



# Dexamphetamine effect on schizotypy and tactile funneling illusion (TFI) experience in healthy participants



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## BACKGROUND

The process of integrating of stimuli depends on the stimulus binding windows (SBW) over which the stimuli are presented.

These SBWs are wider in people with Schizophrenia [1,2]. DA is critical in schizophrenia, but its role in SBWs is unknown, although a study on DEX effects on small number of participants using the TFI or RHI indicates that it may increase binding windows [3].

## AIMS

- To examine the effect of DEX, as a DA-releasing stimulant, on SBWs and TBW
- To examine the relationship between the effects of the DEX on BWs
- To look the effect of DEX on schizotypy in healthy subjects.
- To look the effect of schizotypy on BWs.

## METHODS

- Sixty Six healthy participants were used
- A randomized, double-blind, counter-balanced placebo-controlled cross-over study.
- The effect of DEX (0.45mg/kg, PO) on schizotypy and TFI were tested.
- Five Spatial (5 -1 cm) and three delay conditions (0, 500 and 750 ms) were used to measure the TFI.
  - Variables: Funneling (F) & Error of Spatial Localization (EL)
- Psychological scales: To asses schizotypy effect of the drug
- Physiological measures : blood pressure, body temperature and heart rate
- The statistical analysis was performed using R version 3.5.1
  - ANOVA (~ pairwise t test) and Kernels density estimation were used

## RESULTS

✓**Drug Effect:** significant main effect of DEX on Error of Spatial Localization but not on Funneling in the overall participants ( $p < 0.05$ ).

➤**Temporal and Spatial Conditions:**

✓There were Spatiotemporal effect on the experience of illusion ( $p < 0.001$ )

