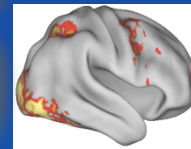


# CNTRICS



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**Cognitive Neuroscience Treatment Research  
to Improve Cognition in Schizophrenia**

# *What Criteria Should We Use For Cognitive Biomarkers?*

- Tied to the needs of clinical trials
- Relevant for treatment development
- Relevant for understanding cognitive function

# *Possible Criteria for Cognitive Biomarkers*

Demonstrated sensitivity to pharmacological manipulations
Demonstrated sensitivity to manipulations of cognitive/affective processing
Test-retest reliability
Openness to pharmacological confounds
Directness of interpretation
Standardization of administration protocols
Clear quality assurance protocols
Standardization of analysis approaches
Ability to assess both cortical and subcortical signals
Easy accessibility
Patient tolerance
Practicality and ease of use
Spatial Resolution
Temporal Resolution
Feasibility of application in multi-center trials

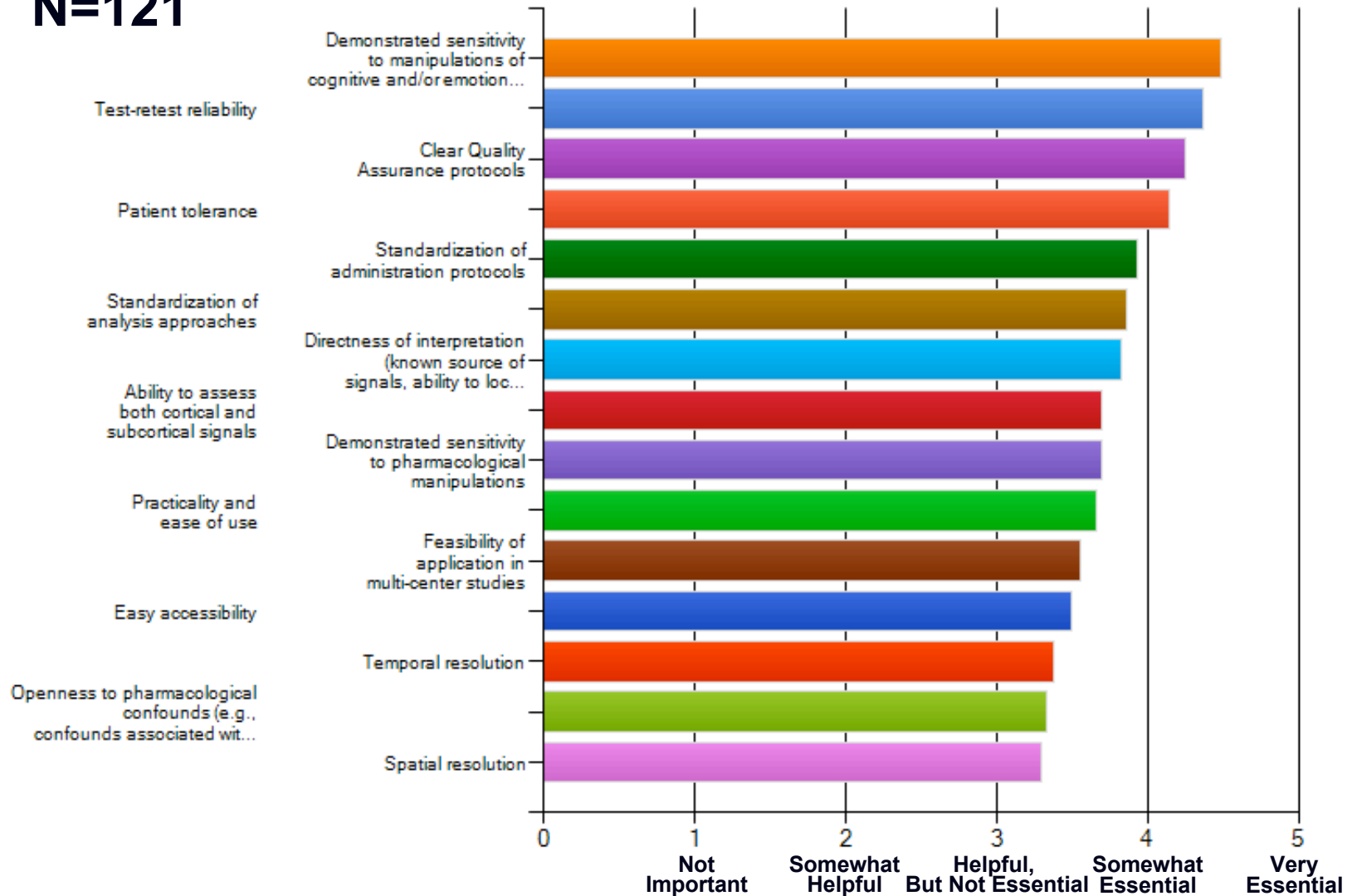
# Rating Scale

Not Necessary	Somewhat Helpful	Very Helpful But Not Essential	Somewhat Essential	Very Essential
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# Results of Survey Criteria

Please rate how important each of the following is for choosing a biomarker method for assessing brain function during cognitive performance for use in pro-cognitive treatment development

