

Corpus linguistics and clinical psychology: examining the psychosis continuum

Dr Luke Collins | [@LukeCCollins](#)
Prof Elena Semino | [@elenasemino](#)





Dr Zsófia Demjén | [@ZsofiaDemjen](#)

Dr Andrew Hardie | [@HardieResearch](#)

Dr Peter Moseley | [@peter_moseley](#)

Dr Ben Alderson-Day | [@aldersonday](#)

Prof Angela Woods | [@literarti](#)

Prof Charles Fernyhough | [@cfernough](#)

Overview

- Voice-hearing
- Data: Interviews with spiritualists and users of mental health services
- The 'psychosis continuum'
- Our corpus-based approach
- Selected findings
- Summary and concluding reflections

Voice-hearing

- Hearing voices that others cannot hear
- Auditory Verbal Hallucinations (AVHs)
- Hallucinations are a primary diagnostic criterion for various psychotic disorders (notably, schizophrenia) according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5)
- AVHs are present in a range of mental health difficulties, including depression and anxiety, post-traumatic stress disorder, emotionally unstable personality disorder, and obsessive-compulsive disorder (van Os & Reininghaus, 2016).

American Psychiatric Association (2013) *Diagnostic and statistical manual of mental disorders*. Fifth Edition.
<https://doi.org/10.1176/appi.books.9780890425596>

van Os, J. and Reininghaus, U. (2016) Psychosis as a transdiagnostic and extended phenotype in the general population.
World Psychiatry 15(2): 118-124.

Voice-hearing

- AVHs also occur as a positive and meaningful experience for voice-hearers, in the absence of any need for clinical care (Baumeister, Sedgwick, Howes and Peters, 2017).
- For example, spiritualists engage in mediumship: communication with departed spirits

Interview

- the terms they would use to describe their experiences
- the qualities of the voice-hearing experience
- the content of the voice-hearing experience
- the voices as having their own character or personality
- the onset of voice-hearing
- changes in the experience over time
- participants' beliefs about/understanding of the experience.

Data

For example, if I was talking to you in the context of a church, so I'm hearing someone telling me something to tell you, and I'm telling you that, so I'm having the conversation with you, but also internally in my head, I'm having a conversation with the other person

Spiritualists

- Self-identified Spiritualists
- 27 participants
- 237 770 tokens

EIP Service Users

- < 9 months of using intervention services
- 40 participants
- 205 941 tokens

With that one, it's, it's not talking to me or with me, it's talking at me. It's telling me you know what I've done wrong, what should have happened. It swears a lot more than I swear, it's, it's very like an aggressive voice.

The ‘psychosis continuum’

“The continuum view holds that psychotic symptoms vary along dimensions such as distress, vividness and duration in clinical and non-clinical groups” (Waters and Fernyhough, 2019: 717)

Healthy

Healthy Voice-hearers

Clinical Voice-hearers

Previous work on the continuum

- Data: typically, interviews with members of different groups
- Analysis: coding for relevant phenomena and statistical comparison:
 - Statistically significant differences, or
 - Similarities, where no significant difference has been found.
- Evidence of continuity across clinical and non-clinical populations with respect to phenomenological aspects of voice-hearing, such as loudness, location and personification.
- Evidence of differences with respect to the interpretation and evaluation of voice-hearing experiences, and the voice-hearer's degree of perceived control on the voices.

Our approach

- Similarity/difference:
 - Keyness analyses at the level of semantic domains:
 - Interview transcripts for one group vs. the transcripts for the other group → candidates for differences;
 - Each set of transcripts vs. oral history interviews in BNC → candidates for similarities.
- Continuity/discontinuity:
 - Plotting the distribution of words belonging to different groups of related semantic domains in each interview for both groups: bar charts and box plots → do we observe overlaps between the two groups?

UCREL Semantic Analysis System (USAS)

- An automated tagging process whereby each token is allocated to a semantic category
- 21 general semantic domains; 232 more specific sub-domains

A general and abstract terms	B the body and the individual	C arts and crafts	E emotion	E1 Emotional Actions, States and Processes
				E2 Liking
				E2+ Like <i>like, love, liked</i>
				E2++ Like <i>prefer</i>
				E2+++ Like <i>favourite</i>
				E2- Dislike <i>hate, can_not_stand</i>
				E3 Calm/Violent/Angry
				E4 Happiness and Contentment
				E5 Bravery and Fear
				E6 Worry and Confidence
F food and farming	G government and public	H architecture, housing and the home	I money and commerce in industry	
K entertainment, sports and games	L life and living things	M movement, location, travel and transport	N numbers and measurement	
O substances, materials, objects and equipment	P education	Q language and communication	S social actions, states and processes	
T time	W world and environment	X psychological actions, states and processes	Y science and technology	
Z names and grammar				

Keyness comparison



Direct comparison:

- Highly contrastive
- 62 key 'Spiritualist' domains
- 44 key 'Service User' domains

