

Supplementary Materials.

Quantitative description of the computerised proposer strategy. Here we describe the transition probabilities of the computerised strategy which acted as the proposer. Similar probabilistic strategies have been used by other research groups to design opponent strategies in iterative social interactive decision-making games^{1,2}. The description below illustrates the logic behind the computer strategy, the actual experimental materials are available from the authors upon request.

let *F* be the facial emotion of the proposer (range 1 (most negative) to 9 (most positive)).

let *O* be the offer amount (between 50 and 950p).

let *n* be the trial number (40 trials per block).

let *y* be the amount of offer change (either 50, 100 or 150p).

if *n*==1 %first trial always start with a neutral face and a fair offer

F=5; % a neutral face

O=500; % a fair offer

else %after the first trial

y=randsample([50 100 150],1,1,[1/3 1/3 1/3]);

%offer step either 50, 100 or 150 p with equal probability

end

if *O* <=500

if reject count →	0	1	2	3	4	5	>5
offer amount							
O-y	.7	.6	.5	.25	.15	.1	0
O	.1	.15	.1	.1	.1	.1	.15
O+y	.2	.25	.4	.65	.75	.8	.85

elseif *O*>500

if reject count →	0	1	2	3	4	5	>5
offer amount							
O-y	.7	.4	.6	.7	.75	.8	.85
O	.1	.2	.1	.1	.1	.1	.1
O+y	.2	.4	.3	.2	.15	.1	.05

end %tables showing offer probabilities at each rejection level.

if accept

accept_count=accept_count+1;

reject_count=0;

else

accept_count=0;

reject_count=reject_count+1;

end

if n>1 %determines how faces are presented, cells showing probabilities

if reject count→	0	1	2	3	4	5	>5
facial emotion							
F-1	.1	.75					
F	.3	.15					
F+1	.6	.1					
1					.7	.7	
2				.7	.2	.3	.15
3			.5	.2	.1		.15
4			.35	.1			.35
5			.15				.35

if accept count→	1	2	3	4	5	>5
facial emotion						
5	.25					.25
6	.55	.25				.45
7	.2	.55	.4	.15		.15
8		.2	.5	.35	.35	.15
9			.1	.5	.65	

end

% to prevent interaction being stuck in a limited range sample higher offer amounts if it is stuck

% in the fair offers range or if they are not sampled frequently enough

% (ie. at least 2 times within a block)

```
if sample_higher<2 && n>15
```

```
    if O>=400 && O<=500
```

```
        O=randsample ([O 750 800 850 900 950],1,1,[.1 .15 .25 .2 .15 .15]);
```

```
        % with 10% probability the offer stays the same
```

```
        sample_higher=sample_higher+1;
```

```
    end
```

```
end
```

```
if sample_higher<2 && n>30
```

```
    if O>=400 && O<=500
```

```
        O=randsample ([750 800 850 900 950],1,1,[.15 .25 .25 .2 .15]);
```

```
        sample_higher=sample_higher+1;
```

```
    end
```

```
end
```

Supplementary References:

- 1 McClure, E. B. *et al.* Responses to conflict and cooperation in adolescents with anxiety and mood disorders. *Journal of abnormal child psychology* **35**, 567-577 (2007).
- 2 Gradin, V. *et al.* Neural correlates of social exchanges during the Prisoner's Dilemma game in depression. *Psychological medicine* **46**, 1289-1300 (2016).