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SUBJECTIVE COGNITIVE DECLINE
PROFESSIONAL INTEREST AREA

January 11, 2023

Year in Review
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Moderator: M. Dubbelman

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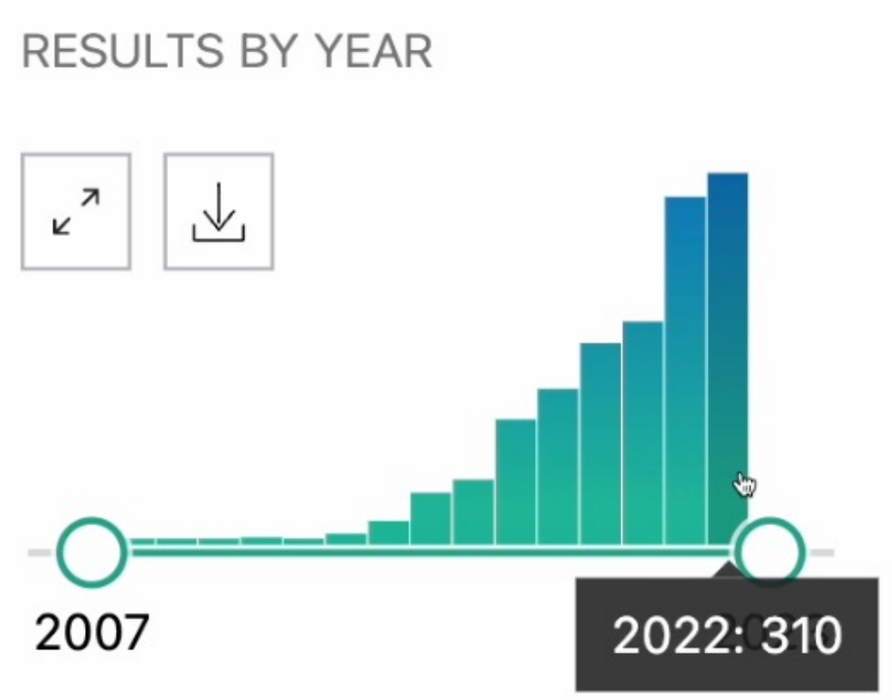
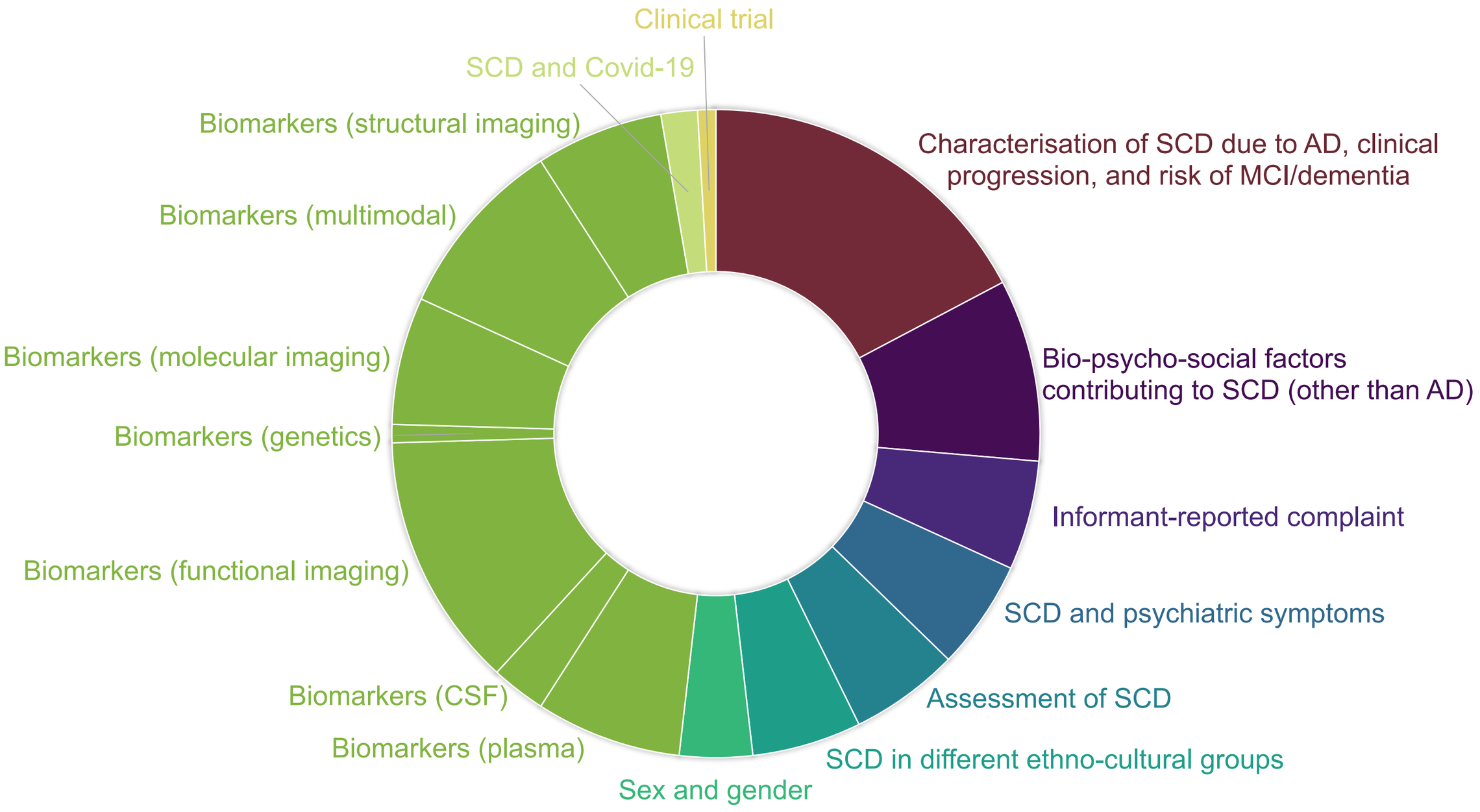
Overview of 2022 research on subjective cognitive decline

Subjective Cognitive Decline (SCD) is defined as a self-experienced decline in cognitive ability from a previous normal state, while age-, sex- and education-adjusted performance on standardized tests is normal

