Supplementary Data

Effects of Concurrent Levodopa Use

Twenty-three of the PD patients were taking agonist plus levodopa co-therapy, while the remaining fifteen patients were on agonist monotherapy. In order to assess the degree to which the presence or absence of levodopa altered agonist effects, we performed separate analyses that included the factor structure *Agonist* (on, off) x *Levodopa* (none, present) x *Correspondence* (corresponding, non-corresponding). The ICB factor was not included in this analysis because such a partitioning reduced sample sizes of each between-subject cell and therefore reduced power. Our primary concern was whether the presence or absence of levodopa impacted the agonist effects, thus we focused on the main and interaction effects associated with the between-subjects Levodopa factor as the pattern of effects involving the other factors did not change from the original analysis.

Mean Interference effects on RT and Accuracy. Overall mean RT and accuracy rates did not differ between patients on agonist monotherapy or on levodopa co-therapy ([487 ms, 96.9% vs. 477 ms, 95.0%] *Levodopa*: RT, $F(1,36)=0.21$, $p=.65$; Accuracy, $F(1,36)=1.41$, $p=.24$). Moreover, patients in the two groups showed similar Simon effects on RT ([Agonist Monotherapy 42 ms; Levodopa co-therapy 39 ms] *Levodopa x Correspondence*: RT, $F(1,36)=0.10$, $p=.75$), while differing on accuracy rates, with patients on levodopa co-therapy showing a 4% reduction in accuracy on non-corresponding trials compared to a 2% reduction among patients on agonist monotherapy (*Levodopa x Correspondence:* Accuracy, $F(1,36)=4.61$, $p=.04$). Notably, neither RT nor accuracy rates were influenced among patients on levodopa co-therapy when they were withdrawn from their dopamine agonist medication (*Levodopa x Agonist*: RT, $F(1,36)=0.46$, $p=.50$; Accuracy, $F(1,36)=1.22$, $p=.28$), irrespective of the correspondence of the stimulus-response relations (*Levodopa x Agonist x Correspondence*: RT, $F(1,36)=1.02$, $p=.32$; Accuracy, $F(1,36)=0.60$, $p=.44$).

Expression and Suppression of Incorrect Action Impulses. Patients prescribed levodopa co-therapy tended to make more fast errors than patients on agonist monotherapy (*Levodopa*, $F(1,36)=2.84$, $p=.10$), a pattern that also trended toward statistical significance for corresponding or non-corresponding stimulus-response relations (*Levodopa x Correspondence*: $F(1, 36)=2.73$, $p=.11$). Tentatively, these data are suggestive that patients on co-therapy may experience a small increase in initial response system capture by the activation of incorrect action impulses. These patterns of fast errors were also unaffected by agonist state (*Levodopa x Agonist*: $F(1,36)=0.00$, $p=.98$; *Levodopa x Agonist x Correspondence*: $F(1,36)=0.54$, $p=.47$). Including all slopes from the delta plots, only agonist state influenced the delta slopes (*Agonist x Slope*: $F(5,32)=3.75$, $p<.01$). The two levodopa status groups had similar final delta slope values (*Levodopa*: $F(1,36)=0.71$, $p=.40$) that were not differentially affected by agonist state

(*Levodopa x Agonist*: $F(1,36)=0.45$, $p=.50$). This suggests that groups based on the presence or absence of levodopa co-therapy were not associated with differential effects on the dynamics of action suppression.