



Childhood trauma severity is associated with objective sleep disturbance but not elevated cortisol.

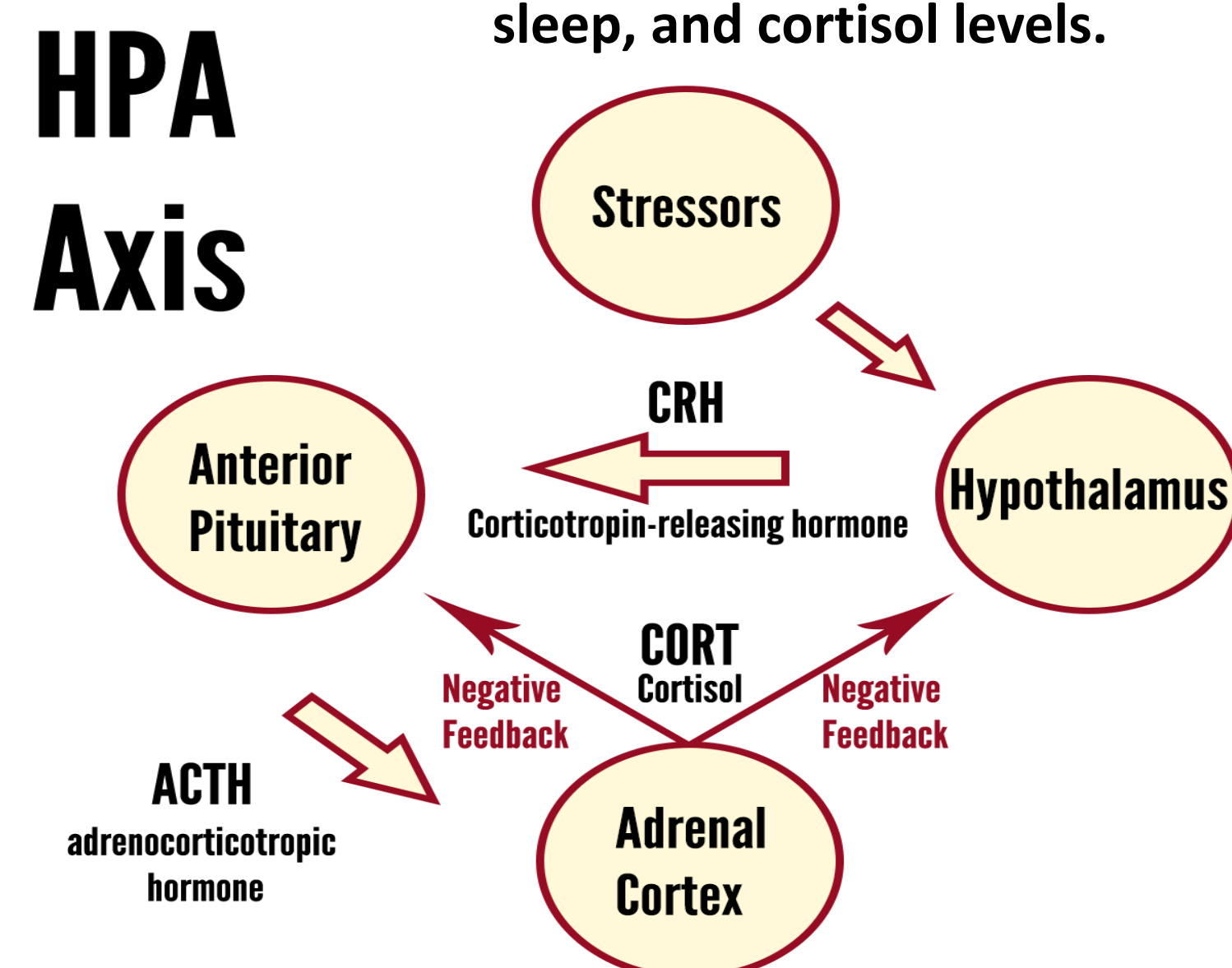
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Introduction