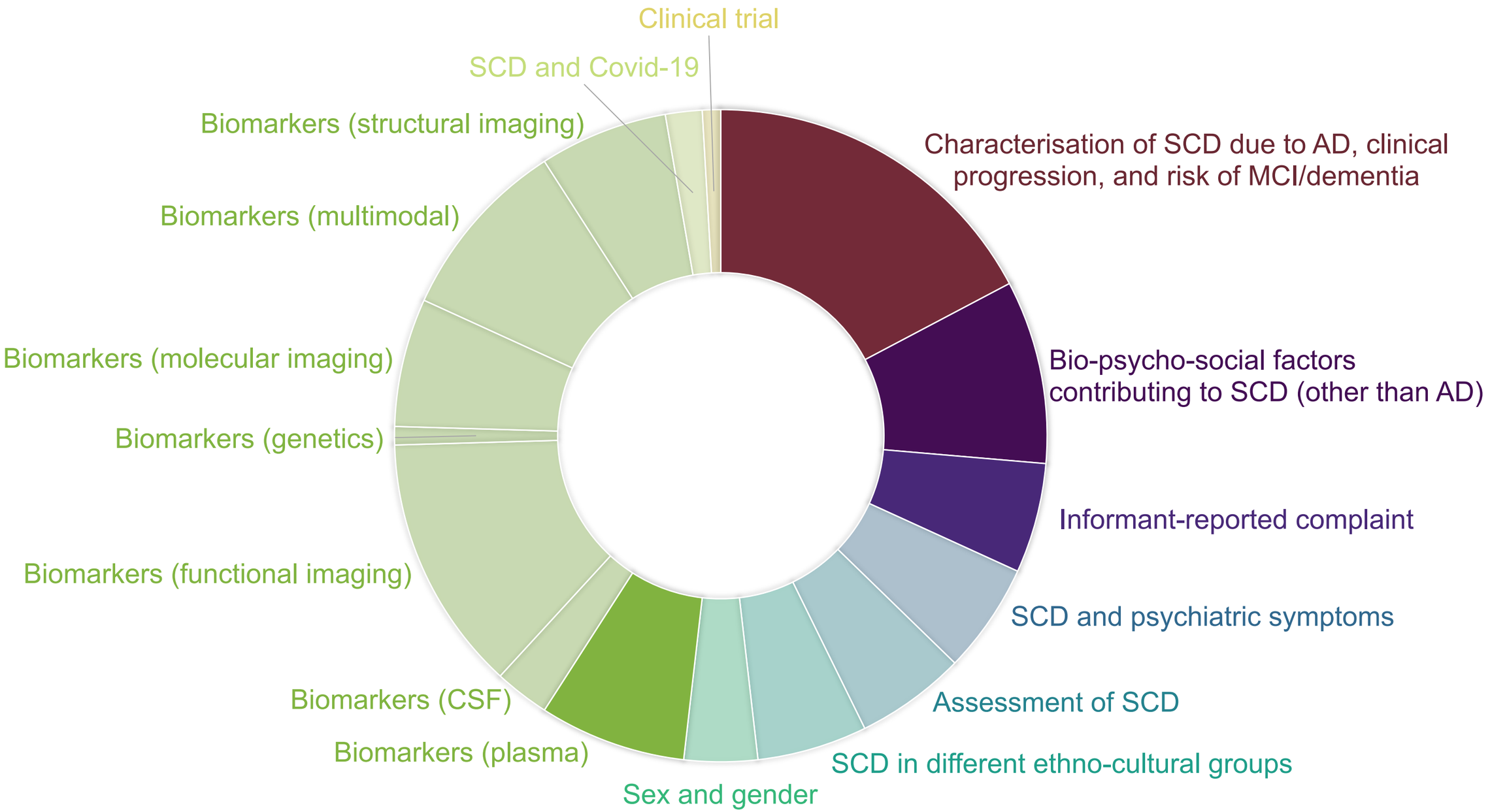
(Jessen et al., 2014, 2020)



Overview of 2022 research on subjective cognitive decline



Overview of 2022 research on subjective cognitive decline

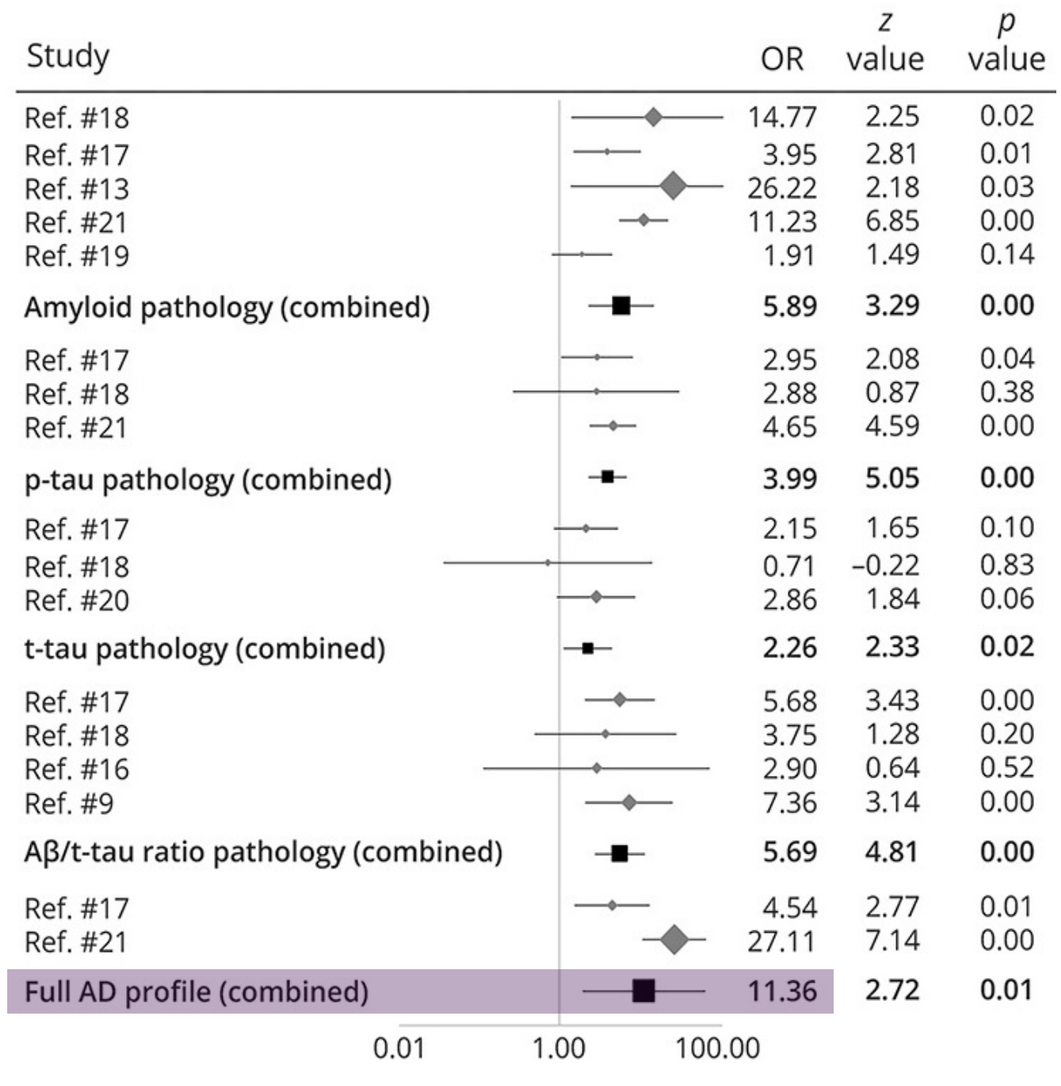


New evidence on the clinical progression of SCD

Progression of Subjective Cognitive Decline to MCI or Dementia in Relation to Biomarkers for Alzheimer Disease: A Meta-analysis.
Rostamzadeh A, Bohr L, Wagner M, Baethge C, Jessen F. *Neurology*

STUDY TYPE Meta-analysis, 8 studies included

MAIN RESULT SCD individuals with **full AD pathology** (both amyloid and tau) had a substantially increased risk of progressing to MCI or dementia, compared to SCD individuals without AD pathology or with only one positive biomarker



New evidence on the clinical progression of SCD

Subjective cognitive decline and stage 2 of Alzheimer disease in patients from memory centers.
Jessen F, Wolfsgruber S, Kleineindam L, Spottke A, Altenstein S, Bartels C, Berger M, et al. *Alzheimers Dement*

OBJECTIVE Whether SCD may serve for the identification of stage 2 of the AD continuum (Jack et al, 2018)