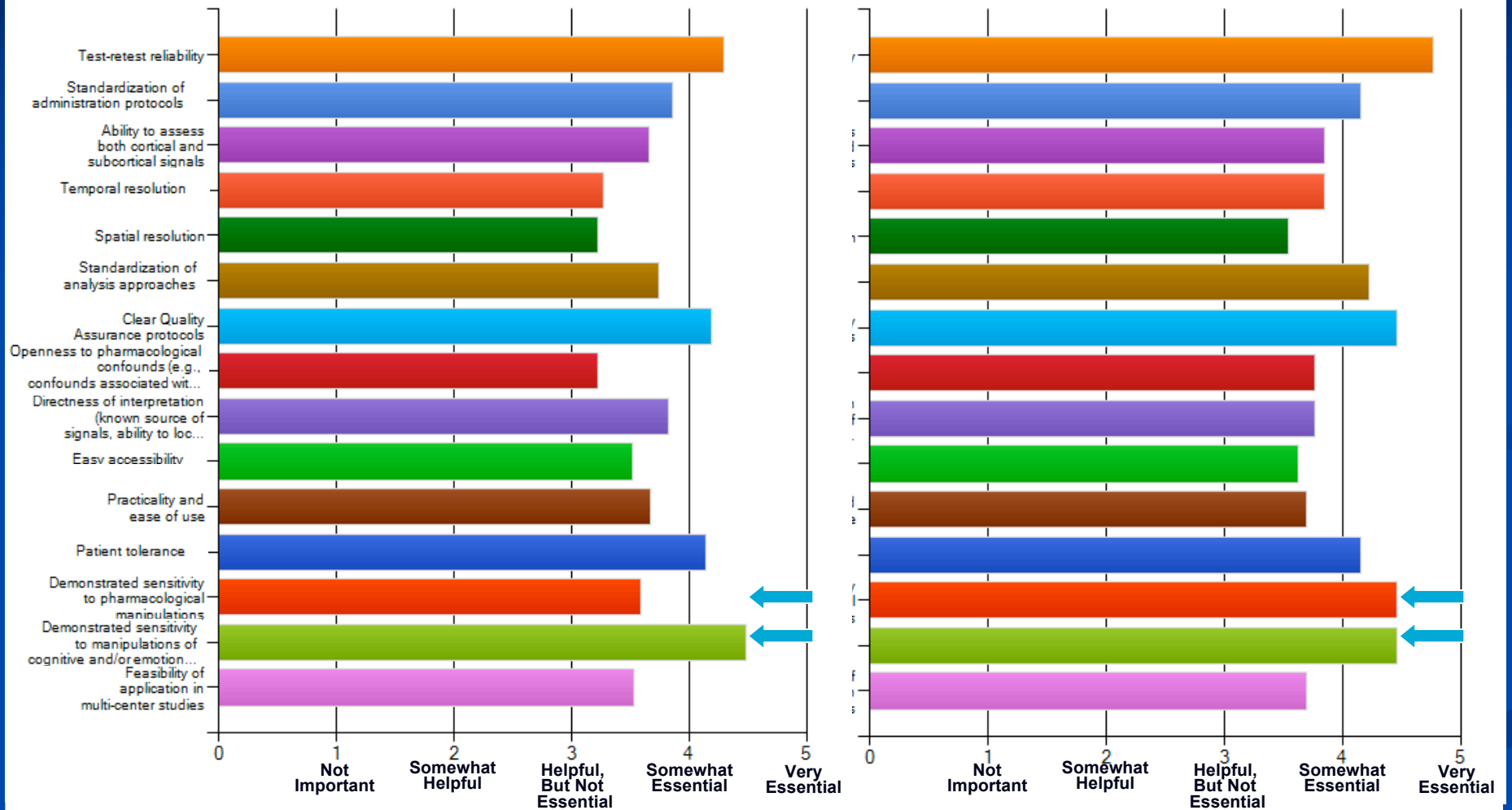
N=121



# Results of Survey Criteria

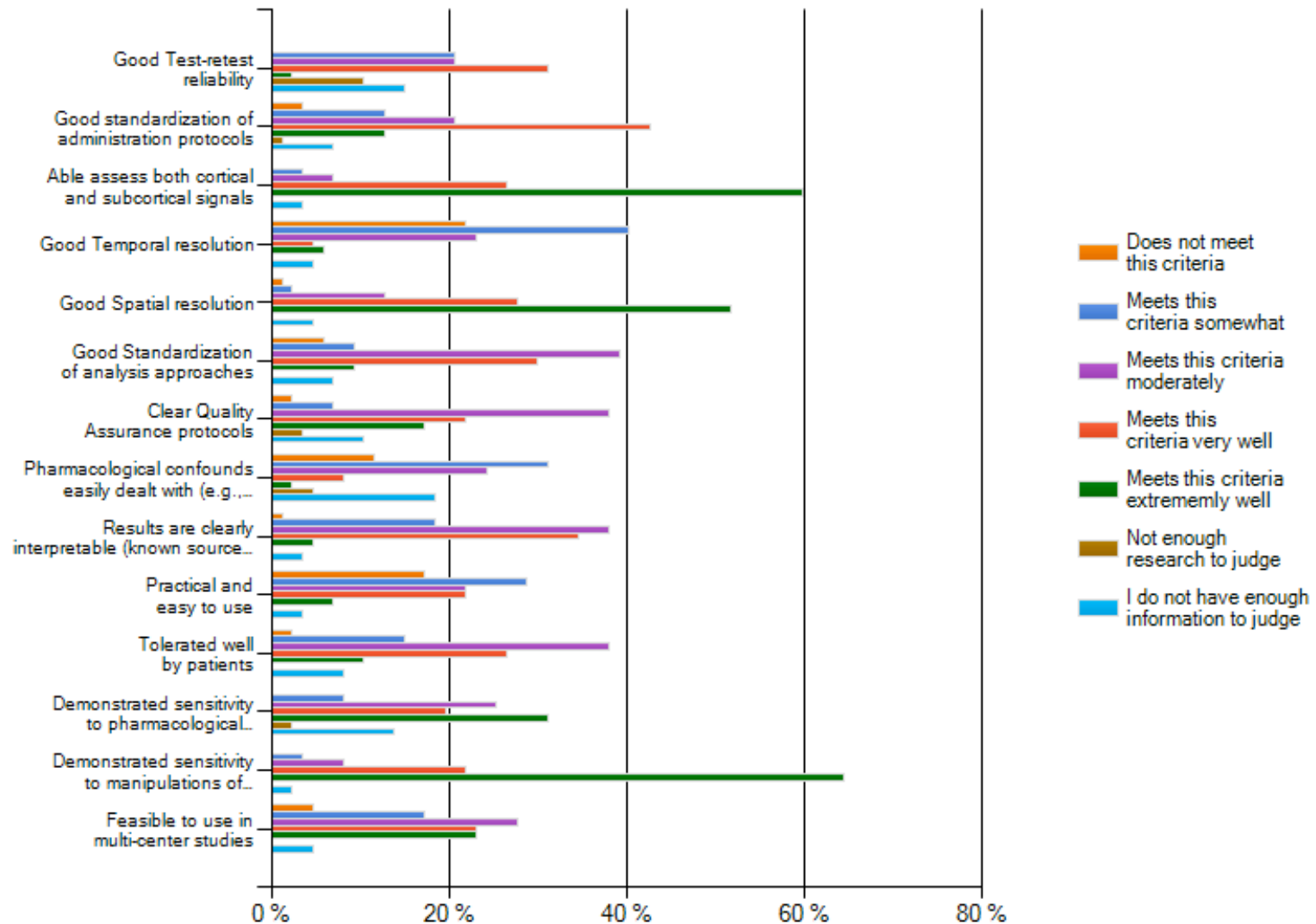