LL: 6.63+; Log Ratio: 1.0+

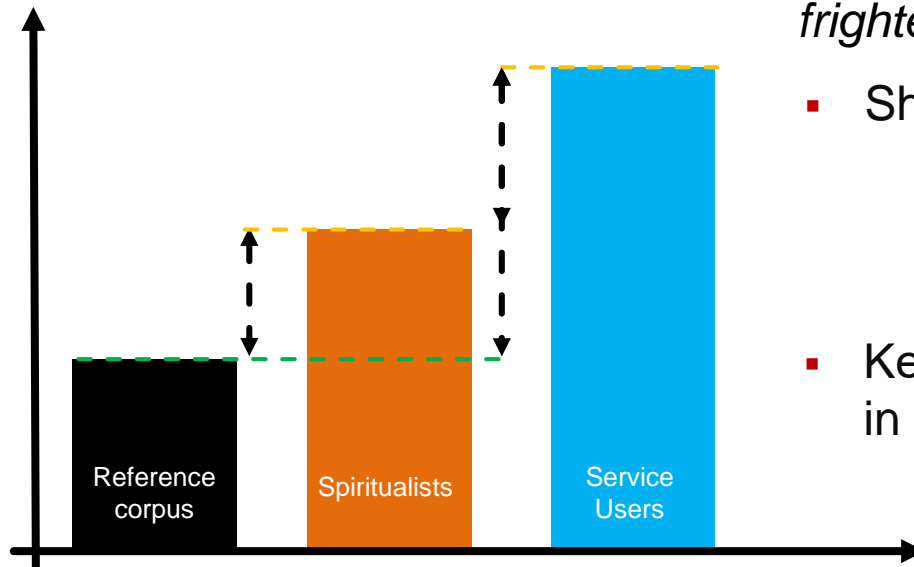


Indirect comparison:

- Similarity and difference
- 23 shared key domains
- 20 distinct 'Spiritualist' domains
- 29 distinct 'Service User' domains

Similar and different

- Semantic domain could be both ‘shared’ and ‘distinct’, depending on the keyness comparison



E5- Fear/Shock

frightened, fear, shock, scared, terrified

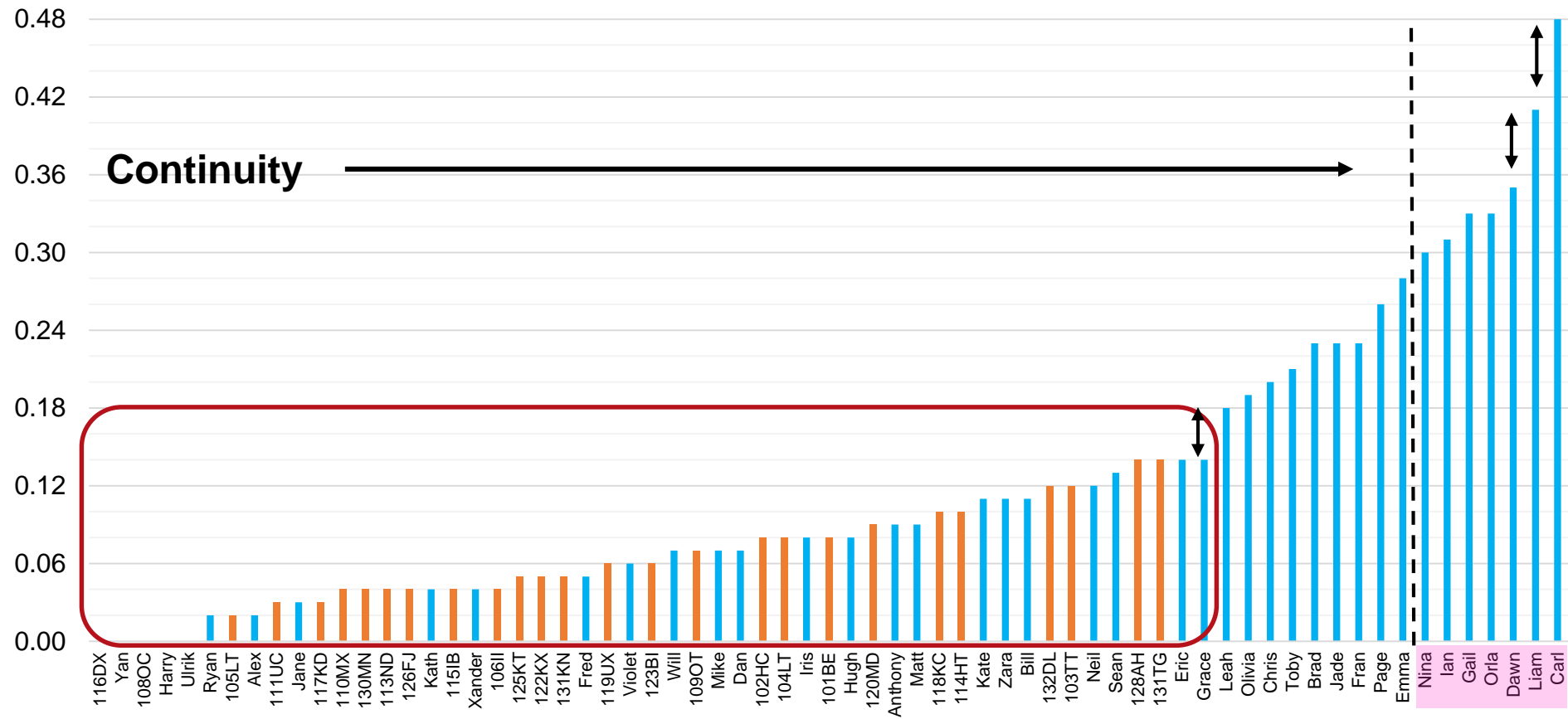
- Shared key domain

	LL	LogR
Spiritualists	74.69	1.42
Service Users	341.46	2.52
- Key ‘Service User’ domain in direct comparison