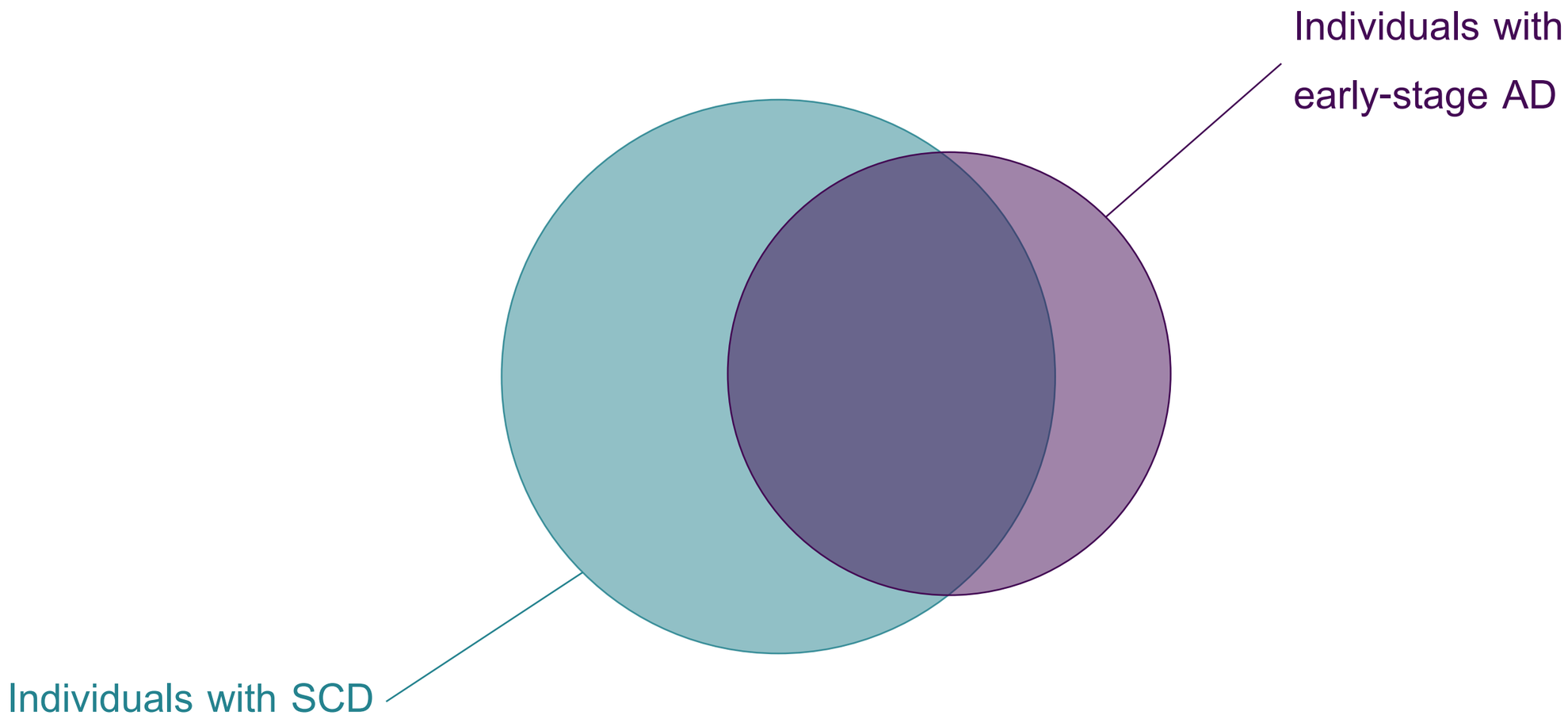
PARTICIPANTS SCD (n=445); non-SCD controls (n=236); aMCI (n=190); mild AD (n=126)

MAIN RESULTS

- SCD group [vs non-SCD] ⟶ slightly more behavioral, functional, and cognitive symptoms, and CSF Aβ had a greater effect on cognitive decline;
- Aβ+ SCD (39.3% of all SCD) [vs Aβ+ non-SCD] ⟶ greater behavioral, functional, and cognitive impairment, greater hippocampal atrophy.

TAKE-HOME MESSAGE Aβ+ SCD individuals may represent **stage 2 of the AD continuum**.

Relationship between SCD and AD



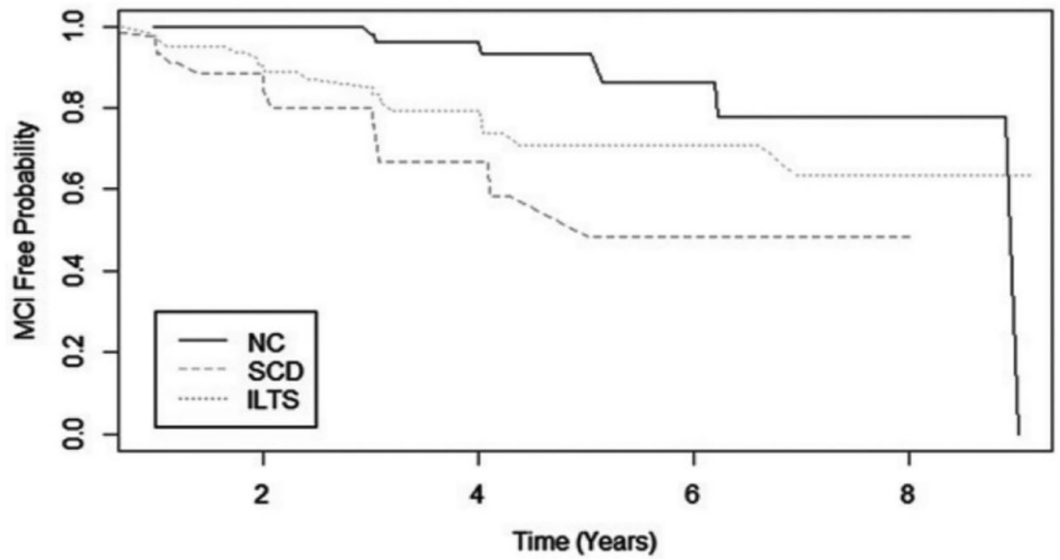
New evidence on the clinical progression of SCD

Clinical Progression of Baseline Risk States for Mild Cognitive Impairment.
Goldberg SM, Zhao Y, Cheng Y, Weinstein AM, Gujral S, Berman SB, Sweet RA, Butters MA, Lopez OL, Snitz BE. *J Alzheimers Dis*

OBJECTIVE Investigating the risk of MCI or dementia in two clinical “grey zones”

PARTICIPANTS
1) SCD and normal cognition (n = 107)
2) very mild impairment (-1 SD) without SCD (n = 74)

MAIN RESULTS



TAKE-HOME MESSAGE Individuals **with SCD** and normal cognition and those with very mild impairment **without SCD** may **both** be at risk of AD

Bio-psycho-social factors contributing to SCD (other than AD)

- SCD was strongly associated with longstanding psychiatric and personality variables, rather than with a family history of dementia
  (Reynolds et al., 2022, *J Prev Alzheimers Dis*)
- Both longer sleep duration (>8h) and shorter duration (<8h) were linked to worse SCD
  (Lin et al., 2022, *BMC Psychiatry*)
- SCD was suggestive of cerebrovascular disease
  (Pitti et al., 2022, *Ageing Res Rev*)
- Common chronic diseases and socio-demographic characteristics
  (Lin et al., 2022, *BMC Public Health*)
- Smoking (greatest prevalence of SCD among current smokers)
  (Rajczyk et al., 2022, *J Alzheimers Dis*)
- Those who had 4+ adverse childhood experiences had 3 times higher odds of having SCD when compared to respondents with no adverse childhood experiences
  (Baiden et al., 2022, *Aging Ment Health*)
- Psychosocial variables (i.e., depression, perceived social status, and personality traits)
  (Hopper et al., 2022, *Gerontology*)

Characterizing SCD due to AD

Characteristics of subjective cognitive decline associated with amyloid positivity
Janssen O, Jansen WJ, Vos SJB, Boada M, Parnetti L, Gabryelewicz T, Fladby T, Molinuevo JL, , et al. *Alzheimers Dement*

OBJECTIVE Clarifying which general and SCD-specific characteristics are associated with Aβ+

PARTICIPANTS 20 cohorts included in the Amyloid Biomarker Study (1640 subjects with SCD)

MAIN RESULTS

- In research settings: greater probability of Aβ+ in the case of confirmation by an informant (vs non-confirmation), in individuals with *memory* complaint (vs without), and with *attention* complaint (vs without).
- In clinical settings: no association between these 3 and Aβ+.
- In older subjects, greater feeling of worse performance was associated with a higher frequency of Aβ+ (and a lower frequency of Aβ+ in younger subjects).
- No association between concerns and Aβ+.

TAKE-HOME MESSAGE SCD characteristics such as **memory**, **attention**, and **informant complaints** may facilitate the identification of Aβ+ individuals in research settings.