## Academia

## Industry



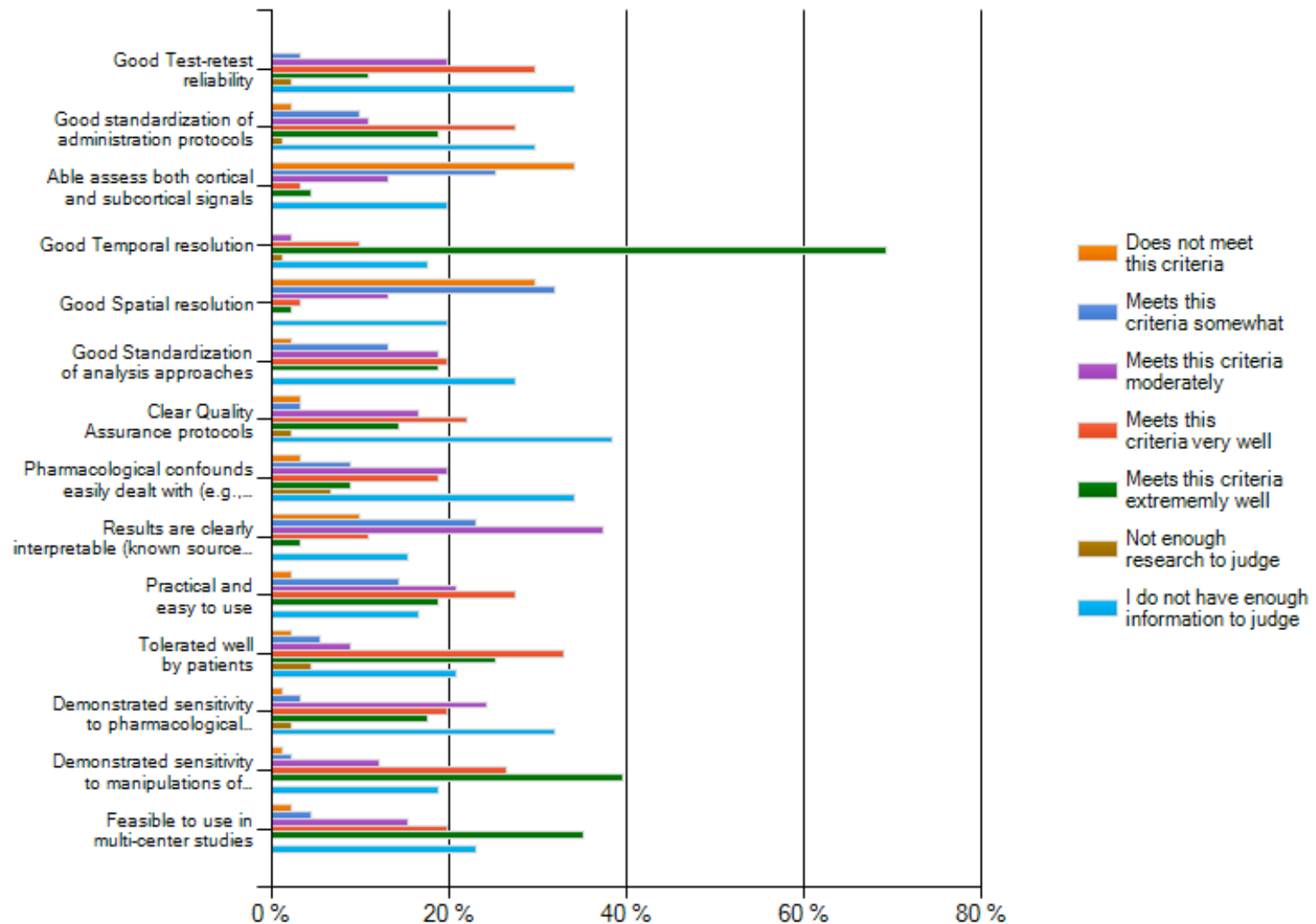
# Initial fMRI Ratings

## Functional Magnetic Resonance