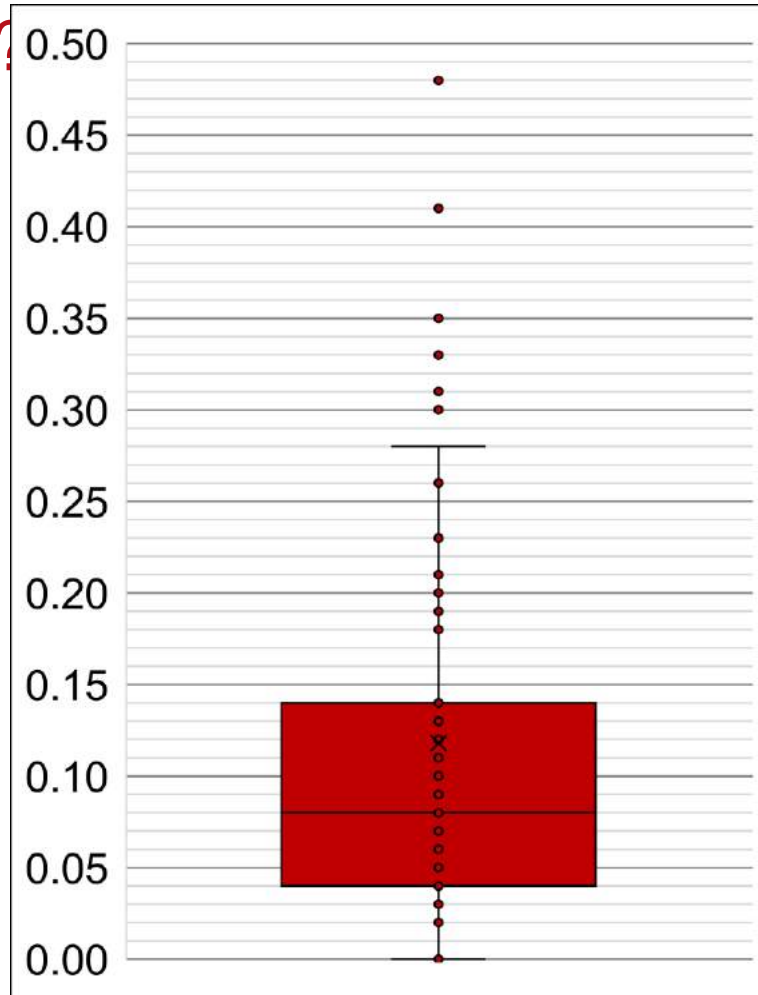
	61.32	1.11
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(Dis)continuity?

E5- Fear/Shock



(Dis)continuity?



E5- Fear/Shock

Key themes

- The direct and indirect keyness approach identified 122 key domains
- We grouped domains into themes:
 - Affect
 - Control
 - Meaning-making
 - Sensory input
- The groupings correspond with aspect of voice-hearing that have previously been indicative of similarities/differences in the experiences of clinical/non-clinical populations (Baumeister et al., 2017)
- These groupings account for 36 of the key domains (29.5%)

Groupings

- **Affect:** Negative emotions, Positive emotions, Negative evaluations of self
 - **Control:** Disengagement, Command over, Development (of skills)
 - **Meaning-making**
 - **Sensory Input:** Loudness, Strength, Other senses, Cognition
- We plotted the dispersion of the relative frequency values for terms in these groupings
- ❖ This allowed to examine different realisations of '(dis)continuity'

Affect

- **Negative emotions**
- **Positive emotions**
- **Negative evaluations of Self**

E2-	Dislike	<i>hate, hates, hated, hatred..</i>
E4.1-	Sad	<i>upset, grief, cry, depressed..</i>
E5-	Fear/Shock	<i>scared, scary, panic, fear, frightened..</i>
E6-	Worry	<i>anxiety, stress, distressing, worry..</i>