Characterizing SCD due to AD

Self-reported word-finding complaints are associated with CSF amyloid beta and atrophy in cognitively normal older adults.
Montembeault M, Stijelja S, Brambati SM. *Alzheimers Dement (Amst)*

OBJECTIVE Clarifying the clinical significance of self-reported word-finding difficulties

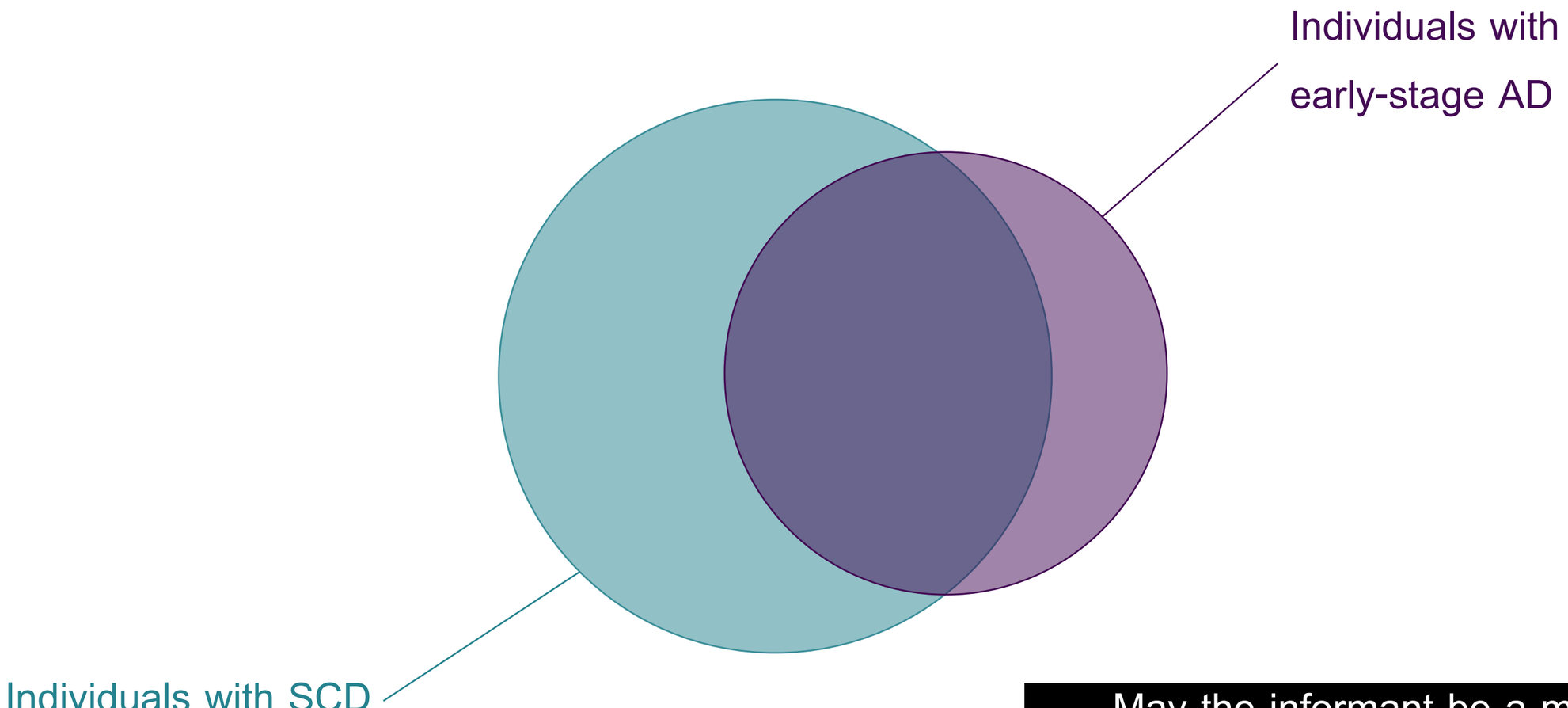
PARTICIPANTS 239 cognitively-normal individuals

MAIN RESULTS

- Ecog-Lang1 (Forgetting names of objects) significantly predicted Aβ levels in the CSF
- Individuals with greater word-finding complaints showed greater atrophy than cognitively-normal individuals with less intense complaints.

TAKE-HOME MESSAGE Word-finding complaints have the potential to identify CN at risk of AD. These results support the need to include other cognitive domains in the investigation of SCD

Relationship between SCD and AD



May the informant be a more accurate/specific source of information than the patient themself?

Informant-reported complaint

Do informant-reported subjective cognitive complaints predict progression to mild cognitive impairment and dementia better than self-reported complaints in old adults? A meta-analytical study. Pérez-Blanco L, Felpete A, Patten SB, et al. *Ageing Res Rev*

STUDY TYPE Meta-analysis, 7 studies included

MAIN RESULT Both self-reported and informant-reported complaints were associated with an high risk of transition from normal cognition to MCI and/or dementia. The association was stronger and more robust for informant-reported complaint (relative risk = 1.38) than for self-reported complaint (relative risk = 1.27).

TAKE-HOME MESSAGE Corroborated information from an informant could provide important details for distinguishing between normal aging and clinical states.

Informant-reported complaint

The role of dyadic cognitive report and subjective cognitive decline in early ADRD clinical research and trials: Current knowledge, gaps, and recommendations. Nosheny RL, Amariglio R, Sikkes SAM, Van Hulle C, Bicalho MAC, et al. *Alzheimers Dement (N Y)*

STUDY TYPE

Position paper on reports of cognitive decline from patient/informant dyads

MAIN RESULTS

- Dyadic measures of SCD are associated with clinical diagnosis, objective measures of cognition, clinical progression, and biomarkers.
- External factors contribute to these associations:
  - dyad relationship type
  - neuropsychiatric symptoms of both the participant and study partner
  - caregiver burden
  - cognitive status of study-partners

LIMITATIONS / CHALLENGES

The requirement of a study partner is one of the most important barriers to enrolling participants in clinical research.

TAKE-HOME MESSAGE

They recommend greater dyad report use in research settings to identify AD risk.

Informant-reported complaint

Differential Patterns of Domain-Specific Cognitive Complaints and Awareness Across the Alzheimer's Disease Spectrum.
Cacciamani F, Godefroy V, Brambati SM, Migliaccio R, Epelbaum S, Montembeault M. *Front Aging Neurosci*

OBJECTIVE Which source of information between the self-reported and the informant-reported complaint is the most useful for distinguishing various groups on the AD spectrum

PARTICIPANTS Aβ+ AD (n=71); Aβ+ aMCI (n=191); Aβ+ CN (n=181); Aβ- CN (n=211) [ADNI]

MAIN RESULTS Memory, language, attention, and visuospatial complaints reported by a study partner were all more accurate classifiers into clinical stages (all AUCs between 0.70 and 0.99) than the same kind of complaint reported by the patient themself (all AUCs between 0.60 and 0.85).

TAKE-HOME MESSAGE The presence of an informant seems necessary in both clinical practice and research given its accuracy as a source of information.

Informant-reported complaint

Subjective Cognitive Decline Is More Accurate When Metamemory Is Better.
Chapman S, Joyce JL, Barker MS, Sunderaraman P, Rizer S, Huey ED, Dworkin J, Gu Y, Cosentino S. *Front Aging Neurosci*

