Examining the Roles of Symptom Accommodation and Obsessive-Compulsive Symptom Severity in Decision-Making Processes

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Obsessive-compulsive disorder (OCD) is a debilitating psychiatric condition that affects approximately 1.3% of the global population[1,4]. Research has shown that family accommodation (FA) maintains obsessive-compulsive (OC) symptoms and impedes treatment outcomes by implicitly validating obsessive thoughts and rituals such as checking symptoms.
- A core feature of OCD is compulsive checking, reflecting potential impairments in repeated decision-making processes. **Symptom Accommodation (SA)**, adapted from FA, represents accommodations made by family or friends[3,6].

Previous OC studies using drift-diffusion models (DDMs) have consistently identified impairment in decision-making, including reduced rates of evidence accumulation and elevated decision threshold, yet few have examined repeated decision making scenarios[2,9,10].
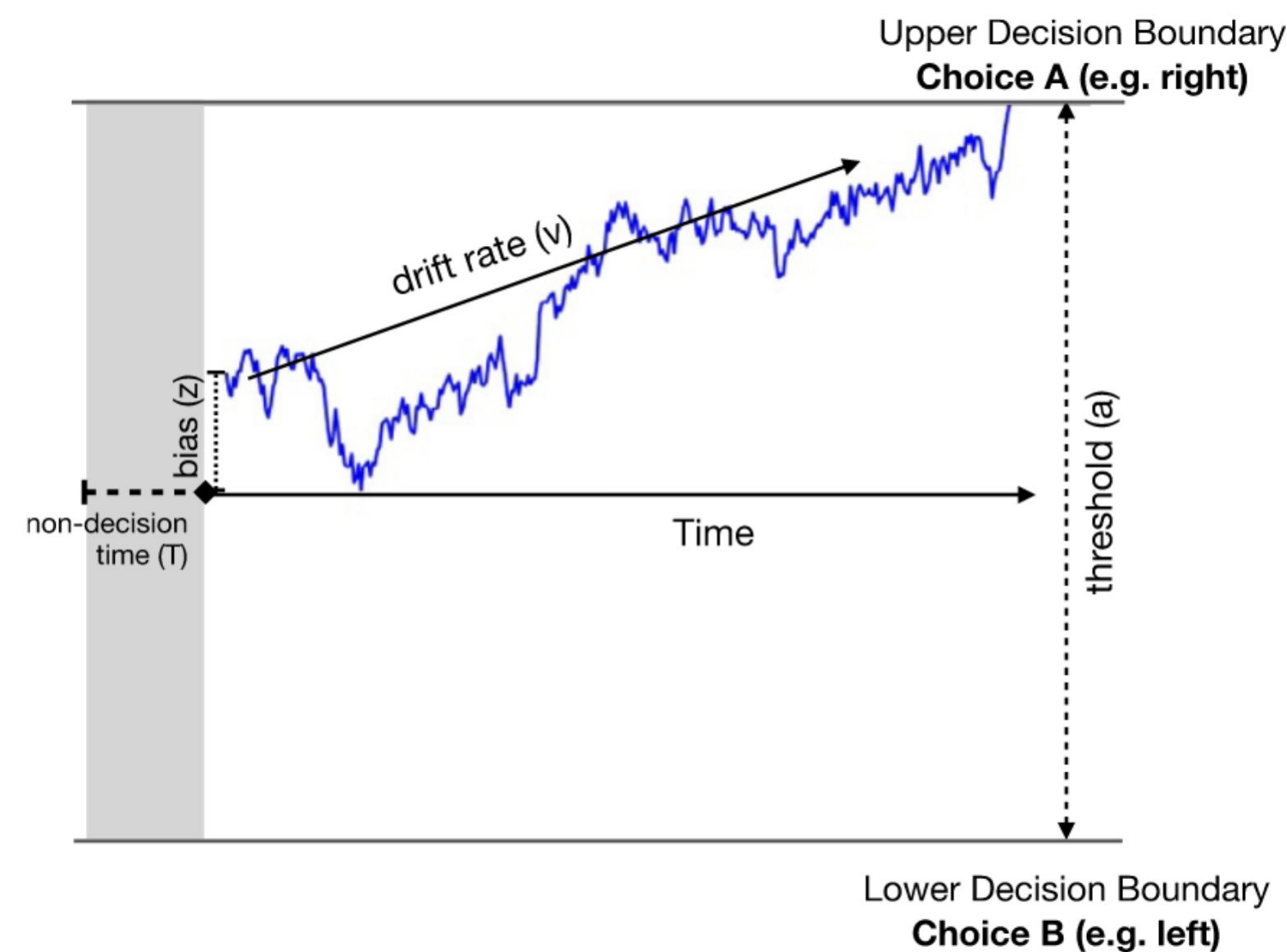

