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Introduction

- Tuberous sclerosis complex (TSC) is a neurocutaneous disorder characterized by the formation of hamartomas in multiple organs, including the brain, skin, heart, eyes, kidneys, lungs, and liver^{1,2}
- More than 90% of people with TSC have TSC-associated neuropsychiatric disorders (TANDs), characterized by behavioral, psychiatric, intellectual, academic, neuropsychologic, and psychosocial problems³⁻⁵
- Epidiolex®, a plant-derived highly purified pharmaceutical formulation of cannabidiol (CBD), is approved in the United States (US) for the treatment of seizures associated with Lennox-Gastaut syndrome, Dravet syndrome, or TSC in patients aged ≥1 year⁶
- BECOME-TSC (BEhavior, COgnition, and More with Epidiolex® in TSC) is an ongoing cross-sectional survey to quantify the real-world impact of CBD on seizure and nonseizure outcomes in people with TSC
 - This poster presents the nonseizure outcomes (seizure outcomes will be presented in Poster 1.435)

Objective

- To present caregiver-reported nonseizure behavioral and cognitive outcomes following initiation of CBD treatment in people with TSC

Methods

- Using electronic health records, healthcare providers at TSC centers in the US identified people with TSC who were treated with CBD (Epidiolex®, 100 mg/mL oral solution) for ≥6 months
- Caregivers of these individuals completed an online survey, consisting of multiple-choice and rank-order questions, based on the TAND questionnaire,⁷ other validated measures, and previous caregiver reports
- Respondents compared the past month to the period before CBD initiation and rated their impressions of change using a symmetrical 5- or 7-point Likert scale (from worsening to improvement) depending on the domain
- “Don’t recall” or “Not Applicable” responses were excluded
- Continuous variables were summarized as means, medians, and ranges and categorical variables as frequency distributions and percentages
- CBD-associated adverse events, which can include transaminase elevations, somnolence, decreased appetite, diarrhea, pyrexia, vomiting, fatigue, rash, sleep disorders, and infections, were not assessed
- The survey was conducted with caregivers of people taking Epidiolex®, and the results do not apply to other CBD-containing products

