



Altered stress response and gene expression among peer victimized youth

Jens Heumann, <jens.heumann@uzh.ch>, Michael J. Shanahan

Peer victimization



Research question

What are the psychological, physiological, and biological effects of peer victimization on individuals?

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- ▶ **Psychological conditions:** anxiety, sensitivity, attentional bias
- ▶ **Physiological response:** reactivity
- ▶ **Biological processes:** stress hormones, differential gene expression (inflammation, immune suppression), cytokines

Stress process



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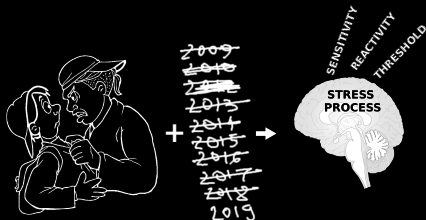


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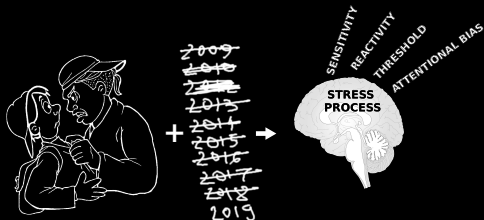


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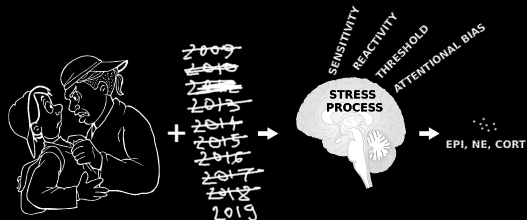


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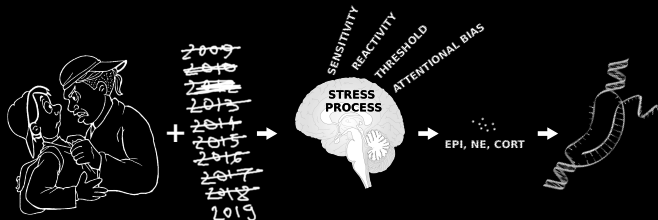


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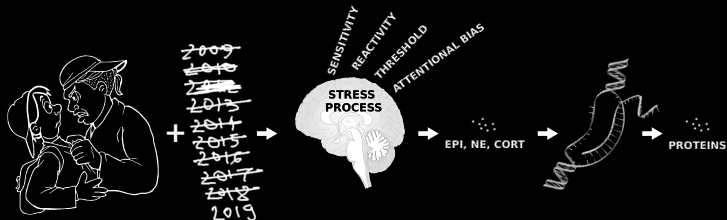


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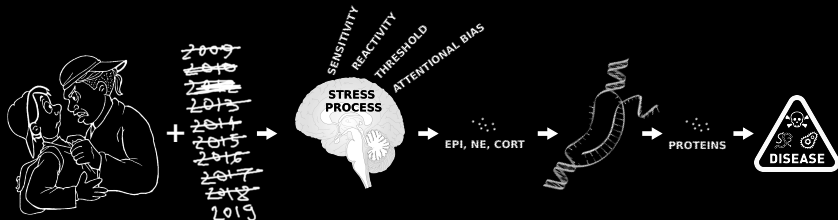


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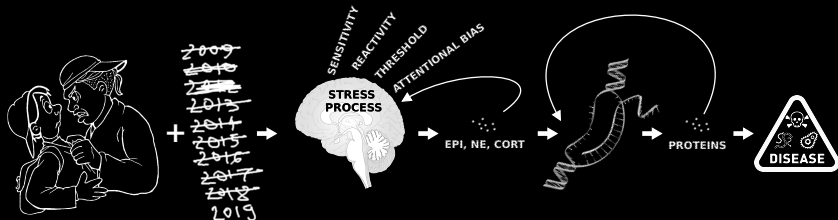


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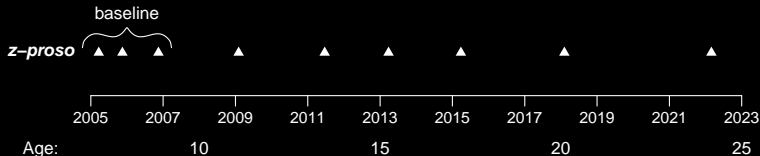


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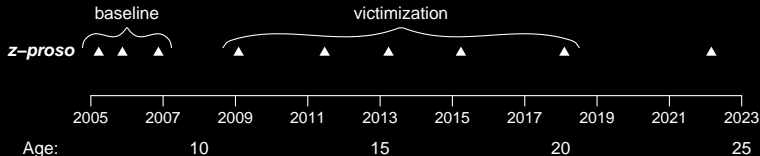


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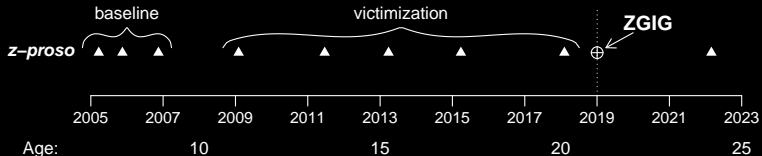


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ZGIG Treatment (victim) variable 1/2

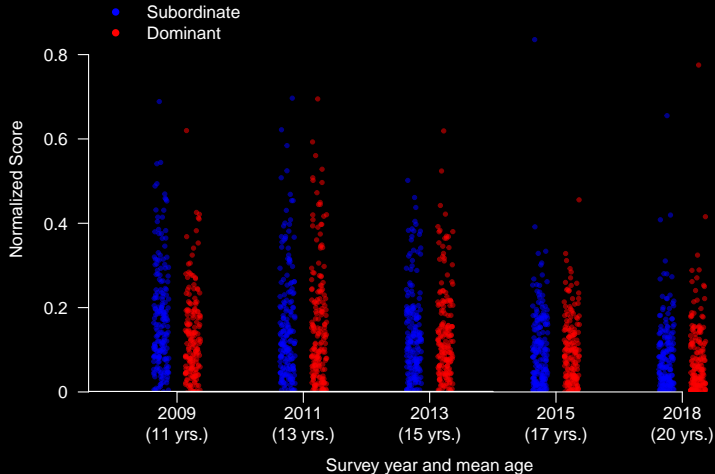


Fig 3. Prevalence of subordinate experiences and dominant behavior.

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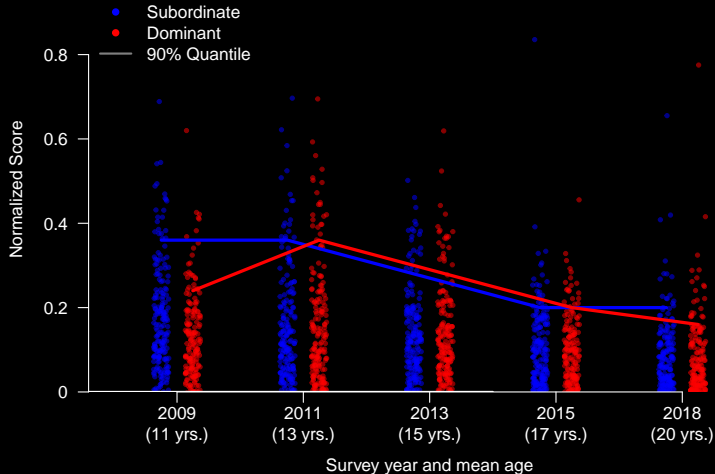


Fig 3. Prevalence of subordinate experiences and dominant behavior.

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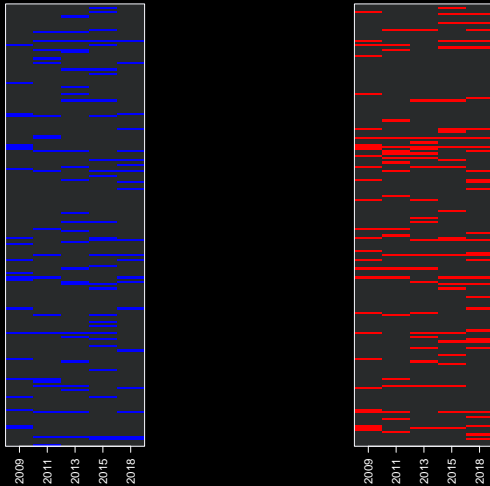


Fig 4. Victims of social peer adversity.