Hypotheses

Specific decision mechanisms under the context of repeated decision making would correlate with SA and OC severity:
1. **Higher SA and OC symptoms will correlate with a reduced rate of evidence accumulation, as well as a more conservative (i.e. increased) decision threshold, during dot motion decisions.**
2. **Higher SA and OC symptoms will correlate with a reduced rate of evidence accumulation, as well as with a more conservative decision threshold, when deciding whether to repeat a previous decision.**

Method
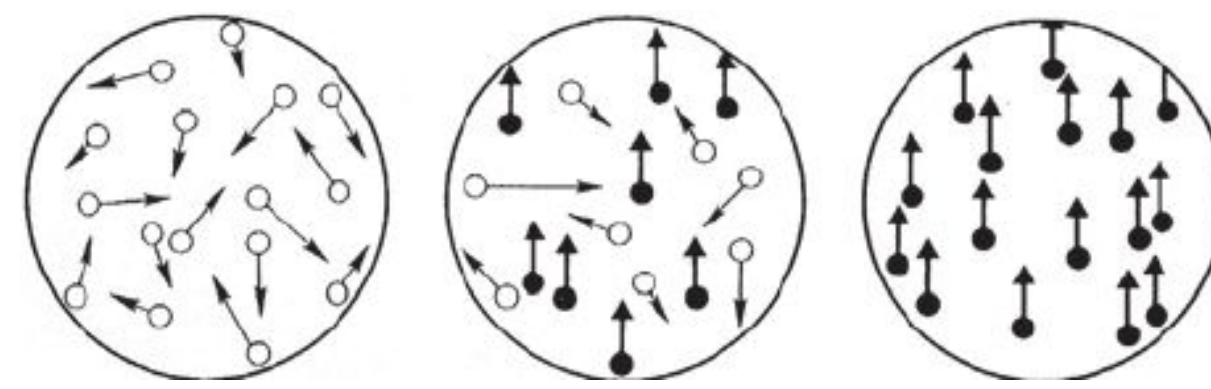
Data from college students (n=100, 65% BIPOC, 69% female) with various levels of OC symptoms.
- High OC individuals were oversampled to reach 50% of total participants. Participants consented, and then completed an online Repeated Decision Making Task, followed by a set of questionnaires.

Trial-by-trial reaction times and decisions were analyzed using hierarchical latent behavioral modeling implemented with Bayesian methods via the Stan package in R[5,7]. All model parameters converged well (R_hat < 1.1).