Imaging (fMRI)



# Initial ERP Ratings

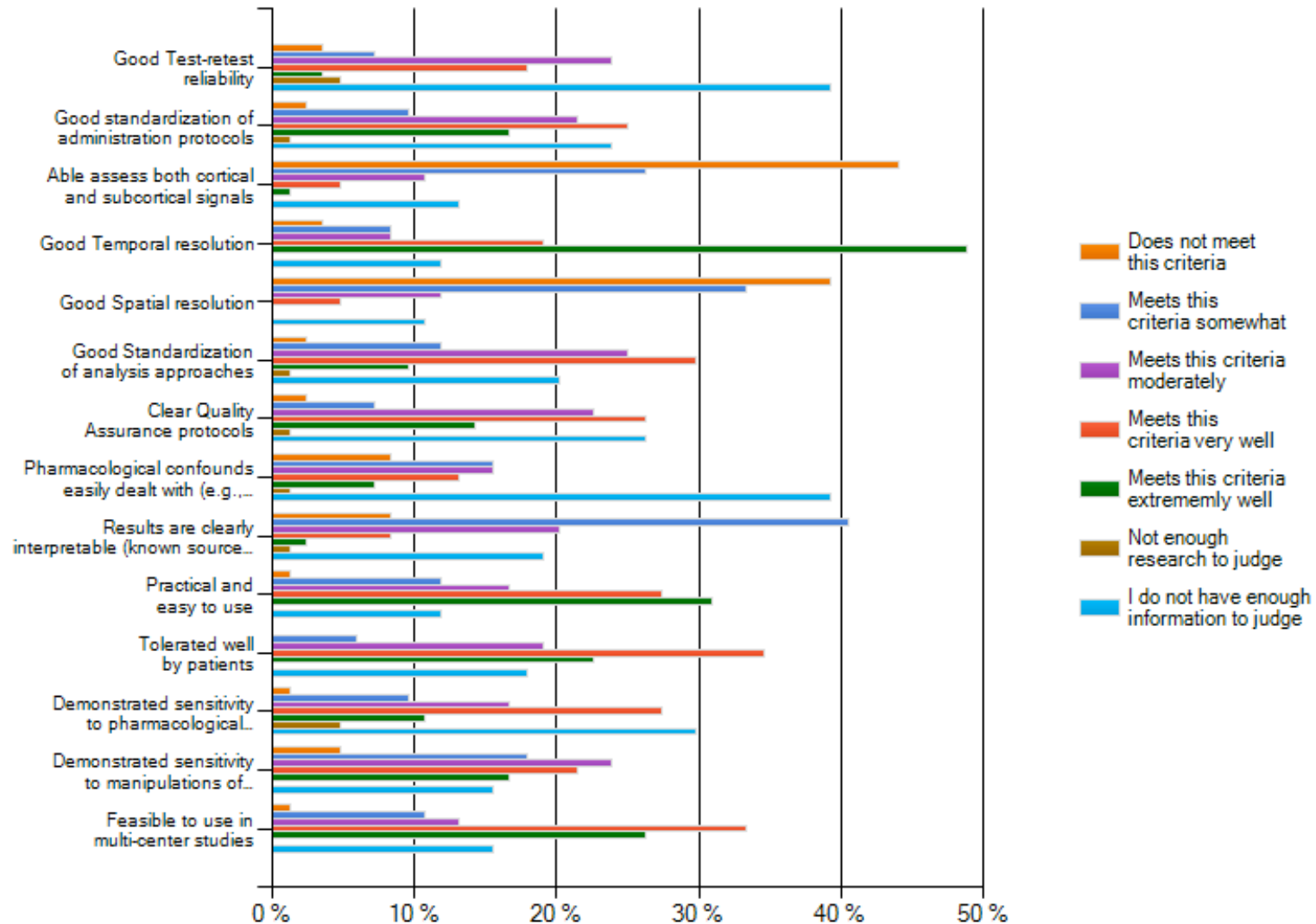
Event Related Potentials (ERPs)





