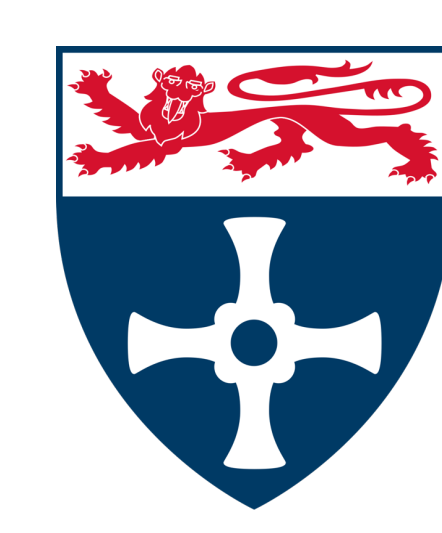# Number, animacy, and individual variation in the processing of cataphora

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Psycholinguistic background on the processing of **Cataphora**

A cataphor (pronoun that precedes its referent) causes an **active search** for a feature-matched NP [1-4]

- Evidence mostly comes from Gender Mismatch Effects (GMEs)

- e.g. for reading times: *she...FEM* = 🐌 (1a), but *he...FEM* = 😕 (1b)

(1) a. After **she** made breakfast, **the nun** interviewed the monk.

    b. After **he** made breakfast, **the nun** interviewed the monk.

How general is this feature-guided search?

- Some previous evidence for Number Mismatch Effects (NMEs) [1,4]

- But, PL is semantically underspecified [5], and *they* has many uses!

Sociolinguistic background on the emergence of **Singular *They***

Especially in North America, non-plural uses of *they* are becoming more common [6-9]

(2) a. **Those poets** look like **they** work out.   Plural *they*

    b. **Every poet** looks like **they** work out.   Bound Variable *they* [10]

    c. %**That poet** looks like **they** work out.   Definite Sing. *they* = *dsT*

NB: Singular *they* must have an animate referent [6]

(3) a. **Those chairs** look like **they** recline.

    b. #**Every chair** looks like **they** recline.   No inanimate SG *they*

    c. #**That chair** looks like **they** recline.

Off-line sociolinguistic/experimental work on *dsT*

- Younger raters like it more than older raters: change in progress [9]

- Transgender & nonbinary people rate it better than cis people [9]

- Other factors: prescriptivism, trans familiarity, political beliefs… [8]

Our previous socio-psycholinguistic work on **Cataphoric *They***

Reading-time study with diverse participants [11]

- Initial evidence that real-time comprehension strategies for *they* vary predictably across sociolinguistic groups (cf. [6,7])

	***They*-Innovators** (Younger, Noncis)	***They*-Noninnovators** (Older, Cis)	
Cataphoric *s/he*	Strong expectation for SG *s/he...PL* = 😕		**Uniform NME**
Cataphoric *they*	Weak exp. for PL *they...SG* = 🐰	Strong exp. for PL *they...SG* = 😕	**Differential NME**

- Prediction: *they*.INAN should evoke strong PL expectations for everyone

Current study: Design and recruitment breakdown

Subexp1 (HUM): {*s/he*, *they*} × {NP1$_{SG}$, NP1$_{PL}$}; 28 itemsets from [11]

(4) a. When **she** exercises at home, **the reporter** misses the librarians' enthusiastic encouragement.   ***s/he...SG***

    b. When **she** exercises at home, **the reporters** miss the librarian's…   ***s/he...PL***

    c. When **they** exercise at home, **the reporter** misses the librarians'…   ***they...SG***

    d. When **they** exercise at home, **the reporters** miss the librarian's…   ***they...PL***