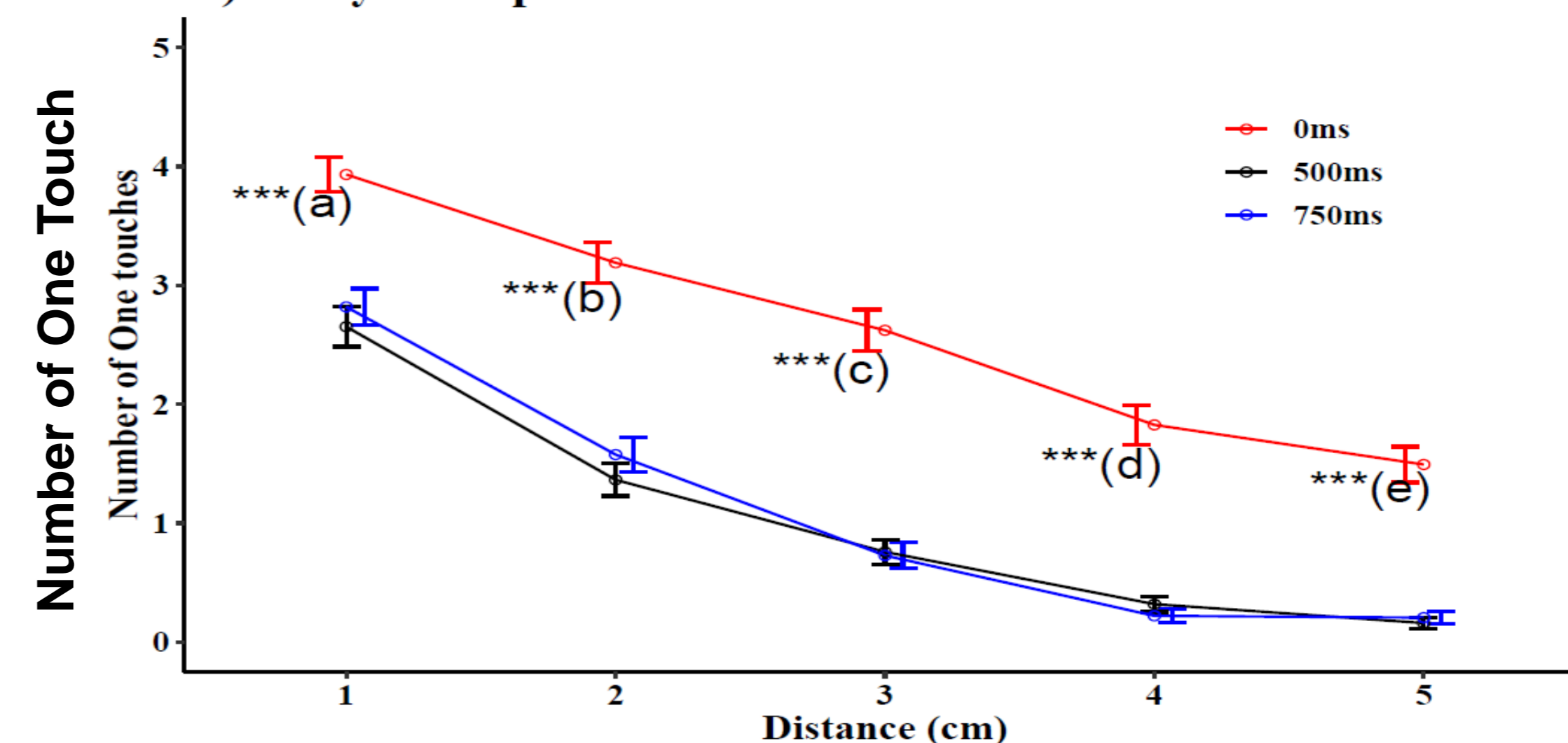
➤**Drug effect on TBW:**

✓significant main effect of DEX on TBW was observed at 500 ms delay condition ( $p < 0.05$ ).

➤**Schizotypy Score and TFI:**

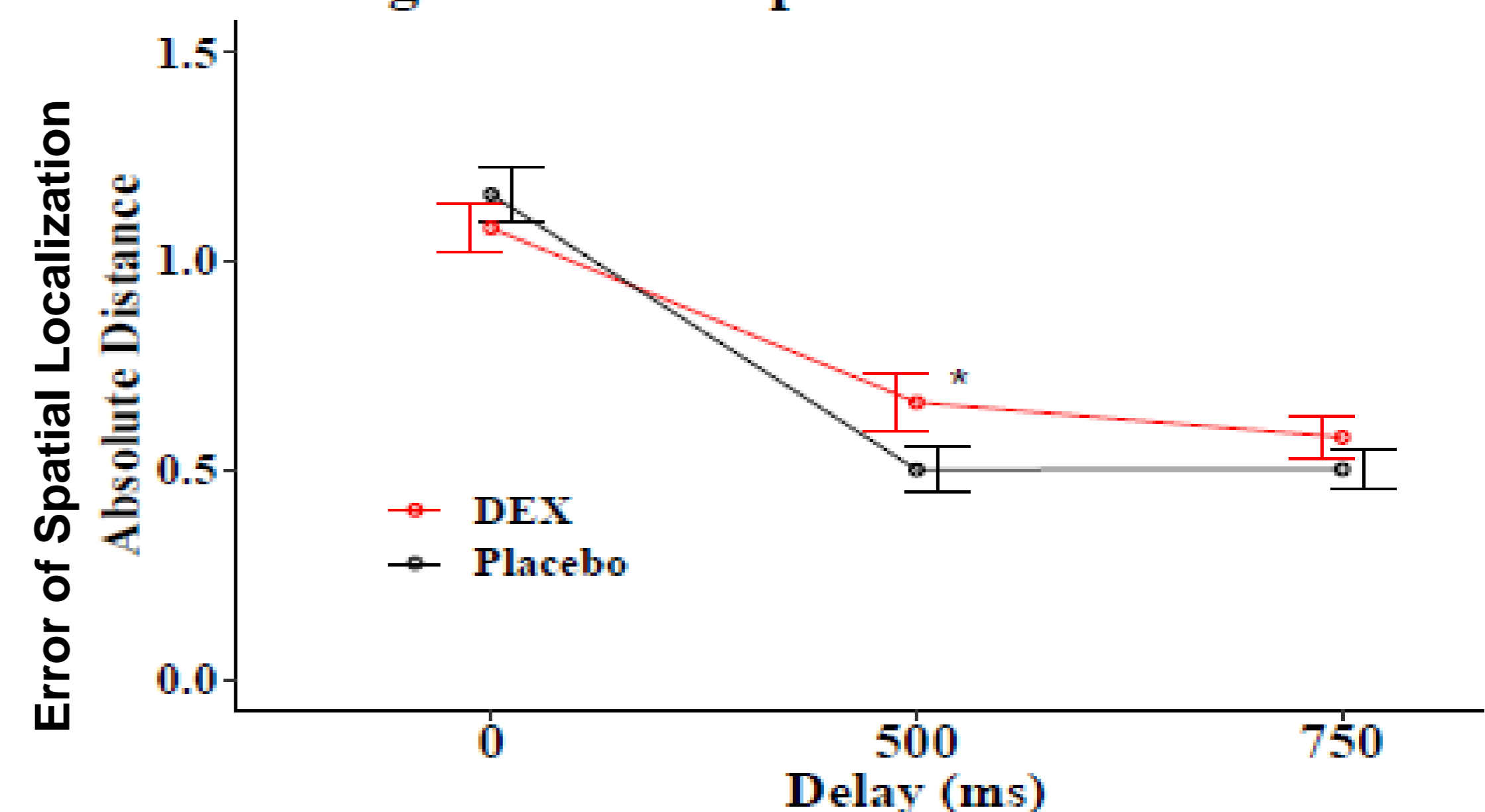
- DEX increased schizotypy score ( $p < 0.01$ )
- DEX increased illusion (both F and EL) in schizotypy subjects ( $p < 0.05$ )
- Schizotypy subjects experience more TFI illusion than the non-schizotypy one