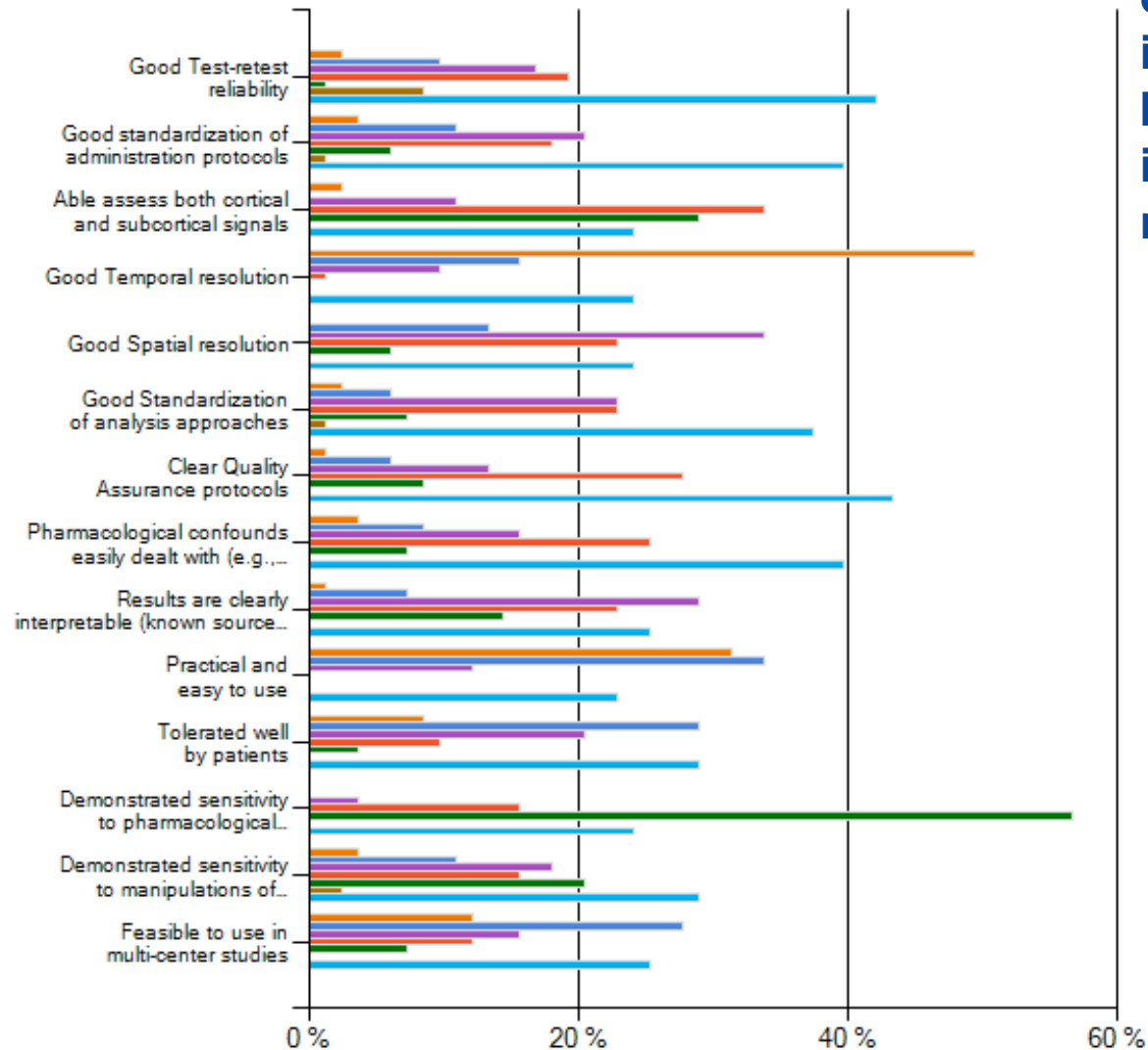
# Initial EEG Ratings

## Electroencephalography (EEG)



# Initial Dynamic Ligand Ratings

## Receptor Based Cognitive Imaging (PET)

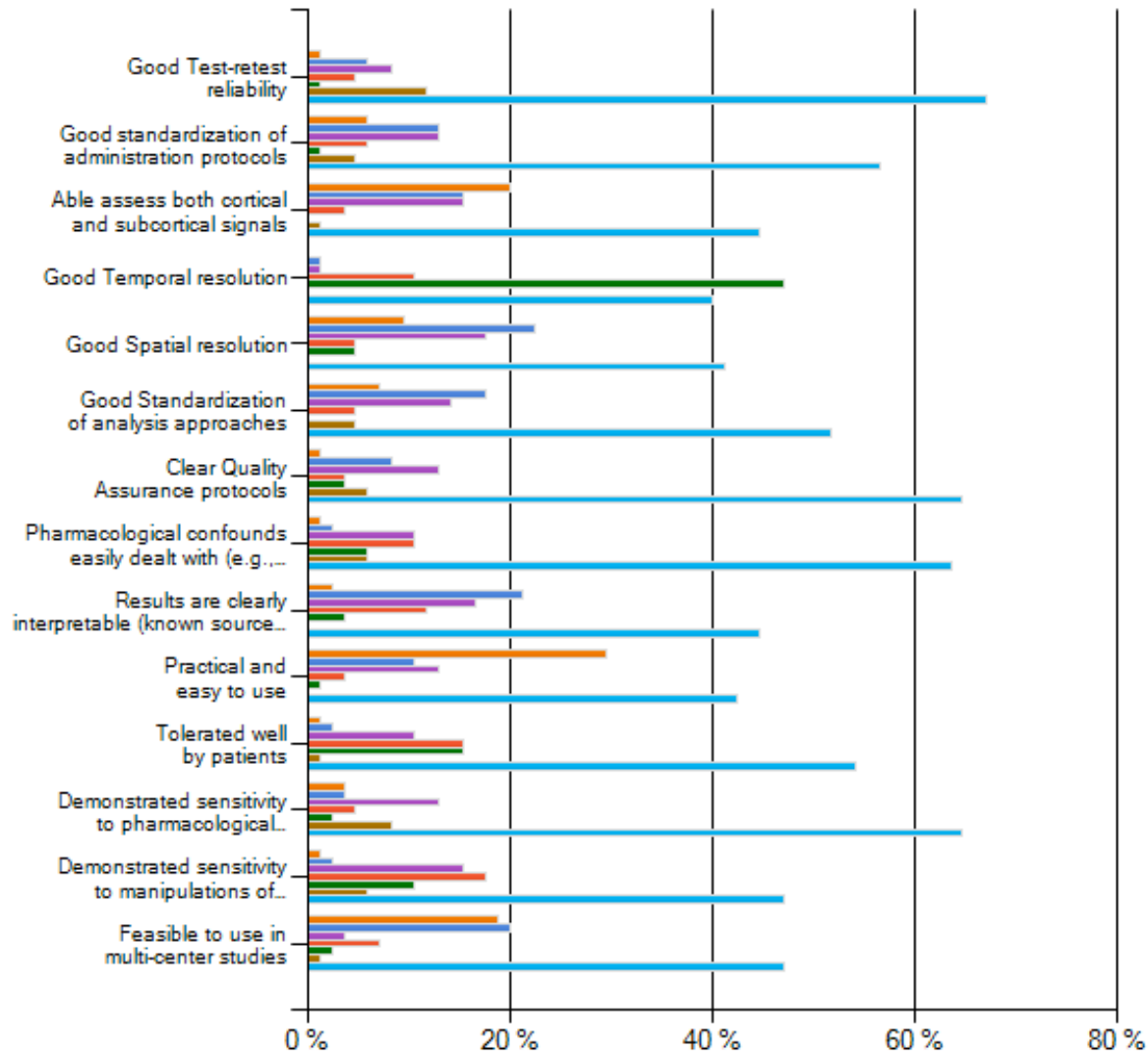


High scores on some important criteria, but more information needed

- Does not meet this criteria
- Meets this criteria somewhat
- Meets this criteria moderately
- Meets this criteria very well
- Meets this criteria extremely well
- Not enough research to judge
- I do not have enough information to judge

# Initial MEG Ratings

Magneto Electro Encephalography (MEG)

