Accelerated Aging is Associated with Increased Post-traumatic Stress Disorder Symptoms Trajectory in U.S. Veterans: A Longitudinal Study

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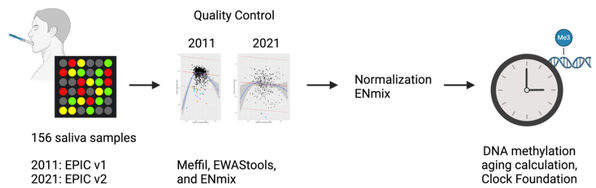
INTRODUCTION

- Trauma can lead to development of PTSD
- PTSD: chronic and often disabling disorder; lifetime prevalence = ~8.7%
- Veterans are more likely to develop PTSD due to exposition to different traumatic events
- Physiological changes associated with PTSD: increased heart rate, sweating, muscle tension, pain, age-related diseases and premature death
  - Biological modifications during aging process

METHODS



Phenotypic data assessed at 2011, 2013, 2015, 2018, and 2021.

PACE GRIMAGE

*Rate at which biological aging occurs over time

*How quickly or slowly an individual is aging

$$\Delta = AccelGrimAge2021 - AccelGrimAge2011$$

RESULTS

Table 1. Demographics.

	Overlap (n=153)
Age 2011	62.8±10.3
Race	
European American	153 (100%)
Other	0 (0%)
Sex	
Male	153 (100%)
Female	0 (0%)
Current smoker	12 (7.8%)

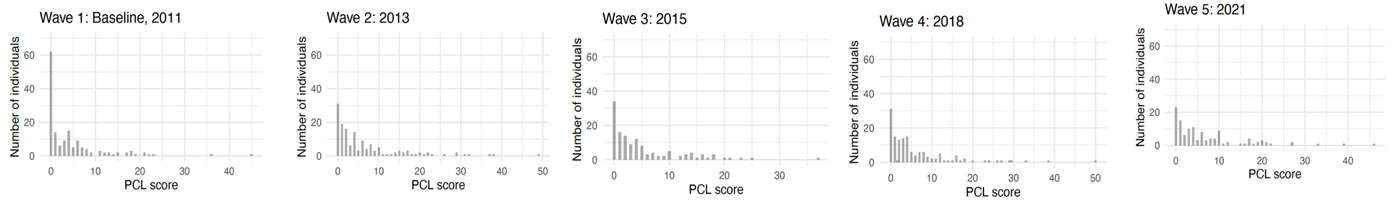


Figure 2. PCL score distribution for Wave 1 – 5. The PCL score was assessed at baseline, in 2013 (Wave 2), 2015 (Wave 3), 2018 (Wave 4), and 2021 (Wave 5). DNA methylation was assessed at Baseline and Wave 5.

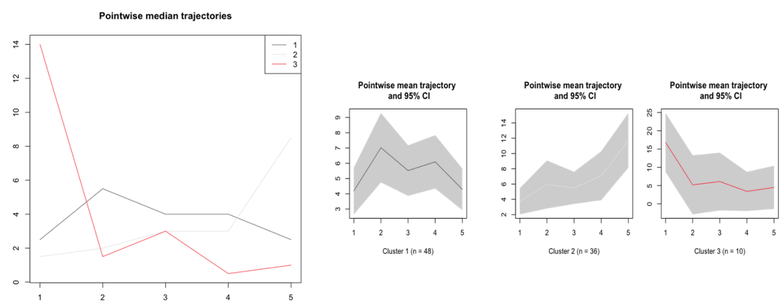
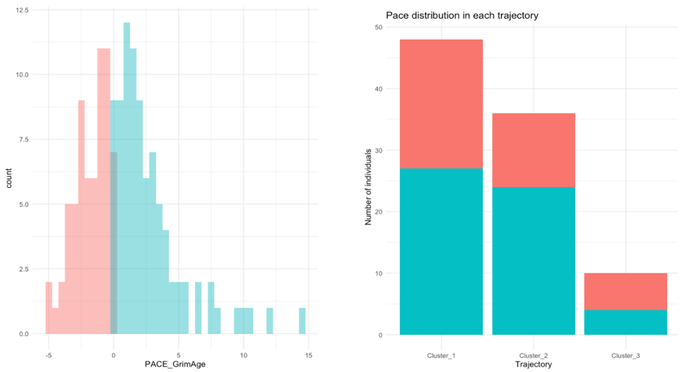


Figure 1.Trajectory analyses. Here we used Traj R package to cluster the samples in three trajectories.



PACE:

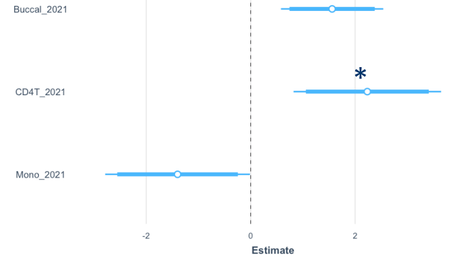
delta<0

Decrease in the accel rate over time

delta>0

Increase in the accel rate over time

Figure 3. PACE. We observed the distribution of PACE dividing them into two groups, increasing acceleration aging over the years and decreasing accelerated aging over the years.



* FDR significance at 0.05

Figure 4. Linear regression showed significant association with Cluster 2, that represents an increase of PCL score over the ten years.

CONCLUSIONS

- Our longitudinal analysis of PTSD symptoms identified three clusters: no change over time, increased PTSD symptoms over time, and decreased PTSD symptoms over time.
- After adjusting for confounders, we found an association between higher pace of aging and increased PTSD symptoms over time, suggesting that biological aging is faster in individuals with increased PTSD symptoms.
- Future studies will evaluate the influence of risk and protective factors in the longitudinal relationship between pace of aging and PTSD symptoms, such as medication, social support, disease comorbidities, and others.

LIMITATIONS

- Small sample size.
- A need to evaluate other population groups.

ACKNOWLEDGEMENTS

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