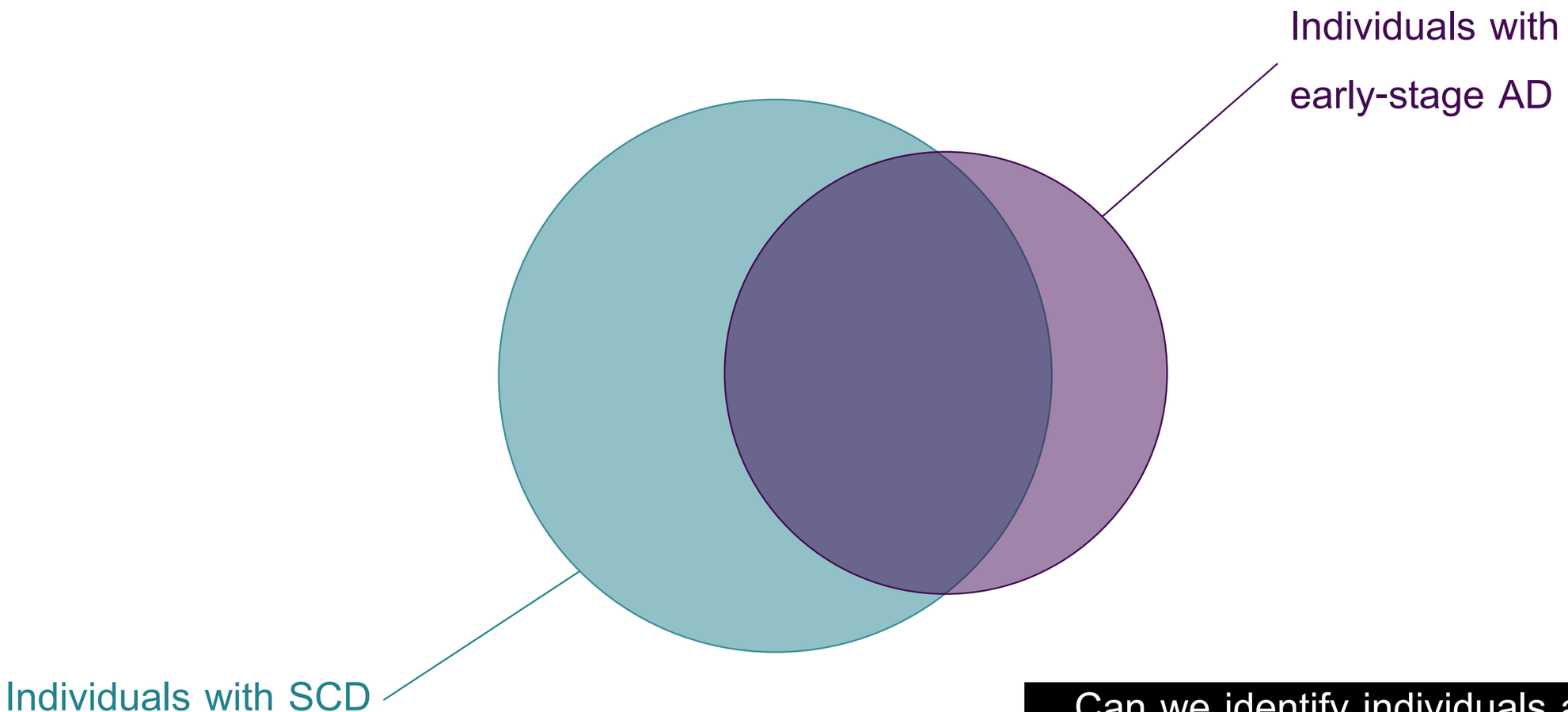
OBJECTIVE Examine the extent to which metamemory moderates the relationship between SCD and objective memory

PARTICIPANTS 157 cognitively-normal individuals performing the Modified feeling of knowing scale (Cosentino et al.)

MAIN RESULTS More accurate metamemory ⟶ stronger association between increased complaints and susceptibility to semantic proactive interference.

TAKE-HOME MESSAGE Metamemory, specifically the ability to adjust moment-to-moment predictions in line with their performance, can influence the extent to which SCD maps onto objective cognition.

Relationship between SCD and AD



Can we identify individuals at risk based on SCD and plasma markers?

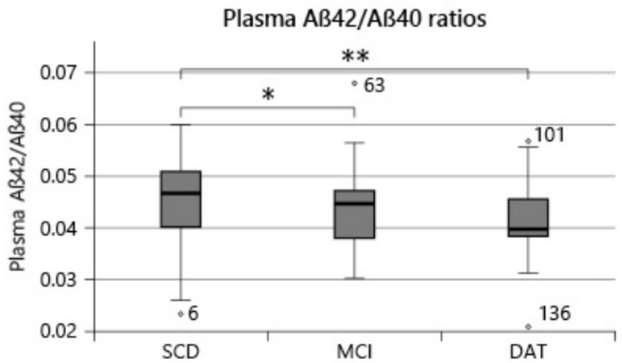
SCD and plasma AD biomarkers

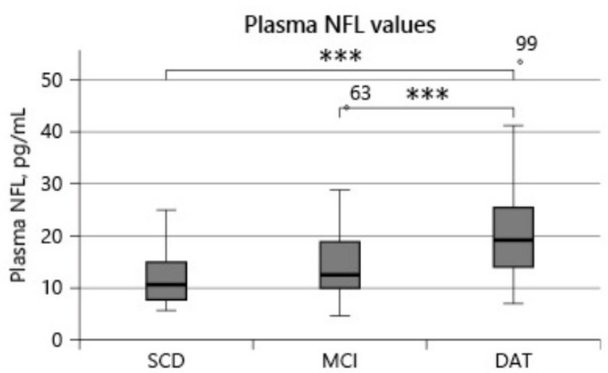
Alzheimer's Disease Plasma Biomarkers Distinguish Clinical Diagnostic Groups in Memory Clinic Patients
Gerards M, Schild AK, Meiberth D, Rostamzadeh A, Vehreschild JJ, Wingen-Heimann S, et al. *Dement Geriatr Cogn Disord*

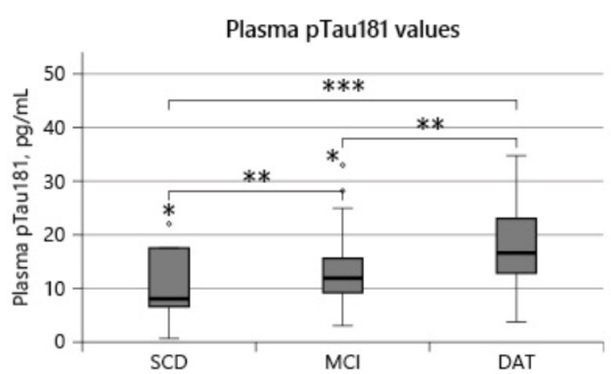
OBJECTIVE Performance of blood biomarkers in differentiating groups in a clinical setting

PARTICIPANTS N=144, including SCD, MCI, and AD

MAIN RESULTS







TAKE-HOME MESSAGE Aβ42/40, NFL and, especially, pTau181 can discriminate between clinical groups

Opportunities for 2023

1 To characterize the SCD most suggestive of early-stage AD

- Identify the most sensitive and specific questions
- Further research on SCD in minority groups

2 To identify the best combination of SCD-related questions and biomarkers for detecting early-stage AD

3 Informant-reported complaint:

- When is it more sensitive and specific (according to the type of patient-informant relationship, the characteristics of the informant, the cognitive domains investigated, etc.)?
- How to improve and facilitate study partner engagement?
- To optimize its assessment

4 Better understand the link between SCD and mood symptoms

5 To evaluate the utility of SCD as an outcome measure in clinical trials

6 To examine the effects of cognitive and psychological interventions on SCD

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PROFESSIONAL INTEREST AREA

Thank you for your attention!

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Additional readings

Characterisation of SCD due to AD, clinical progression, risk of MCI/dementia

Title	Authors	Journal
Regional brain atrophy and cognitive decline depend on definition of subjective cognitive decline	Morrison C, Dadar M, Shafiee N, Villeneuve S, Louis Collins D	Neuroimage Clin
Subjective cognitive decline in Brazil: Prevalence and association with dementia modifiable risk factors in a population-based study	Borelli WV, Zimmer ER, Bieger A, Coelho B, Pascoal TA, Chaves MLF, Amariglio R, Castilhos RM.	Alzheimers Dement (Amst)
A latent class analysis of cognitive decline in US adults, BRFSS 2015-2020	Snead R, Dumenci L, Jones RM.	BMC Public Health
Subjective cognitive decline, APOE e4 allele, and the risk of neurocognitive disorders: Age- and sex-stratified cohort study	Liew TM.	Aust N Z J Psychiatry
Subjective Cognitive Decline: Level of Risk for Future Dementia and MCI, a Meta-Analysis of Longitudinal Studies	Pike KE, Cavuoto MG, Li L, Wright BJ, Kinsella GJ.	Neuropsychol Rev
Longitudinal change in ATN biomarkers in cognitively normal individuals	Ebenau JL, Visser D, Kroeze LA, van Leeuwenstijn MSSA, van Harten AC, Windhorst AD, et al.	Alzheimers Res Ther
Subjective short-term memory difficulties at ages 50-75 predict dementia risk in a community-based cohort followed over 17 years	Möllers T, Stocker H, Perna L, Rujescu D, Holleczek B, Schöttker B, Brenner H.	Age Ageing
Transition from MCI to normal cognition: Determining the predictors of reversion with multi-state Markov models	Sanz-Blasco R, Ruiz-Sánchez de León JM, Ávila-Villanueva M, Valentí-Soler M, et al.	Alzheimers Dement
Relevance of Subjective Cognitive Decline in Older Adults with a First-Degree Family History of Alzheimer's Disease	Wolfsgruber S, Kleineidam L, Weyrauch AS, Barkhoff M, Röske S, Peters O, Preis L, Gref D, et al.	J Alzheimers Dis
Timed Up and Go in People with Subjective Cognitive Decline Is Associated with Faster Cognitive Deterioration and Cortical Thickness	Borda MG, Ferreira D, Selnes P, Tovar-Rios DA, Jaramillo-Jiménez A, Kirsebom BE, et al.	Dement Geriatr Cogn Disord