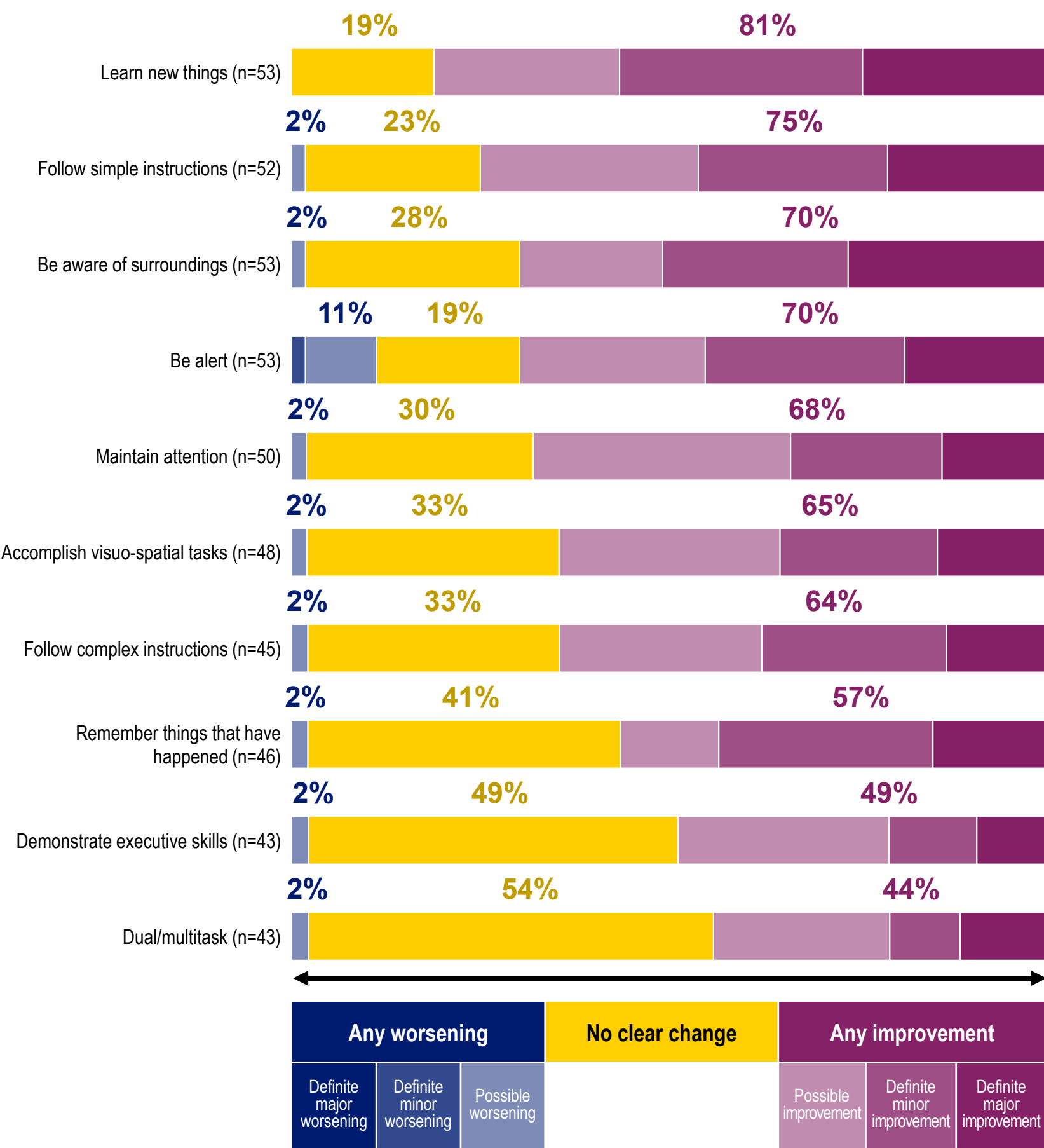
Results

Table. Characteristics of patients	
	Patients (N=55)
Age, years, mean (SD)	16.5 (11.3)
17 or younger, n (%)	32 (58)
Number of ASMs before CBD initiation, median (Q1, Q3) ^a	2 (1, 4)
Most common (≥25%) concomitant ASMs, n (%)	
Everolimus	22 (40)
Clobazam	17 (31)
Clonazepam	14 (26)
Most common co-occurring conditions, n (%)	
Developmental delay	49 (89)
Autism spectrum disorder	39 (71)
Anxiety disorder	17 (31)
Attention-deficit/hyperactivity disorder	17 (31)
Intellectual disability, n (%)	
Severe-profound	26 (47)
CBD dose at the time of survey, mg/kg/day, median (Q1, Q3)	12 (8, 18)

^an=54. ASM, antiseizure medication, commonly referred to as antiepileptic drugs; CBD, cannabidiol; Q1, first quartile; Q3, third quartile.