A) Delay and Spatial Effect on Number of One Touches



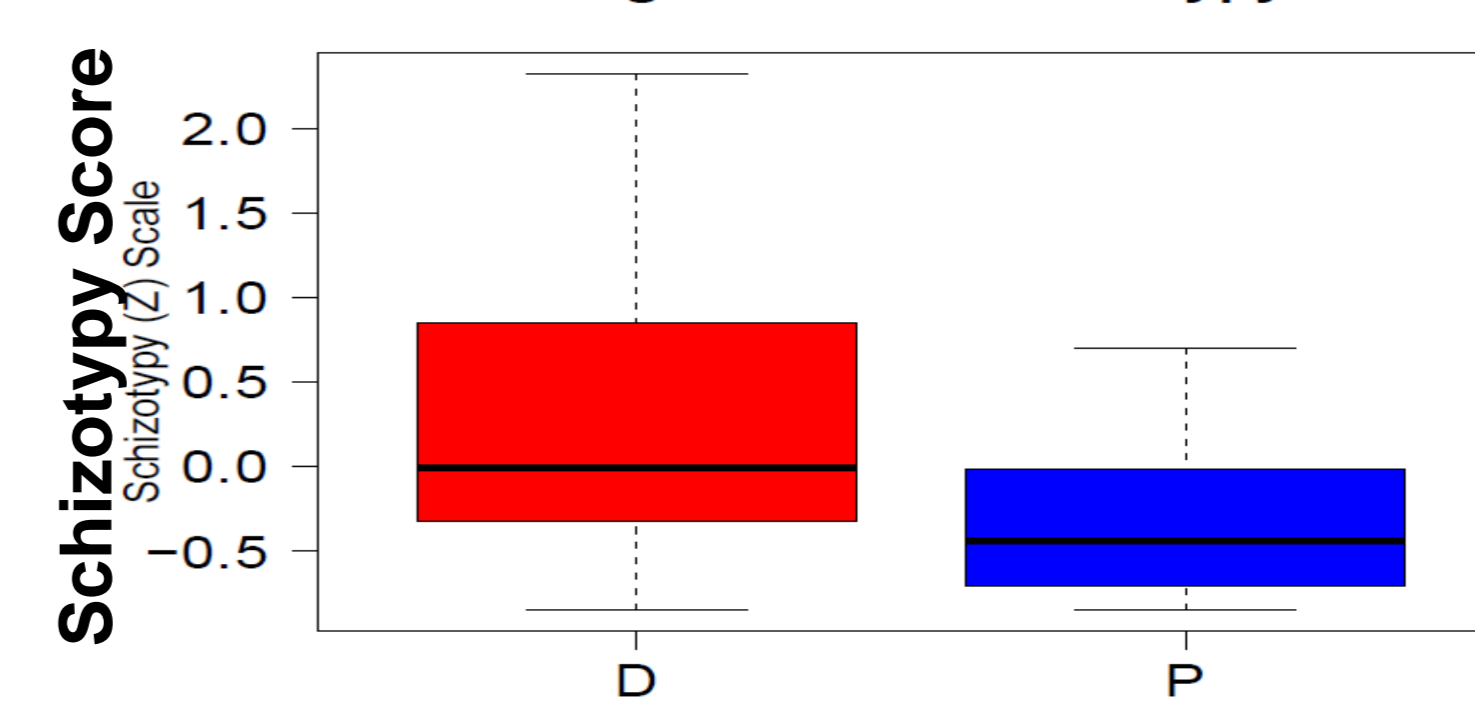
Spatiotemporal Effect on EL ( $p < 0.001$ )

