

General music performance anxiety and audience presence: their influence on the music students' neuroendocrine response across time during a music performance

Guyon, A.J.A.A.¹, Hildebrandt, H.², Güsewell, A.³, Horsch, A.⁴, Nater, U.M.⁵ & Gomez, P.¹

¹ Center for Primary Care and Public Health (Unisanté), Department of occupational and environmental health, University of Lausanne, Switzerland
² Swiss University Center for Music Physiology, University of the Arts of Basel and Zurich, Switzerland
³ Haute Ecole de Musique (HEMU), HES-SO University of Applied Sciences and Arts Western Switzerland, Lausanne, Switzerland
⁴ Institute of Higher Education and Research in Healthcare (IUFRS), University of Lausanne, Lausanne, Switzerland
⁵ Department of Clinical & Health Psychology, University of Vienna, Vienna, Austria

unisanté
 Centre universitaire de médecine générale et santé publique - Lausanne

INTRODUCTION

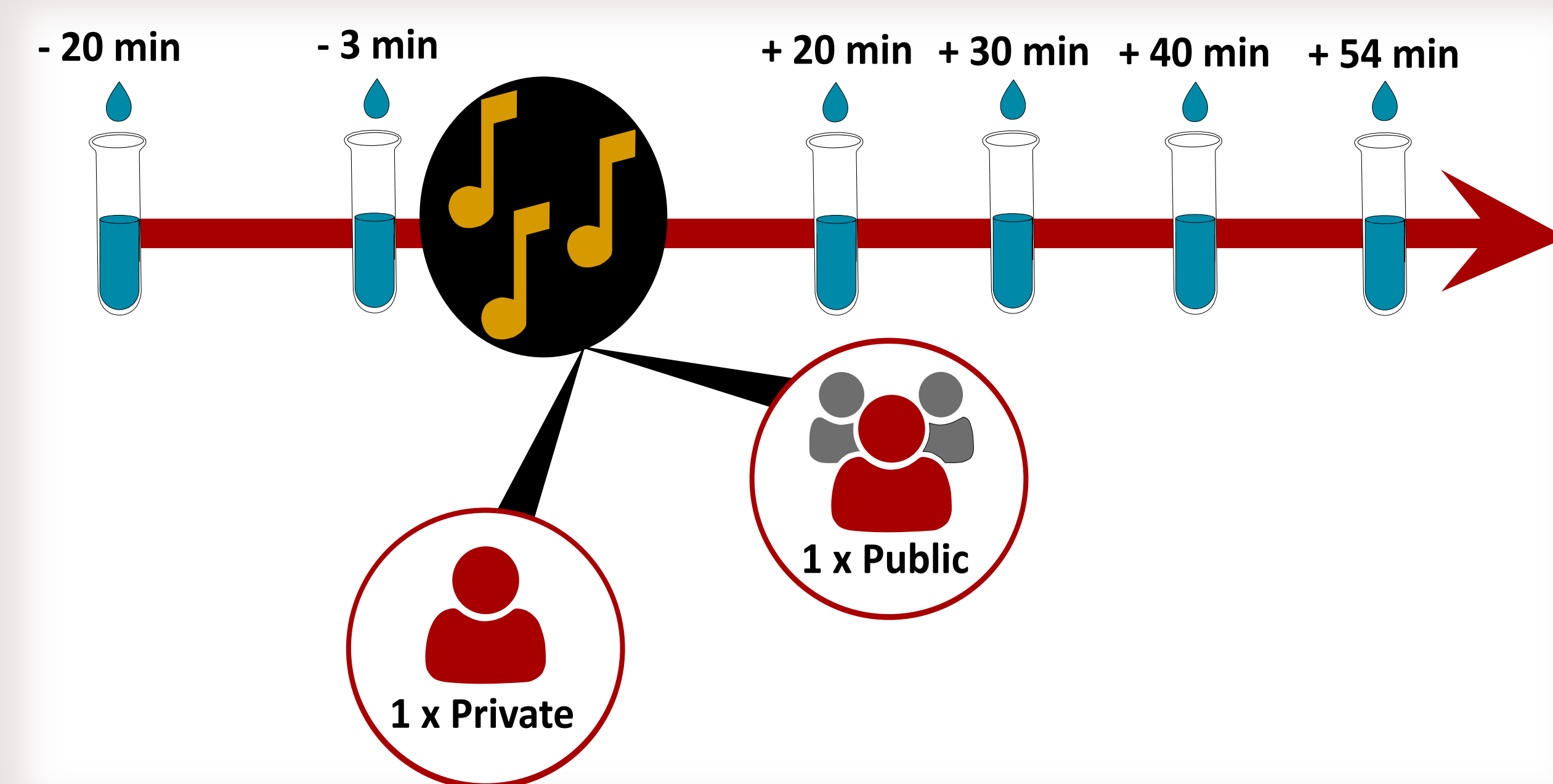
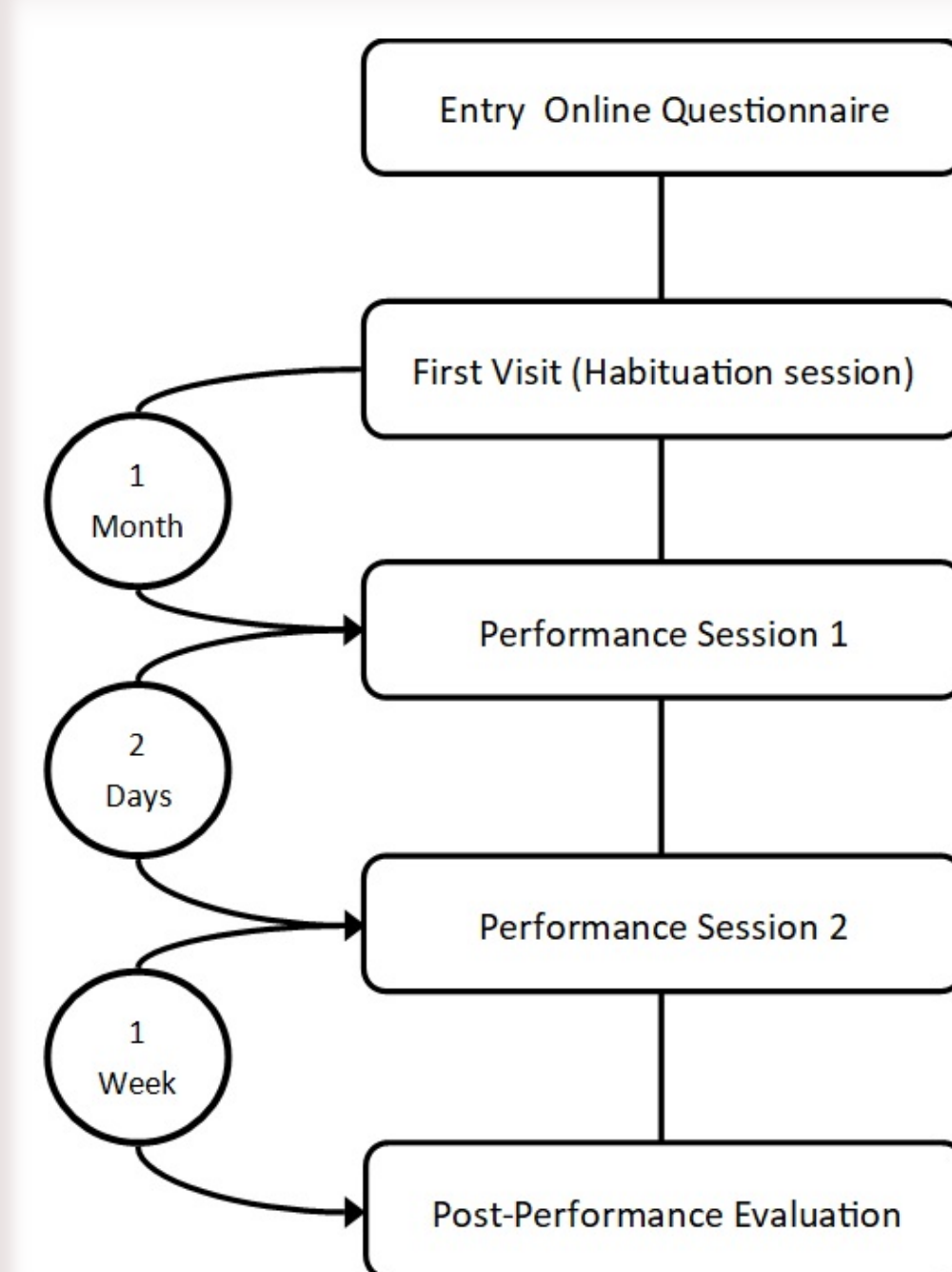
Performing in front of an audience can be considered as a **social-evaluative stress situation** that can provoke **music performance anxiety (MPA)** symptoms, yet all music students must do it regularly to pursue their career.