Bio-psycho-social factors contributing to SCD (other than AD)

Title	Authors	Journal
Examining the Role of Aging Perceptions in Subjective Cognitive Decline	Chapman S, Weiss D, Broulíková HM, Sunderaraman P, Barker MS, Joyce JL, Azar M, McKeague I, Kriesl WC, Cosentino S.	Alzheimer Dis Assoc Disord
Subjective cognitive decline and self-reported sleep problems: The SCIENCe project	Exalto LG, Hendriksen HMA, Barkhof F, van den Bosch KA, Ebenau JL, van Leeuwenstijn-Koopman M, Prins ND, Teunissen CE, Visser LNC, Scheltens P, van der Flier WM.	Alzheimers Dement (Amst)
Adverse childhood experience categories and subjective cognitive decline in adulthood: an analysis of the Behavioral Risk Factor Surveillance System	Terry RM, Schiffmacher SE, Dutcher AA, Croff JM, Jelley MJ, Hartwell ML.	J Osteopath Med

Informant-reported complaint

Title	Authors	Journal
Subjective Cognitive Decline and its Relation to Verbal Memory and Sex in Cognitively Unimpaired Individuals from a Colombian Cohort with Autosomal-Dominant Alzheimer's Disease	Martinez JE, Pardilla-Delgado E, Guzmán-Vélez E, Vila-Castelar C, Amariglio R, Gatchel J, Aguirre-Acevedo DC, Bocanegra Y, Baena A, Henao E, Tirado V, Muñoz C, Giraldo-Chica M, Lopera F, Quiroz YT.	J Int Neuropsychol Soc
Economic and caregiver impact of Alzheimer's disease across the disease spectrum: a cohort study	Dauphinot V, Potashman M, Levitchi-Benea M, Su R, Rubino I, Krolak-Salmon P.	Alzheimers Res Ther
Informant report of practical judgment ability in a clinical sample of older adults with subjective cognitive decline, mild cognitive impairment, and dementia	Rabin LA, Guayara-Quinn CG, Nester CO, Ellis L, Paré N.	Neuropsychol Dev Cogn B Aging Neuropsychol Cogn

SCD and psychiatric symptoms

Title	Authors	Journal
Disentangling the relationship of subjective cognitive decline and depressive symptoms in the development of cognitive decline and dementia	Kleineidam L, Wagner M, Guski J, Wolfsgruber S, Miebach L, Bickel H, König HH, Weyerer S, Lühmann D, Kaduszkiewicz H, Luppa M, Röhr S, Pentzek M, Wiese B, Maier W, Scherer M, Kornhuber J, Peters O, Frölich L, Wiltfang J, Lewczuk P, Hüll M, Ramirez A, Jessen F, Riedel-Heller SG, Heser K.	Alzheimers Dement
Specific depression dimensions are associated with a faster rate of cognitive decline in older adults	Soleimani L, Schnaider Beeri M, Grossman H, Sano M, Zhu CW.	Alzheimers Dement (Amst)
Depressive Symptoms Have Distinct Relationships With Neuroimaging Biomarkers Across the Alzheimer's Clinical Continuum	Moulinet I, Touron E, Mézenge F, Dautricourt S, De La Sayette V, Vivien D, Marchant NL, Poisnel G, Chételat G.	Front Aging Neurosci
Anxiety and Depressive Symptoms and Cortical Amyloid-β Burden in Cognitively Unimpaired Older Adults	Lewis CK, Bernstein OM, Grill JD, Gillen DL, Sultzer DL.	J Prev Alzheimers Dis
A longitudinal study on quality of life along the spectrum of Alzheimer's disease	Mank A, Rijnhart JJM, van Maurik IS, Jönsson L, Handels R, Bakker ED, Teunissen CE, van Berckel BNM, van Harten AC, Berkhof J, van der Flier WM.	Alzheimers Res Ther
Unravelling neural correlates of empathy deficits in Subjective Cognitive Decline, Mild Cognitive Impairment and Alzheimer's Disease	Giacomucci G, Galdo G, Polito C, Berti V, Padiglioni S, Mazzeo S, Chiaro E, De Cristofaro MT, Bagnoli S, Nacmias B, Sorbi S, Bessi V.	Behav Brain Res

Assessment of SCD

Title	Authors	Journal
Measuring Subjective Cognitive Decline in Older Adults: Harmonization Between the Cognitive Change Index and the Measurement of Everyday Cognition Instruments	Wells LF, Risacher SL, McDonald BC, Farlow MR, Brosch J, Gao S, Apostolova LG, Saykin AJ; Alzheimer's Disease Neuroimaging Initiative.	J Alzheimers Dis
Evaluating measurement properties of subjective cognitive decline self-reported outcome measures: a systematic review	Ibnidris A, Robinson JN, Stubbs M, Piumatti G, Govia I, Albanese E.	Syst Rev
The reliability and validity test of subjective cognitive decline questionnaire 21 with population in a Chinese community	Hao L, Jia J, Xing Y, Han Y.	Brain Behav
The diagnostic usefulness of experimental memory tasks for detecting subjective cognitive decline: Preliminary results in an Italian sample	De Simone MS, Rodini M, De Tollis M, Fadda L, Caltagirone C, Carlesimo GA.	Neuropsychology
Translation, cross-cultural adaptation, and validity of the Brazilian version of the Cognitive Function Instrument	Studart-Neto A, Moraes NC, Spera RR, Merlin SS, Parmera JB, Jaluul O, SanchesYassuda M, Brucki SMD, Nitrini R.	Dement Neuropsychol
MASCoD-Multidimensional Assessment of Subjective Cognitive Decline	Maffoni M, Pierobon A, Fundarò C.	Front Psychol

SCD in different ethno-cultural groups

Title	Authors	Journal
Subjective cognitive decline, mild cognitive impairment, and dementia - syndromic approach: recommendations of the Scientific Department of Cognitive Neurology and Aging of the Brazilian Academy of Neurology	Smid J, Studart-Neto A, César-Freitas KG, Dourado MCN, Kochhann R, Barbosa BJAP, Schilling LP, Balthazar MLF, Frota NAF, de Souza LC, Caramelli P, Bertolucci PHF, Chaves MLF, Brucki SMD, Nitrini R, Resende EPF, Vale FAC	Dement Neuropsychol
Gender and Racial/Ethnic Disparities in Social Determinants of Health and Subjective Cognitive Decline: The Mediating Role of Depression	Brown MJ, Joseph C, James T, Haider MR, Zahnd WE, Cohen SA.	J Gerontol Nurs
Associations Among Loneliness, Purpose in Life and Subjective Cognitive Decline in Ethnoracially Diverse Older Adults Living in the United States	Pluim CF, Anzai JAU, Martinez JE, Munera D, Garza-Naveda AP, Vila-Castelar C, Guzmán-Vélez E, Ramirez-Gomez L, Bustin J, Serrano CM, Babulal GM, Okada de Oliveira M, Quiroz YT	J Appl Gero,tol
Subjective Memory Decline Predicts Incident Cognitive Impairment among White-but Not Black or Hispanic-Older Adults	Ferraro KF, Sauerteig-Rolston MR, Barnes LL, Friedman E, Sands LP, Thomas PA.	Gerontologist
Subjective cognitive decline and objective cognition among diverse U.S. Hispanics/Latinos: Results from the Study of Latinos-Investigation of Neurocognitive Aging (SOL-INCA)	Zlatar ZZ, Tarraf W, González KA, Vásquez PM, Marquine MJ, Lipton RB, Gallo LC, Khambaty T, Zeng D, Youngblood ME, Estrella ML, Isasi CR, Daviglus M, González HM.	Alzheimers Dement
Association of Subjective Cognitive Decline With Progression to Dementia in a Cognitively Unimpaired Multiracial Community Sample	Chapman S, Rentería MA, Dworkin JD, Garriga SM, Barker MS, Avila-Rieger J, Gonzalez C, Joyce JL, J Vonk JM, Soto E, Manly JJ, Brickman A, Mayeux R, Cosentino SA.	Neurology