**Reference
corpus
comparison**

Service Users

Both

Both

Service Users

**Direct
comparison**

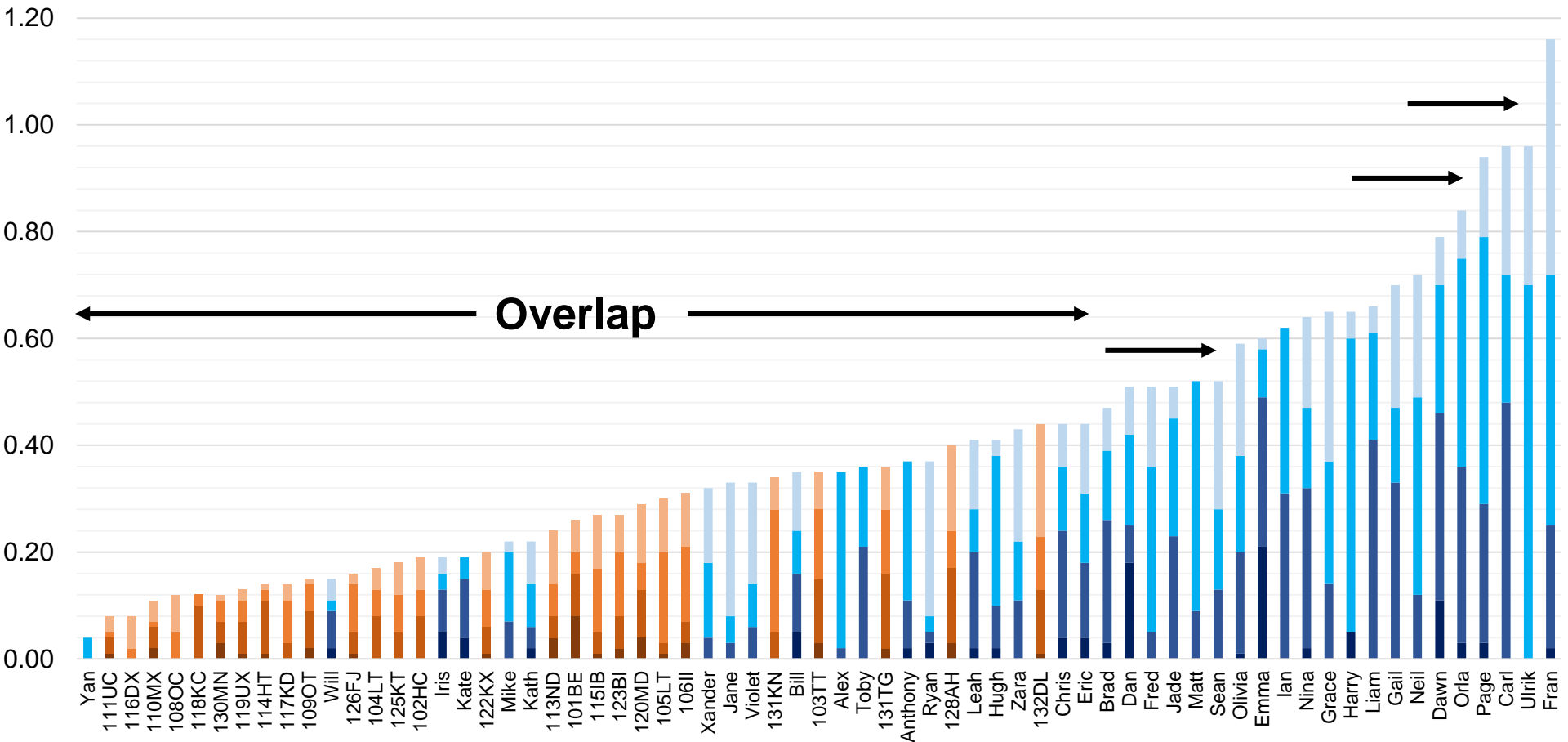
Service Users

Service Users

Service Users

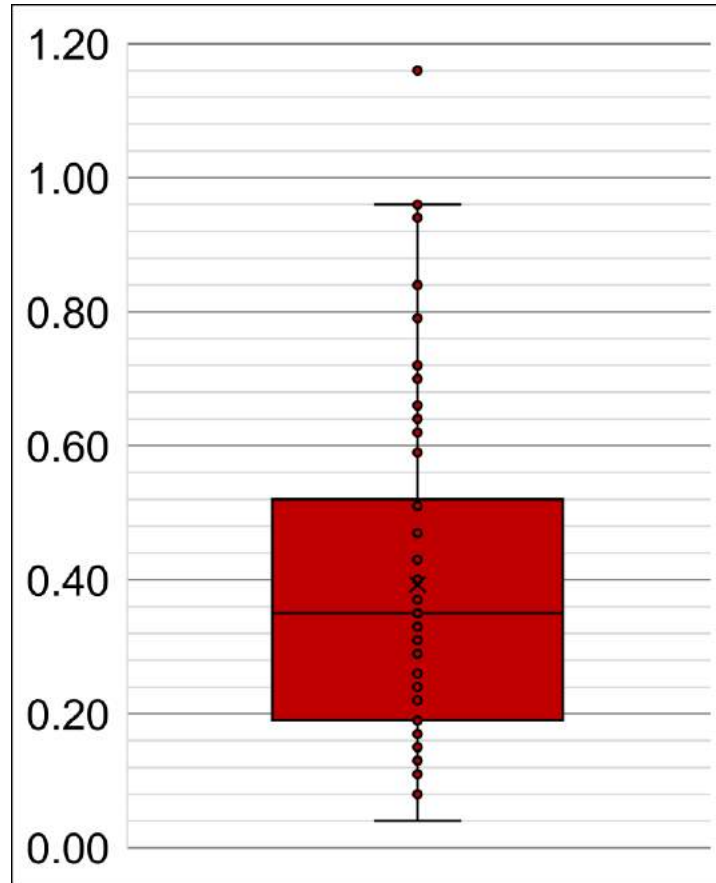
Service Users

E2- Dislike E4.1- Sad E5- Fear/Shock E6- Worry **Negative emotions**



E2- Dislike ■■ E4.1- Sad ■■ E5- Fear/Shock ■■ E6- Worry ■■

Negative emotions



Affect

- **Negative emotions**

Fran: when I feel **anxious** or I'm **feeling down** or **upset**, the voice comes out stronger.