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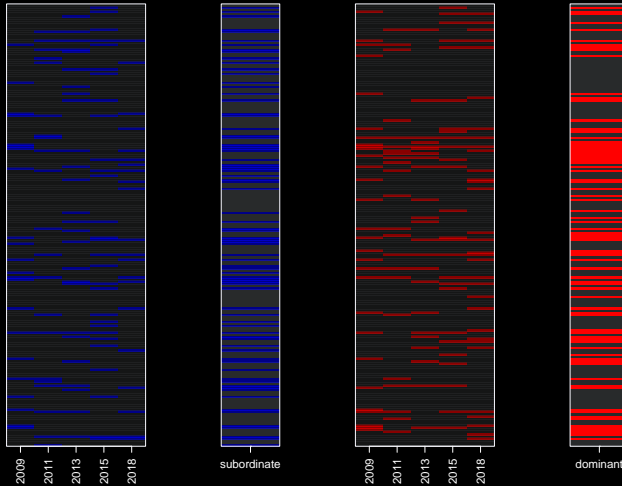


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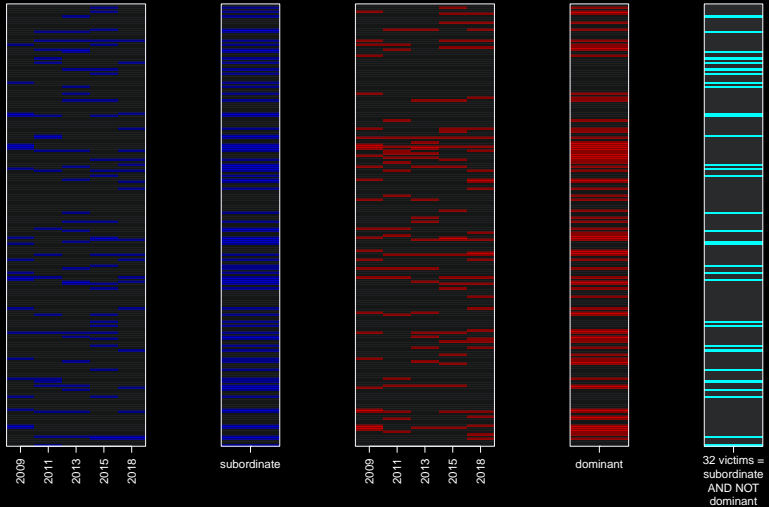


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ZGIG Confounders

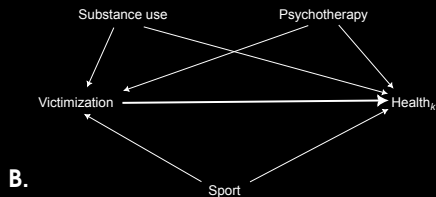
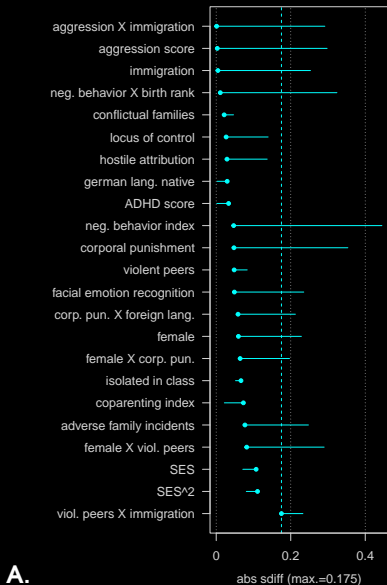


Fig 4. ZGIG Confounders.

A. Baseline confounders (from literature), used for inverse probability weighting (IPW) throughout the analysis. **B.** Time-varying confounders [1–13].

ZGIG Measures



Fig 5. ZGIG Measures. tissue, physiological, survey.

ZGIG Measures

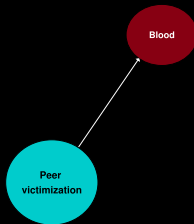


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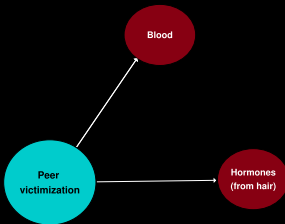


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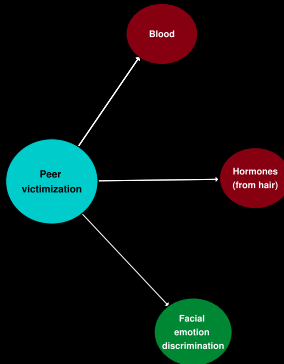


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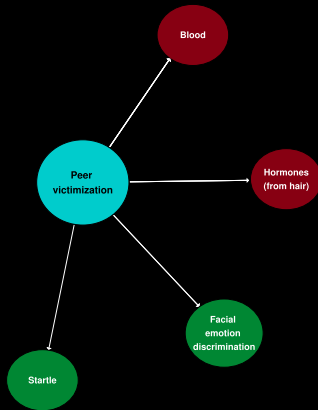


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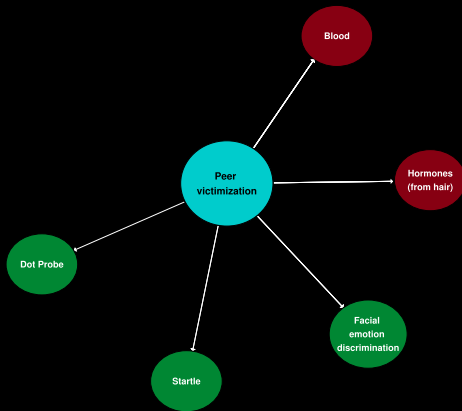


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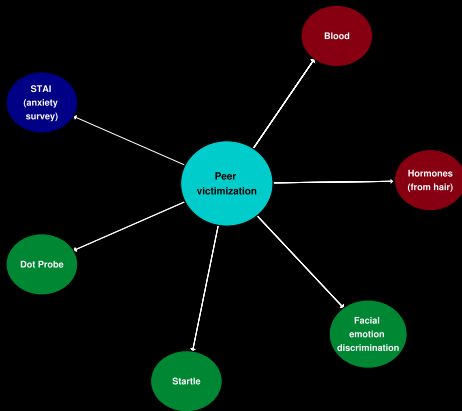


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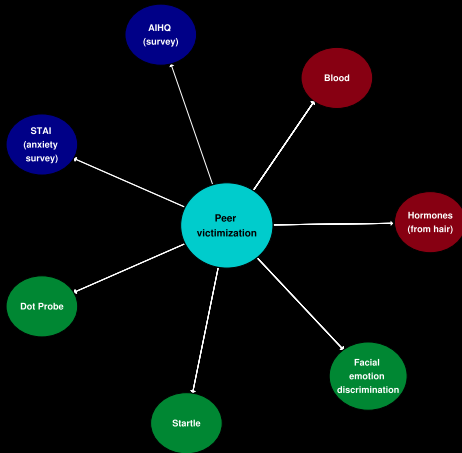


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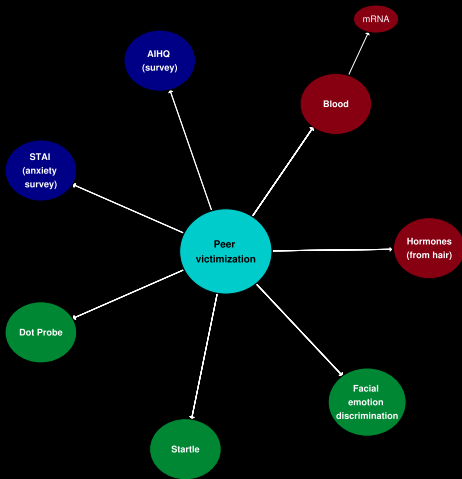


