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# Main Figures:	6
# Supplementary Figures:	10
# Supplementary Tables:	0
# Supplementary Videos:	0

Reporting Checklist for Nature Neuroscience

This checklist is used to ensure good reporting standards and to improve the reproducibility of published results. For more information, please read Reporting Life Sciences Research.

Please note that in the event of publication, it is mandatory that authors include all relevant methodological and statistical information in the manuscript.

▶ Statistics reporting, by figure

- Please specify the following information for each panel reporting quantitative data, and where each item is reported (section, e.g. Results, & paragraph number).
- Each figure legend should ideally contain an exact sample size (n) for each experimental group/condition, where n is an exact number and not a range, a clear definition of how n is defined (for example x cells from x slices from x animals from x litters, collected over x days), a description of the statistical test used, the results of the tests, any descriptive statistics and clearly defined error bars if applicable.
- For any experiments using custom statistics, please indicate the test used and stats obtained for each experiment.
- Each figure legend should include a statement of how many times the experiment shown was replicated in the lab; the details of sample collection should be sufficiently clear so that the replicability of the experiment is obvious to the reader.
- For experiments reported in the text but not in the figures, please use the paragraph number instead of the figure number.

Note: Mean and standard deviation are not appropriate on small samples, and plotting independent data points is usually more informative. When technical replicates are reported, error and significance measures reflect the experimental variability and not the variability of the biological process; it is misleading not to state this clearly.

FIGURE NUMBER	TEST USED		n			DESCRIPTIVE STATS (AVERAGE, VARIANCE)		P VALUE		DEGREES OF FREEDOM & F/t/z/R/ETC VALUE	
	WHICH TEST?	SECTION & PARAGRAPH #	EXACT VALUE	DEFINED?	SECTION & PARAGRAPH #	REPORTED?	SECTION & PARAGRAPH #	EXACT VALUE	SECTION & PARAGRAPH #	VALUE	SECTION & PARAGRAPH #
example 1a	one-way ANOVA	Fig. legend	9, 9, 10, 15	mice from at least 3 litters/group	Methods para 8	error bars are mean +/- SEM	Fig. legend	p = 0.044	Fig. legend	F(3, 36) = 2.97	Fig. legend
example results, para 6	unpaired t-test	Results para 6	15	slices from 10 mice	Results para 6	error bars are mean +/- SEM	Results para 6	p = 0.0006	Results para 6	t(28) = 2.808	Results para 6