Fran: I **hate** being in the house being by myself. [...] Like I should be like enjoying it, you know, have the house to myself like one night! But I can't do that because I feel too **scared** to you know.

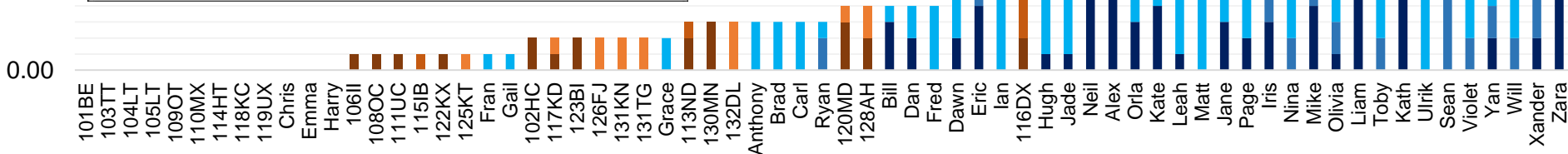
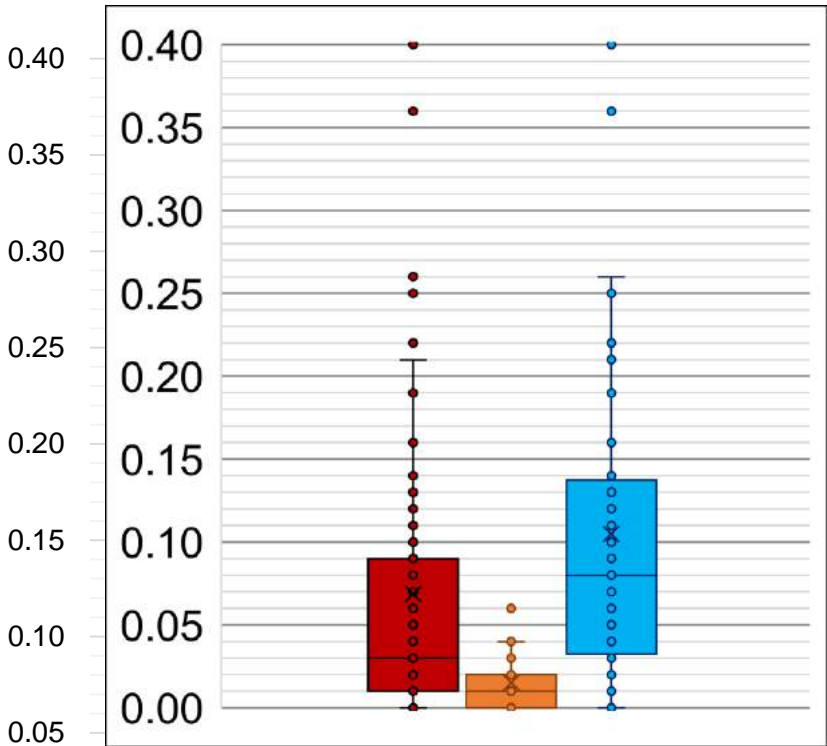
Control

- **Disengagement**

- clinical voice-hearers are more likely to try to actively ignore voices (Kråkvik et al. 2015)
- Increasing number of ‘relational’ therapeutic approaches

			Reference corpus comparison	Direct comparison
A1.9	Avoiding	<i>leave_alone, avoid..</i>	-	Service Users
Q2.1-	Speech: Not communicating	<i>shut_up, keep_quiet..</i>	Service Users	Service Users
X5.1-	Inattentive	<i>ignore, distract..</i>	Both	Service Users

A1.9 Avoiding ■ Q2.1- Speech: Not communicating ■ X5.1- Inattentive ■ **Disengagement**



Control

- **Disengagement**

Xander: if I tell him to **shut up**, he won't listen, he'll get worse!

it would be nice if [...] he would just sort of **leave me alone**

however I don't want them to just disappear [...] I have a connection with them now

Zara: yesterday I heard it, it made us jump and look around, and then obviously I listened and I thought, just go away, **leave us alone**, then it went away. So it's [...] in the past I listened, used to listen to the voice [...] When it first started happening, and I was doing as I was told. But I'm not let- letting it win this time.

102HC: I was saying to her, 'please **leave me alone**, God bless you, go on your way and **leave me alone**', because I had to get to sleep.

