

Validation of a dynamic facial emotion stimulus set and English version of the “Face Puzzle” emotion recognition task



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Introduction

Faces provide rich dynamic information about internal emotional states of others.

Facial emotion recognition tasks are often limited by lack of complex emotions and static instead of dynamic stimuli (Montagne et al., 2007)

“Face Puzzle” addressed limitations with high internal/external validity, sensitive to subtle difficulties in Autism (Rosenblau et al., 2020)

Limited applicability: only in German with narrow ethnical stimulus diversity.

Overall research goal:

Select a validated more ethnically diverse stimulus set and validate an English version of the Face Puzzle task.

Aims of this study:

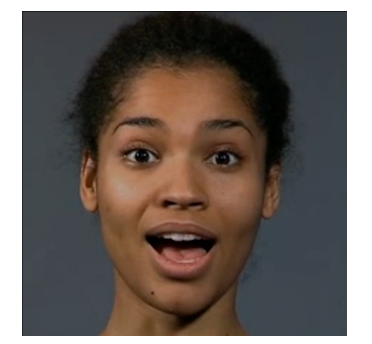
- (1) Validate arousal, valence, and believability of stimuli
- (2) Improve task internal consistency
- (3) Assess task external validity with other socio-cognitive tasks
- (4) Assess the sensitivity of the task to atypical social cognition

→ four preregistered studies at OSF (<https://osf.io/gvrxa/>)

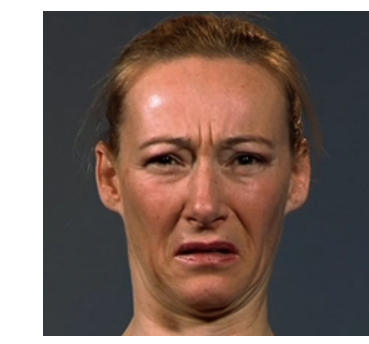
Methods

Face Puzzle

25 trials - target emotional expression video, four emotion labels
Three distractor labels: same valence similar arousal levels, same valence dissimilar arousal levels, opposite valence



Surprised Proud
Enthusiastic Touched



Disgusted Bored
Confused Surprised

Participants

- Study 1: n= 120; 53 female, age= 35.4 (7.1) , MTurk
- Study 2: n= 76; 43 female, age= 36.2 (7.3), MTurk
- Study 3: n= 47; 31 female, age= 21.1 (6.4)
- Study 4: NT: n= 18; 9 female, age= 25 (8.9)
ASD: n= 18; 9 female, age= 27.7 (7.9)

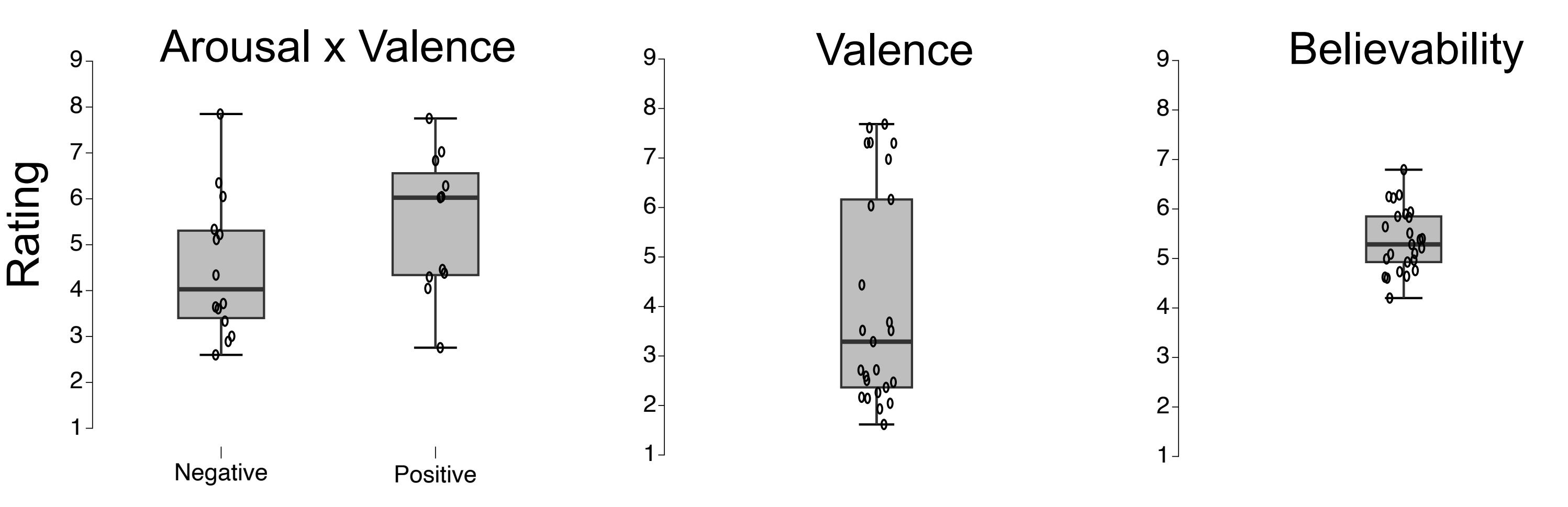
External social cognitive measures (Studies 3 & 4)