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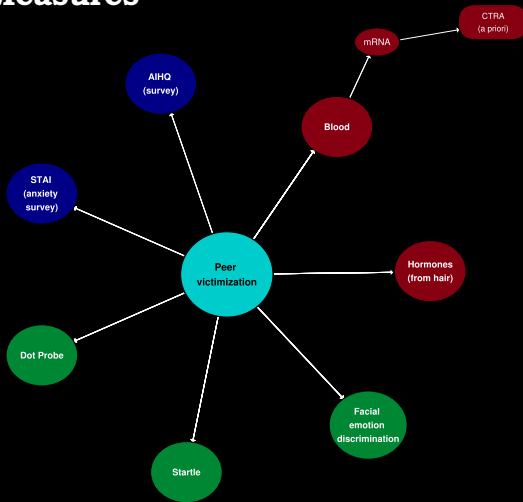


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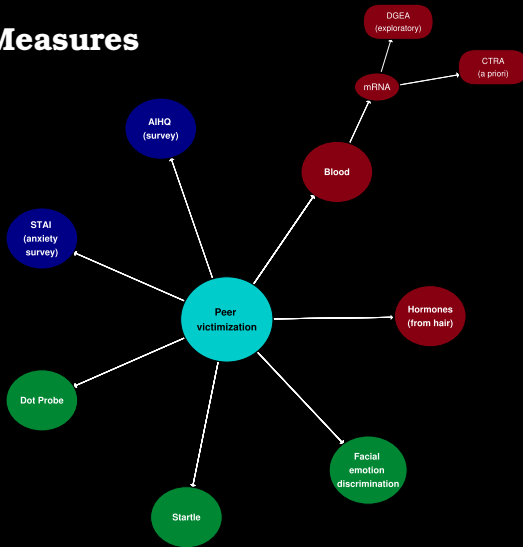


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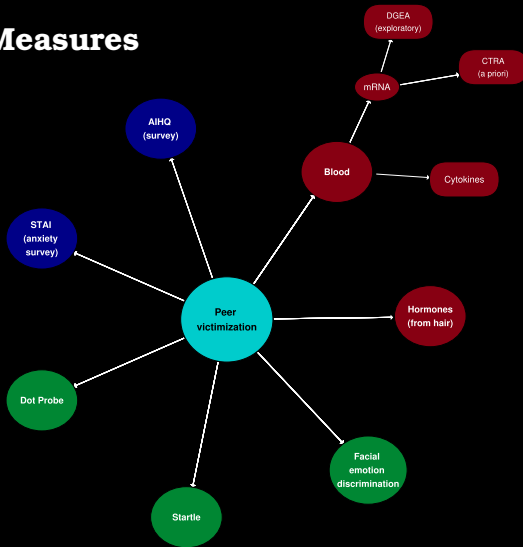


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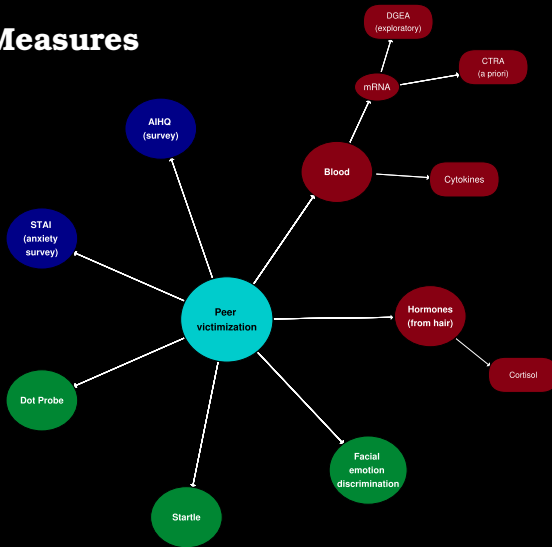


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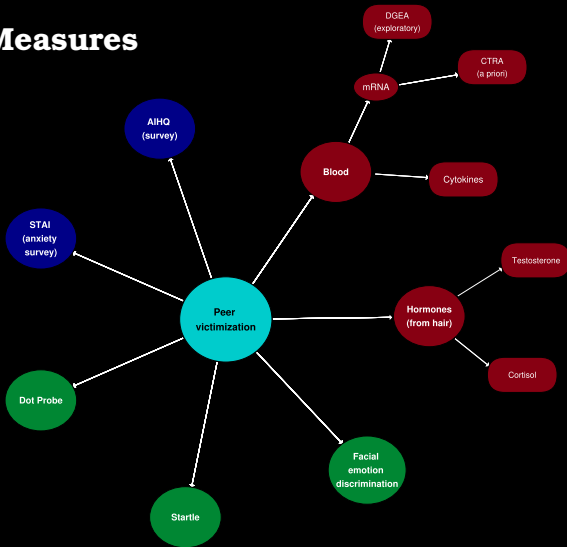


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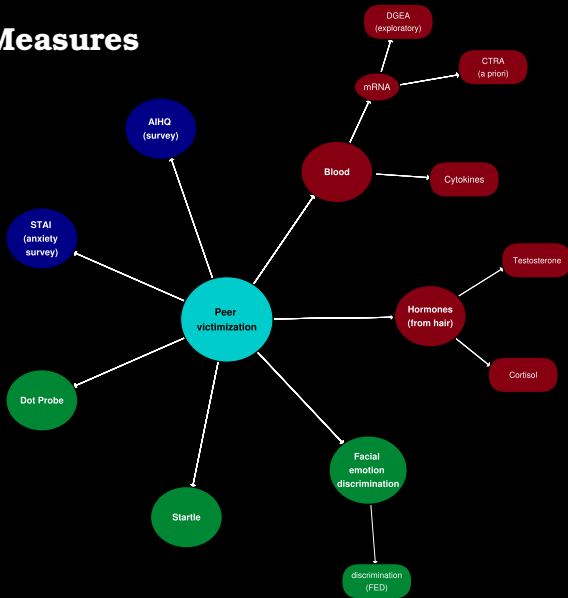


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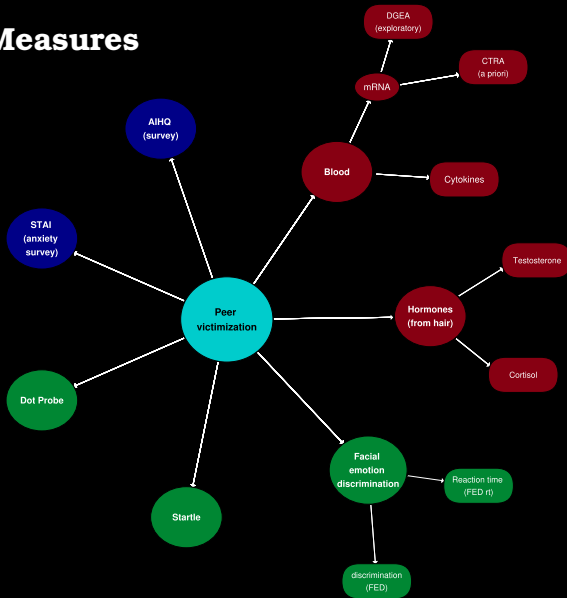


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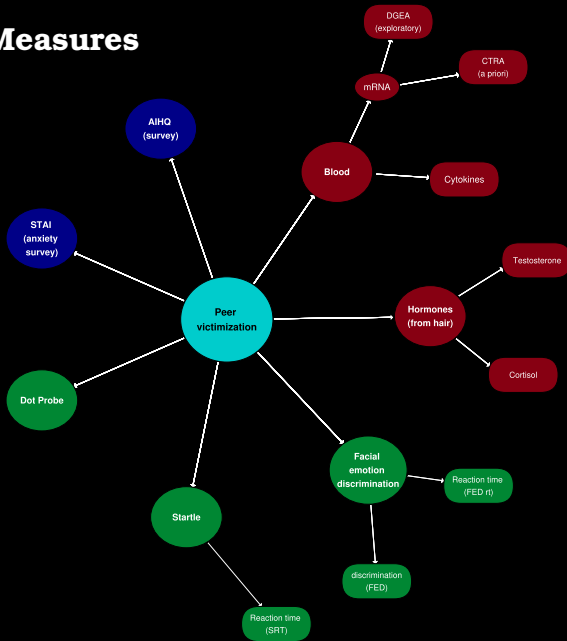