	FIGURE NUMBER	TEST USED		n			DESCRIPTIVE STATS (AVERAGE, VARIANCE)		P VALUE		DEGREES OF FREEDOM & F/t/z/R/ETC VALUE	
		WHICH TEST?	SECTION & PARAGRAPH #	EXACT VALUE	DEFINED?	SECTION & PARAGRAPH #	REPORTED?	SECTION & PARAGRAPH #	EXACT VALUE	SECTION & PARAGRAPH #	VALUE	SECTION & PARAGRAPH #
+ -	Fig 1b	T-test	Figure legend para 1	6,6	Cells/group	Figure legend	error bars are mean +/- SEM	fig legend para 1	p=0.525291201	Figure legend		
+ -	Fig 1c	T-test	Figure legend para 1	4,4	Cells/group	Figure legend	error bars are mean +/- SEM	fig legend para 1	p=0.254089512	Figure legend		
+ -	Fig 1d	KS-test, T-test (for the cumulative distribution), T-test (for histograms)	Figure legend para 1	9,8	Cells/group	Figure legend	error bars are mean +/- SEM	fig legend para 1	p=0.677 (K-S test) p=0.525016642 (T-test)	Figure legend		
+ -	Fig 1e	KS-test (for the cumulative distribution), T-test (for histograms)	Figure legend para 1	9,8	Cells/group	Figure legend	error bars are mean +/- SEM	fig legend para 1	p=0.099 (K-S test) p=0.356882597 (T-test)	Figure legend		
+ -	Fig 1f(i)	T-test	Figure legend para 1	20,22	Cells/group	Figure legend	error bars are mean +/- SEM	fig legend para 1	p=0.06839053	Figure legend		
+ -	Fig 1f(ii)	T-test	Figure legend para 1	12,12	Cells/group	Figure legend	error bars are mean +/- SEM	fig legend para 1	p=0.37547821	Figure legend		
+ -	Fig 1g	T-test	Figure legend para 1	12,12	Cells/group	Figure legend	error bars are mean +/- SEM	fig legend para 1	p=0.007906409	Figure legend		
+ -	Fig 1h	T-test	Figure legend para 1	8,10	Cells/group	Figure legend	error bars are mean +/- SEM	fig legend para 1	p=0.173081418	Figure legend		
+ -	Fig 1i	T-test	Figure legend para 1	20,22	Cells/group	Figure legend	error bars are mean +/- SEM	fig legend para 1	p=0.079633588	Figure legend		
+ -	Fig 2b	T-test	Figure legend para 2	12,11	Cells/group	Figure legend	error bars are mean +/- SEM	Figure legend para 2	p=(0.00222503 34, 0.001531507, 0.015549413, 0.012946272)	Figure legend		
+ -	Fig 2f	T-test	Figure legend para 2	6,5	Cells/group	Figure legend	error bars are mean +/- SEM	Figure legend para 2	p=0.0181	Figure legend		
+ -	Fig 3c	T-test	Figure legend para 3	5,7	Cells/group	Figure legend	error bars are mean +/- SEM	Figure legend para 3	p=0.8243	Figure legend		

+ -	Fig 3d	T-test	Figure legend para 3	5,7	Cells/group	Figure legend	error bars are mean +/- SEM	Figure legend para 3	p=0.3649	Figure legend		
+ -	Fig 3k	T-test	Figure legend para 3	6,8	Cells/group	Figure legend	error bars are mean +/- SEM	Figure legend para 3	p=0.00150	Figure legend		
+ -	Fig 3l	T-test	Figure legend para 3	6,8	Cells/group	Figure legend	error bars are mean +/- SEM	Figure legend para 3	p=0.0489	Figure legend		
+ -	Fig 3o	T-test	Figure legend para 3	11,8	Cells/group	Figure legend	error bars are mean +/- SEM	Figure legend para 3	p=0.0150	Figure legend		
+ -	Fig 3p	T-test	Figure legend para 3	11,8	Cells/group	Figure legend	error bars are mean +/- SEM	Figure legend para 3	p=0.0467	Figure legend		
+ -	Fig 5l	T-test	Figure legend para 4	13,13	Slices/group	Figure legend	error bars are mean +/- SEM	Figure legend para 4	p=0.0018	Figure legend		
+ -	Fig 5n	T-test	Figure legend para 4	13,13	Slices/group	Figure legend	error bars are mean +/- SEM	Figure legend para 4	p=0.0138	Figure legend		
+ -	Fig 5o	T-test	Figure legend para 4	13,13	Slices/group	Figure legend	error bars are mean +/- SEM	Figure legend para 4	p=0.2657	Figure legend		
+ -	Fig 4a	2 Way ANOVA/ Bonferroni's multiple comparision test	Figure legend para 4	10,12	Cells/group	Figure legend	error bars are mean +/- SEM	Figure legend para 4	for genotype p=0.1363 (2 Hz) p=0.1091 (5 Hz) p=0.4979(10 Hz) p= 0.1453 (20Hz)	Figure legend	$F_{(1,10)}$= 2.624(2 hz) $F_{(1,10)}$= 3.368(5 hz) $F_{(1,10)}$= 0.4988(10 hz) $F_{(1,10)}$= 2.8(20 hz)	
+ -	Fig 4b	2 Way ANOVA/ Bonferroni's multiple comparision test	Figure legend para 4	10,12	Cells/group	Figure legend	error bars are mean +/- SEM	Figure legend para 4	p=0.0941 (30Hz) p=0.0171 (50Hz) p=0.0158 (100Hz) p=0.0051 (200Hz)	Figure legend	$F_{(1,10)}$= 3.503(30 hz) $F_{(1,10)}$= 9.664(50 hz) $F_{(1,10)}$= 16.17(100 hz) $F_{(1,10)}$= 22.8(200 hz)	
+ -	Fig 4h	2 Way ANOVA/ Bonferroni's multiple comparision test	Figure legend para 4	9,9	Cells/group	Figure legend	error bars are mean +/- SEM	Figure legend para 4	p=0.0105 (genotype) p=0.0001 (stim. no.) p=0.0012 (interaction)	Figure legend	$F_{(1,16)}$= 8.540 (genotype) $F_{(9,144)}$= 35.45 (stim no) $F_{(9,144)}$=3.294 (interaction)	
+ -	Fig 5k	-	Figure legend para 4	13,13	slices/group	Figure legend	confidence levels are mean +/- 2xSEM	Figure legend para 4		Figure legend		

