SUPPLEMENTARY MATERIAL

Apparatus

Behavioral measures

For behavioral measures, we used a device fabricated by Sensix (Model: K2V-1410A14, www.sensix.fr) consisting of two force sensor buttons (medio-lateral distance between centres: 2 cm, surface dimensions: 1.5 x 1.2 cm). The device was connected to a CED Power1401 running Spike2v6 (www.ced.co.uk) and force data were acquired at ~1 kHz/channel.

During Go trials without TMS, two reaction time measures were obtained corresponding to the start and end of the finger movement. RT-Release: the reaction time for removing the index finger from the right force sensor. And RT-Press: the reaction time to reach the left force sensor. The respective time was defined as force threshold crossings at mean force at rest + 2SD.

At the end of the experiment, 26 participants were asked if they were aware of any experimental changes between blocks. Among these 26 participants, 21 were not aware of changes in GO probability, 2 were aware (1 PSZ, 1 SIB), and 3 HC were partially aware (they declared that one block seemed to have more or less Go or NoGo trials).

Electrophysiological recordings

Electromyographic signal (EMG) was recorded from the first dorsal interosseous (1DI) of the right hand (Figure 1A, B) using pre-gelled disposable electrodes (www.adinstruments.com). EMG signals were amplified with a CED 1902 isolated pre-amplifier, and sampled at ~3 kHz using the (above mentioned) CED Power1401. Data analysis was done using Matlab (www.mathworks.com).

The 1DI corresponds to the index finger abductor involved in the movement when a Go signal occurred. Two EMG measures were extracted (in Go trials): the delay from the IS to the onset of 1DI muscle activity (EMG-Onset) and the delay to the end of the 1DI muscle activity (EMG-Offset). EMG background activity data is detailed in supplementary Table 1.

Transcranial Magnetic Stimulation (TMS)

TMS was applied over the cortical representation of the right 1DI (contralateral hemisphere) using a figure-of-eight coil (7cm diameter) connected to two Magstim 200 units, synchronized with a Bistim module (www.magstim.com). The optimal coil position was defined as the stimulation site inducing the largest 1DI MEP at the lowest intensity (i.e., MEPs above 0.5mV). The stimulation site was recorded as a landmark on the template MNI scan used for neuronavigation (www.ant-neuro.com). The neuronavigation system was used during the entire experiment and stimulation site was maintained within a maximum of 5 mm and/or 5° shift from the target.

1DI MEPs, elicited by a single TMS pulse, are indicative of corticospinal excitability (CSE). A first CSE measure was obtained at the mid-point of the waiting phase (TMS-Waiting, lasting randomly between 2 and 3 s). The second CSE measure was obtained at the end of the warning signal (TMS-Warning), i.e. at the onset of the IS. In both instances, the subject was

not aware if the current trial was a Go or a NoGo trial. Thus the MEP reflects the statistical context, but not the fact that the current trial was a Go or NoGo trial.

Resting motor threshold (RMT) was defined as the lowest pulse intensity eliciting a MEP above 0.05 mV in at least five out of ten stimulations. CSE (pulse at 120% of RMT) and short-interval intracortical inhibition (SICI, double pulse with conditioning pulse at 80% of RMT followed by a test pulse of 120% of RMT) at rest prior to the experiment are detailed in supplementary Table 1.

RT_{max} definition

Since the reaction time could vary as a function of participant age or motor impairments in the case of patients, we determined an individual maximum reaction time for Go trials. To determine this reaction time (RT_{max}), i.e., the individually predetermined delay, a separate session prior to the Go/NoGo session was performed. It consisted of a block of 18 consecutive Go trials with the IS (Go signal) in grey. RT_{max} was defined as mean RT + 2SD.

Data analysis

For all behavioural and EMG measures, we used individual median values to express the central tendency for each participant and condition (probability). We excluded Go trials with anticipatory movements (RT-Release<100 ms or RT-Press<400 ms) or late/slow movements (RT-Press>1.5 s).

Statistical analyses were performed using Wolfram Mathematica 10 and IBM SPSS Statistics 23.