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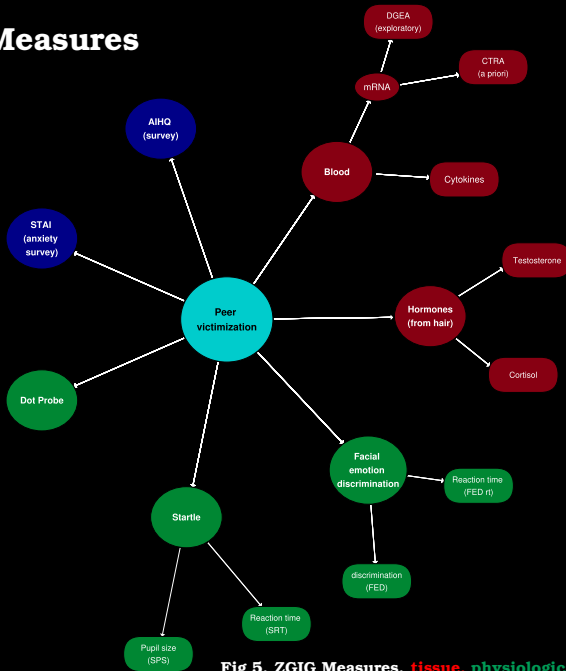


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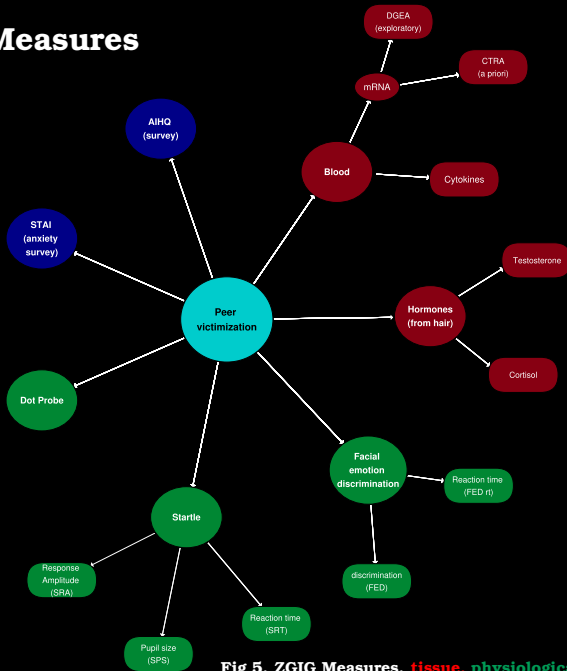


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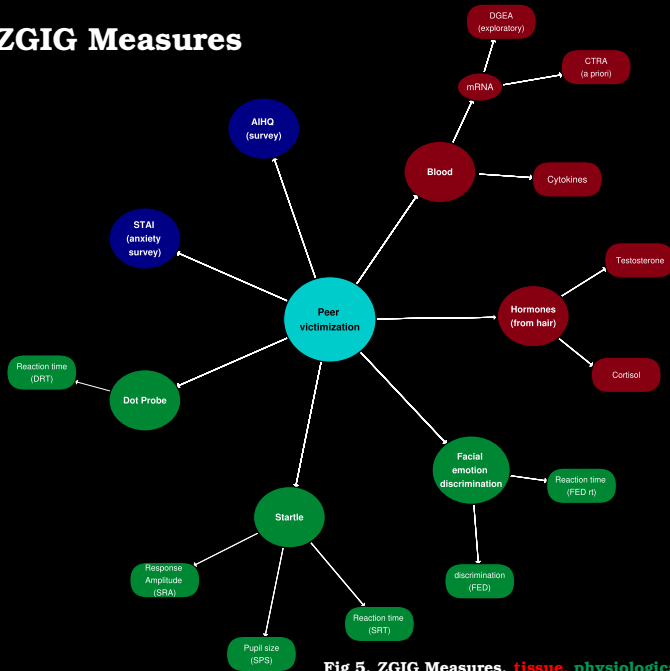


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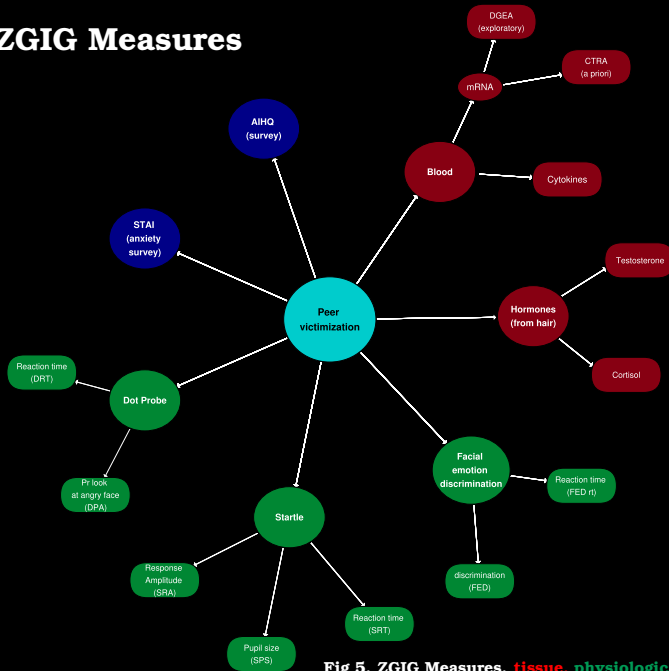


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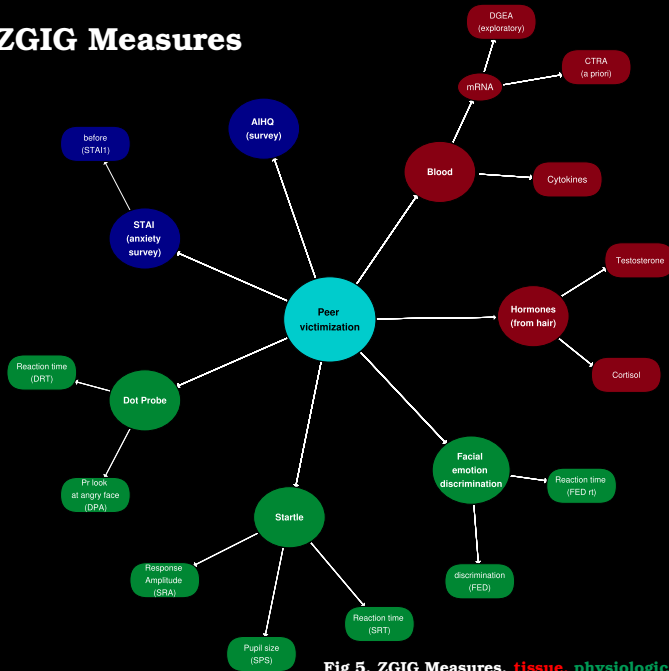


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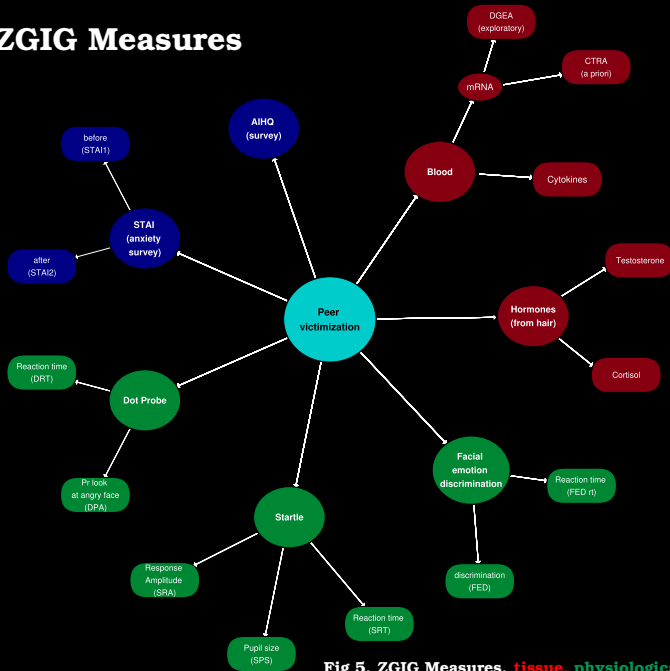