(Dis)continuity

- Continuity between Spiritualists and Service Users with a clinical sub-group
 - **Affect:** Negative emotions, Positive emotions, Negative evaluations of self
 - **Control:** Disengagement, Command over, Development (of skills)
 - **Meaning-making**
 - **Sensory Input:** Loudness, Strength, Other senses, Cognition

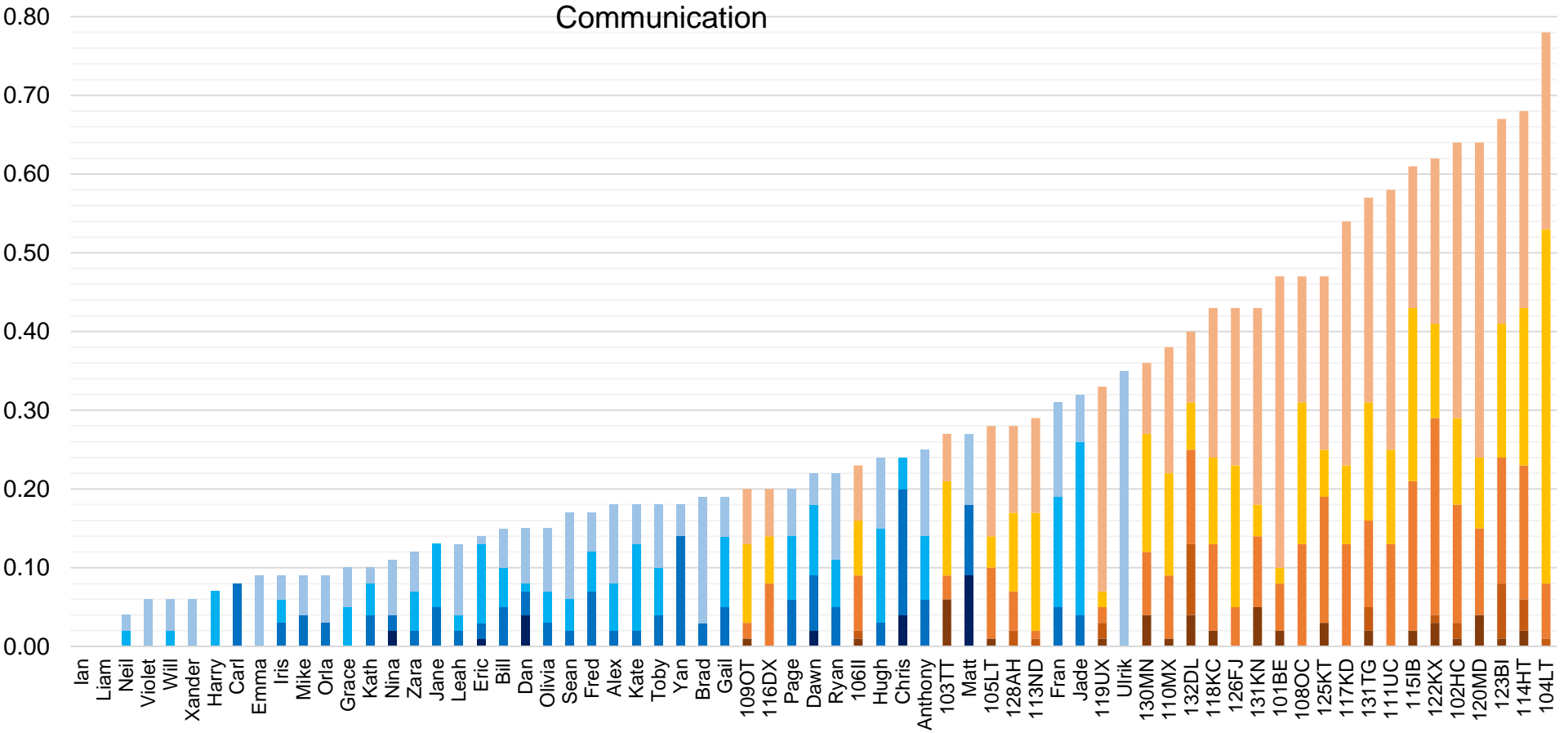
Meaning-making

- Research has identified differences in the way clinical and non-clinical populations interpret their AVHs (Daalman et al., 2011)