Analysis of behavioural measures: To analyse the effect of the Go signal probability on reaction time alone, we excluded the individual effect of absolute reaction time by using a repeated measures ANCOVA (within subject factor PROBABILTY, between subject factor GROUP) with the response time at 33%-Go as a covariate. Assumptions for ANCOVA were tested: (i) normality of dependent variables, (ii) independence of the covariate RT-Release for 33%-Go from the factor PROBABILITY, (iii) correlation between the covariate and the dependent variable: RT-Release for 33%-Go correlated with the difference between 33%-Go and 66%-Go RT-Release value ($r=0.58$, $p<0.001$, Pearson), and (iv) group means of the covariate 33%-Go did not differ significantly (HC: 353±46 ms, SIB: 346±40 ms, PSZ: 352±74 ms, all $p>0.65$, t-test). Similarly, for RT-Press we used its 33%-Go measure as covariate. This covariate was correlated with the difference between 33%-Go and 66%-Go ($r=-.58$, $p<0.001$, Pearson) and group means did not differ significantly (HC: 485±65 ms, SIB: 488±62 ms, PSZ: 513±115 ms, all $p>0.36$, t-test).

EMG analysis: We computed repeated measures ANCOVA (within-subject factor PROBABILTY, between-subject factor GROUP, covariate EMG-Onset at 33%-Go). Similarly to RT analyses, the covariate EMG-Onset for 33%-Go was independent from PROBABILITY and correlated with the difference between 33%-Go and 66%-Go ($r=0.67$, $p<0.001$, Pearson) and was not significantly different between groups (HC: 269±57 ms, SIB: 280±68 ms, PSZ: 261±72 ms, all $p>0.43$, t-test). Likewise for EMG-Offset, we used 33%-Go measure as covariate. 33%-Go EMG-Offset was correlated with the difference between 33%-Go and 66%-Go ($r=0.47$, $p=0.002$, Pearson). For each probability, no significant group difference was observed (HC: 604±89 ms, SIB: 610±87 ms, PSZ: 604±82 ms, all $p>0.45$, t-test).

TMS - analysis of MEPs:

MEPs z-scores

For MEP amplitude measures, we computed for each participant a probability z-score of the median value (equation 2) for the TMS-Waiting condition (and similar for the TMS-Warning condition):

$$z\ score\ MEP_{TMS-Waiting} = Median\ \frac{MEP_{TMS-Waiting} - Mean(MEP_{All})}{Standard\ Deviation\ (MEP_{All})} \quad \textbf{(2)}$$

where MEP_{All} corresponds to the 64 MEPs measured for one subject over all 3 conditions (probabilities) and over the two TMS time-points.

To analyse the effect of probability on MEP size independently from the hypothesized individual maximum MEP amplitude and independently of prior EMG amplitude, we computed repeated measures ANCOVA (within-subject factor PROBABILTY and TIME-POINT, between-subject factor GROUP, and covariate TMS-Warning at 66%-Go) where TIME-POINT corresponded to the two TMS measurements: TMS-Warning and TMS-Waiting. The covariate was independent from PROBABILITY and correlated with the difference between 33%-Go and 66%-Go of MEP-Warning ($r=0.74$, $p<0.001$, Pearson) and MEP-Waiting ($r=0.46$, $p<0.001$, Pearson). TMS-Warning at 66%-Go did not differ significantly between groups (HC: 0.02, SIB: 0.01 and PSZ: 0.08, MEPs z-scores; all $p>0.72$, t-test).

Supplementary Table S1

	Condition	HC	SIB	PSZ
EMG background activity (mV)	33%-Go	.0039±.0026	.0054±.0031	.0042±.0034
	50%-Go	.0044±.0030	.0053±.0026	.0042±.0029
	66%-Go	.0037±.0019	.0045±.0022	.0044±.0031
SICI (%reduction of MEP)		67%±20*	53%±17**	71%±20
MEP amplitude at rest (mV)		1.56±1.02	1.96±1.01	1.79±1.36

Table S1: EMG background activity, short interval intracortical inhibition (SICI) and MEP amplitude at rest. HC and SIB scores that are significantly different from PSZ group: *p<0.05, **p<0.01 t-test