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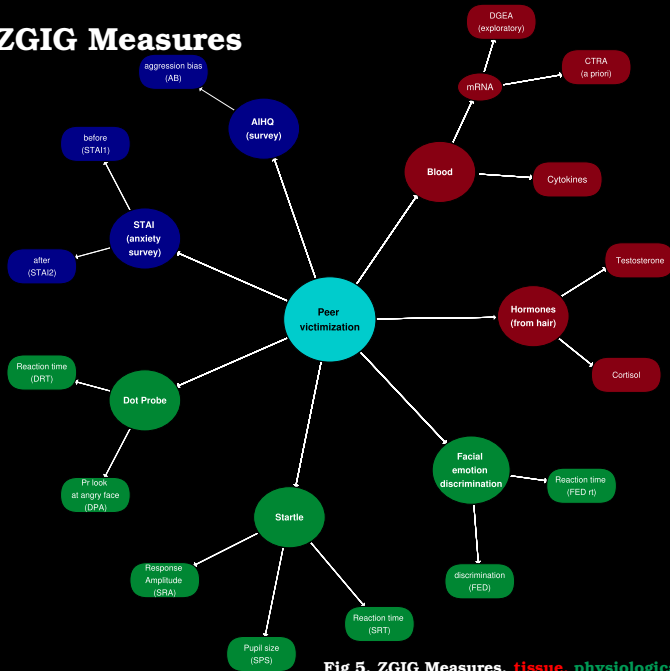


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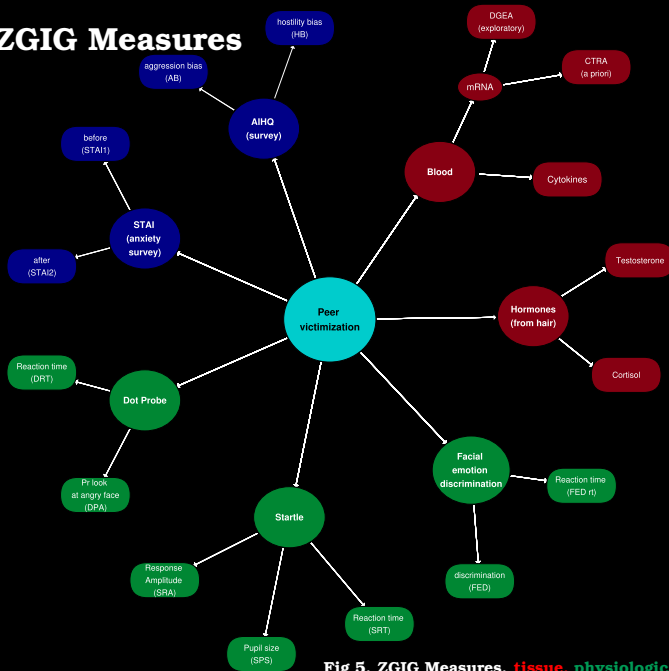


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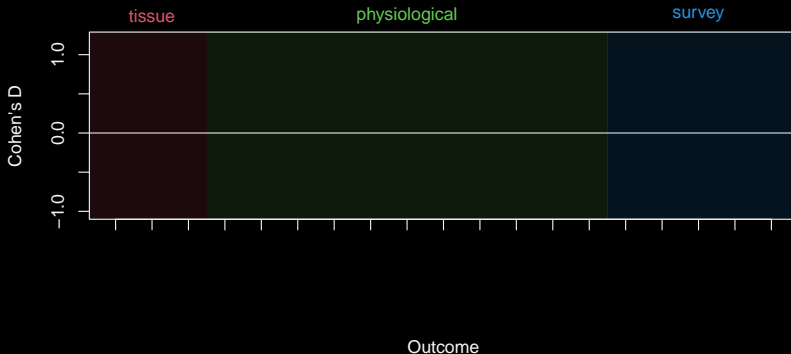


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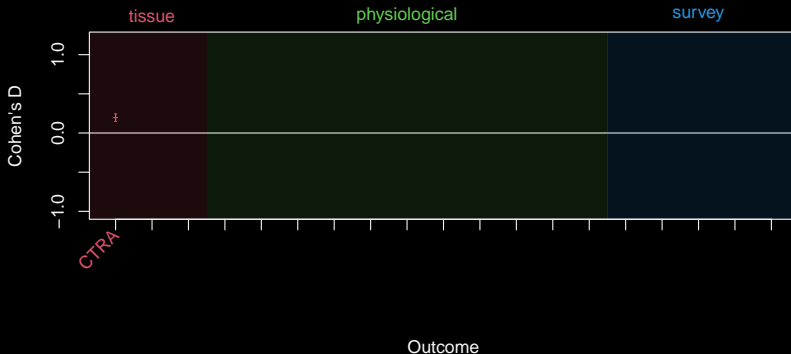


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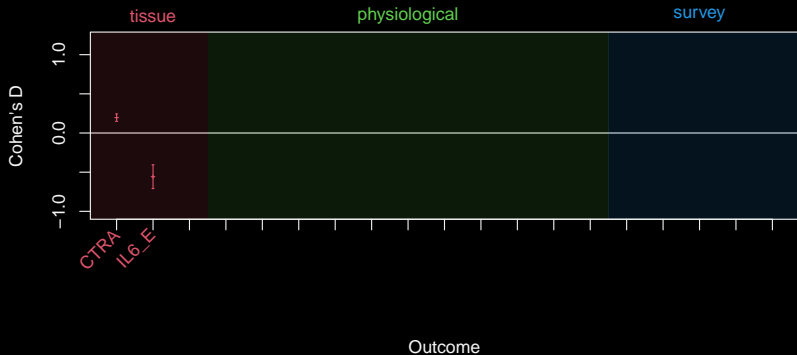


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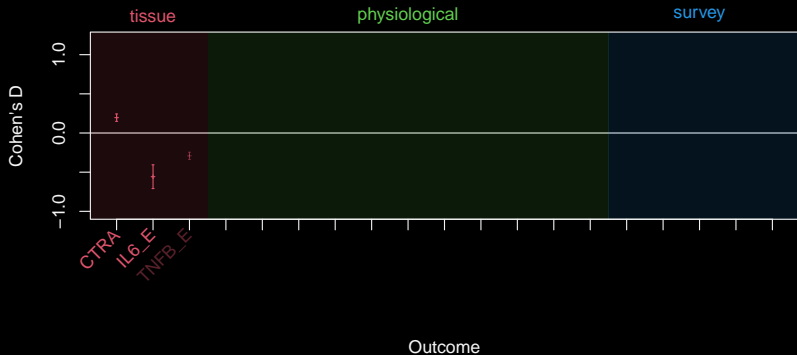


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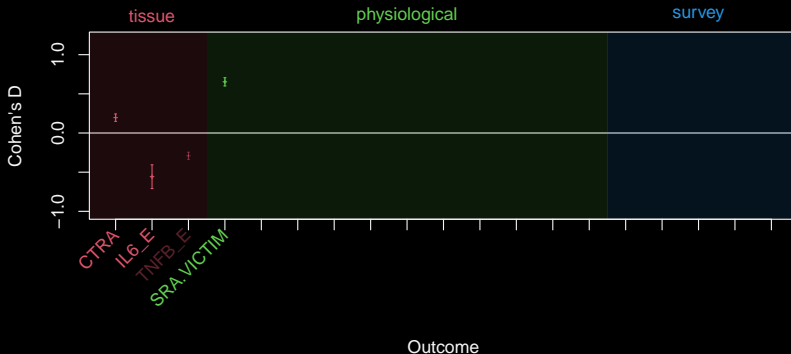


