

Latent Lifestyle-psychological Profiles Enable Precision Prevention Of Brain Health Decline

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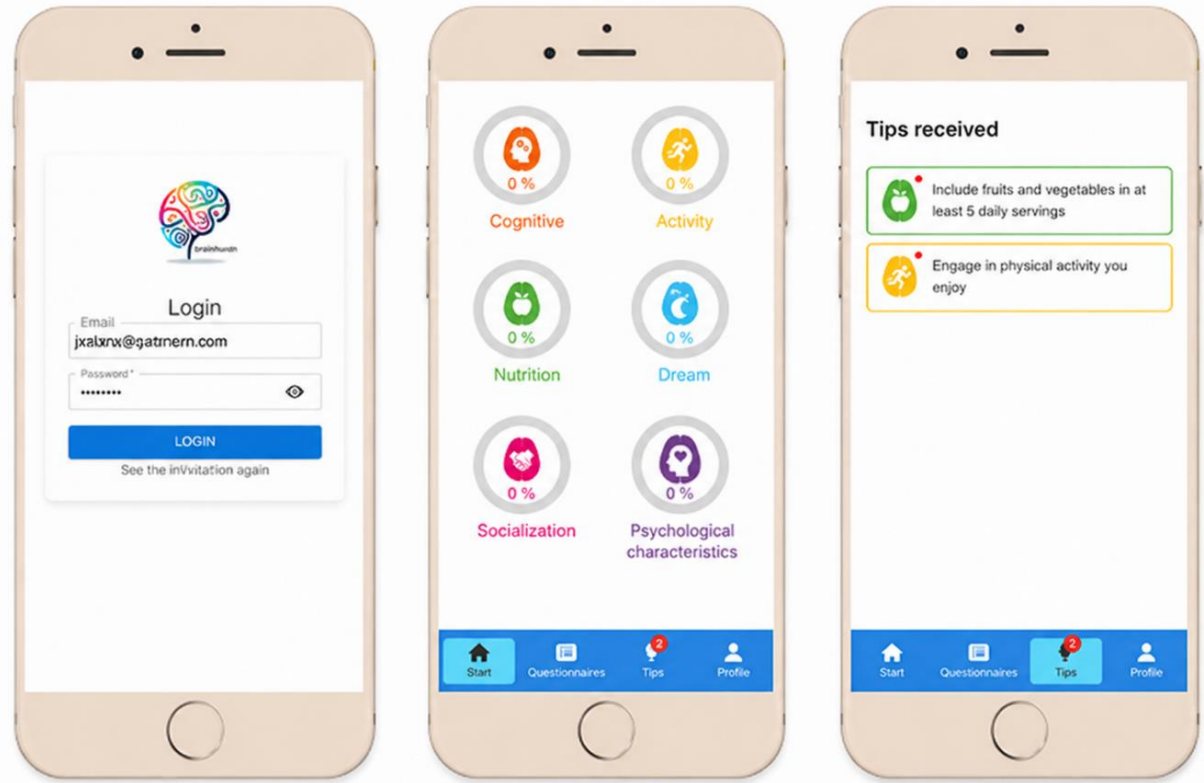
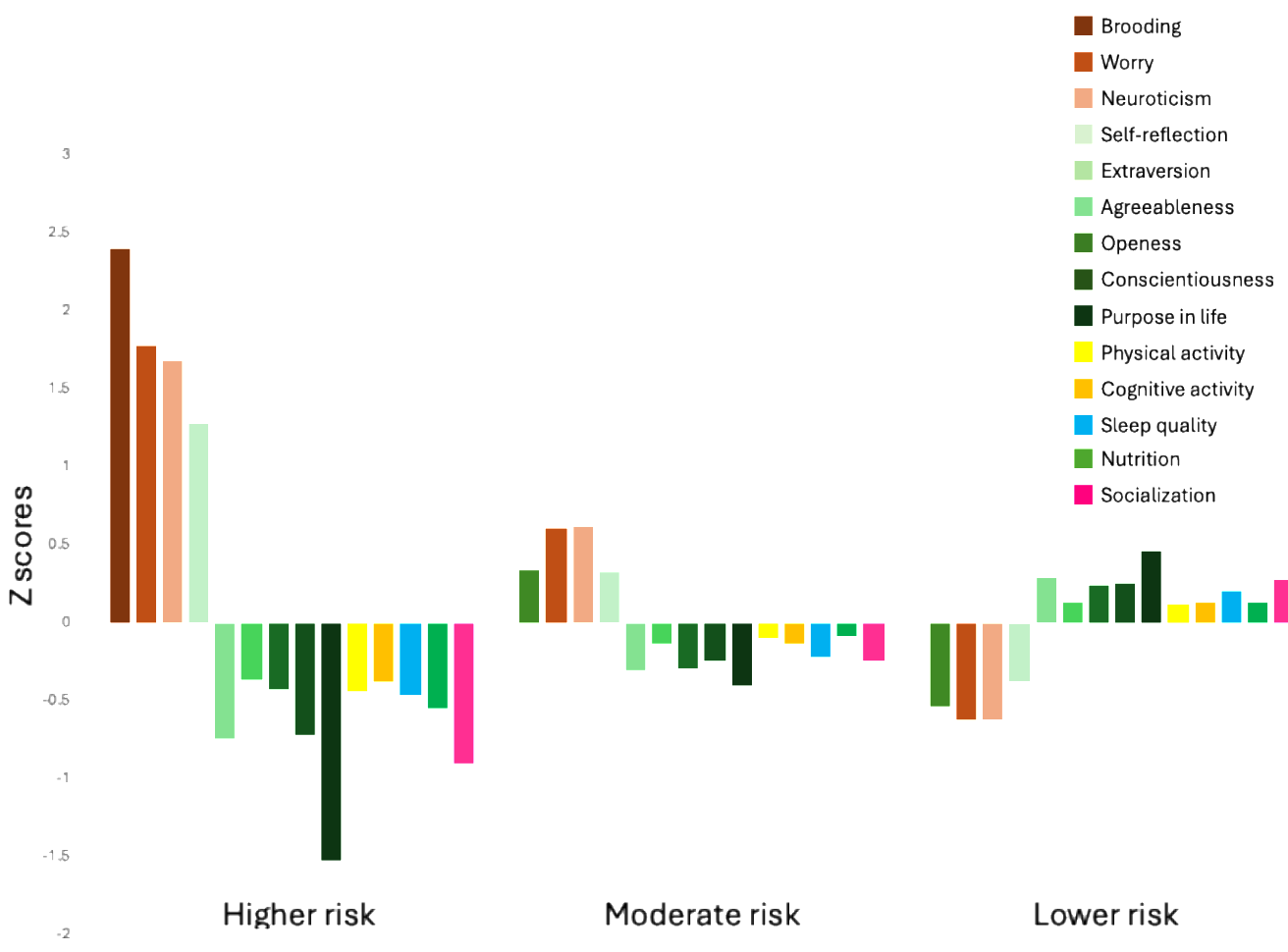
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Lifestyle–psychological profiling can identify cognitively healthy adults who may benefit most from personalized dementia-prevention interventions.