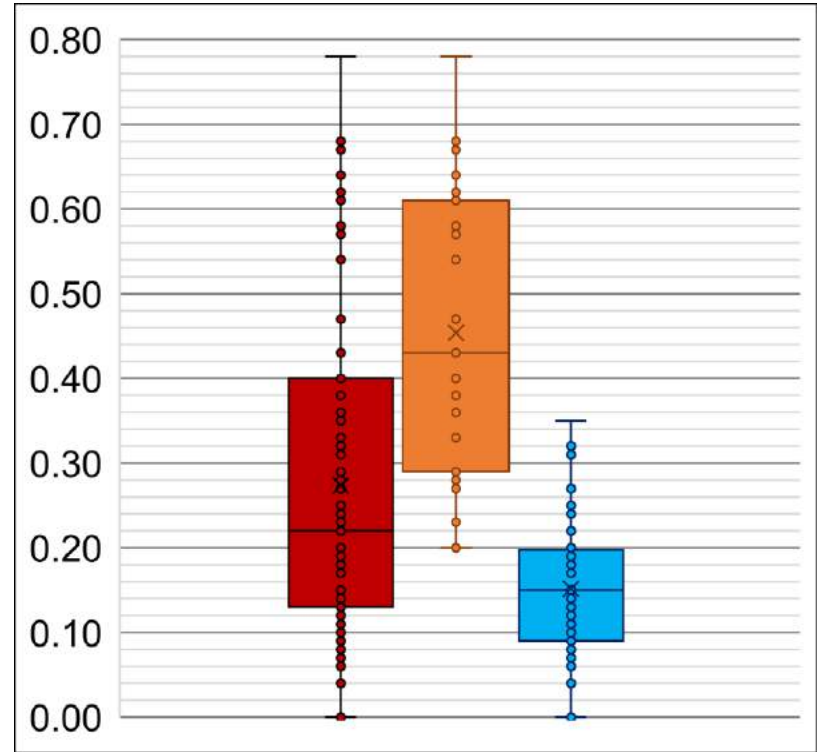
			Reference corpus comparison	Direct comparison
A1.2+	Suitable	<i>relevant, appropriate</i>	-	Spiritualists
A1.6	Concrete/Abstract	<i>philosophical, practical</i>	Spiritualists	Spiritualists
A11.1+	Important	<i>important, main</i>	-	Spiritualists
A5.2+	Evaluation: True	<i>evidence, prove</i>	-	Spiritualists
Q1.1	Linguistic Actions, States..	<i>message, means</i>	Spiritualists	Spiritualists

Daalman, K., Boks, M.P.M., Diederer, K.M.J., de Weijer, A.D., Blom, J.D., Kahn, R.S. and Sommer, I.E.C. (2011) The Same or Different? A Phenomenological Comparison of Auditory Verbal Hallucinations in Healthy and Psychotic Individuals. *The Journal of Clinical Psychiatry* 72(3): 320-325.

A1.2+ Suitable ■ ■ A1.6 Concrete/Abstract ■ ■ A11.1+ Important ■ ■ **Meaning-making**
 A5.2+ Evaluation: True ■ ■ Q1.1 Linguistic Actions, States and Process: ■ ■
 Communication



A1.2+ Suitable ■■ A1.6 Concrete/Abstract ■■ A11.1+ Important ■■ **Meaning-making**
A5.2+ Evaluation: True ■■ Q1.1 Linguistic Actions, States and Process: ■■
Communication



Sensory Input

- Strength**

103TT: When I say a volume, I mean a **strength** of impression. Rather than sound volume.

			Reference corpus comparison	Direct comparison
S1.2.5+	Tough/Strong	<i>strong, strengths</i>	-	Spiritualists
S1.2.5++	Tough/Strong	<i>stronger</i>	Spiritualists	Spiritualists

- Researchers have questioned whether this reflects differences in the phenomenology of the experience or a particular vocabulary associated with mediumship (Luhmann, 2017).