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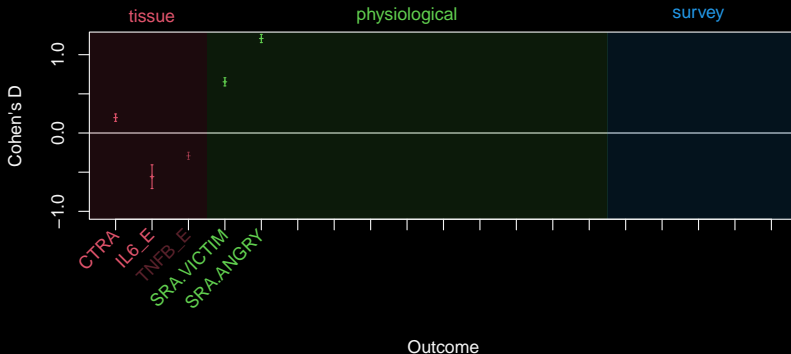


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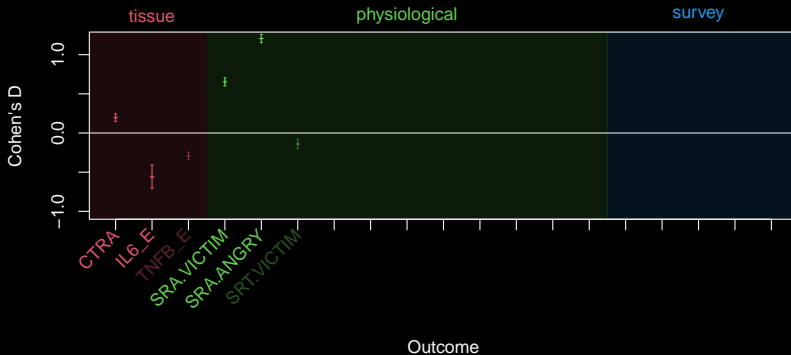


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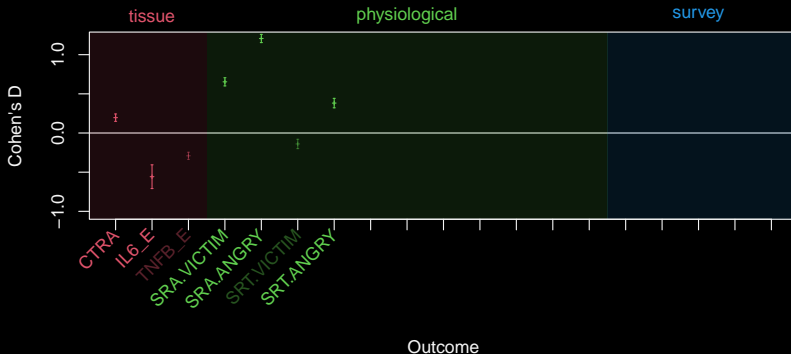


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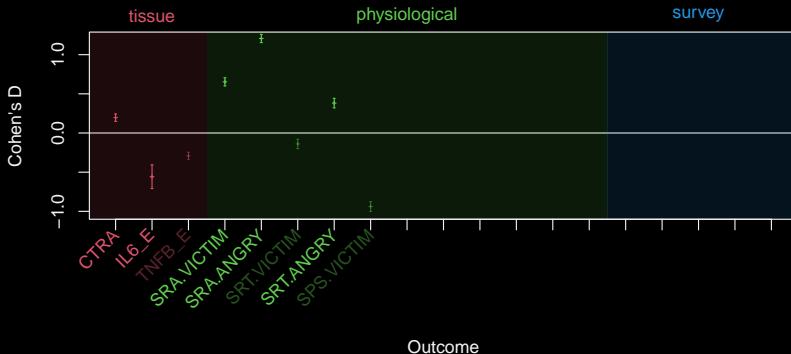


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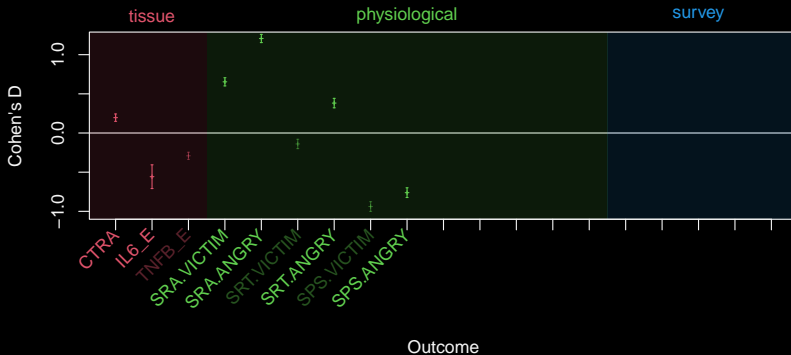


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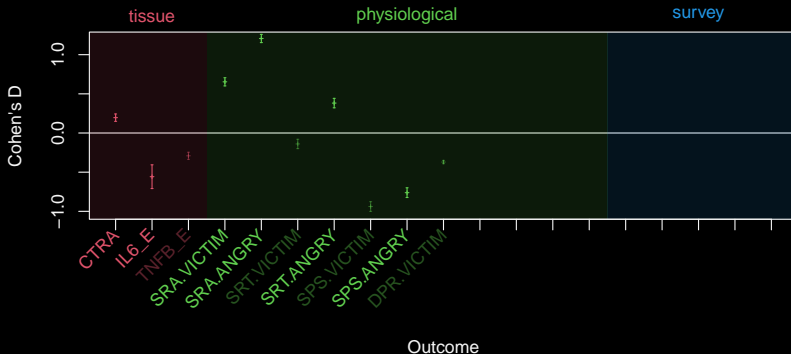


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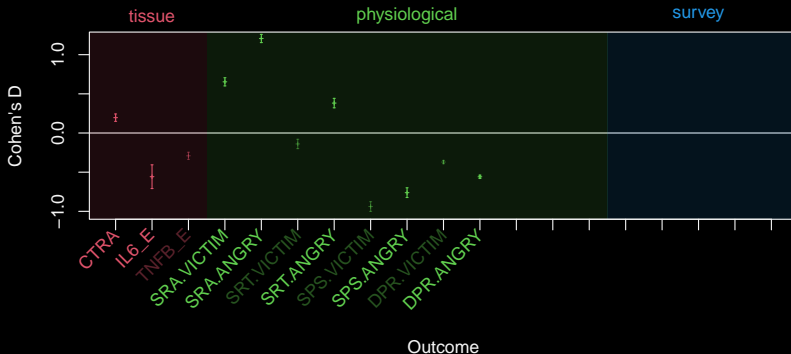


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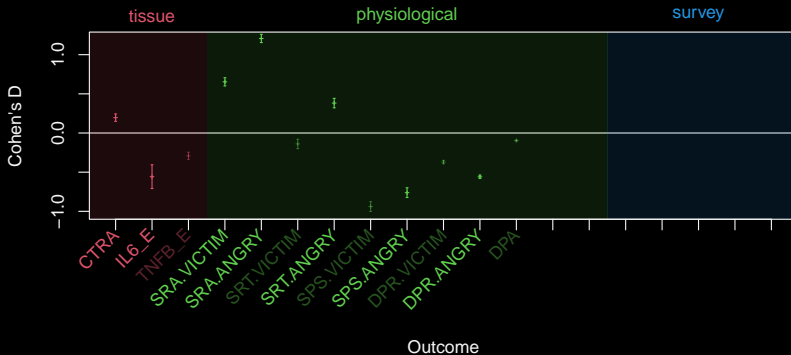


Fig 6. ZGIG Results. IPW weights for baseline confounders. Controlled for time varying confounders. red=tissue, green=physiological measures (SRA=startle amplitude, SRT=startle reaction time, SPS=startle pupil size, DPR=Dot probe reaction time, DPA=probability look at angry, FED=Facial emotion discrimination, FED_RT=reaction time), blue=survey (AIHQ_HB=hostility bias, AIHQ_AB=aggression bias, STAI_1=anxiety before, STAI_2=after, STAI_2=difference).