Regressors:
- Dot Motion Trial Difficulty (low, medium, high)
- OC severity (as measured by PADUA Inventory[8])
- OC symptom accommodation scores (measure adapted from Family Accommodation Scale - Patient Version[3])
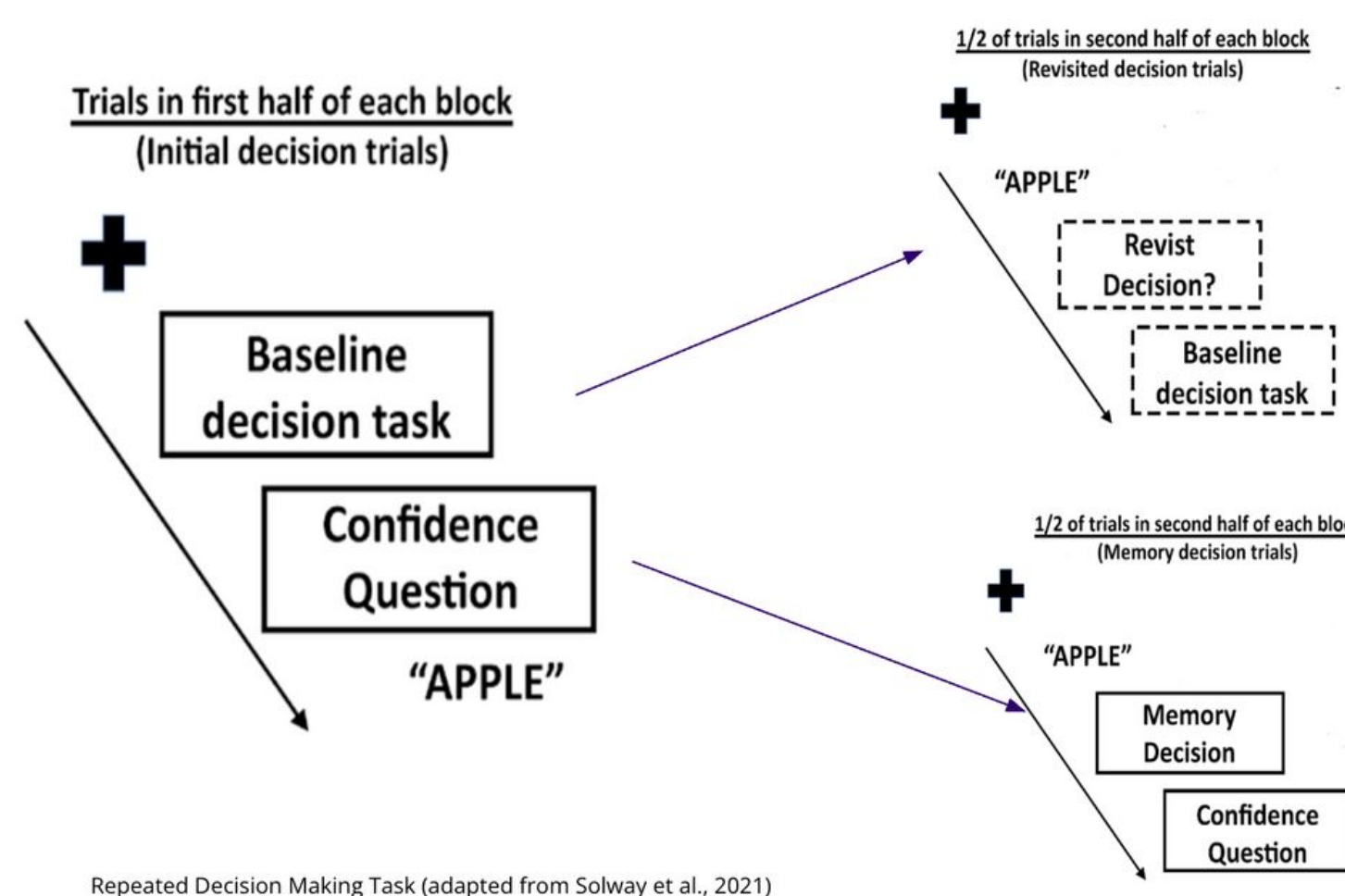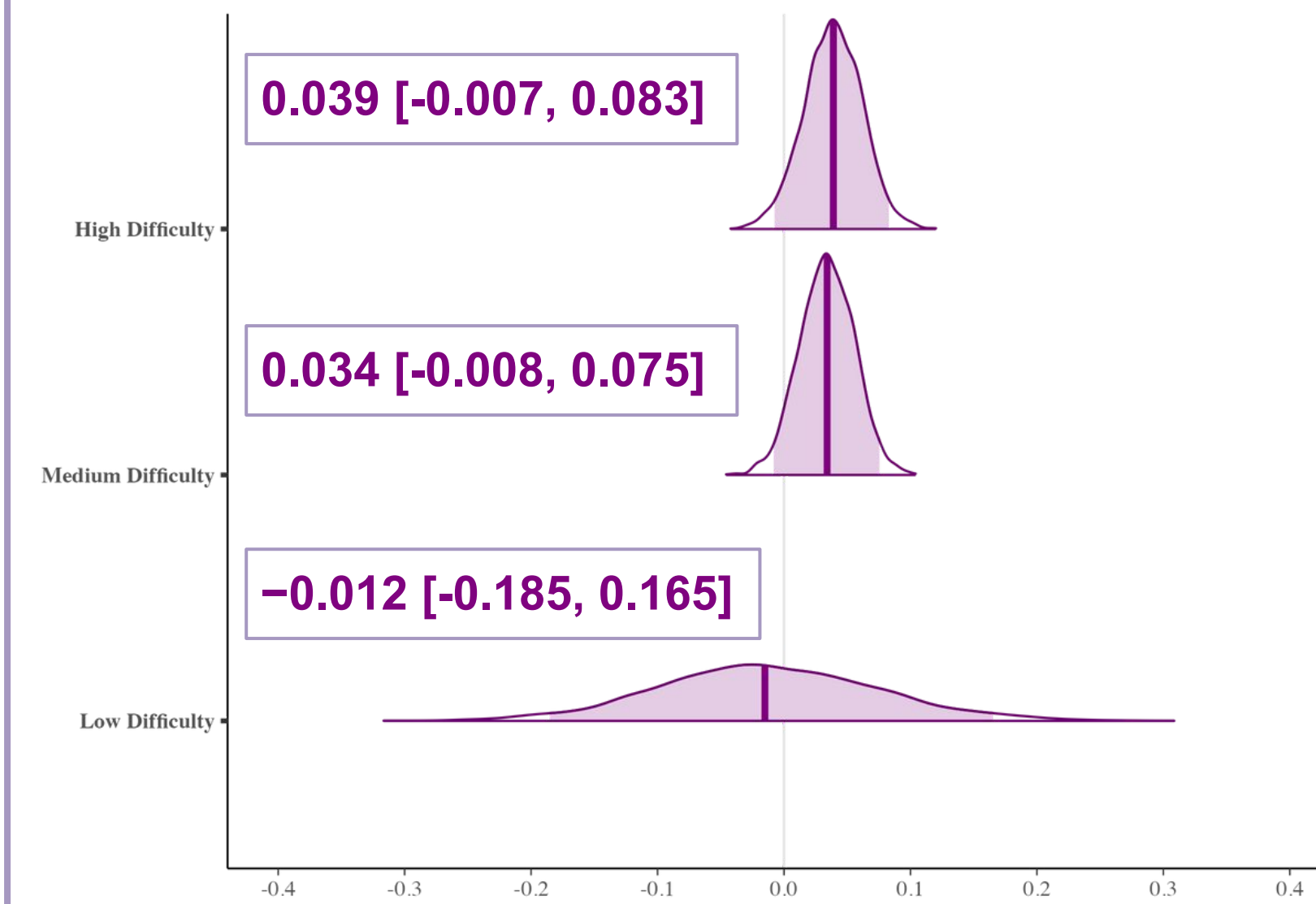