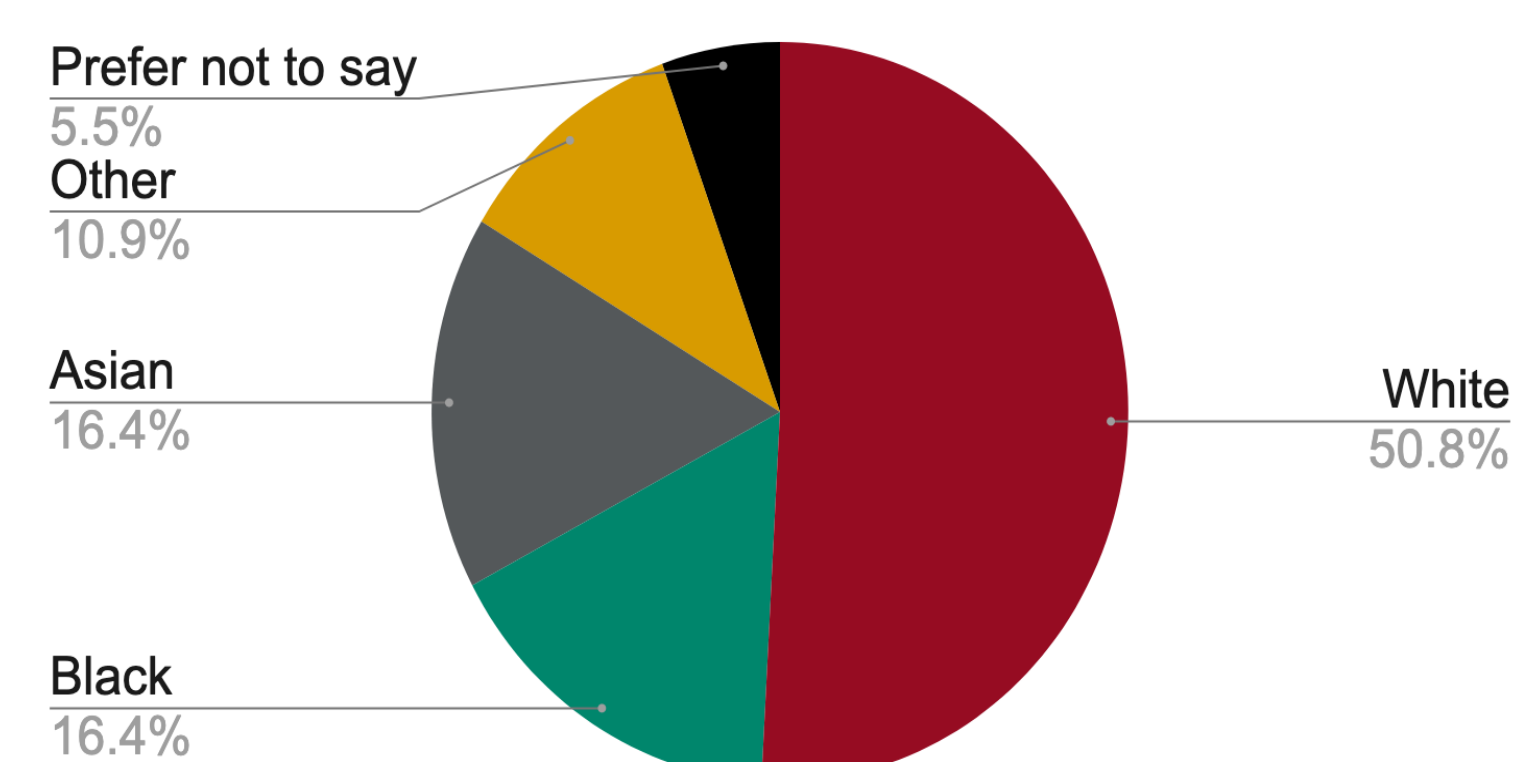
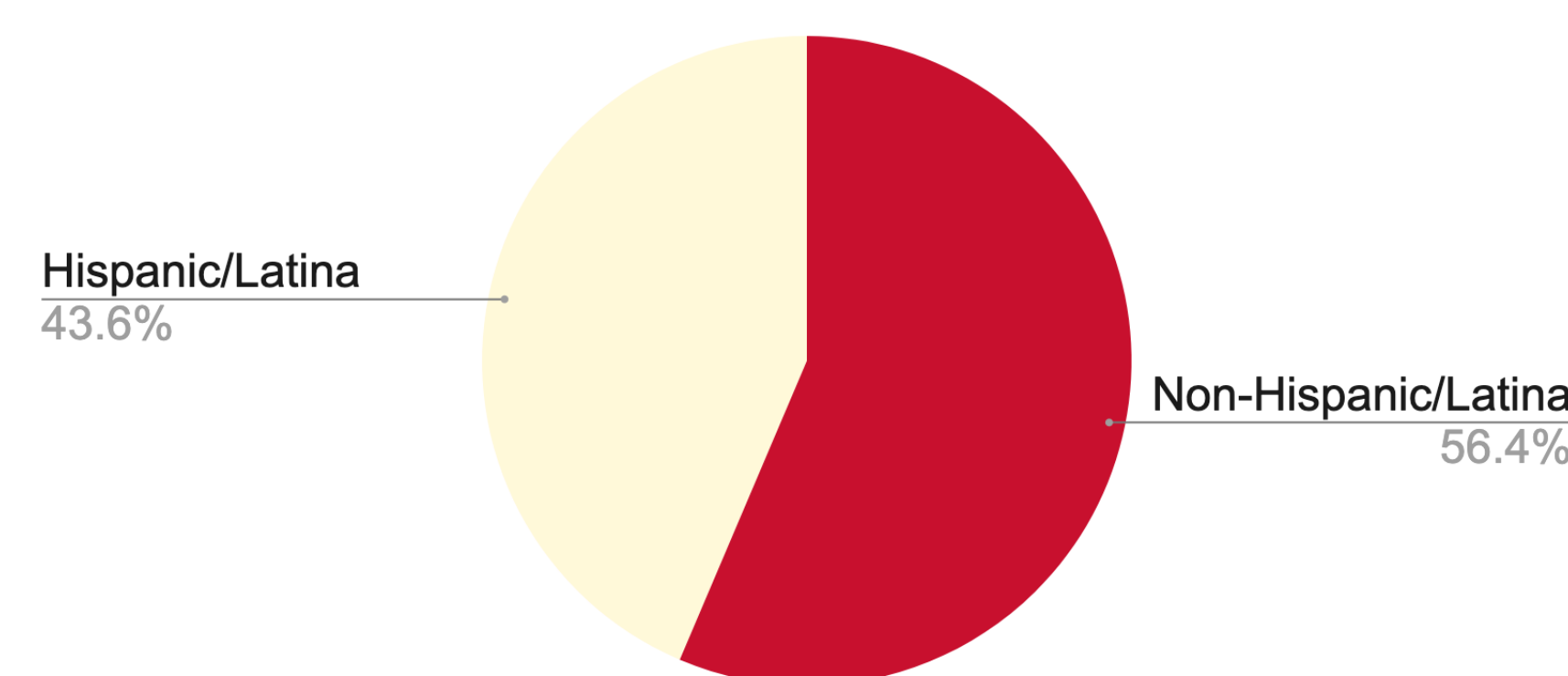
- Childhood sexual abuse (CSA) is an adverse childhood experience that disproportionately affects women and is a risk factor for a range of posttraumatic stress symptoms and other health concerns.
- Symptoms such as generalized anxiety, intrusive thoughts, increased arousal, stress reactivity, and sleep disturbance are often found within adult victims of CSA.
- Sleep disturbance is common following exposure to traumatic events. CSA, in particular, has been linked to increased sleep onset latency (SOL) and wake after sleep onset (WASO), otherwise known as fragmented sleep.
- The HPA axis is the main stress system of the brain and produces the stress hormone, cortisol, in response to stressors. However, in the case of acute or chronic trauma, this system can become dysregulated.
- Symptoms such as generalized anxiety and increased arousal can be related to a dysfunctional HPA axis, such as elevated cortisol when no stressor is present.
- It is noted in the literature that cortisol levels are associated with sleep outcomes generally. However, research examining this association in this population is sparse.
- Past research examining sleep in CSA has primarily utilized self-report measures, with little attention on objective sleep measurement.