Drug Effect on Spatial Localization

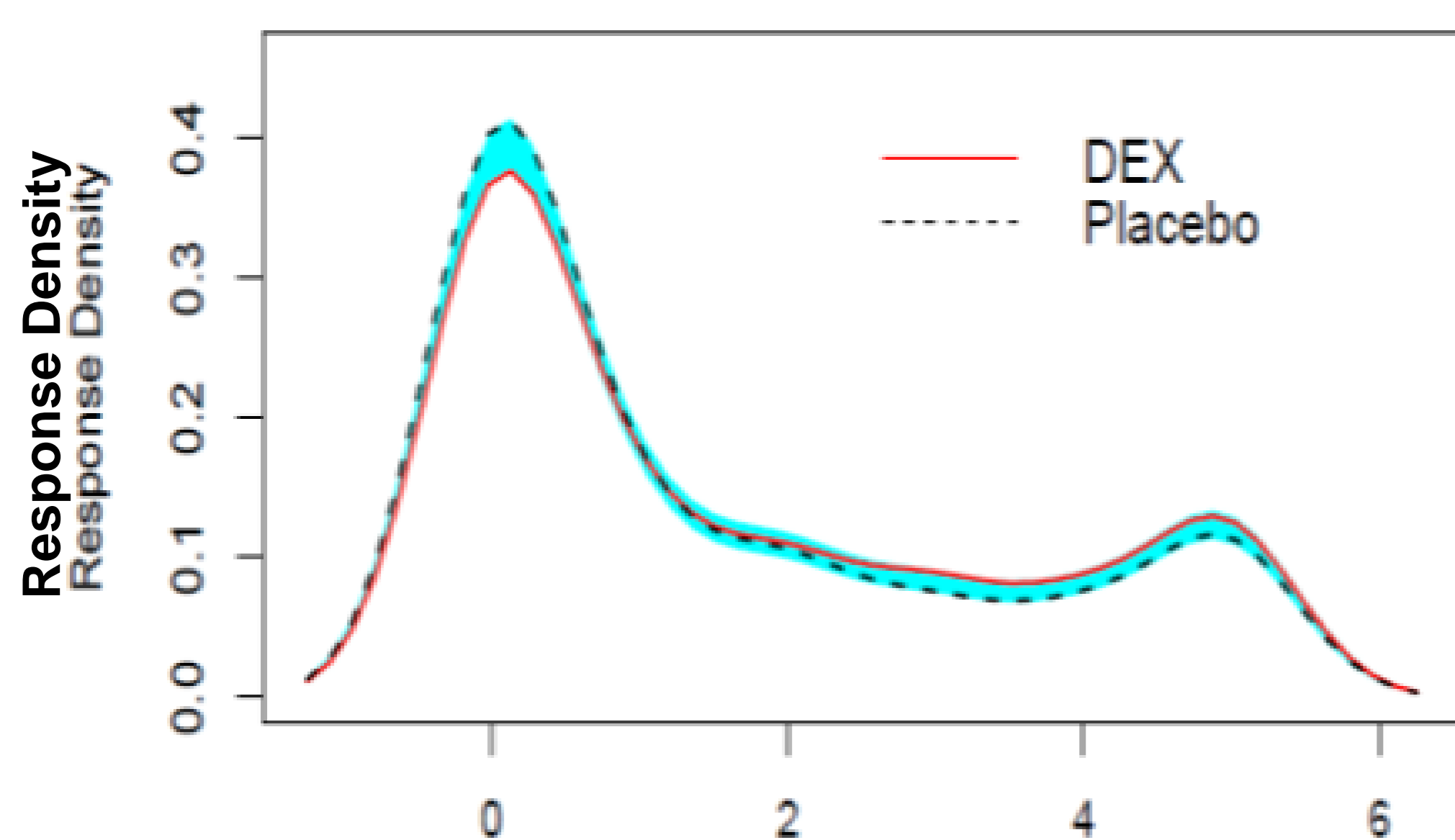


DEX (0.45mg/kg, PO) Effect on EL on TBW ( $p < 0.05$ )