INTRODUCTION	METHODS	RESULTS	CONCLUSIONS	REFERENCES
Dementia prevention focuses on modifiable lifestyle factors, including physical activity, sleep, diet, cognitive engagement, and social participation [1]. However, individuals differ in their behavioral patterns, psychological vulnerability, and capacity to adhere to recommendations. Precision prevention may improve targeting by identifying multidimensional risk profiles and tailoring intervention intensity and support.	We performed a latent profile analysis [2] in 1,740 cognitively healthy BBHI adults [3] aged 42–75 years (mean age = 60.63, SD = 7.31). The model combined lifestyle domains, physical activity, sleep, nutrition, cognitive engagement, and social engagement, with psychological characteristics, including personality traits, stress, repetitive negative thinking, and sense of purpose. Based on the profiles, 120 Moderate- and High-Risk participants entered an 8-week personalized intervention using the Brain Health Coaching App.	We identified three profiles: Low-Risk (~57%), Moderate-Risk (~35%), and High-Risk (~8%). High-Risk group showed poorer lifestyle habits and psychological traits potentially linked to reduced brain resilience. The three-profile solution showed the best balance between model fit, classification quality, and interpretability, with lower AIC, BIC, and SABIC values. Classification accuracy was high: entropy = 0.87, minimum average posterior probability = 0.92, and all profiles exceeded 5% of the sample.	Latent lifestyle–psychological profiling provides a practical framework for precision brain-health prevention. By identifying individuals with different combinations of modifiable behaviors and psychological vulnerability, this strategy can guide recruitment, personalize intervention content, and adapt the intensity of digital support and health coaching. Integrating data-driven stratification with scalable digital tools may improve adherence to lifestyle recommendations and support more efficient dementia-prevention programs in cognitively healthy middle-aged and older adults.	[1] Livingston G, et al. Dementia prevention, intervention, and care: 2024 report of the Lancet Standing Commission. Lancet. 2024. [2] Lanza ST, Cooper BR. Latent class analysis for developmental research. Child Dev Perspect. 2016. [3] Cattaneo G, et al. The Barcelona Brain Health Initiative: a cohort study to define and promote determinants of brain health. Front Aging Neurosci. 2018.
MULTIDOMAIN FACTORS CONSIDERED  Cognitive training  Physical exercise  Nutrition  Psychological characteristics  Socialization  Sleep	 LoginLifestyle domainsPersonalized tips	 Higher riskModerate riskLower risk		CONTACT  Maria Ortuño Saavedra Research Director mortuno@Guttmann.com 