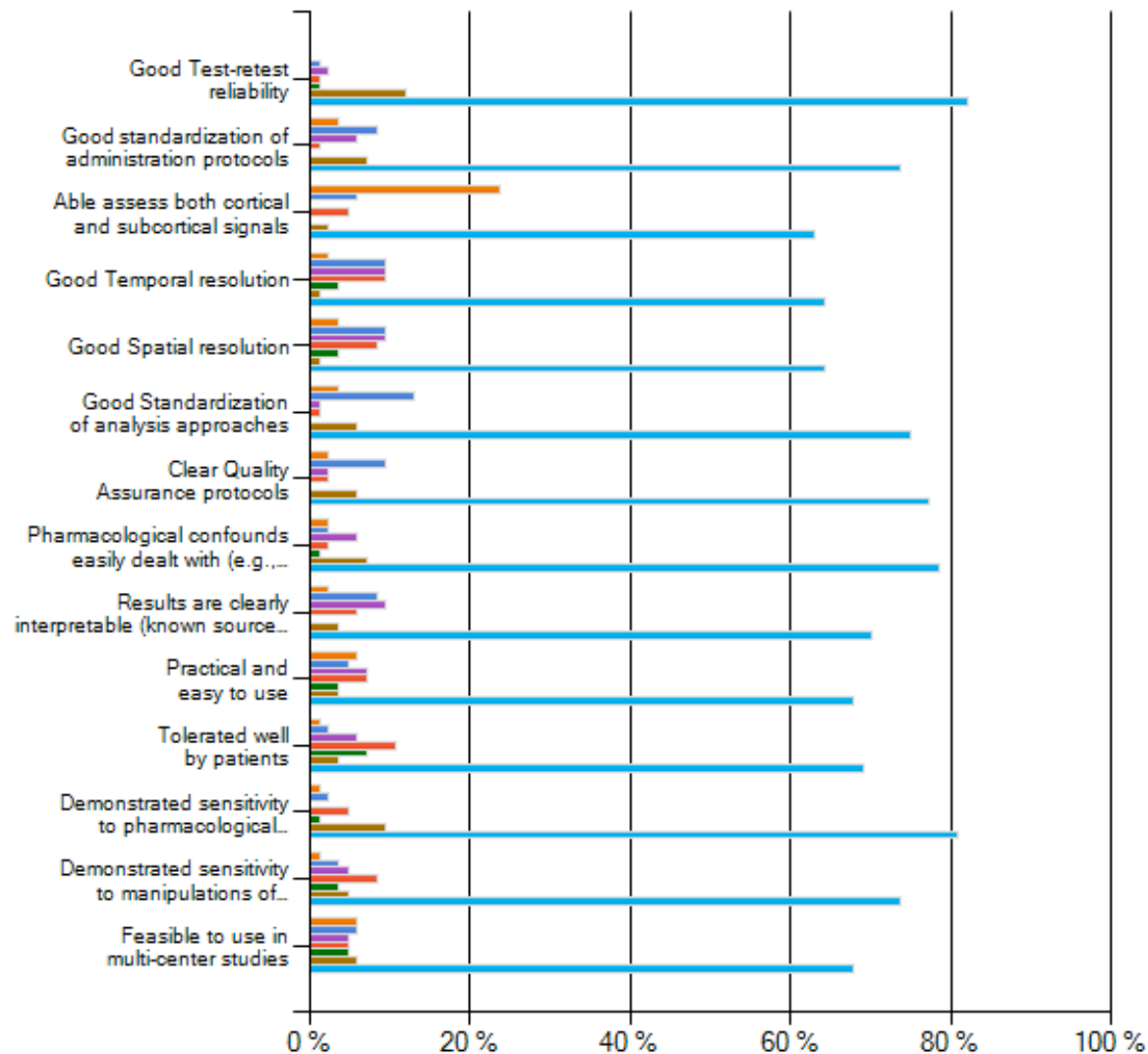


**Need more Information!**

- Does not meet this criteria
- Meets this criteria somewhat
- Meets this criteria moderately
- Meets this criteria very well
- Meets this criteria extremely well
- Not enough research to judge
- I do not have enough information to judge