Repeated Decision Making Task (adapted from Solway et al., 2021)

Results

Fig. 1 Effect of OC Severity on Drift Rate, Initial Decisions with medians and 95% intervals

−0.089 [−0.138, −0.040]
−0.031 [−0.075, 0.013]
-0.002 [−0.173, 0.168]
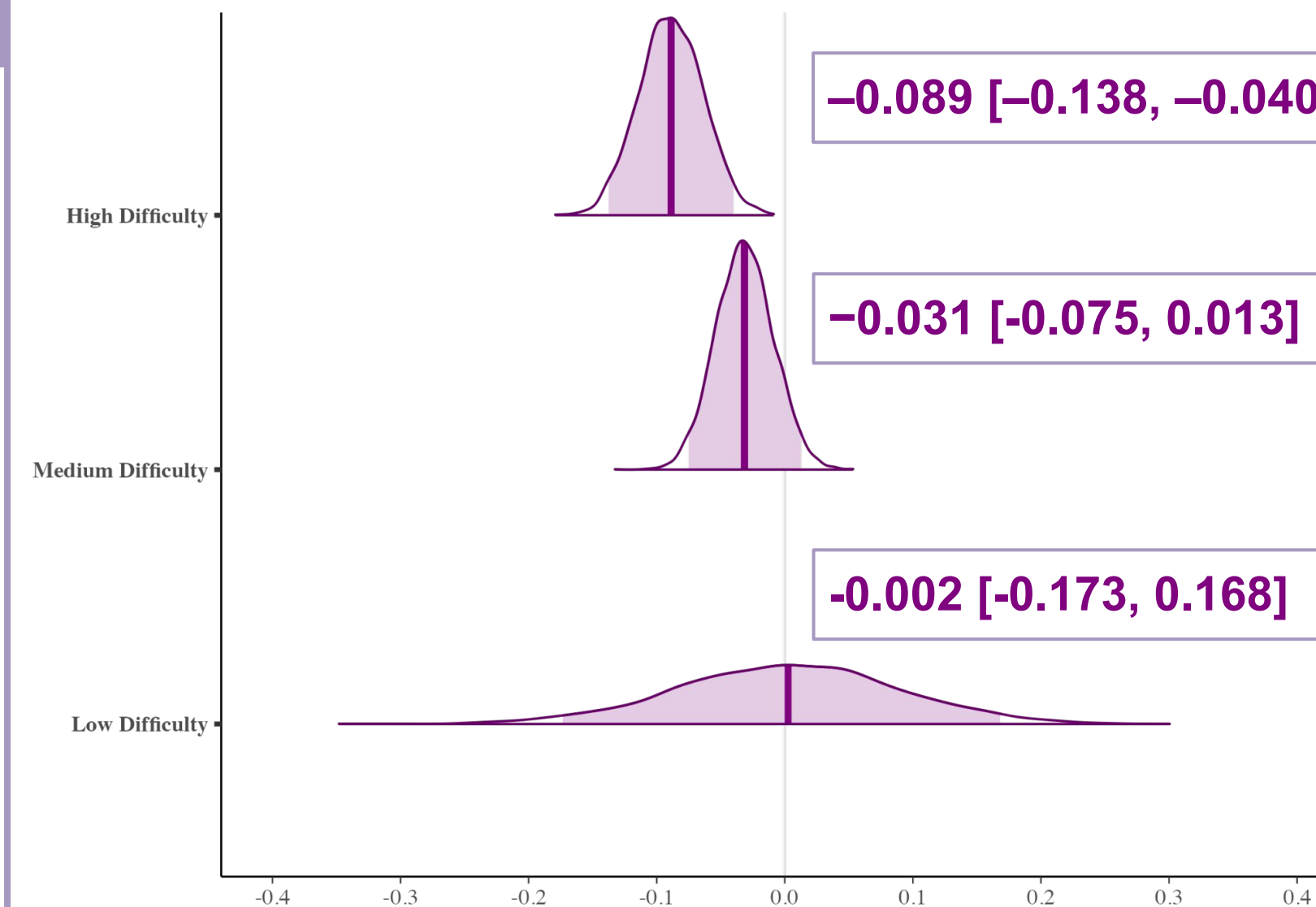
Fig. 2 Effect of Symptom Accommodation on Drift Rate, Initial Decisions with medians and 95% intervals

0.039 [-0.007, 0.083]
0.034 [-0.008, 0.075]
−0.012 [-0.185, 0.165]

Fig. 3 Effect of OC Severity on Decision Threshold, Phase Two Decisions with medians and 95% intervals