- Emotion inference from eye regions - RMET (Baron-Cohen et al., 2001)
- Emotion inference from videos - BLERT (Bell et al 1997)
- Emotion inference from face pictures - ER40 (Kohler et al 2003)
- Alexithymia self-report - TAS-20 (Bagby et al 1994)
- Levels of autistic symptoms - AQ (Baron Cohen et al. 2001)
- Intellectual functioning - KBIT (Kaufman et al 2004)

Results

Study 1: Stimulus validation

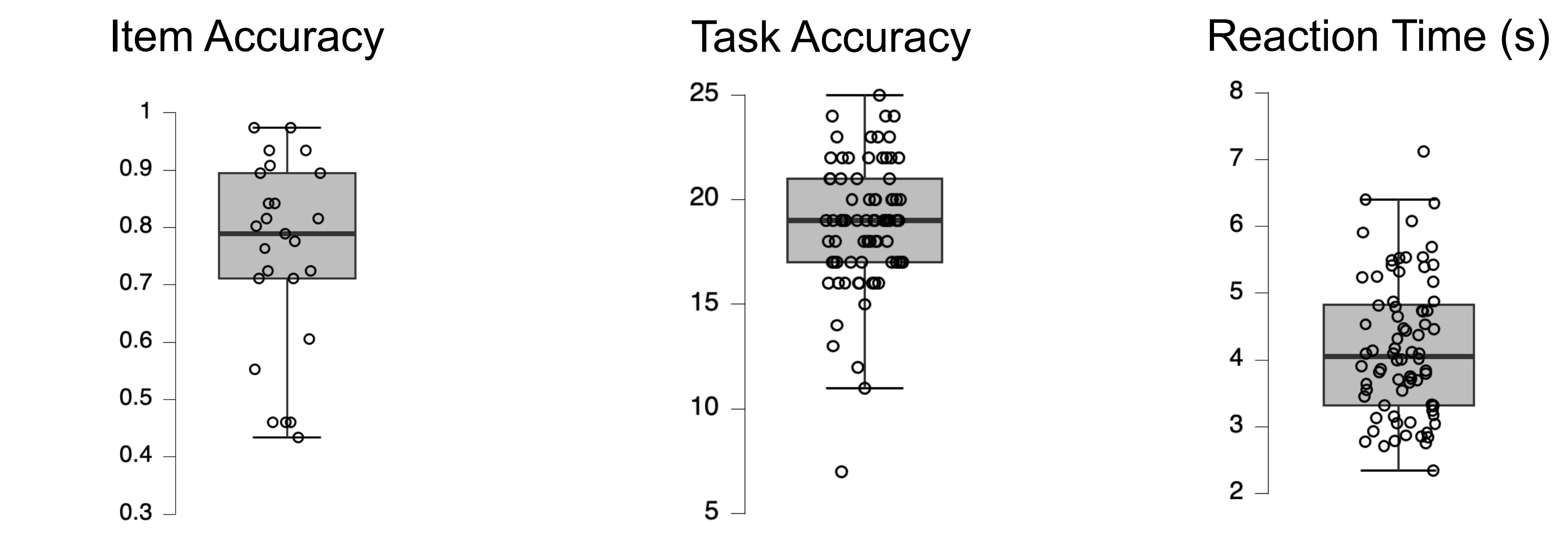
Do valence/arousal ratings confirm the intended stimulus categories?
 Are expressions of emotions believable?
 → 3 rounds of iterations with 3 samples (n = 40)