Sex and gender

Title	Authors	Journal
Gender differences in cognitive reserve: implication for subjective cognitive decline in women	Giacomucci G, Mazzeo S, Padiglioni S, Bagnoli S, Belloni L, Ferrari C, Bracco L, Nacmias B, Sorbi S, Bessi V.	Neurol Sci
Overall and sex-specific risk factors for subjective cognitive decline: findings from the 2015-2018 Behavioral Risk Factor Surveillance System Survey	Schliep KC, Barbeau WA, Lynch KE, Sorweid MK, Varner MW, Foster NL, Qeadan F.	Biol Sex Differ
Subjective cognitive decline is a better marker for future cognitive decline in females than in males	Oliver MD, Morrison C, Kamal F, Graham J, Dadar M.	Alzheimers Res Ther

Biomarkers (plasma)

Title	Authors	Journal
A head-to-head comparison between plasma pTau181 and tau-PET along the Alzheimer's disease continuum	Coomans EM, Verberk IMW, Ossenkoppele R, Verfaillie SCJ, Visser D, Gouda M, Tuncel H, Wolters et al.	J Nucl Med
Plasma neurofilament light chain as a biomarker of Alzheimer's disease in Subjective Cognitive Decline and Mild Cognitive Impairment	Giacomucci G, Mazzeo S, Bagnoli S, Ingannato A, Leccese D, Berti V, Padiglioni S, Galdo G, Ferrari C, Sorbi S, Bessi V, Nacmias B.	J Neurol
Plasma amyloid-beta oligomer is related to subjective cognitive decline and brain amyloid status	Kim KY, Park J, Jeong YH, Kim HJ, Lee E, Park JY, Kim E, Kim WJ.	Alzheimers Res Ther
Validity and Performance of Blood Biomarkers for Alzheimer Disease to Predict Dementia Risk in a Large Clinic-Based Cohort	Planche V, Bouteloup V, Pellegrin I, Mangin JF, Dubois B, Ousset PJ, Pasquier F, Blanc F, Paquet C, Hanon O, Bennys K, Ceccaldi M, Annweiler C, et al.	Neurology
Clinical Application of Plasma Neurofilament Light Chain in a Memory Clinic: A Pilot Study	Shim Y.	Dement Neurocogn Disord
Association of plasma apolipoproteins and levels of inflammation-related factors with different stages of Alzheimer's disease: a cross-sectional study	Wang T, Wang X, Yao Y, Zhao C, Yang C, Han Y, Cai Y.	BMJ Open
Machine Learning-Based Classification of Subjective Cognitive Decline, Mild Cognitive Impairment, and Alzheimer's Dementia Using Neuroimage and Plasma Biomarkers	Chiu SI, Fan LY, Lin CH, Chen TF, Lim WS, Jang JR, Chiu MJ.	ACS Chem Neurosci
Non-linear Character of Plasma Amyloid Beta Over the Course of Cognitive Decline in Alzheimer's Continuum.	Pan FF, Huang Q, Wang Y, Wang YF, Guan YH, Xie F, Guo QH.	*Front Aging Neurosci*

Biomarkers (CSF)

Title	Authors	Journal
Association of Subjective Cognitive Decline with Cerebrospinal Fluid Biomarkers of Alzheimer's Disease Pathology in Cognitively Intact Older Adults: The CABLE Study	Wen C, Bi YL, Hu H, Huang SY, Ma YH, Hu HY, Tan L, Yu JT.	J Alzheimers Dis
Association of CSF Ab(38) Levels With Risk of Alzheimer Disease-Related Decline	Cullen N, Janelidze S, Palmqvist S, Stomrud E, Mattsson-Carlgren N, Hansson O; Alzheimer’s Disease Neuroimaging Initiative.	Neurology
A Novel Neurofilament Light Chain ELISA Validated in Patients with Alzheimer's Disease, Frontotemporal Dementia, and Subjective Cognitive Decline, and the Evaluation of Candidate Proteins for Immunoassay Calibration	Das S, Dewit N, Jacobs D, Pijnenburg YAL, In 't Veld SGJG, Coppens S, Quaglia M, Hirtz C, Teunissen CE, Vanmechelen E.	Int J Mol Sci

Biomarkers (functional imaging) 1/2

Title	Authors	Journal
Prefrontal Activation During Effortful Processing Differentiates Memory Abilities in Adults with Memory Complaints	Yeung MK, Lee TL, Chan AS.	J Alzheimers Dis
Electroencephalography for Early Detection of Alzheimer's Disease in Subjective Cognitive Decline	Shim Y, Yang DW, Ho S, Hong YJ, Jeong JH, Park KH, Kim S, Wang MJ, Choi SH, Kang SW.	Dement Neurocogn Disord
Static and dynamic functional connectivity variability of the anterior-posterior hippocampus with subjective cognitive decline	Wang Q, Chen B, Zhong X, Hou L, Zhang M, Yang M, Wu Z, Chen X, Mai N, et al.	Alzheimers Res Ther
Functional Connectivity Dynamics Altered of the Resting Brain in Subjective Cognitive Decline	Wei YC, Kung YC, Huang WY, Lin C, Chen YL, Chen CK, Shyu YC, Lin CP.	Front Aging Neurosci
Abnormal Dynamic Functional Networks in Subjective Cognitive Decline and Alzheimer's Disease	Wang J, Wang K, Liu T, Wang L, Suo D, Xie Y, Funahashi S, Wu J, Pei G.	Front Comput Neurosci
Sensitive and reproducible MEG resting-state metrics of functional connectivity in Alzheimer's disease	Schoonhoven DN, Briels CT, Hillebrand A, Scheltens P, Stam CJ, Gouw AA.	Alzheimers Res Ther
Discrimination of SCD from healthy control based on glucose-oxygen metabolism network coupling features and machine learning	Ding C, Wang L, Han Y, Jiang J.	Annu Int Conf IEEE Eng Med Biol Soc
MEG Oscillatory Slowing in Cognitive Impairment is Associated with the Presence of Subjective Cognitive Decline	Bruña R, López-Sanz D, Maestú F, Cohen AD, Bagic A, Huppert T, Kim T, Roush RE, Snitz B, Becker JT.	Clin EEG Neurosci
Negative affective burden is associated with higher resting-state functional connectivity in subjective cognitive decline	Schwarz C, Benson GS, Antonenko D, Horn N, Köbe T, Klimecki O, Sommer W, Wirth M, Flöel A.	Sci Rep

Biomarkers (functional imaging) 2/2

Title	Authors	Journal
Exploring Network Properties Across Preclinical Stages of Alzheimer's Disease Using a Visual Short-Term Memory and Attention Task with High-Density Electroencephalography: A Brain-Connectome Neurophysiological Study	Lazarou I, Georgiadis K, Nikolopoulos S, Oikonomou VP, Stavropoulos TG, Tsolaki A, Kompatsiaris I, Tsolaki M; RADAR-AD Consortium.	J Alzheimers Dis
Differential Abnormality in Functional Connectivity Density in Preclinical and Early-Stage Alzheimer's Disease	Song Y, Wu H, Chen S, Ge H, Yan Z, Xue C, Qi W, Yuan Q, Liang X, Lin X, Chen J.	Front Aging Neurosci
Exploring dynamic functional connectivity alterations in the preclinical stage of Alzheimer's disease: an exploratory study from SILCODE	Yang F, Jiang X, Yue F, Wang L, Boecker H, Han Y, Jiang J.	J Neural Eng
Novelty-Related fMRI Responses of Precuneus and Medial Temporal Regions in Individuals at Risk for Alzheimer Disease	Billette OV, Ziegler G, Aruci M, Schütze H, Kizilirmak JM, Richter A, Altenstein S, Bartels C, et al.	Neurology
Use of machine learning to identify functional connectivity changes in a clinical cohort of patients at risk for dementia	Shen Y, Lu Q, Zhang T, Yan H, Mansouri N, Osipowicz K, Tanglay O, Young I, Doyen S, Lu X, Zhang X, Sughrue ME, Wang T.	Front Aging Neurosci

