Section 1

In response to a reviewer's concerns, we also conducted voxelwise analyses of the data in the high and low anxiety groups separately. The voxelwise corrected results are shown in tables 1-3 following. The voxelwise analyses support our choice of ROIs as important regions in these tasks.

Table 1. High Anxiety Voxel-Wise Thresholded Results during All Three Phases of PD Gameplay (N= 17)

Name of Region	Brodmann Area	Voxels	x	y	z	t(1,15)
				MNI Coordinates		
Decision to Cooperate						
R cuneus	17	234	12	-97	10	10.44
Decision to Defect						
R dlPFC	46	24	27	59	22	9.93
R IFG	44	79	51	20	28	11.61
L IFG	44	20	·42	23	31	9.41
L TPJ	40	117	·33	-46	37	10.42
R hippocampus		24	24	-31	0	12.82
L hippocampus		16	·24	-34	-2	10.44
R mid occipital lobe	17	1039	33	-91	7	17.38
Anticipation following Cooperation						
aMCC	32	42	9	35	40	5.46
R cuneus	17	138	15	-97	10	7.62
Anticipation following Defection						
L dlPFC	46	56	·48	47	-2	5.29

Feedback Co-Player Cooperation						
R dmPFC	32	25	-3	41	31	9.72
R aMCC	32	25	6	38	31	8.50
R caudate		24	15	11	1	11.17
Feedback Co-Player Defection						
L dlPFC	9	18	·39	20	49	10.21
R dmPFC	32	42	6	32	40	9.69
R IFG	45	13	45	29	37	9.50
L TPJ	40	50	·45	-49	49	10.21
R TPJ	40	55	51	-43	46	9.22
L calcarine	17	31	-6	·103	1	10.51
Reciprocated Feedback						
L TPJ	40	25	·39	-49	40	8.82
R TPJ	40	42	36	-64	49	8.58
R cuneus	17	42	12	-97	10	10.55
Unreciprocated Feedback						
R dmPFC	32	16	6	35	40	9.36
L TPJ	40	42	·48	-52	49	9.12
R TPJ	40	11	45	-58	52	8.41
R Cuneus	17	23	15	-94	7	8.44

Note: all results reported at a voxelwise threshold of $p < .05$, FWE-corrected except for anticipation phases results which are reported at an initial voxelwise threshold of $p < .001$, clusterwise threshold of $p < .05$, FDR-corrected.

Table 2. Low Anxiety Voxel-Wise Thresholded Results during All Three Phases of PD Gameplay (N= 14)

Name of Region	Brodmann Area	Voxels	MNI Coordinates			$t(1,12)$
			x	y	z	
Decision to Cooperate						
L TPJ	40	30	·36	-49	40	14.51
R MFG	45	13	45	41	28	11.91
R lingual gyrus	17	226	6	-79	·11	11.52
Decision to Defect						
R TPJ	40	20	27	-55	40	10.31
L Calcarine	17	716	·12	-97	-5	13.98
Anticipation following Cooperation						
No significant voxels						
Anticipation following Defection						
aMCC	32	53	0	44	46	5.11
R TPJ	40	101	36	-58	49	5.15
R cuneus	17	80	18	-97	10	5.66
Feedback Co-Player Cooperation						
No significant voxels						
Feedback Co-Player Defection						
R dlPFC	9	41	33	17	52	13.16
R ant insula	48	25	27	17	·14	12.15

L ant insula	48	16	27	17	·14	10.68

Reciprocated Feedback

R dmPFC	32	11	12	62	28	14.25
R dlPFC	9	25	21	20	52	10.48
L TPJ	40	12	·51	-49	43	10.18
L calcarine	17	25	·15	-91	-2	10.12

Unreciprocated Feedback

  No significant voxels

Note: all results reported at a voxelwise threshold of p <.05, FWE-corrected except for anticipation phases results which are reported at an initial voxelwise threshold of p <.001, clusterwise threshold of p<.05, FDR-corrected.

