

MEDICATION EXPOSURE AND BIOMARKERS OF EARLY ALZHEIMER’S DISEASE IN A POPULATION-BASED SWEDISH COHORT

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REAL AD

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About the study

REAL AD is a population-based screening study aiming to evaluate blood-based biomarkers (BBMs) and remote digital cognitive assessments (DCAs) for early Alzheimer's disease detection using an existing public primary care infrastructure in southwest Sweden [1].

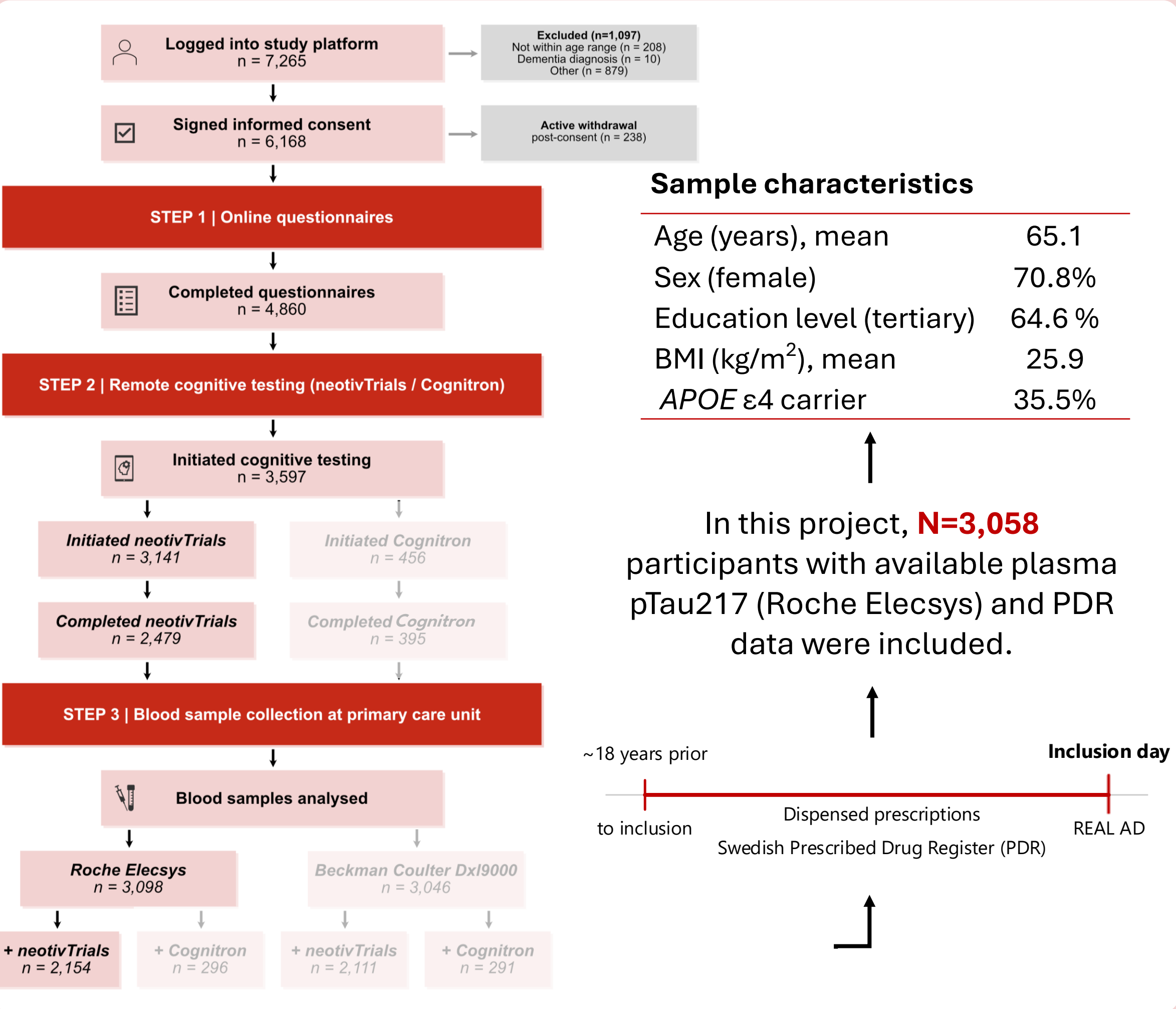
Background and aims

Certain medical conditions and medications may affect BBM levels and remain insufficiently studied [2]. Biomarker associations observed in clinically recruited cohorts may not generalize to community-based populations [3].