Drug Effect on Schizotypy

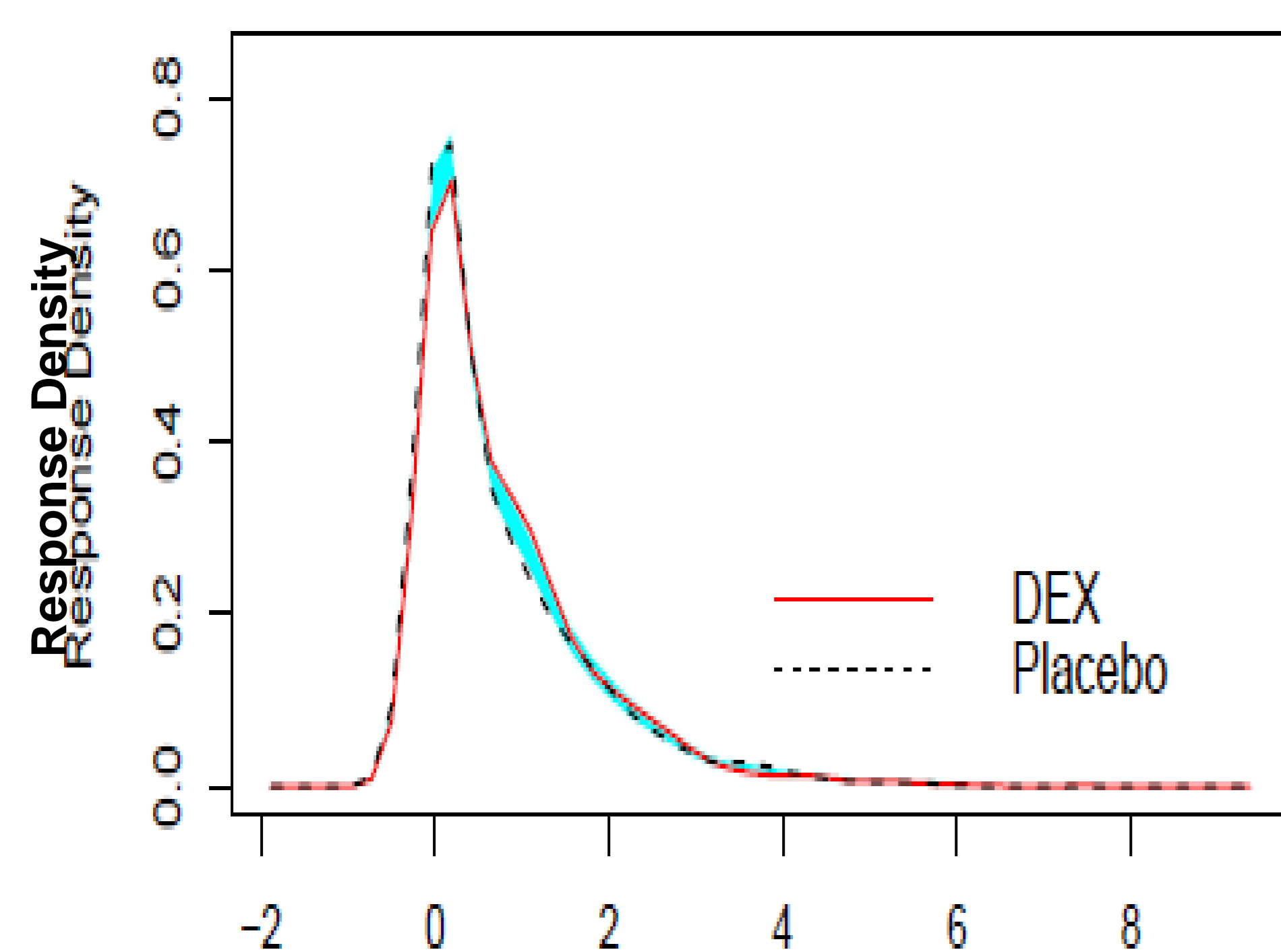


A) Drug Effect on the Number of One Touches



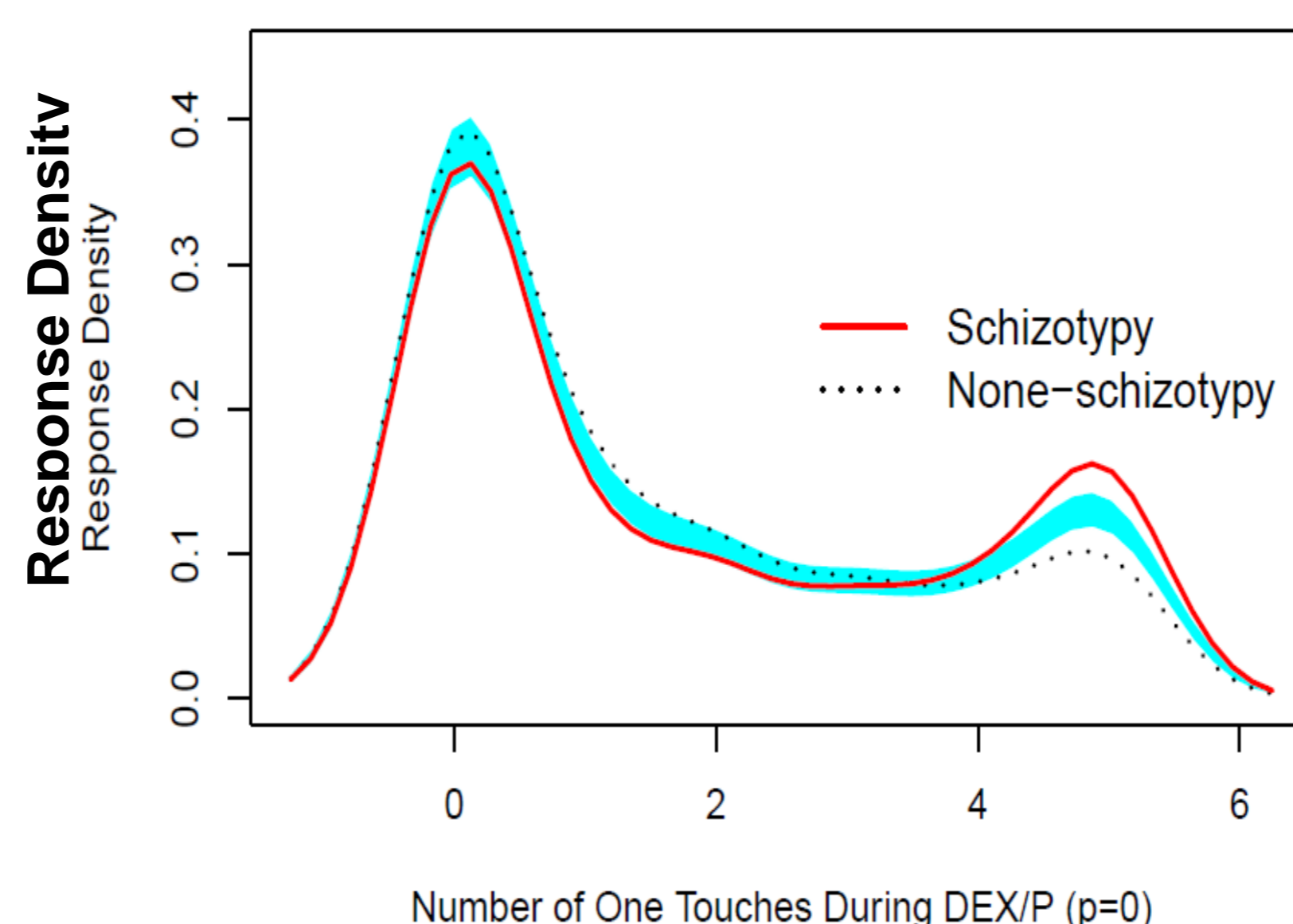
DEX (0.45mg/kg, PO) Effect on Funneling ( $p > 0.05$ )