Table 3. Direct Comparisons between Anxious Groups during PD Gameplay

Name of Region	Brodmann Area	Voxels	MNI Coordinates x	y	z	$t(1,28)$
Decision to Defect (Low>High)						
L Fusiform Gyrus	37	61	·30	-37	·20	6.08
Feedback Co-Player Cooperation						
(High>Low)						
R caudate		49	15	8	13	4.04

Note: all results reported at an initial voxelwise threshold of p < .001 uncorrected, clusterwise threshold of p < .05 FDR-corrected.

Section 2

2 x 2 Mixed ANOVA of Cooperation Rates Between 1ˢᵗ and 2ⁿᵈ Human Game

For this analysis, anxiety group (high, low) was included as the between-subjects factor, game was included as the within-subjects factor (Game 1, Game 2) and the dependent variable was average cooperation rate of the subjects in game 1 and game 2. The objective was to compare the average cooperation rate across the two games between both groups.

There was a significant main effect of game on the average cooperation rate between games, $F(1,29) = 9.43$, $p = 0.005$. However, there was no significant interaction between game number and anxiety level on the average cooperation rate, $F(1,29) = 0.85$, $p = 0.35$. Overall, participants regardless of anxiety level tended to cooperate less in the second game than they did in the first game.

Table 4. Relationship between anxiety level and cooperation rates between human games

Variables of Interest	Degrees of Freedom	Mean Square	F	Sig
Game	1	1886.79	9.43	0.005
Game x Anxiety	1	169.33	0.85	0.37
Error	29	200.06		

Section 3

Operation of the Computerized Algorithm that Determined Co-Player Behavior

The algorithm used in this study has been previously published in (48). It is based on human patterns of play. The computerized co-player always cooperates during the first round of a game and always defects during the final two rounds of the game. During the other rounds of the game, the computer selects a "choice" based on the participant's pattern of decisions in the prior two rounds. A pattern of defection in the prior two rounds increases the likelihood of computer defection, while a pattern of cooperation in the prior two rounds increases the likelihood of computer cooperation. The algorithm additionally establishes a 50% likelihood that the computer will defect after four consecutive rounds of mutual cooperation. We specified this behavior because prior research has shown that in an iterated game, players engage in mutual cooperation for the majority of the task (47) and such a pattern of play would prevent participants from experiencing perceived betrayal (DC trials) in a suitable numbers of rounds for subsequent statistical analysis. A complete breakdown of algorithm behavior is presented below.

Table 5 Probability that the computer (Player B) will cooperate:

1) Round 1: 100%
2) Round 2:
   a. If Round 1 outcome was CC, then 93%
   b. If Round 1 outcome was DC, then 36%
3) Rounds 3-10:
   a. If outcome of 1st 2 rounds was CCCC: 92%
   b. If outcome of prior 2 rounds was CDCC: 86%
   c. If outcome of prior 2 rounds was DCCC: 78%
   d. If outcome of prior 2 rounds was DDCC: 50%
   e. If outcome of prior 2 rounds was CCCD: 58%
   f. If outcome of prior 2 rounds was CDCD: 0%
   g. If outcome of prior 2 rounds was DCCD: 33%
   h. If outcome of prior 2 rounds was DDCD: 33%
   i. If outcome of prior 2 rounds was CCDC: 86%
   j. If outcome of prior 2 rounds was CDDC: 80%

      k. If outcome of prior 2 rounds was DCDC: 33%
      l.   If outcome of prior 2 rounds was DDDC: 20%
      m. If outcome of prior 2 rounds was CCDD: 50%
      n. If outcome of prior 2 rounds was CDDD: 38%
      o. If outcome of prior 2 rounds was DCDD: 50%
      p. If outcome of prior 2 rounds was DDDD: 43%