Final set of selected stimuli: 14 actors (6 male); 13 new videos

Compassionate, Bored, Wistful, Surprised, Relieved, Envious, Furious, Worried, Enthusiastic, Expectant, Disgusted, Angry, Happy, Forgiving, Doubtful, Content, Embarrassed, Touched, Disappointed, Interested, Fearful, Confident, Apologetic, Contemptuous, Amused

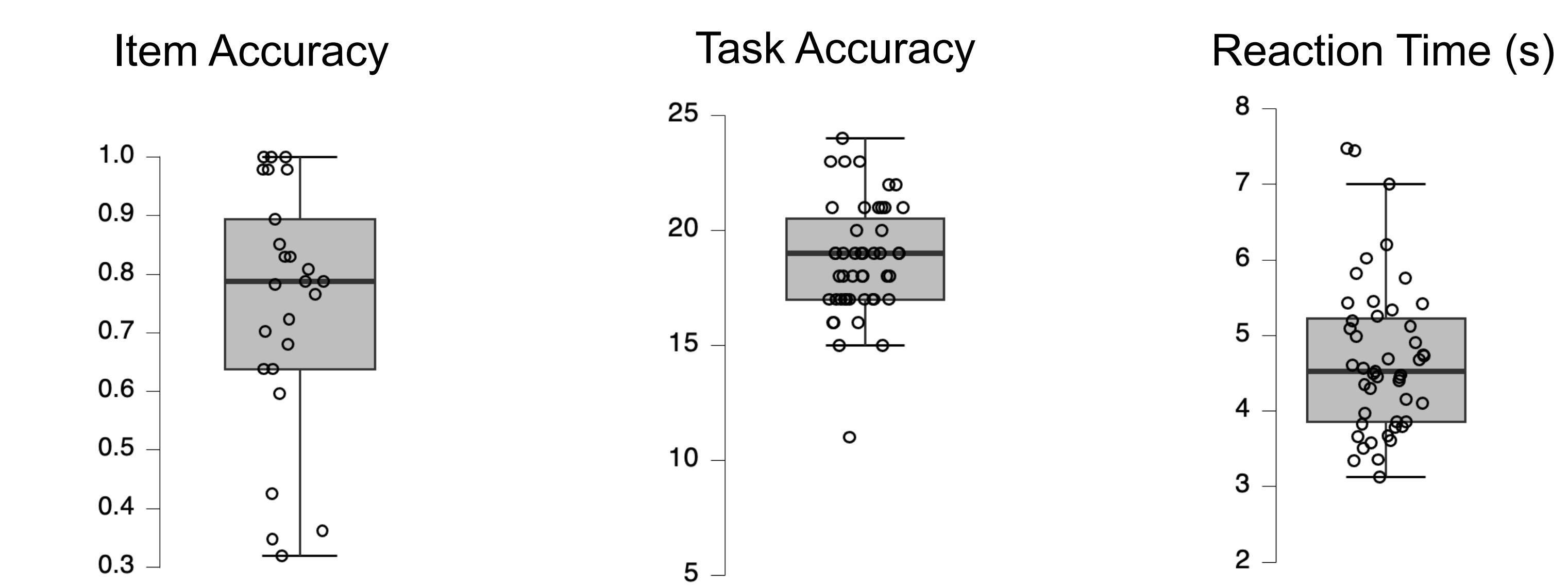
Study 2: Improve internal consistency



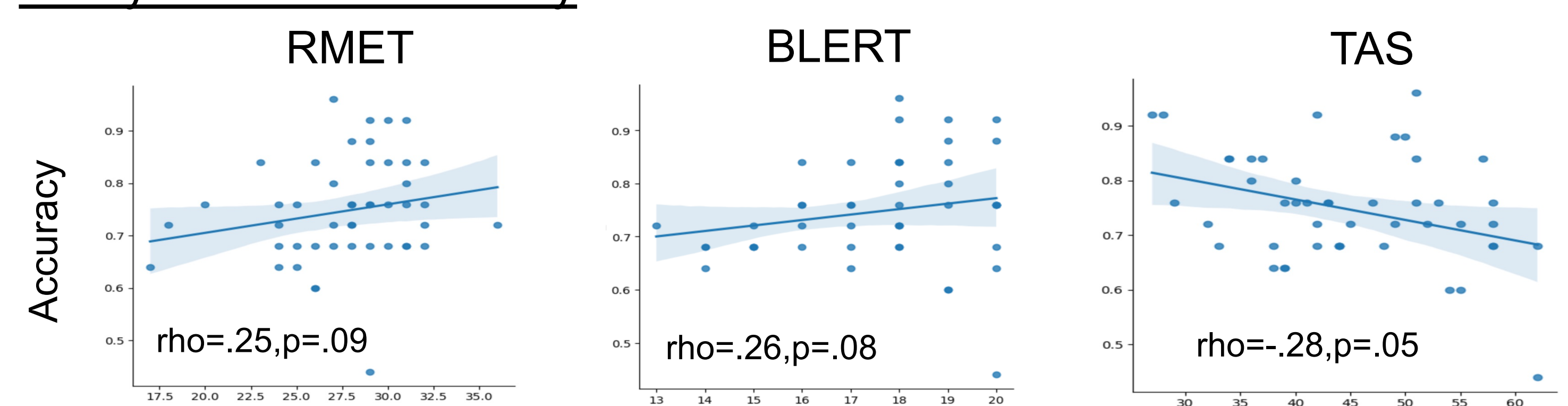
Internal Consistency

25 items: Cronbach's alpha = .61
 20 items: Cronbach's alpha = .68 (excluded: angry, expectant, happy, interested, envious)
 < 50% accuracy: Expectant (43), Apologetic (46), Wistful (46), Forgiving (46)