Previous literature showed that when facing social-evaluative stress situations the **sympathetic-adrenal-medullary (SAM)** system and the **hypothalamic-pituitary-adrenal (HPA)** axis are activated (Dickerson & Kemeny, 2004).

Little is known about how the general MPA level (i.e., the general tendency to experience anxiety during solo music performance) and audience presence influence the SAM system and the HPA axis across a music performance.

The aim was to investigate the impact of general MPA level, audience presence and time on the **salivary alpha-amylase (sAA) activity**, known as an index of the SAM system activity (Ali & Nater, 2020), the **salivary cortisol (sC)** quantity, the **salivary dehydroepiandrosterone (sDHEA)** quantity, both secreted by the HPA axis, and the **anabolic balance (sDHEA/sC)**, considered lately as a more accurate indicator of the ability to cope efficiently with a stressful situation (Mendes et al., 2007).

METHODS

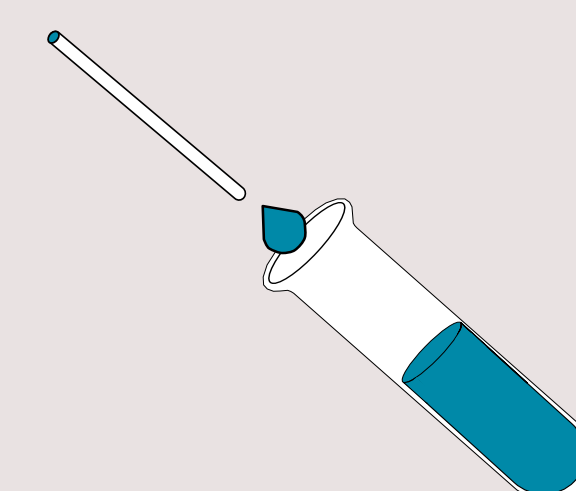


Participants:

- 121 classical university music students
- 18-32 years old
- 69 women
- General MPA level varying between 27 and 76
- Year 1 to year 7
- All instrument types
- Except harp, percussions and tuba

Measures:

Saliva samples with passive drooling method



Rinse with water --> Swallow --> Wait 2 min --> Spit

RESULTS

sAA activity

- Not influenced by audience presence.
- Increased before and decrease after the performance started.