Biomarkers (genetics)

Title	Authors	Journal
MicroRNA-29c-3p in dual-labeled exosome is a potential diagnostic marker of subjective cognitive decline	Li Y, Xia M, Meng S, Wu D, Ling S, Chen X, Liu C.	Neurobiol Dis

Biomarkers (molecular imaging)

Title	Authors	Journal
Subtle Cognitive Deficits Are Associated with Amyloid-β Positivity, but Not Severity of Self-Reported Decline: Results from the CoSCo Study	Ryu SY, Hong YJ, Ho S, Jeong JH, Park KH, Kim S, Wang MJ, Choi SH, Yang DW.	Dement Geriatr Cogn Disord
Predicting Amyloid Positivity in Cognitively Unimpaired Older Adults: A Machine Learning Approach Using A4 Data	Petersen KK, Lipton RB, Grober E, Davatzikos C, Sperling RA, Ezzati A.	Neurology
Tau levels are higher in objective subtle cognitive decline but not subjective memory complaint	Thomas KR, Weigand AJ, Edwards LC, Edmonds EC, Bangen KJ, Ortiz G, Walker KS, Bondi MW; Alzheimer's Disease Neuroimaging Initiative.	Alzheimers Res Ther
Brain Amyloid Index as a Probable Marker Bridging Between Subjective Memory Complaint and Objective Cognitive Performance	Choe YM, Suh GH, Lee BC, Choi IG, Lee JH, Kim HS, Hwang J, Kim JW.	Front Neurosci
Difference in Amyloid Load Between Single Memory Domain and Multidomain Subjective Cognitive Decline: A Study from the SILCODE	Wang X, Bi Q, Lu J, Chan P, Hu X, Su L, Jessen F, Lin H, Han C, Shu N, Liu H, Han Y.	J Alzheimers Dis
Prevalence Estimates of Amyloid Abnormality Across the Alzheimer Disease Clinical Spectrum	Jansen WJ, Janssen O, Tijms BM, Vos SJB, Ossenkoppele R, Visser PJ; Amyloid Biomarker Study Group, Aarsland D, Alcolea D, et al.	JAMA Neurol

Biomarkers (multimodal)

Title	Authors	Journal
Identification of subjective cognitive decline due to Alzheimer's disease using multimodal MRI combining with machine learning	Lin H, Jiang J, Li Z, Sheng C, Du W, Li X, Han Y.	Cereb Cortex
Percentage amplitude of fluctuation and structural covariance changes of SCDin patients: A multimodal imaging study	Xu K, Wei Y, Zhang S, Zhao L, Geng B, Mai W, Li P, Liang L, Chen D, Zeng X, Deng D, Liu P.	Front Neurosci
Cerebral blood flow, amyloid burden, and cognition in cognitively normal individuals	Ebenau JL, Visser D, Verfaillie SCJ, Timmers T, van Leeuwenstijn MSSA, Kate MT, et al.	Eur J Nucl Med Mol Imaging
White matter lesions may be an early marker for age-related cognitive decline	Morrison C, Dadar M, Villeneuve S, Collins DL.	Neuroimage Clin
Benzodiazepine use and neuroimaging markers of Alzheimer's disease in nondemented older individuals	Gallet Q, Bouteloup V, Locatelli M, Habert MO, Chupin M, Delrieu J, Lebouvier T, Robert G, et al.	Neuropsychopharmacology
SCD-related worries modulate the relationship between global amyloid load and gray matter volume in preclinical AD	Wang X, Wang M, Wang X, Zhou F, Jiang J, Liu H, Han Y.	Brain Imaging Behav
Structural and Functional Abnormalities of Olfactory-Related Regions in SCD, MCI, and AD	Chen B, Wang Q, Zhong X, Mai N, Zhang M, Zhou H, Haehner A, Chen X, Wu Z, Auber LA, et al.	Int J Neuropsychopharmacol
Association of Cholinergic Basal Forebrain Volume and Functional Connectivity with Markers of Inflammatory Response in AD	Teipel SJ, Dyrba M, Ballarini T, Brosseron F, Bruno D, Buerger K, Cosma NC, Dechent P, et al.	J Alzheimers Dis
Machine learning based on the multimodal connectome can predict the preclinical stage of AD: a preliminary study	Chen H, Li W, Sheng X, Ye Q, Zhao H, Xu Y, Bai F; Alzheimer’s Disease Neuroimaging Initiative.	Eur Radiol
Assessing clinical progression from SCD to mild cognitive impairment with incomplete multi-modal neuroimages	Liu Y, Yue L, Xiao S, Yang W, Shen D, Liu M.	Med Image Anal
Amyloid pathology but not APOE ε4 status is permissive for tau-related hippocampal dysfunction	Düzel E, Ziegler G, Berron D, Maass A, Schütze H, Cardenas-Blanco A, Glanz W, Metzger C, et al.	Brain

Biomarkers (structural imaging)

Title	Authors	Journal
Altered pattern analysis and identification of subjective cognitive decline based on morphological brain network	Xu X, Chen P, Xiang Y, Xie Z, Yu Q, Zhou X, Wang P.	Front Aging Neurosci
Cholinergic white matter pathways along the Alzheimer's disease continuum	Nemy M, Dyrba M, Brosseron F, Buerger K, Dechent P, Dobisch L, Ewers M, Fliessbach K, et al.	Brain
Rich-Club Organization Disturbances of the Individual Morphological Network in Subjective Cognitive Decline	Peng L, Feng J, Ma D, Xu X, Gao X.	Front Aging Neurosci
Reduced Inter-Voxel White Matter Integrity in Subjective Cognitive Decline: Diffusion Tensor Imaging With Tract-Based Spatial Statistics Analysis	Chao YP, Liu PB, Wang PN, Cheng CH.	Front Aging Neurosci
White matter hyperintensity load varies depending on subjective cognitive decline criteria	Morrison C, Dadar M, Villeneuve S, Ducharme S, Collins DL.	Geroscience
Domain-Prior-Induced Structural MRI Adaptation for Clinical Progression Prediction of Subjective Cognitive Decline	Yu M, Guan H, Fang Y, Yue L, Liu M.	Med Image Comput Comput Assist Interv
Differential associations of visual memory with hippocampal subfields in subjective cognitive decline and amnestic mild cognitive impairment	Huang Y, Huang L, Wang Y, Liu Y, Lo CZ, Guo Q.	BMC Geriatr

SCD and Covid-19

Title	Authors	Journal
Subjective cognitive decline and anxious/depressive symptoms during the COVID-19 pandemic: what is the role of stress perception, stress resilience, and β-amyloid?	Akinci M, Sánchez-Benavides G, Brugulat-Serrat A, Peña-Gómez C, Palpatzis E, Shekari M, Deulofeu C, Fuentes-Julian S, Salvadó G, González-de-Echávarri JM, Suárez-Calvet M, Minguillón C, Fauria K, Molinuevo JL, Gispert JD, Grau-Rivera O, Arenaza-Urquijo EM; ALFA Study.	Alzheimers Res Ther
Psychosocial Effects of COVID-19 Measures on (Pre-)Dementia Patients During Second Lockdown	Bakker ED, van Maurik IS, Mank A, Zwan MD, Waterink L, van den Buuse S, van den Broeke JR, Gillissen F, van de Beek M, Lemstra E, van den Bosch KA, van Leeuwenstijn M, Bouwman FH, Scheltens P, van der Flier WM.	J Alzheimers Dis

Clinical trial

Title	Authors	Journal
Can a serious game-based cognitive training attenuate cognitive decline related to Alzheimer's disease? Protocol for a randomized controlled trial	Brill E, Krebs C, Falkner M, Peter J, Henke K, Züst M, Minkova L, Brem AK, Klöppel S.	BMC Psychiatry