4) Rounds 11-18:
      a. If outcome of prior 2 rounds was CCCC: 92%
      b. If outcome of prior 2 rounds was CDCC: 90%
      c. If outcome of prior 2 rounds was DCCC: 100%
      d. If outcome of prior 2 rounds was DDCC: 60%
      e. If outcome of prior 2 rounds was CCCD: 13%
      f.   If outcome of prior 2 rounds was CDCD: 20%
      g. If outcome of prior 2 rounds was DCCD: 67%
      h. If outcome of prior 2 rounds was DDCD: 33%
      i.   If outcome of prior 2 rounds was CCDC: 83%
      j.   If outcome of prior 2 rounds was CDDC: 63%
      k. If outcome of prior 2 rounds was DCDC: 0%
      l.   If outcome of prior 2 rounds was DDDC: 33%
      m. If outcome of prior 2 rounds was CCDD: 33%
      n. If outcome of prior 2 rounds was CDDD: 8%
      o. If outcome of prior 2 rounds was DCDD: 50%
      p. If outcome of prior 2 rounds was DDDD: 25%

5) Rounds 19-20: 0%

Section 4.

Anxiety Assessment.

We assessed severity of SA symptoms using the LSAS-SR. This short questionnaire is designed to measure the range of social interaction and performance situations that an individual fears and/or avoids, as well as the intensity of the fear and the frequency of any avoidance behaviors. Participants are asked to rate, using a Likert-type scale that ranges from 0 to 3 how much fear or apprehension they feel (0) none, 1) mild, 2) moderate, and 3) severe) in each of 24 social situations, 13 of which relate to performance anxiety and 11 of which concern social situations. For each of the 24 social situations, participants then rate how likely they are to avoid each social situation: 0) never, 1) occasionally, 2) often, and 3) usually. Combining the total scores of the Fear and Avoidance sections of the questionnaire yields an overall score with a maximum of 144 possible points.

Section 5.

Details on ROI demarcation

The ROI for the TPJ was generated based on McClure-Tone et al.'s approach (25). The TPJ ROI consisted of a sphere with a radius of 15 mm, centered at coordinates 48, −54, 27. The ROI for the dmPFC was generated based on results from (44) and consisted of a sphere with a radius of 10mm, centered at coordinates 6, 36, 33. The radius was expanded to 15mm to better capture activity across this large region of the brain. The ROI for the aMCC was generated based on the method that (39) used. The peak voxel was centered at coordinates 0, 31, 21 with a radius of 10mm (39). This radius was also expanded to 15mm.

Section 6

Scanning Parameters

2008 Data: Functional task-related BOLD signal data were acquired with a ZSAGA functional protocol, a method for reducing the influence of magnetic susceptibility artifacts in echo planar imaging (56) (number of volumes vary depending on time spent on task; TR = 3,000 ms; TE 1 = 30 ms; TE 2=65.8 ms; matrix size = 64 x 64 mm; FA =90°; 3.3 x 3.3x 3.3 mm^3 voxels; 30 interleaved slices; FOV = 210 mm). A high resolution anatomical image was also acquired using a T1-weighted standardized magnetization gradient echo sequence to aid spatial normalization (MPRAGE; sagittal plane; TR =2300 ms; TE=3.02 ms; matrix size of 256x256 mm, 1 mm^3 isomorphic voxels, 176 interleaved slices; FOV = 256 mm; flip angle 8°).

2016-17 Data: A 40-minute functional task-related BOLD scan was acquired with a T2*-weighted echo-planar functional protocol (number of volumes vary depending time spent on task; TR = 2,000 ms; TE = 30 ms; matrix size = 64 x 64 mm; FA =77°; 3.4 x 3.4x 4.0 mm^3 voxels; 33 interleaved slices; FOV = 220 mm). A high resolution anatomical image was also acquired using a T1-weighted standardized magnetization spoiled gradient echo sequence to aid spatial normalization (MPRAGE; sagittal plane; TR =2250 ms; TE=4.18 ms; GRAPPA parallel imaging factor of 2; a matrix resolution size of 256x256 mm, 1 mm^3 isomorphic voxels, 176 interleaved slices; FOV = 256 mm; FA=9°).