−0.061 [-0.123, 0.002]
−0.063 [-0.126, 0]
0.082 [-0.016,0.178]
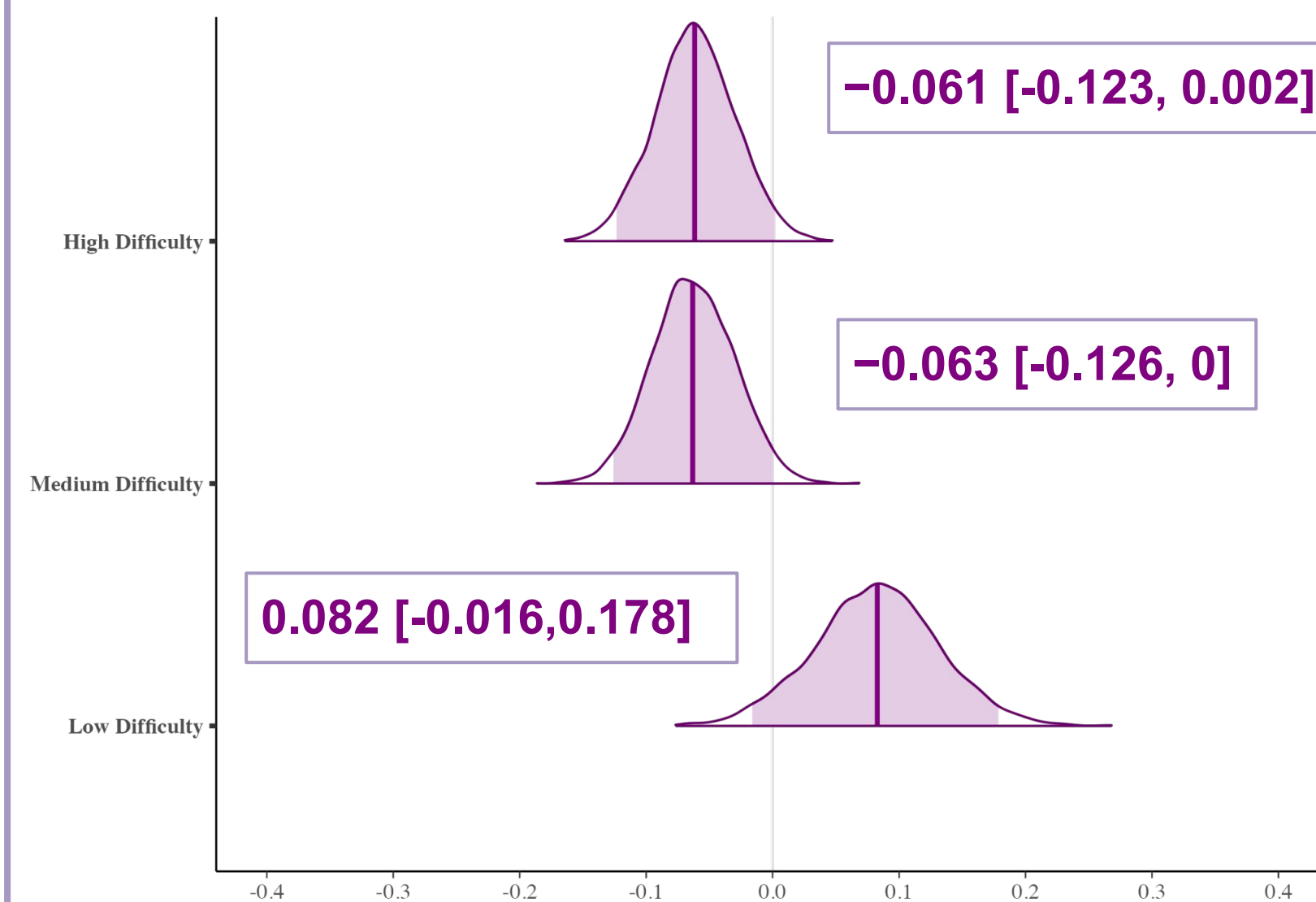
Results

Initial Decisions (Hypothesis 1)
- OC severity was associated with lower speed of evidence accumulation in high difficulty trials, but not medium and low difficulty trials (Fig. 1).
- SA was associated with marginal increase in drift rate in medium and high difficulty trials (Fig. 2).

Repeat Decisions (Hypothesis 2)
- OC severity was associated with marginal decrease in decision threshold when deciding to repeat high and medium difficulty trials (Fig. 3).

Discussion

We investigated the trial-by-trial estimation of the effects of SA and OC symptoms in decision-making processes.
- The marginal increase in the decision threshold (Fig. 3) could potentially be explained by high OC individuals are heavily biased towards repeating, instead of not repeating their decisions.

Since **we did not find significant evidence supporting the association between SA and changes in decision making parameters**, SA may play a more limited or context-dependent role in cognitive functioning in OCD. Our next step is to look at more complex interactions between OCS and SA, and to explore whether SA plays a role more for certain OC symptom domains, or whether certain types of SA may have a greater moderating impact on decision-making.

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