Subexp2 (INAN): {*it*, *they*} × {NP1$_{SG}$, NP1$_{PL}$}; 28 new itemsets

(5) a. After **it** was replanted last spring, **the elm** protected the petunias from harsh sunlight.   ***it...SG***

    b. After **it** was replanted last spring, **the elms** protected the petunia…   ***it...PL***

    c. After **they** were replanted last spring, **the elm** protected the petunias…   ***they...SG***

    d. After **they** were replanted last spring, **the elms** protected the petunia…   ***they...PL***
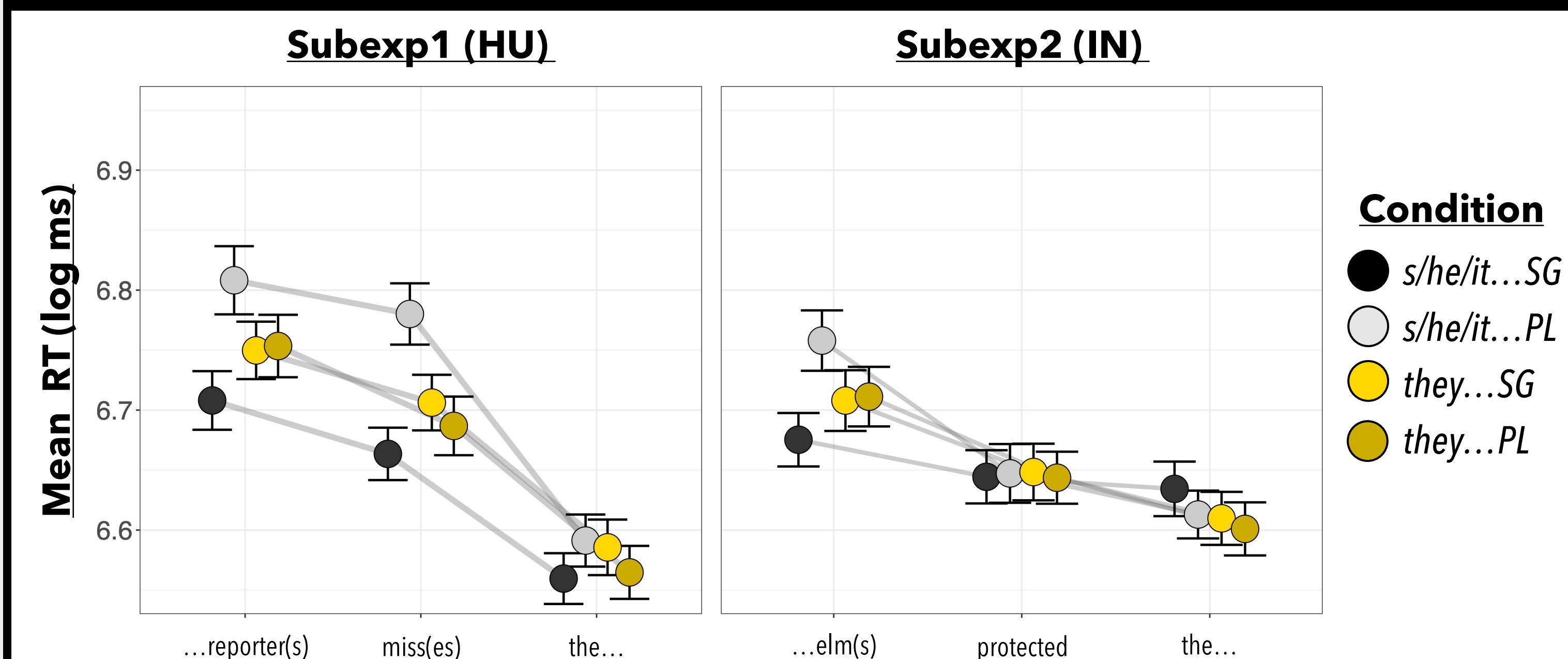
Participant breakdown

- Recruited from a previous big socio-lx survey [12]; many other variables for analysis

- This study ended with a mini acceptability task

	More familiar with *dsT*	**Less familiar** with *dsT*
Older (born before '80)	N=18	N=22
Younger (born after '89) [13]	N=24	N=21

L-Maze task [14] on PC-Ibex [15]; N1 was gender neutral [16]

Reading-time **Results** at critical regions & spillovers

Subexp1 (HU)   Subexp2 (IN)

Mean RT (log ms)