ZGIG Results: Summary

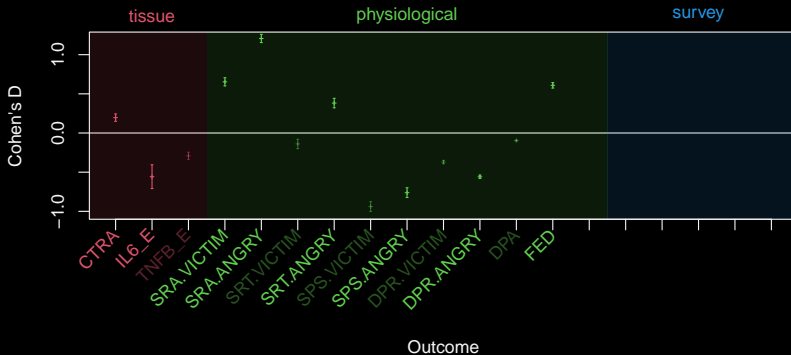


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ZGIG Results: Summary

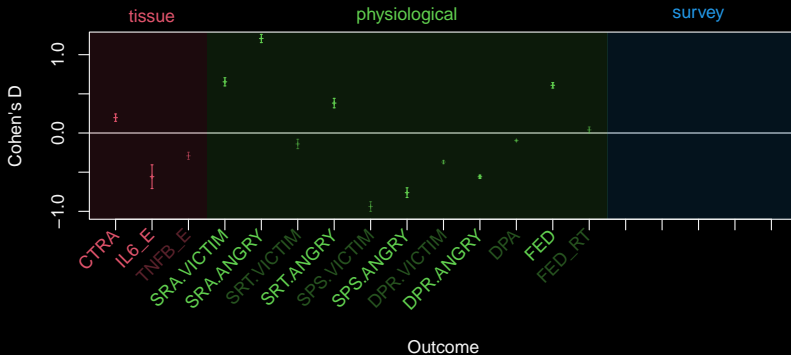


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ZGIG Results: Summary

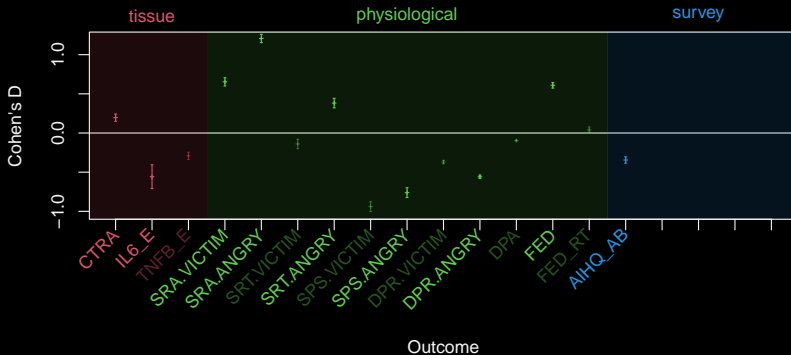


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ZGIG Results: Summary

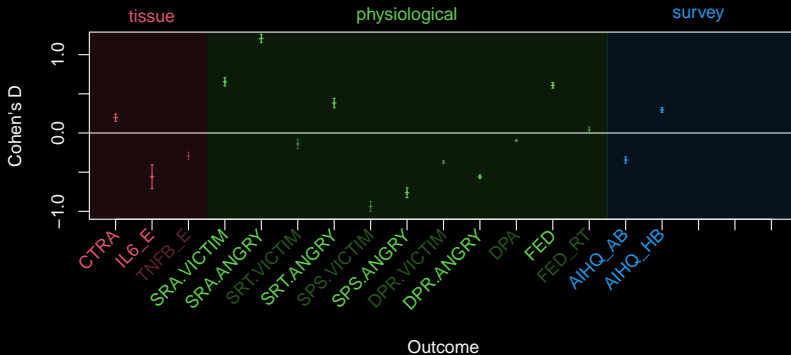


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ZGIG Results: Summary

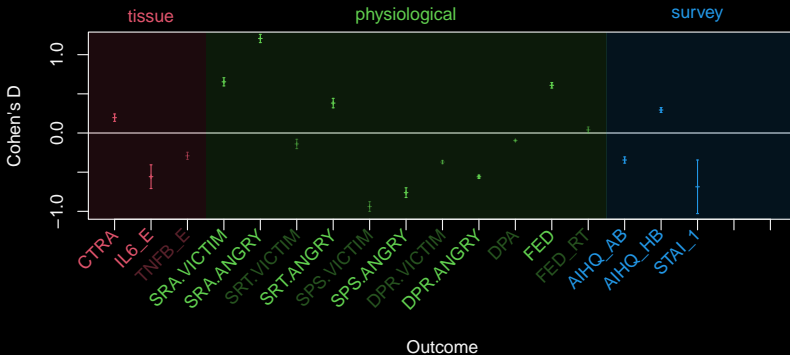


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ZGIG Results: Summary

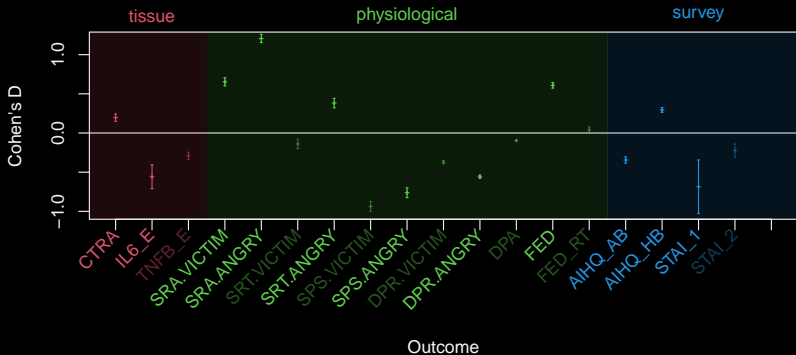


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ZGIG Results: Summary

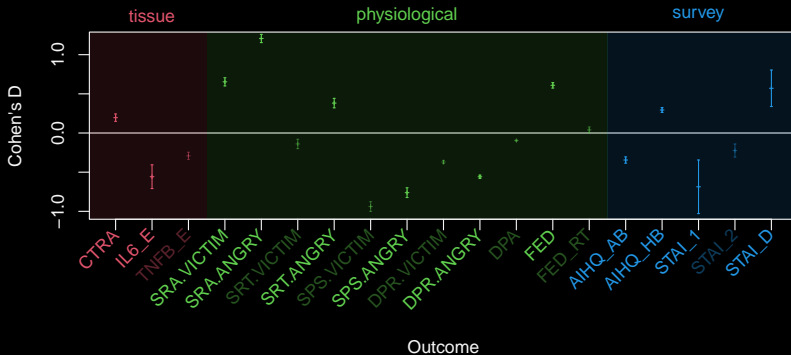


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ZGIG Results: mRNA

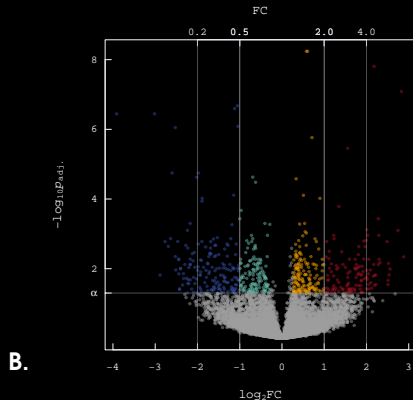
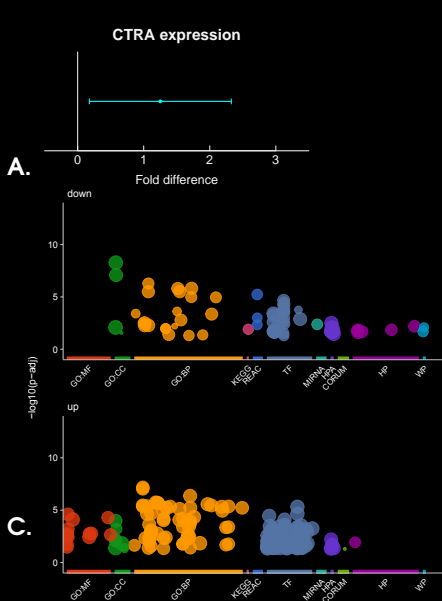


Fig 7. Diff. gene expression peer victims.

A. Fold difference of CTRA gene signature (survey-weighted GLM, adj. for multiple measures). **B.** Volcano plot of genome-wide differential gene expression analysis using *geex* procedure [14, 15] for correct IPW-standard errors. **C.** Manhattan plot of functional enriched genes (Reactome up-regulated: Interferon Signaling, Interferon alpha/beta Signaling, Interferon gamma Signaling).