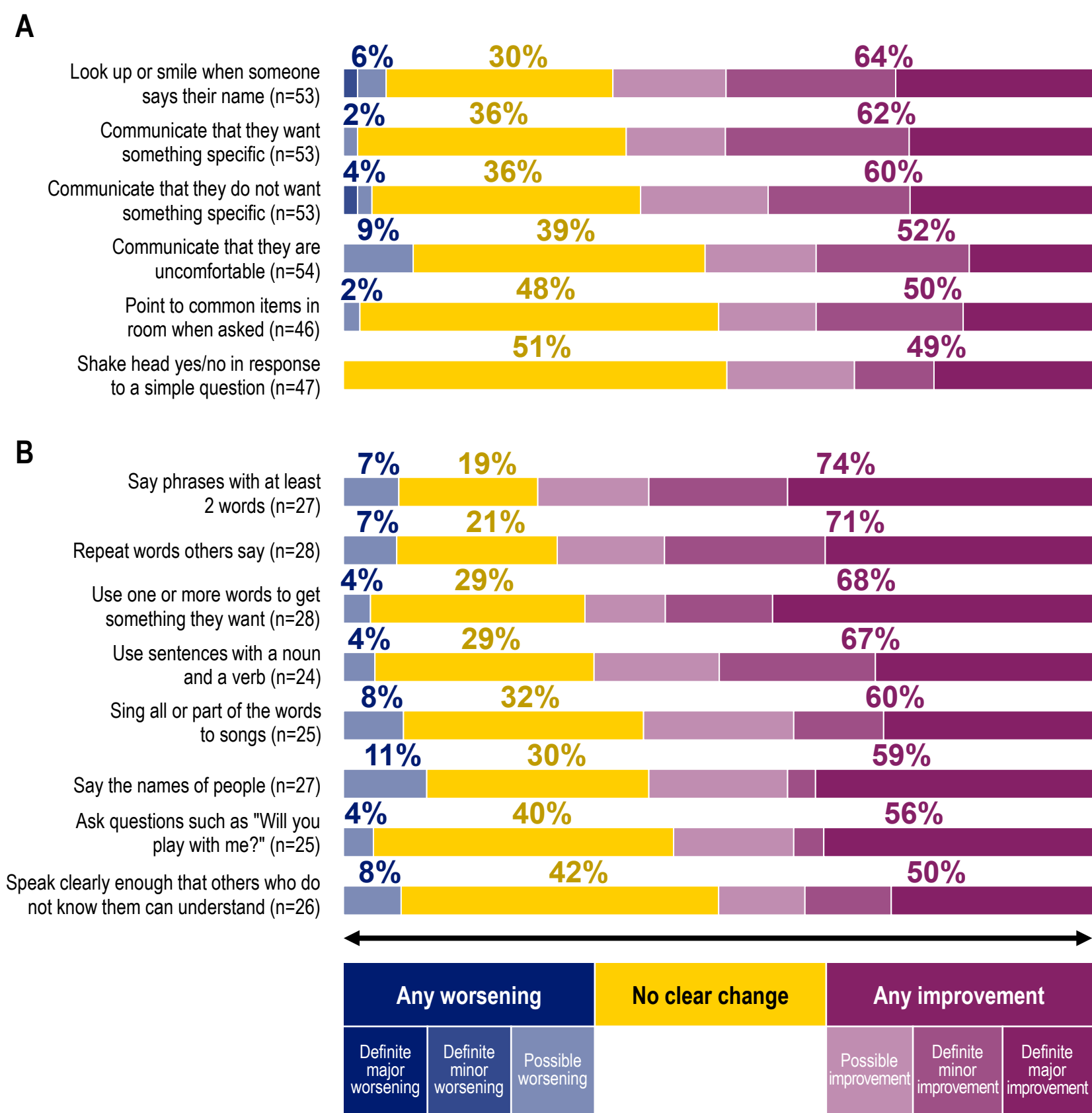
- At the time of analysis, 55 caregivers had completed the survey (Table)
- Among respondents, 62% reported that the patient had a history of infantile spasms; 15% had fluent verbal language