The purpose of the present study was to examine associations between childhood trauma severity, objective sleep, and cortisol levels.



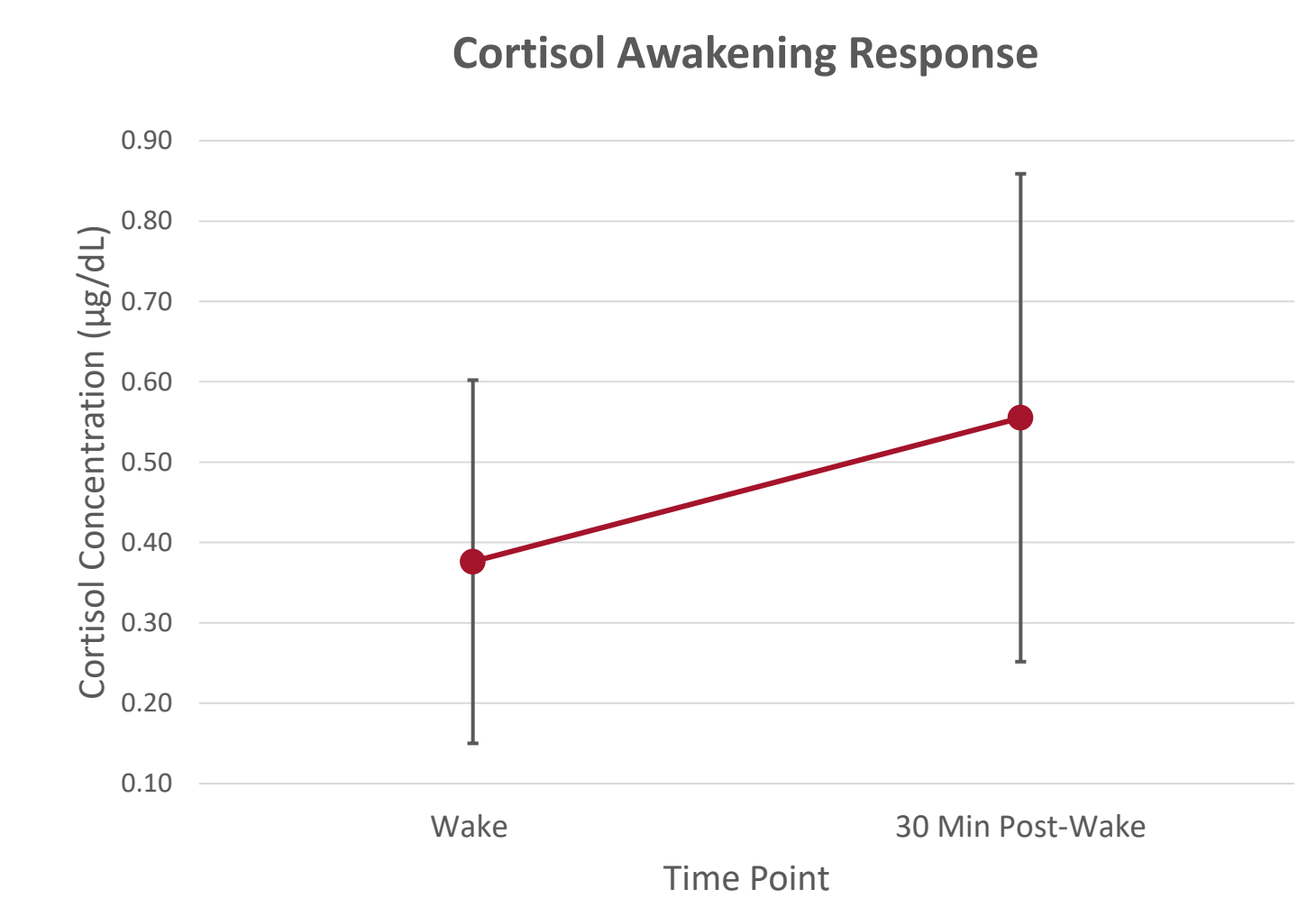
Methods

- 55 cis-gendered women between ages 18 - 40 ($M = 23.45$, $SD = 4.69$), with at least one CSA event before age 12, completed all parts of the study.
 - 50.9% = White, 16.4% = Black, 16.4% = Asian, 10.9% = Other, 5.5% = prefer not to answer
 - 56.4% = Non-Hispanic/Latina, 43.6% = Hispanic/Latina
- Study participation included a baseline interview and self-report measures, 7 days of actigraphy and concurrent sleep diary, and 2 days of saliva collection.
- Cortisol levels in the saliva were analyzed using Salimetrics Cortisol ELISA kits.
- Variables of interest in the present study were childhood trauma severity (assessed with the Childhood Trauma Questionnaire [CTQ]), actigraphy-assessed sleep onset latency (SOL) and minutes awake after sleep onset (WASO), and the cortisol awakening response.



Results

- On the CTQ Sexual Abuse subscale (CTQ-SA), participants reported an average score of 11.92, falling in the 'Moderate' to 'Severe' categories.
- Participants exhibited a cortisol awakening response of +.18 $\mu\text{g/dL}$ from wake to 30 minutes post-wake.
- After controlling for age,
 - CTQ Total Scores were positively correlated with actigraphy-based SOL ($r = .35$, $p = .01$), but not significantly correlated with actigraphy-based WASO.
 - CTQ-SA subscale scores were negatively correlated with actigraphy-based WASO ($r = -.32$, $p = .02$), but not significantly correlated with actigraphy-based SOL.
- Morning cortisol levels were not significantly correlated with childhood trauma severity or the previous night's objectively assessed sleep.