Conclusion

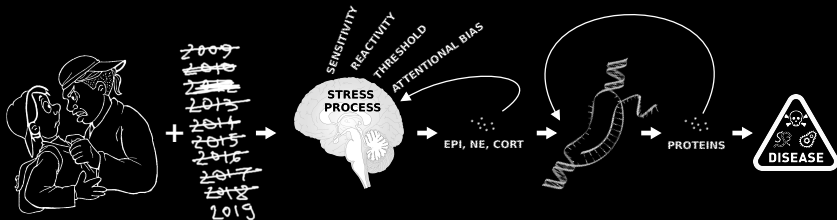


Fig 8. Stress process and gene expression findings.

Conclusion

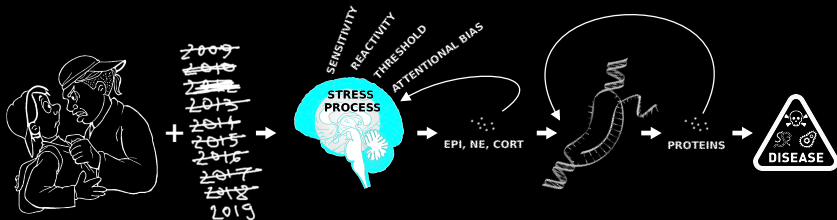


Fig 8. Stress process and gene expression findings.

Conclusion

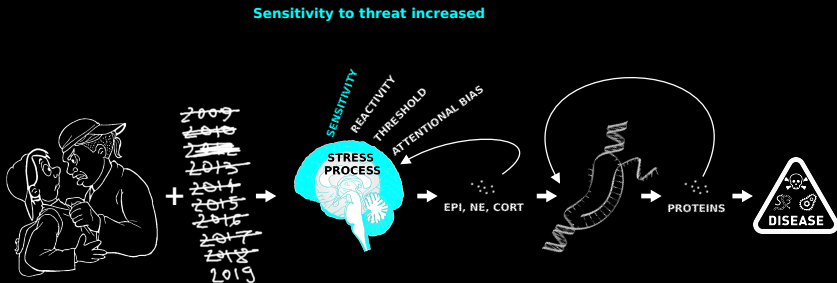


Fig 8. Stress process and gene expression findings.

Conclusion

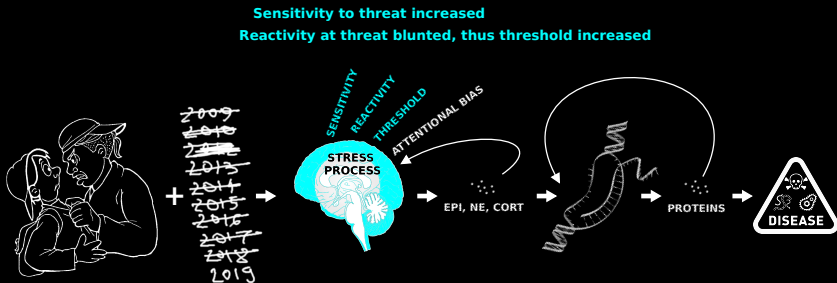


Fig 8. Stress process and gene expression findings.

Conclusion

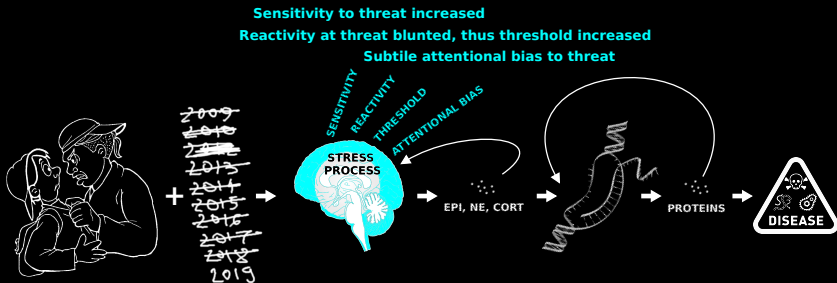


Fig 8. Stress process and gene expression findings.

Conclusion

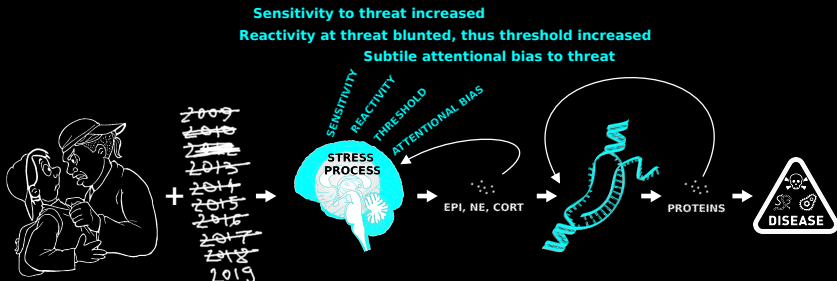


Fig 8. Stress process and gene expression findings.

Conclusion

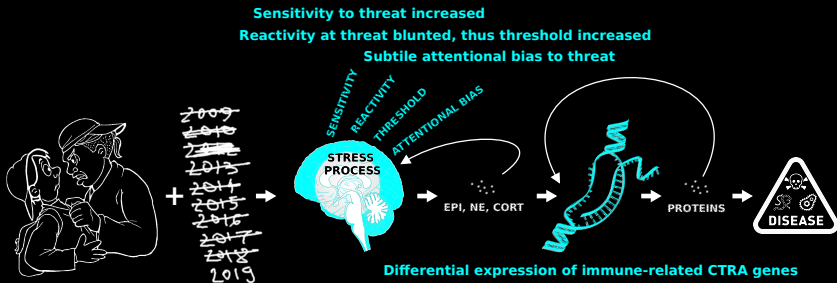


Fig 8. Stress process and gene expression findings.

Conclusion

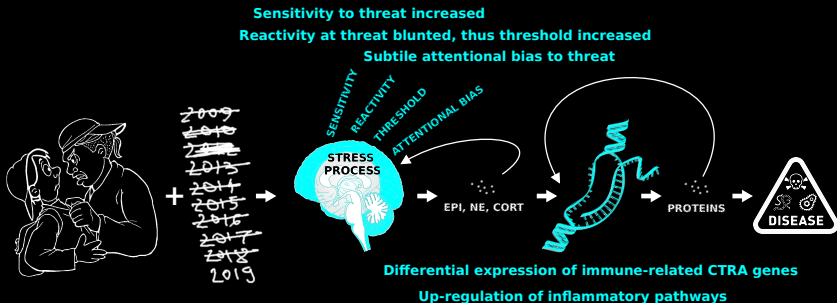


Fig 8. Stress process and gene expression findings.

Conclusion

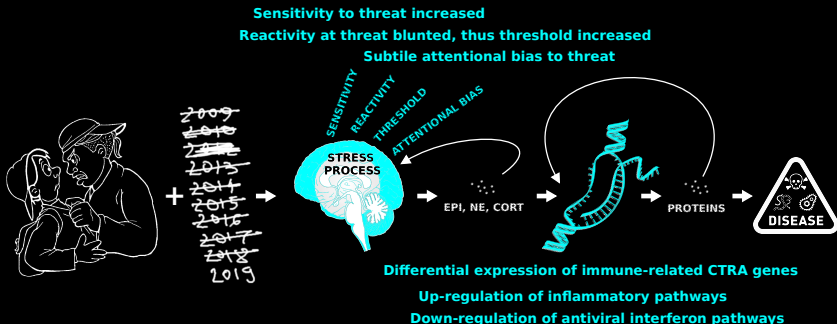


Fig 8. Stress process and gene expression findings.

Thank you!

Jens Heumann, M.A.
Pre-PhD Fellow Social Genomics

University of Zurich
Jacobs Center of Productive Youth Development
jens.heumann@jacobscenter.uzh.ch
www.jacobscenter.uzh.ch
AND 4.14
+41 44 634 06 79



University of
Zurich^{UZH}



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