Figure 1. Alertness, cognition, and executive function – Change in ability to



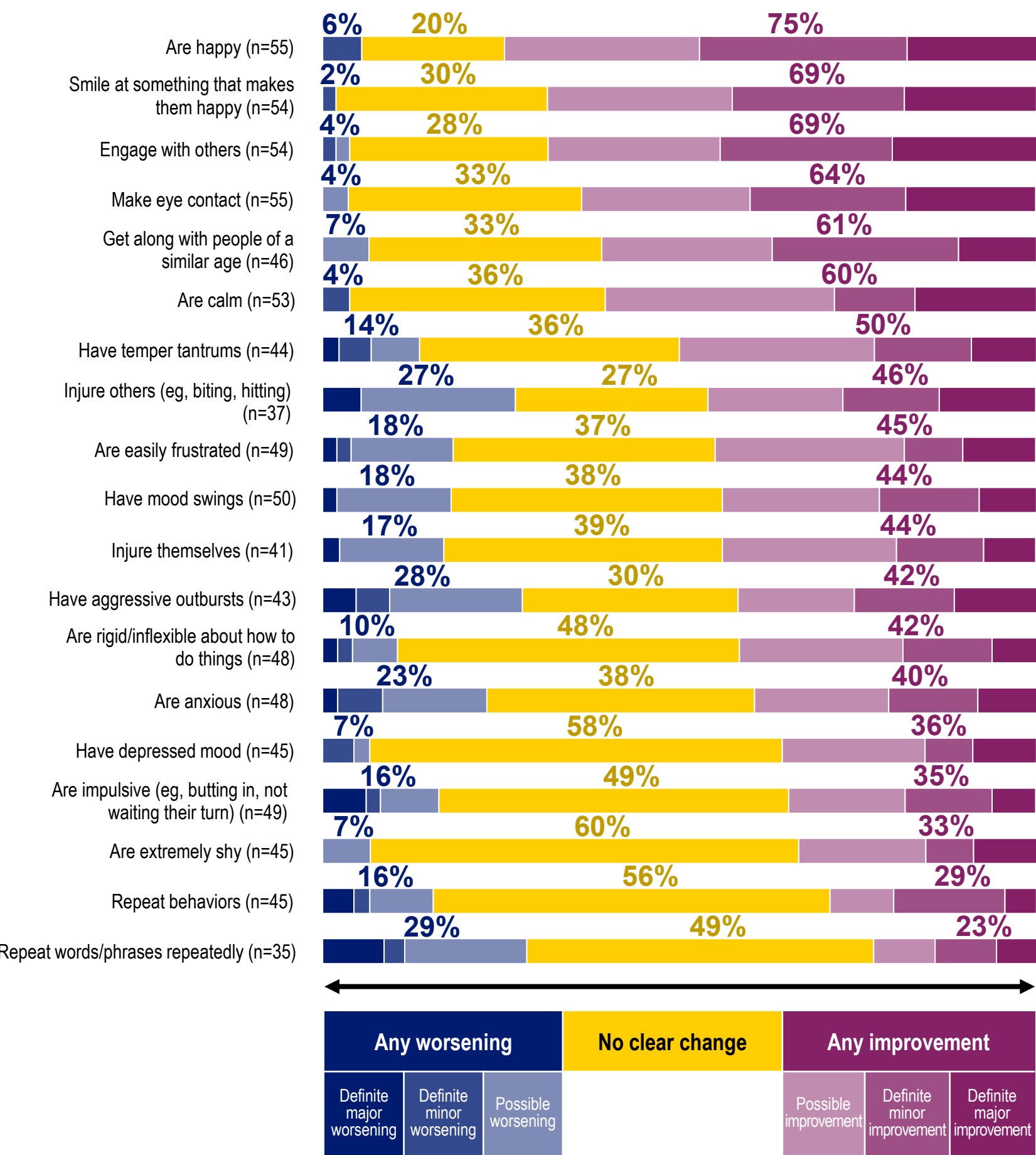
- At least 65% of respondents reported improvements in the patient's ability to learn new things, follow simple instructions, be aware of surroundings, be alert, maintain attention, and accomplish visuo-spatial tasks in the alertness, cognition, and executive function domains (Figure 1)

Figure 2. Language and communication in (A) all patients and (B) patients with verbal abilities (few/minimal words or fluent verbal language) – Change in ability to



- Among all patients, the most frequently reported improvements in the communication domain were in the ability to look up or smile when someone says their name (64%; Figure 2A); among verbal patients, “say phrases with at least 2 words,” “repeat words others say,” and “use one or more words to get something they want” were the most frequently reported (74%, 71%, and 68%, respectively; Figure 2B)

Figure 3. Emotional and social functioning – Change in how often patients



- The most frequently reported improvement in emotional and social functioning was how often patients were happy (75%). Worsening was reported by 29% of respondents in patient's repeated use of words/phrases (Figure 3)

Conclusions

- In this analysis of the ongoing BECOME-TSC survey:
 - Most caregivers reported improvements in the cognition, emotional functioning, and communication domains of the survey
 - A total of 89% of caregivers reported planning to continue CBD. Additional BECOME-TSC survey data are available in the seizure outcomes poster (poster number 1.435), which includes reasons for continuation of CBD treatment, including reduced seizure frequency and reduced seizure severity/duration
 - Most caregivers of people with TSC reported improvement in TAND-related nonseizure outcomes since initiating CBD
 - Limitations of the study include retrospective caregiver accounts and selection bias due to study design. Adverse effects were not assessed and the effect of concomitant antiseizure medications was not considered in this analysis