# Initial NIR Ratings

## Near Infrared Spectroscopy (NIRS)

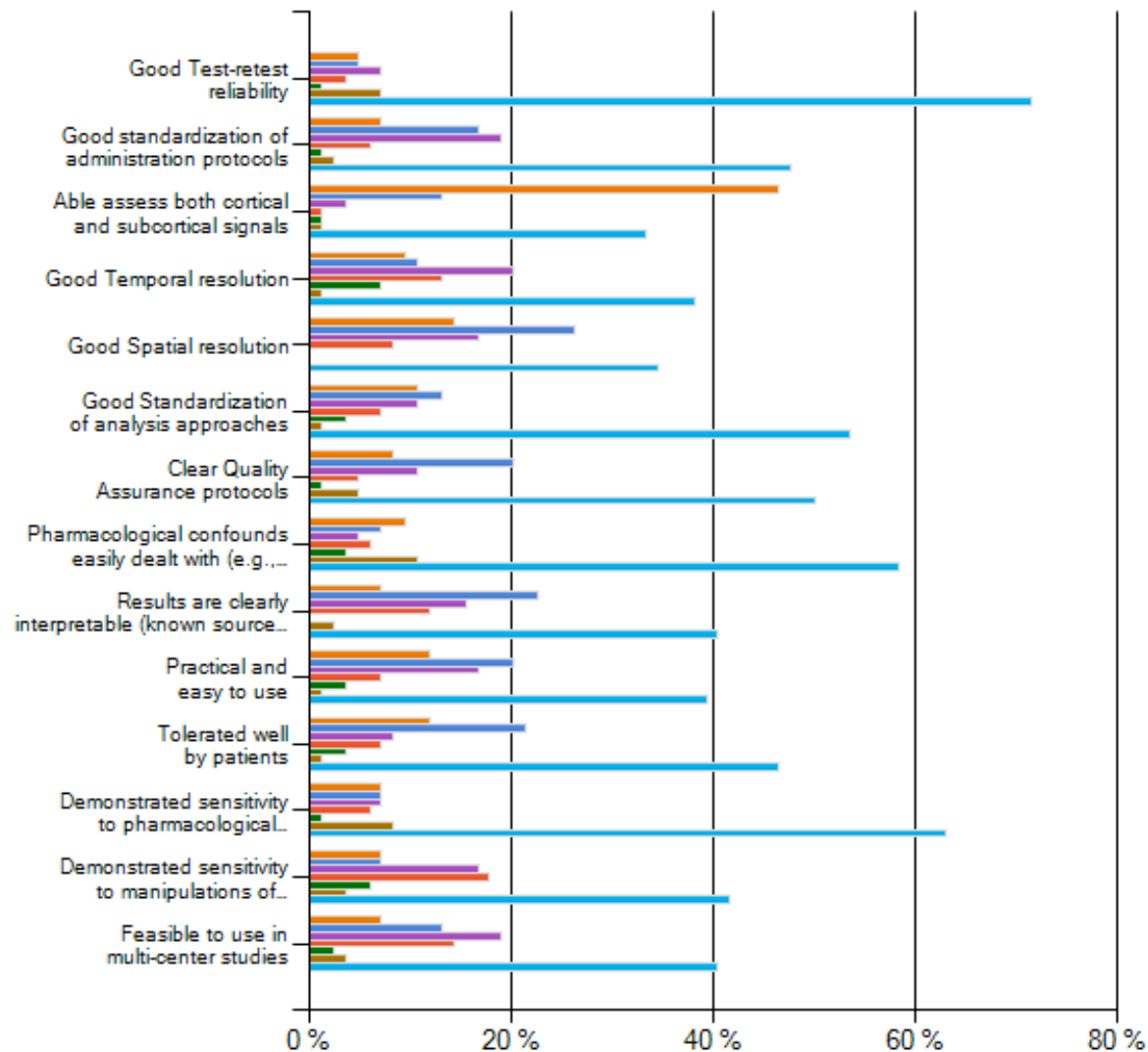


**Need more Information!**

- Does not meet this criteria
- Meets this criteria somewhat
- Meets this criteria moderately
- Meets this criteria very well
- Meets this criteria extremely well
- Not enough research to judge
- I do not have enough information to judge