B) Drug Effect on Spatial Localization



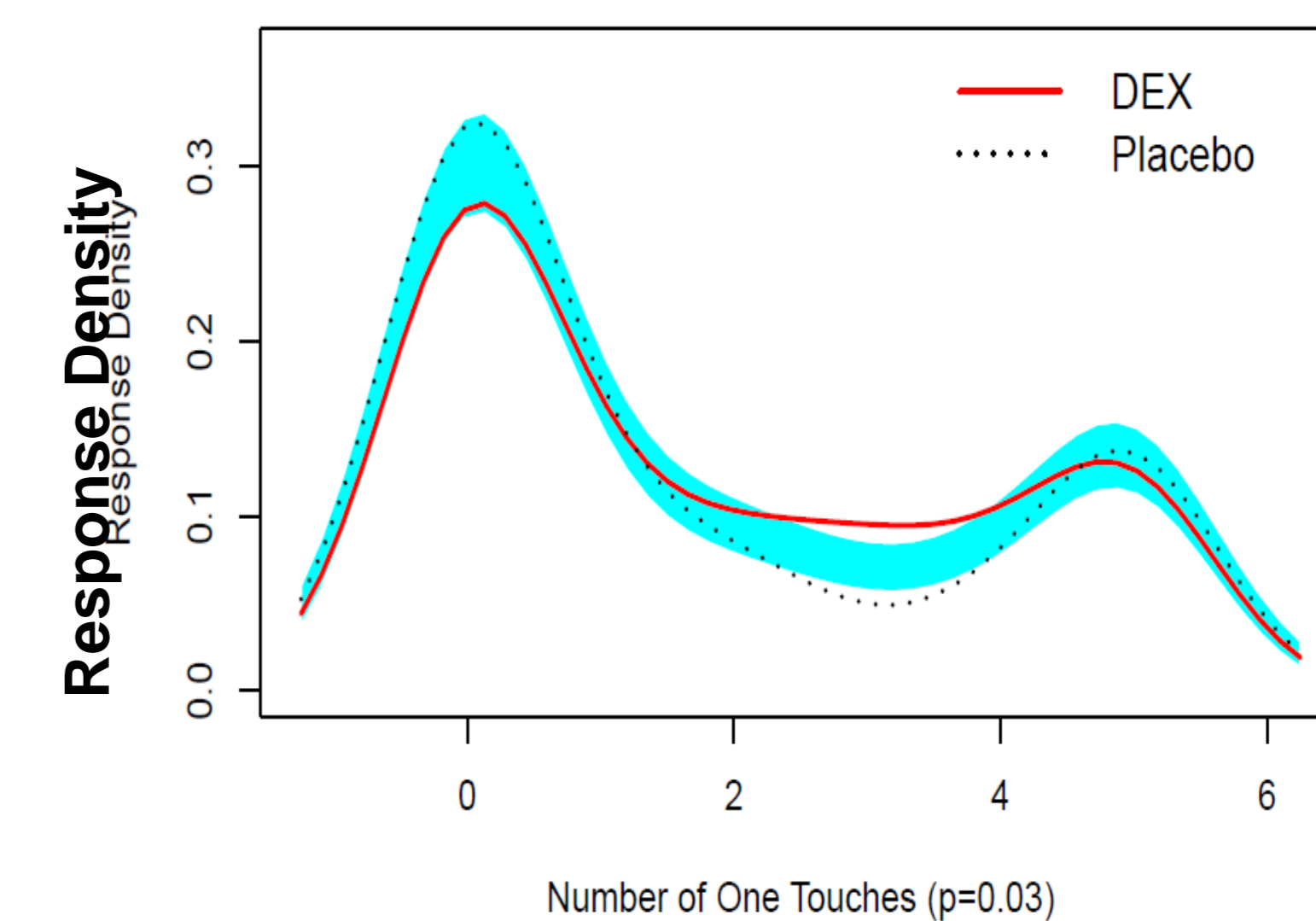
DEX (0.45mg/kg, PO) Effect on SBW (Error of Spatial Localization) ( $p < 0.05$ )

A) Schizotypy Effect on the Number of one Touches



Schizotypy Effect on Funneling ( $p < 0.001$ )

A) Drug Effect on Schizotypy TFI



DEX (0.45mg/kg, PO) Effect on Funneling in Schizotypy ( $p < 0.05$ )

## ACKNOWLEDGMENT

•University of Western Australia, Volunteers and Colleagues

## References

1. Noel JP, Modi K, Wallace MT, Van der Stoep N. (2018a). Atypical audiovisual temporal function in autism and schizophrenia: similar phenotype, different cause. *Eur J Neurosci.* 47(10):1230-1241.
2. Van der Weiden, A., Prikken, M., & van Haren, N. E. M. (2015). Self-other integration and distinction in schizophrenia: A theoretical analysis and a review of the evidence. *Neuroscience & Biobehavioral Reviews.* 57, 220-237
3. Albrecht, M.A., Martin-Iverson, M.T., Price, G. et al. (2011b). Dexamphetamine effects on separate constructs in the rubber hand illusion test *Psychopharmacology* 217: 39

## CONCLUSION

➤ We conclude that increasing DA increases error of spatial localization in healthy subjects, increases schizotypy and widens temporo-spatial binding windows in both schizotypy and overall individuals