Leveraging 18 years of medication prescription data within the REAL AD cohort sample, we aimed to:

- (1) map medication exposure in relation to plasma pTau217 levels,
- (2) characterize medication profiles,
- (3) investigate if the relationship between plasma pTau217 and DCA performance varies across these profiles.

Methods



Results

Figure 1. Medication exposure by WHO's 1st level Anatomical Therapeutic Chemical (ATC) classification system and high plasma pTau217. Antineoplastic and immunomodulating agents were the only ATC chapter significantly associated with the respective pTau217 category (high, intermediate and low) distribution adjusted for age and APOE ε4 ($\chi^2(2) = 8.73$, $p = 0.013$).

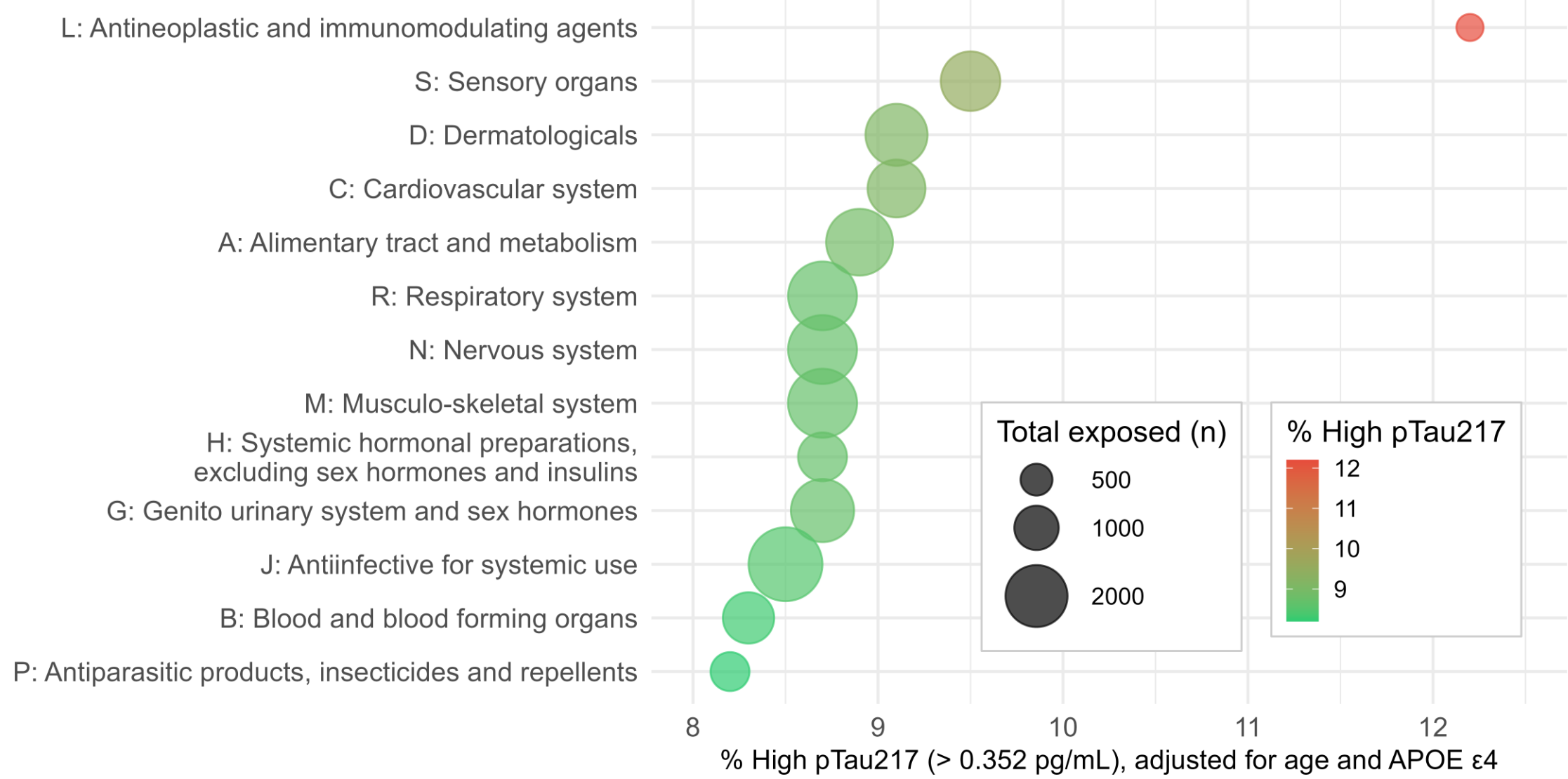


Figure 2. Latent Profile Analysis (LPA) based on person-years treated across 45* medication subgroups identified four distinct medication profiles: a psychotropic & pain profile (n=333) an allergic profile (n=93), a cardiovascular profile (n=181) and a minimal medication profile (n=2451). *37/45 subgroups are shown in figure