# Initial TMS Ratings

## Transcranial Magnetic Stimulation (TMS)

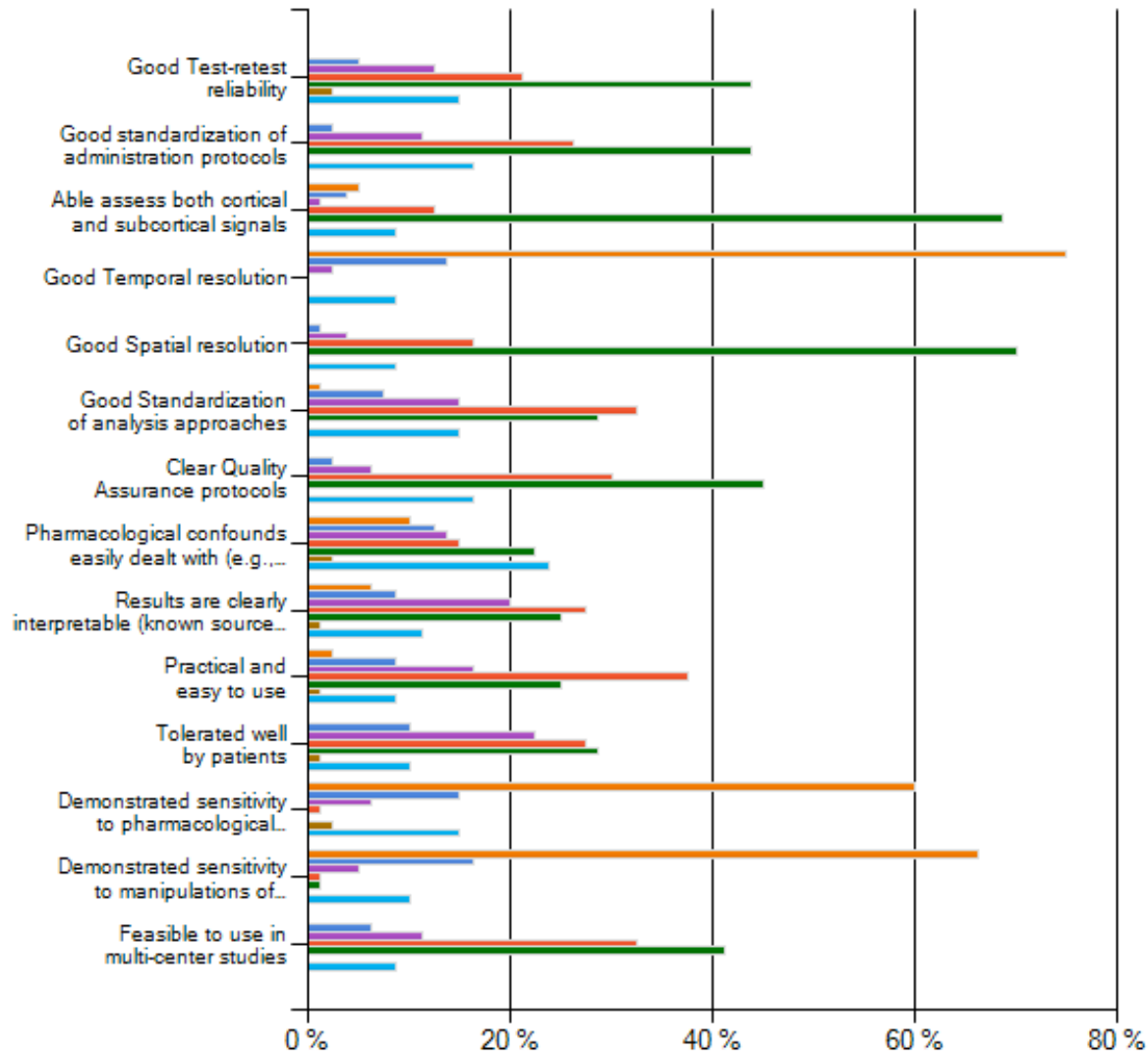


**Need more Information!**

- Does not meet this criteria
- Meets this criteria somewhat
- Meets this criteria moderately
- Meets this criteria very well
- Meets this criteria extremely well
- Not enough research to judge
- I do not have enough information to judge

# Initial sMRI Ratings

## Structural MRI



**Low scores on some important criteria**

- Does not meet this criteria
- Meets this criteria somewhat
- Meets this criteria moderately
- Meets this criteria very well
- Meets this criteria extremely well
- Not enough research to judge
- I do not have enough information to judge