Note. Error bars represent +/- 1 standard deviation

Variable	M	SD
CTQ-Total Score (25 – 125)	67.38	15.30
CTQ-Sexual Abuse (5 – 25)	11.92	4.82
Actigraphy-SOL (minutes)	17.94	13.73
Actigraphy-WASO (minutes)	38.14	18.02
Cortisol Awakening Response ($\mu\text{g/dL}$)	.18	.25

Discussion

- Increased CTQ total score was associated with increased SOL; however, the mean SOL observed via actigraphy was consistent with normative values. (1) WASO was found to be negatively correlated with the sexual abuse subscale of the CTQ.
 - Possible that there may be a discrepancy with what participants report vs. what actigraphy records.
 - Potential role of sleep drive
- Interestingly, waking cortisol was not significantly correlated with any of the objective sleep variables.
 - Possible cortisol blunting effect \rightarrow Chronic stress has been noted to be associated with an attenuation of cortisol levels. Less waking cortisol was observed in the present study compared to a previous study in healthy women (2). It is possible that exposure to childhood trauma, rather than severity, could lead to blunted cortisol.
- Limitations include small sample size, potential interaction of sleep aids (e.g., melatonin), potentially higher functioning sample (excluded those with active suicidal ideation), and potential user error in collecting saliva samples.
- Future directions include replication with objective-based sleep with a larger sample, as well as a control group.

References

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2. Wüst, S., Wolf, J., Hellhammer, D. H., Federenko, I., Schommer, N., & Kirschbaum, C. (2000). The cortisol awakening response - normal values and confounds. *Noise & health*, 2(7), 79–88.

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