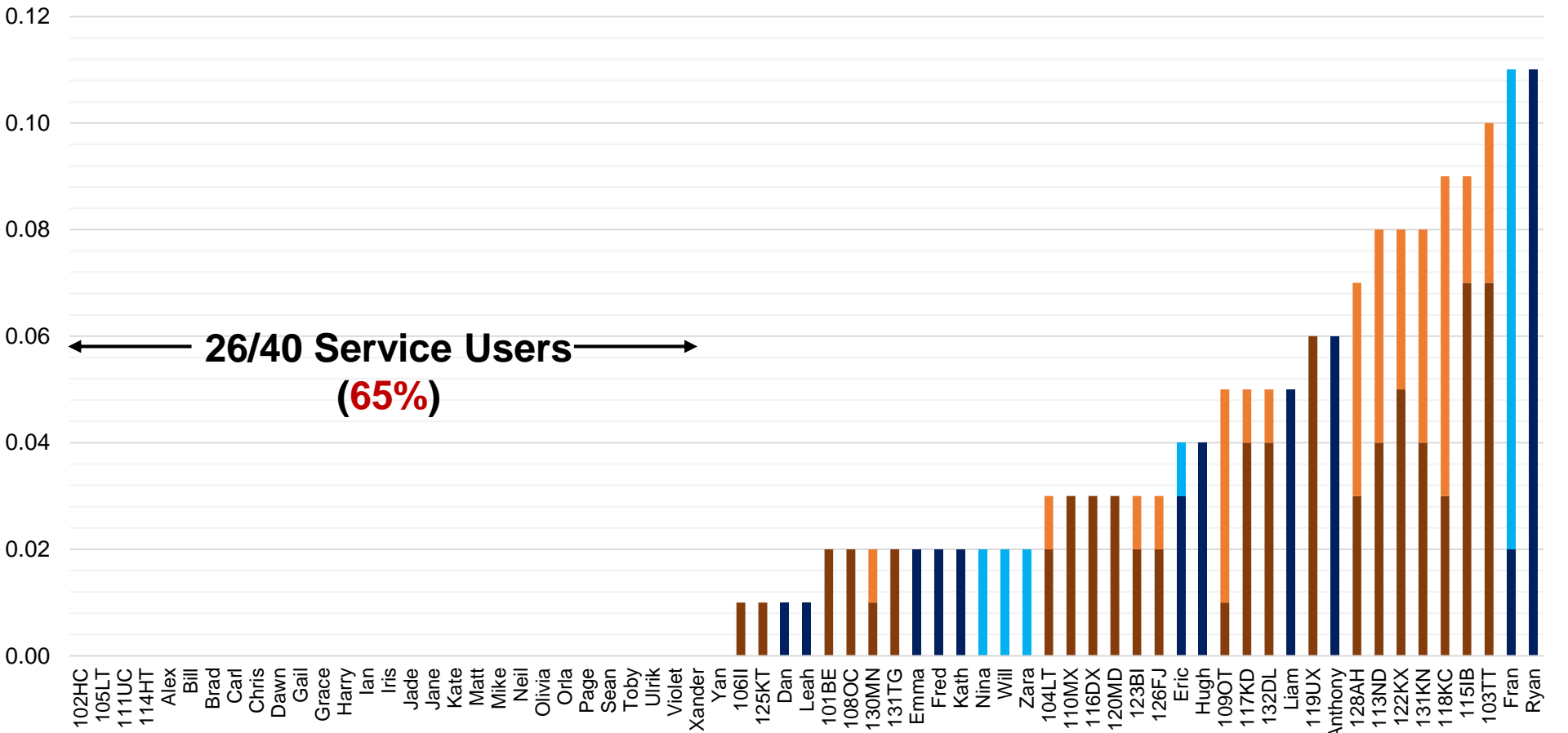
S1.2.5+ Tough/Strong



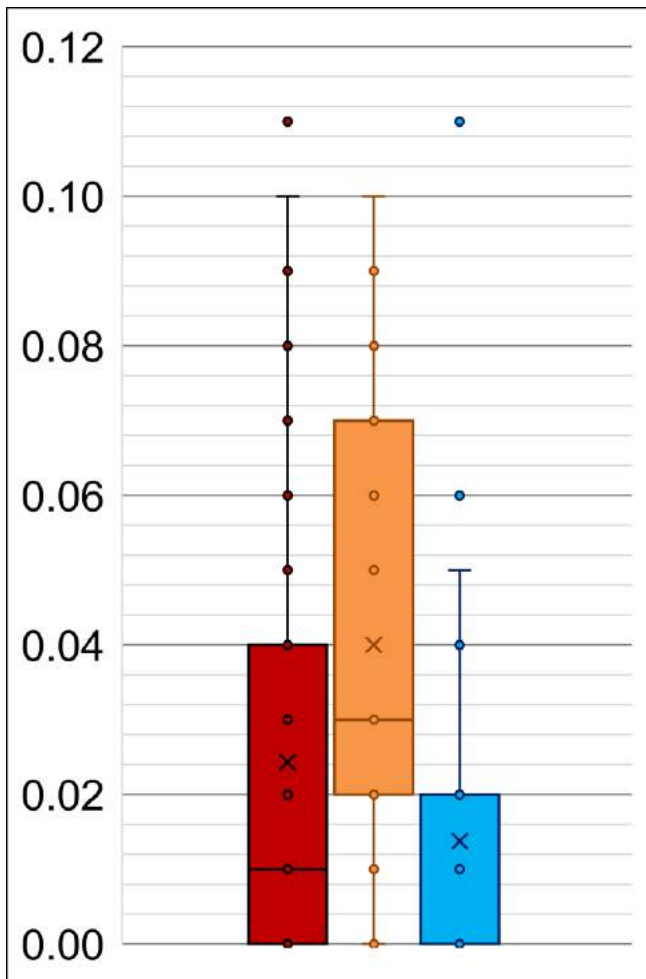
S1.2.5++ Tough/Strong



Strength



← **26/40 Service Users** →
(65%)



S1.2.5+ Tough/Strong



S1.2.5++ Tough/Strong



Strength

Sensory Input

- **Strength**

Ryan: *strength of feeling, strength of character, physical strength*

Fran: when I feel anxious or I'm feeling down or upset, the voice comes out **stronger** [...] and then as I'm hearing it more, and it's coming **stronger** and **stronger** and like it's ...I can't get used to it.

Anthony: when [the voice] comes, it's really kind of **strong**

Identifying (dis)continuity

- Keyness analysis pointed to areas of similarity/difference
- Dispersion revealed (dis)continuities
- In most cases, we observed continuity between Spiritualists and Service Users, with 'discontinuity' to a (clinical) sub-group
 - Negative emotions
 - Negative evaluations of self
 - Disengagement
 - Loudness *
 - Other senses
- Continuity in references to 'meaning-making' *

Identifying (dis)continuity

- Need to consider both quantitative and qualitative (dis)similarities
- ❖ Method allows us to consider degrees of (dis)similarity
- ❖ We can also consider ‘degrees’ of continuity (i.e. overlap)
- ❖ Statistical basis for ‘discontinuity’
- ❖ ‘Breaks’ can help us to develop personalised clinical interventions.

Thank you