Condition:
- ● *s/he/it...SG*
- ○ *s/he/it...PL*
- ● *they...SG* (yellow)
- ● *they...PL* (dark yellow)

Subexp1 participants by age — Older (N=40), Younger (N=45)

Subexp1 participants by *dsT*-familiarity — More Familiar (N=42), Less Familiar (N=43)
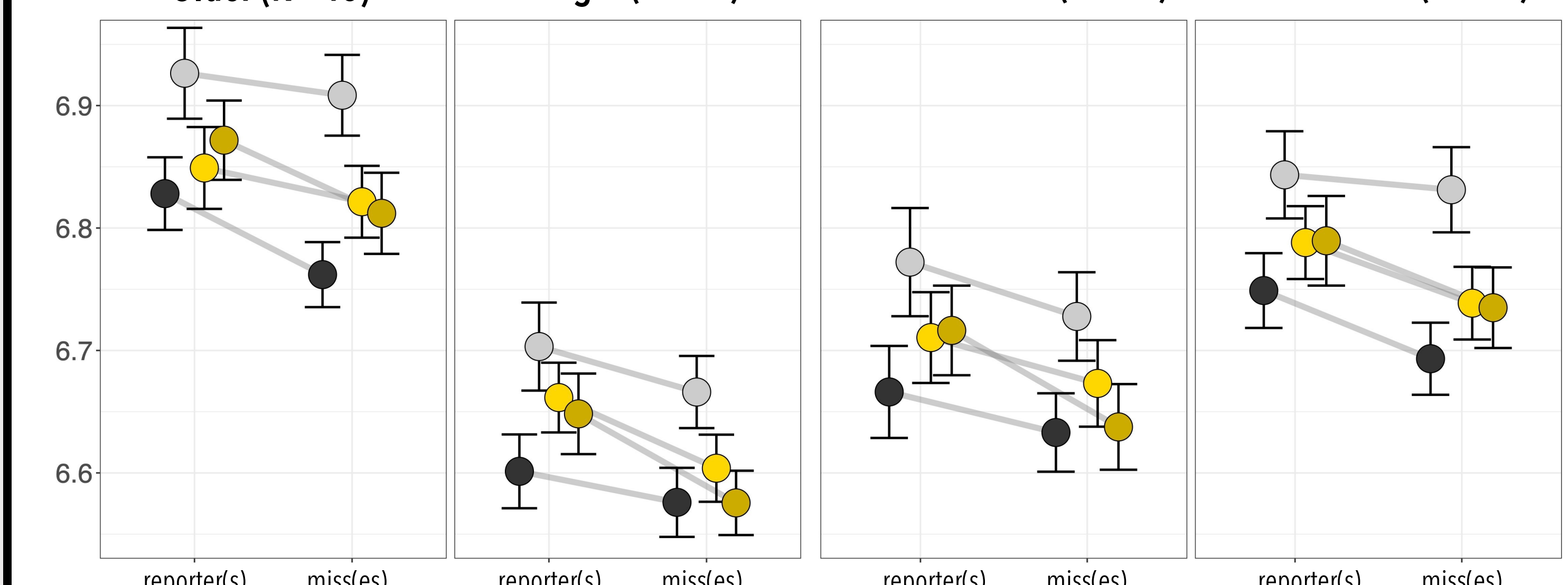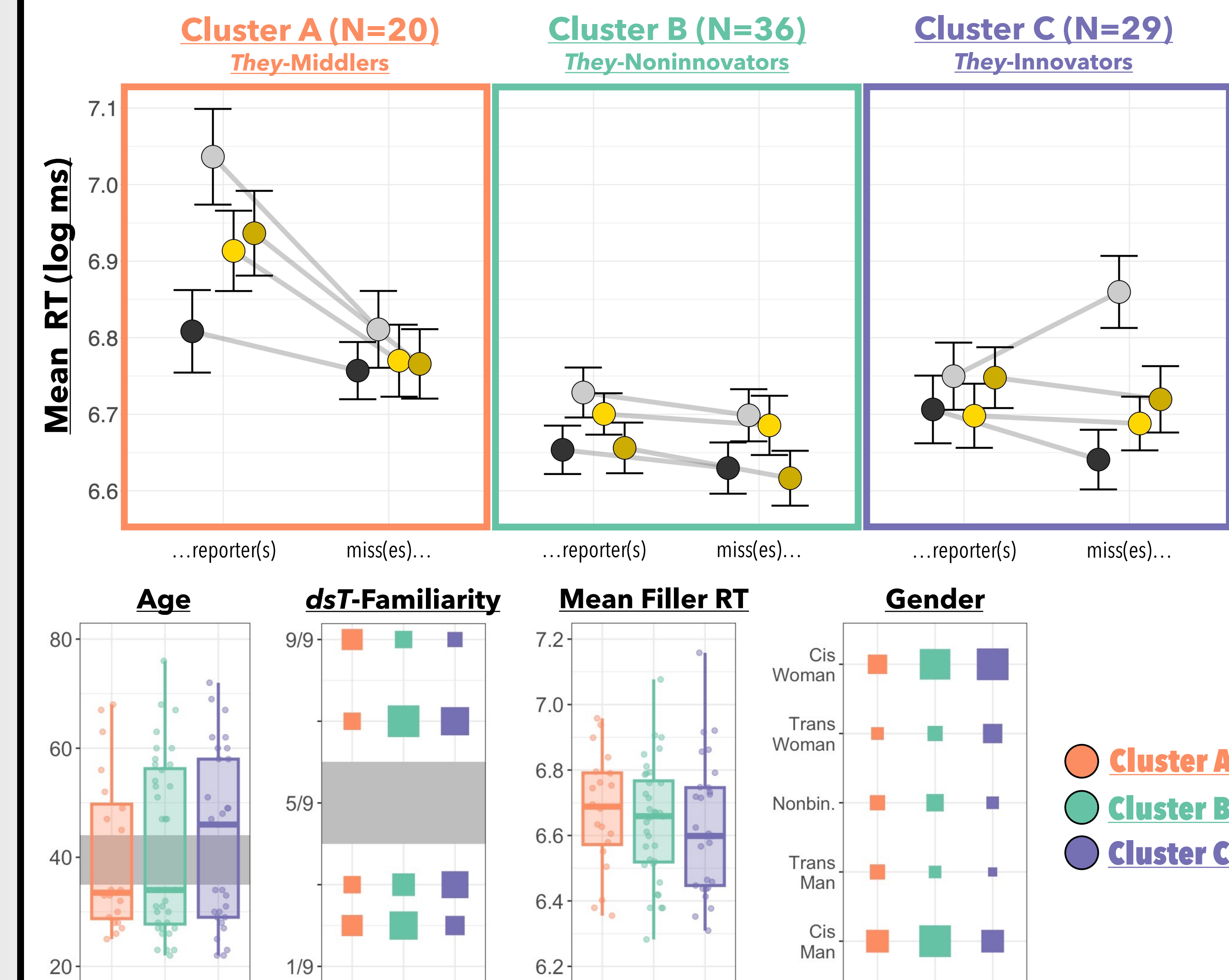
Discussion and **Exploratory analyses**

Overall, cataphoric *they* evokes middling predictions — even given INAN cues, which should exclude *dsT*

- Predictions about group-level variation not borne out [11]

But *k*-means clustering reveals coherent RT patterns

- None obviously correlated with coarse demographic variables [6-8]

Cluster A (N=20) *They*-Middlers   Cluster B (N=36) *They*-Noninnovators   Cluster C (N=29) *They*-Innovators

Age   *dsT*-Familiarity   Mean Filler RT   Gender

Education   Prescriptivism   Transphobia   *dsT* Rating (z)   *dsT* Compr.

- Cluster A / Cluster B / Cluster C

Individuals read & make lx predictions differently [17]

- Populations representing different stages of the change in progress are hard to recruit for; age, gender, education etc. are noisy wrt *dsT*

- How connected are ratings (off-line, conscious) & RTs (on-line, subc.)?

Next: 1984 generation [13], new task [14], UK English

References and **Acknowledgements**

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