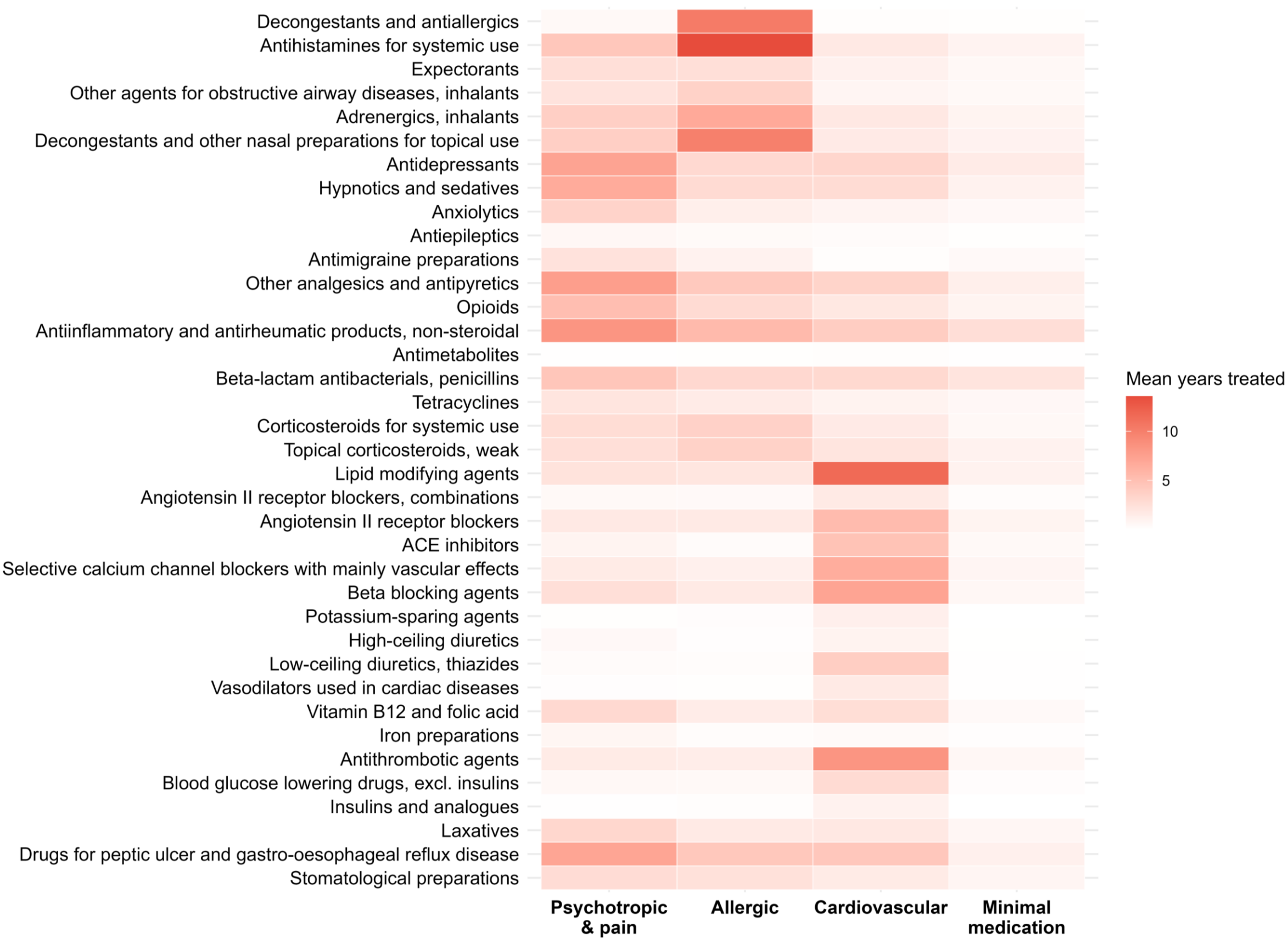
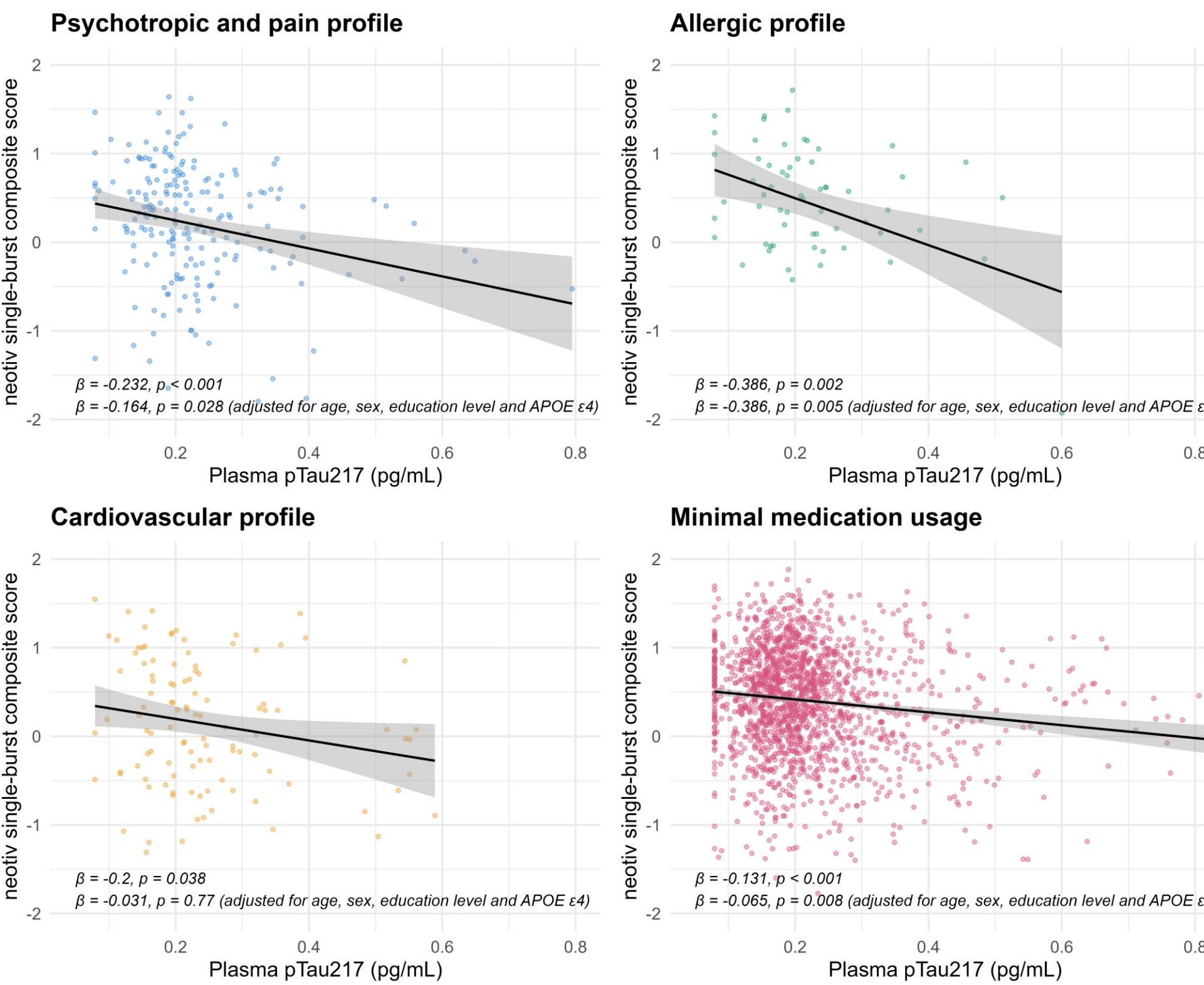


Figure 3. Association between plasma pTau217 levels and DCA performance across medication profiles. In a multiple linear regression model the association between DCA performance and plasma pTau217 remained significant after adjusting for age, sex, APOE ε4 and education level across medication profiles except for the cardiovascular profile.



Conclusions

- “Antineoplastic and immunomodulating agents” was the only ATC chapter associated with high pTau217 category distribution.
- LPA analysis identified four distinct medication profiles.
- The association between cognitive performance and plasma pTau217 did not remain significant for the cardiovascular medication profile (n=181; predominantly long-term use of lipid modifying agents, beta blockers and antithrombotics) after adjusting for demographic and genetic factors.

Further analyses are warranted to **better understand the role of antineoplastic and immunomodulating agents and cardiovascular medication profiles in the interpretation of AD biomarkers.**

References

- Leuzy et al., *Alzheimers Dement.* 2024
- Palmqvist et al., *Alzheimers Dement.* 2025
- Landau et al., *Alzheimers Dement.* 2026



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