Study 3: Task performance

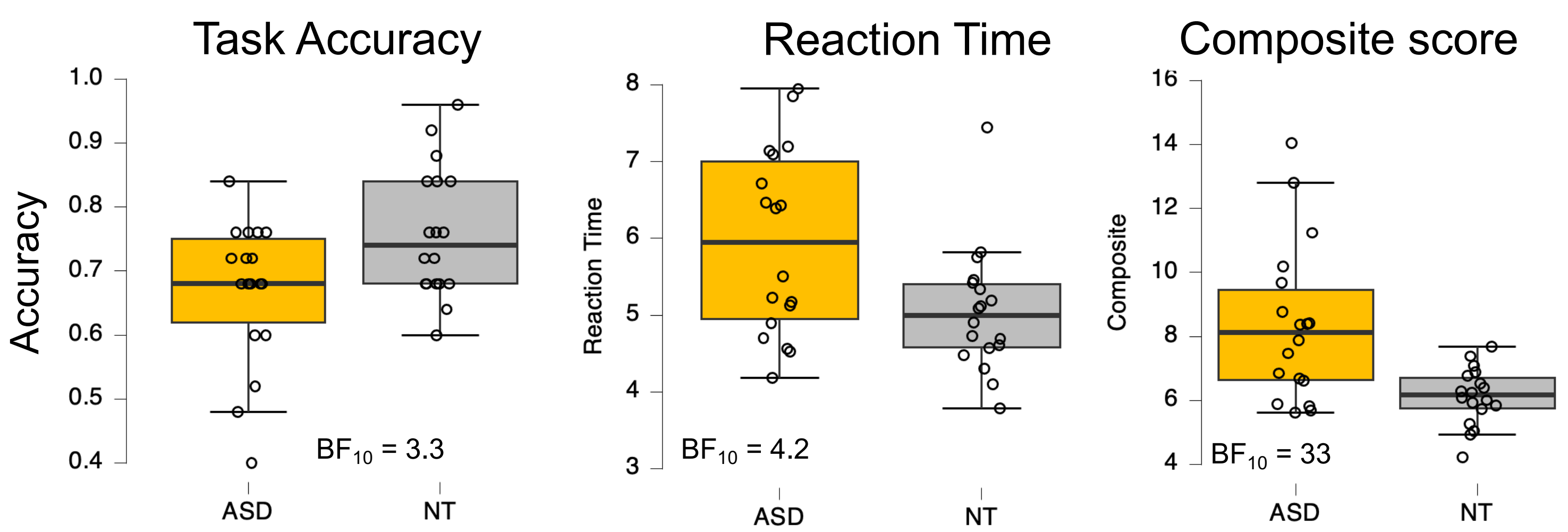


Study 3: External validity

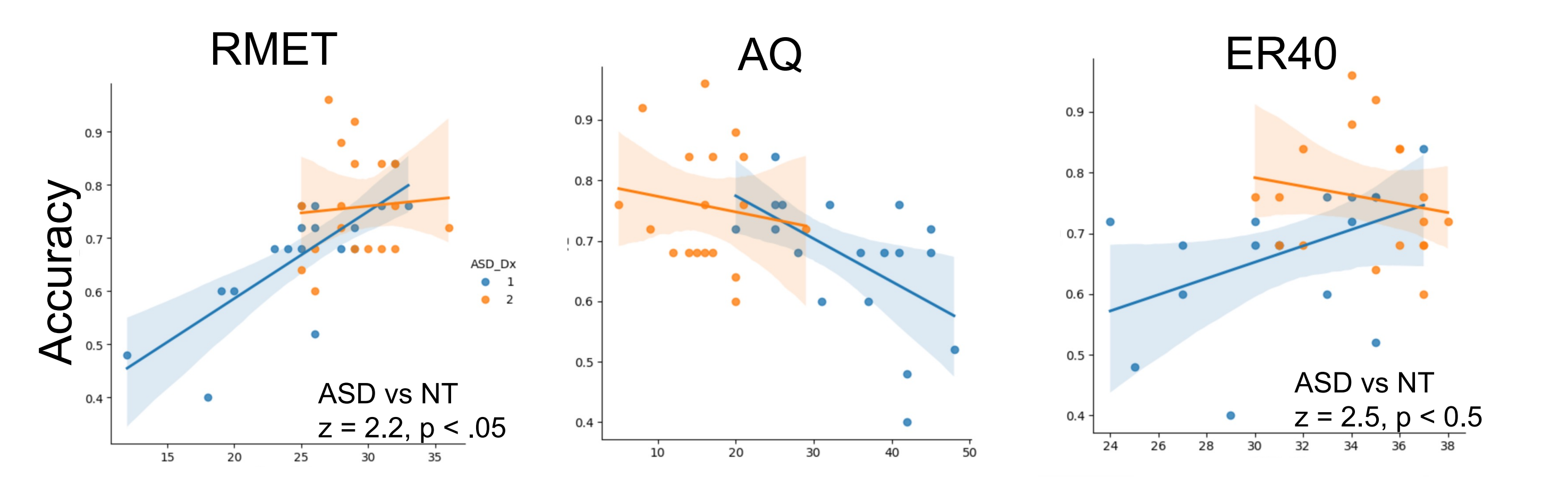


AQ, KBIT, ER40: all p > .15

Study 4: Sensitivity to atypical social cognition



Bayesian ANCOVAs (covariates = age, verbal IQ)



TAS (p = .08), KBIT verbal (p = .90), BLERT (p = .10)

Internal Consistency (NT n = 47, ASD n = 18)

25 items: Cronbach's alpha = .46
 20 items: Cronbach's alpha = .58 (excluded: angry, contempt, happy, envious, worried)

Conclusion

Validated English version of Face Puzzle with validated facial stimuli shows acceptable internal consistency and sensitivity to atypical facial emotion recognition.

Future Directions

Assess external validity with different (more ecologically valid) measures and larger more diverse samples including other psychopathologies (e.g., schizophrenia or anxiety)

References
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