sC and sDHEA concentrations

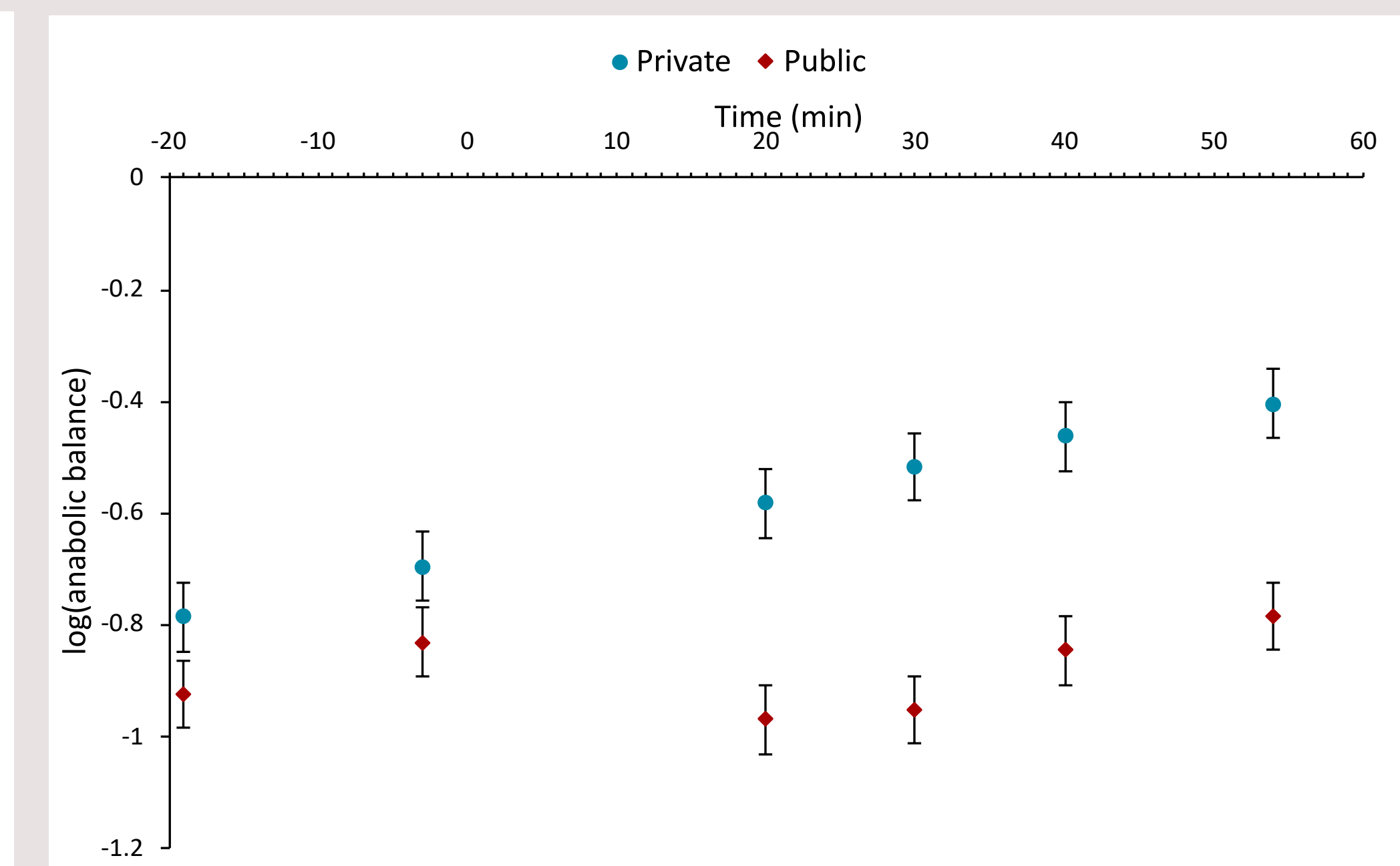
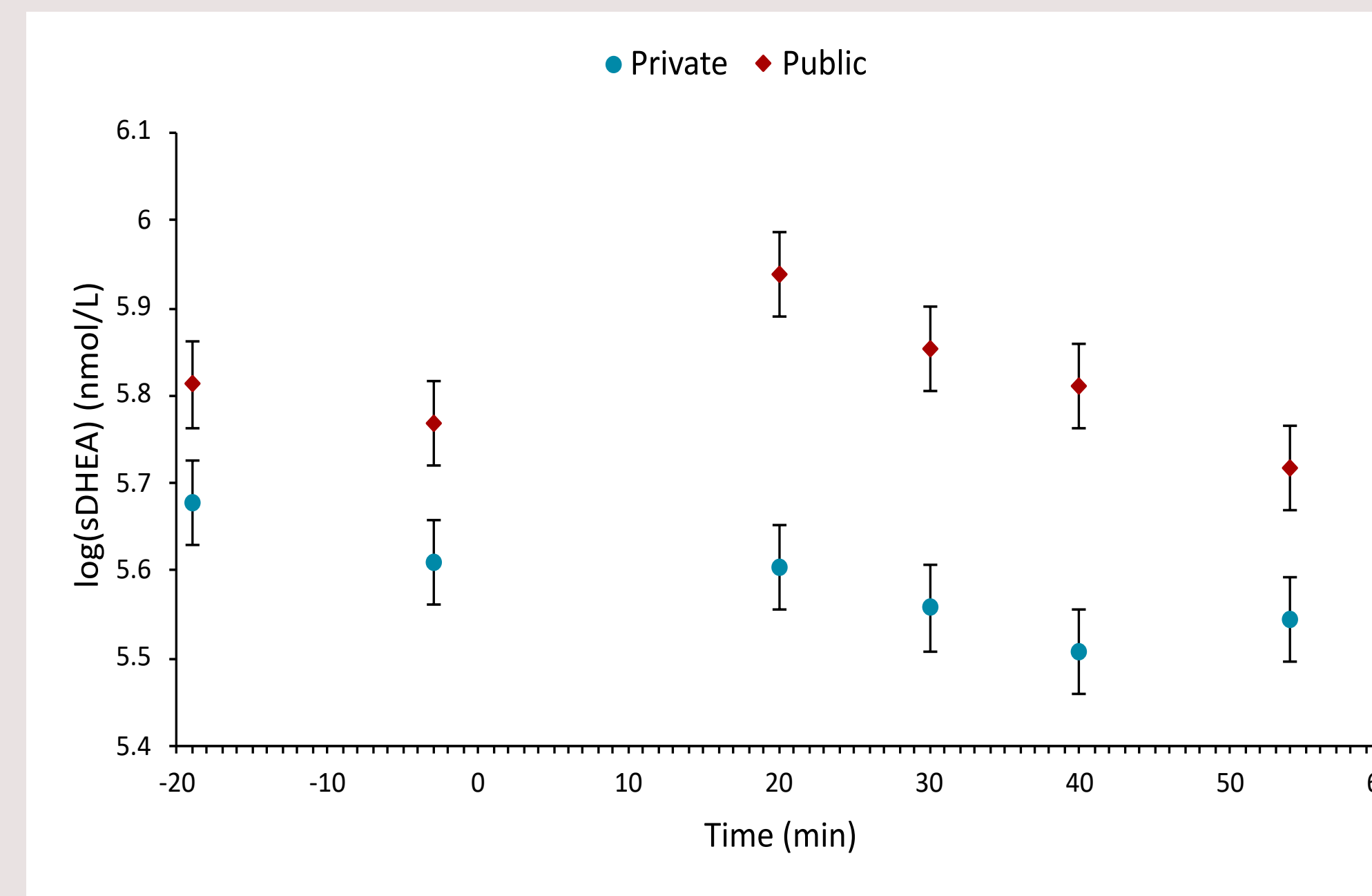
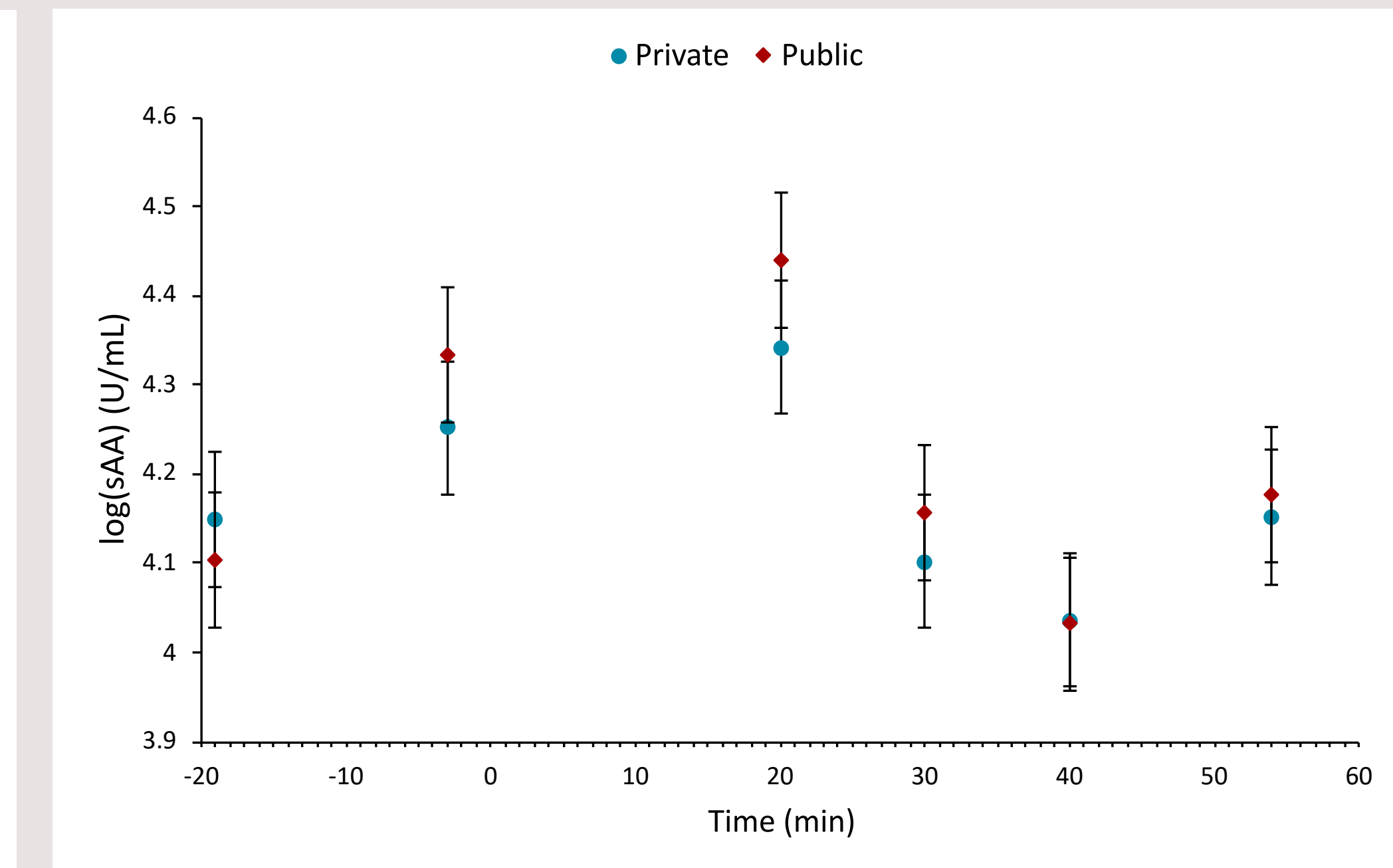
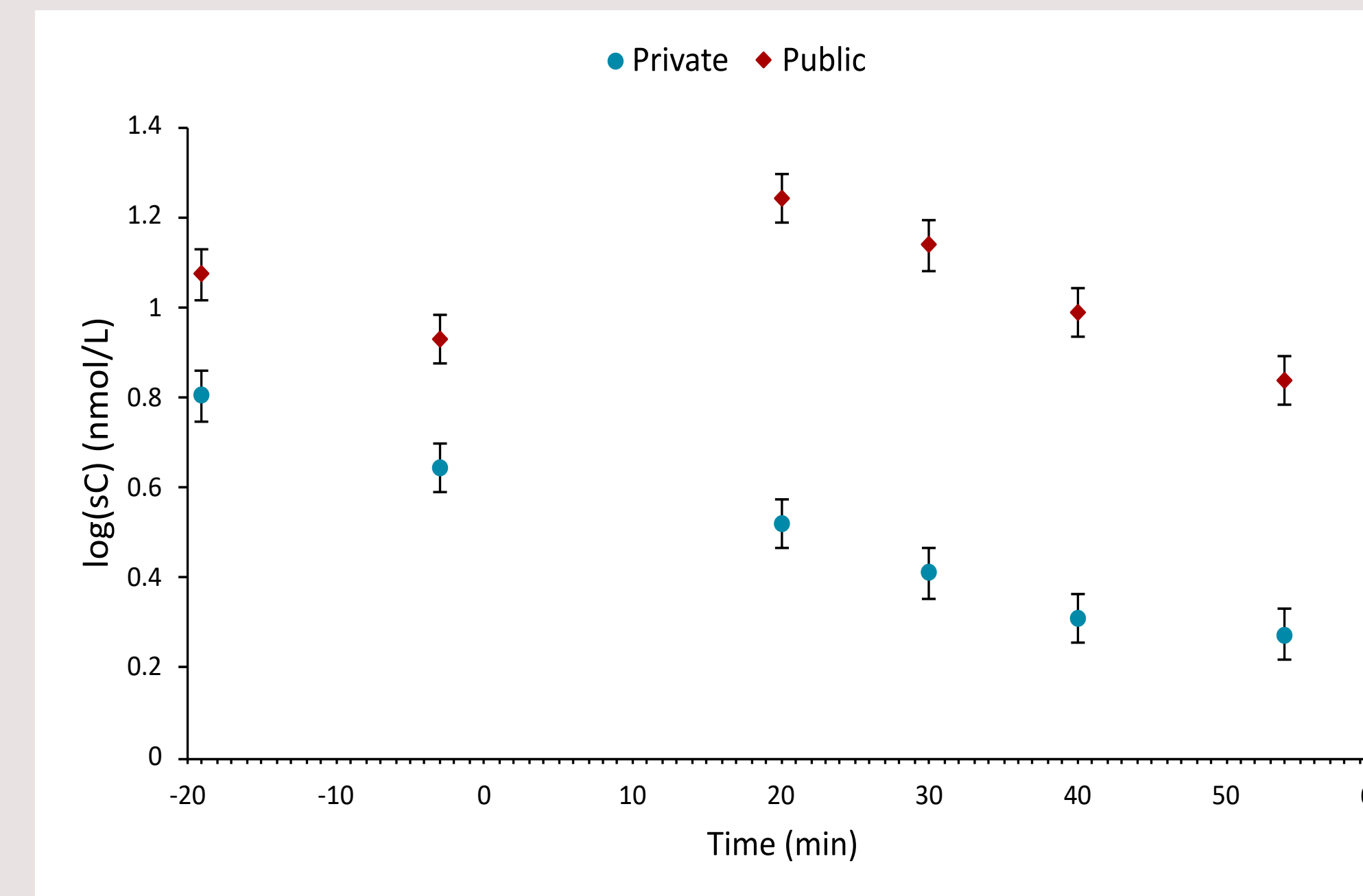
- Higher in public performance than in private performance.
- Only during public performance, significant increase between 3min before and 20min after the performance started.

Anabolic balance

- Only from 20min after the performance started, lower in public performance than in private performance.
- Only during public performance, significant decrease between 3min before and 20min after the performance started.

General MPA level

- No influence on the sAA activity, the sC concentration, the sDHEA concentration, and the anabolic balance.



CONCLUSION

Compared to performing alone, performing in front of an audience causes a substantial **activation the HPA axis prior to** and especially **after performing**.

Audience presence did not influence the **SAM system activation**. It **increased up to the end** of the performance regardless of the condition.

Music students with low vs. high **general MPA levels** did **not significantly differ** in their neuroendocrine response patterns when performing solo.

The present findings add an important dimension to the understanding of the **psychophysiology of music performance** situations, and especially of the impact that an audience can have on the neuroendocrine response.

References:

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- Dickerson, S. S., & Kemeny, M. E. (2004). Acute Stressors and Cortisol Responses: A theoretical Integration and Synthesis of Laboratory Research. *Psychological Bulletin*, 130(3), 355-391.
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This study is part of a bigger project, for more information



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