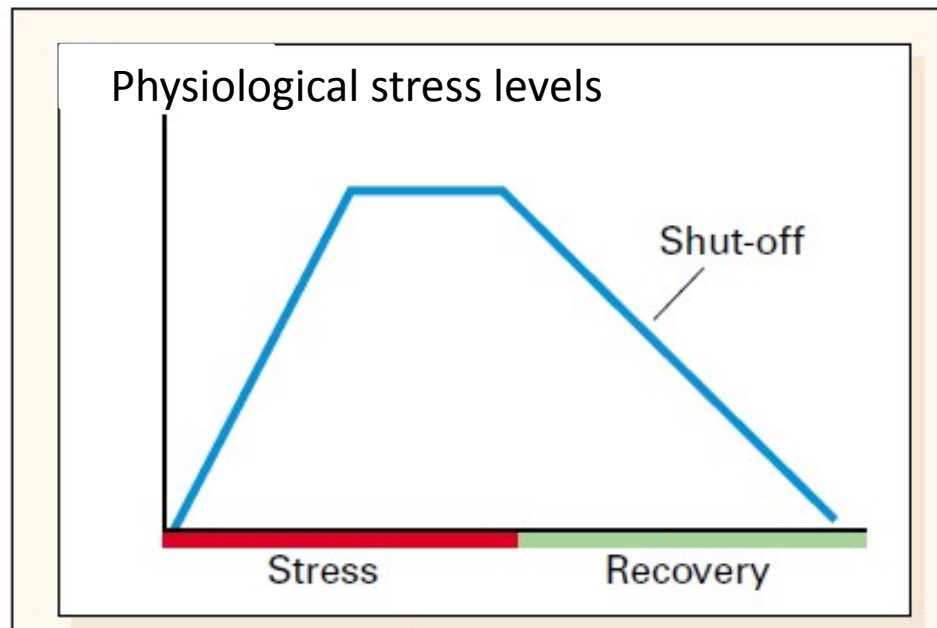
Neuro-endocrine biomarkers:

- Adrenaline
- Nor-adrenaline
- Cortisol
- Cortisone
- DHEA

Sympathetic/Parasympathetic nervous system:

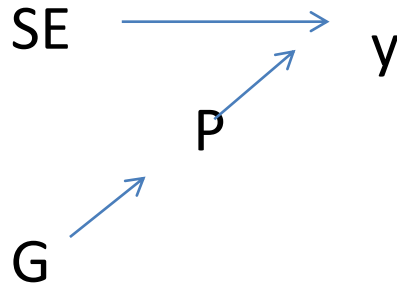
- Heart-Rate Variability

Biomarkers related to recovery process are just as important as those related to the acute stress response

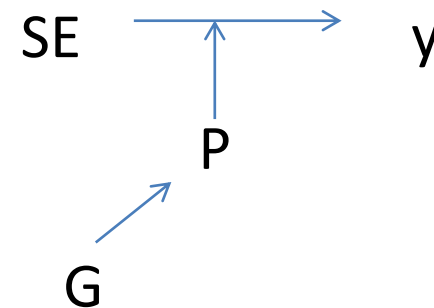


Biomarkers related to the Genetics (G), Phenotypes (P), and associations with Social Environments (SE) and distal outcomes (y)

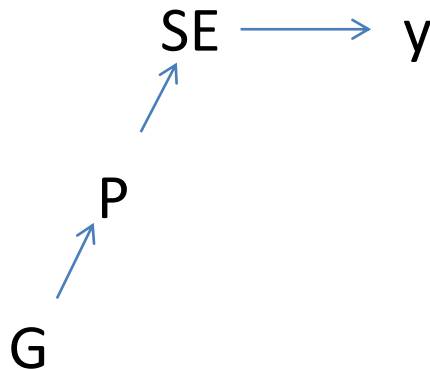
1) Genes as independent additive cause



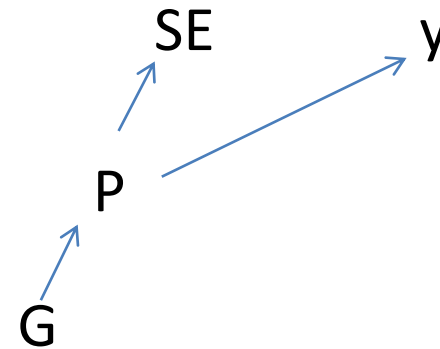
2) Genes as effect modifiers



3) Genes as distal cause



3) Genes as confounders



Biosocial research framework: methodological considerations

- In each of the biomarker examples, the association between the social and biological data needs careful consideration within a relevant (theoretical) framework
- Danger of p-hacking, multiple comparisons, non-reproducible results
- Need for interdisciplinary research teams

Thank you for your attention