+ -	Fig 6b	2-way ANOVA/ Bonferroni's multiple comparision test	Figure legend para 5	12,8	mice/group	Figure legend	error bars are mean +/- SEM	Figure legen d para 5	Bar Graph BL:control vs. BL:DREADDS >0.9999 BL:control vs. FC:control <0.0001 BL:DREADDS vs. FC:DREADDS <0.0001 FC:control vs. FC:DREADDS >0.9999 FC:control vs. EXT:control 0.0012 FC:DREADDS vs. EXT:DREADDS >0.9999 EXT:control vs. EXT:DREADDS 0.0124 Time Course Cont Vs DREADDS P= FE1 0.5312 FE2 0.2169 FE3 0.0409 FE4 0.0053	Figure legend	Bar Graph Interaction F (2, 54) = 3.565 P=0.0352 Session F (2, 54) = 51.2 P<0.0001 Genotype F (1, 54) = 5.682 P=0.0207 Time Course F (1,18)= 10.04 p=0.0316 (genotype), F(3,54)= 13.63 P=0.0001 (session) F (3,54)= 1.073 P=0.028 (interaction)	
+ -	Fig 6c	2-way ANOVA/ Bonferroni's multiple comparision test	Figure legend para 5	12, 16	mice/group	Figure legend	error bars are mean +/- SEM	Figure legen d para 5	Bar Graph BL:control vs. BL:KO >0.9999 BL:control vs. FC:control <0.0001 BL:KO vs. FC:KO <0.0001 FC:control vs. FC:KO 0.999 FC:control vs. EXT:control 0.0002 FC:KO vs. EXT:KO 0.5096 EXT:control vs. EXT:KO 0.0027 Time Course P= FE1 <0.0001 FE2 0.0002 FE3 0.0008 FE4 0.0134	Figure legend	Bar Graph Interaction F (2, 78) = 4.363 P=0.0160 Session F (2, 78) = 86.58 P<0.0001 Genotype F (1, 78) = 7.596 P=0.0073 Time Course F (1,26)= 35.52 p= 0.0001 (genotype), F(3,78)= 80.96 p=0.0001 (session) F (3,78)= 4.25 p=0.0077 (interaction)	

+ -	Fig 6d	2-way ANOVA/ Bonferroni's multiple comparision test	Figure legend para 5	12, 8	mice/group	Figure legend	error bars are mean +/- SEM	Figure legend para 5	Bar Graph BL:control vs. FC:control <0.0001 BL:RESCUE vs. FC:RESCUE <0.0001 FC:control vs. FC:RESCUE 0.9984 FC:control vs. EXT:control 0.0009 FC:RESCUE vs. EXT:RESCUE 0.0352 EXT:control vs. EXT:RESCUE 0.9804 Time Course P= FE1 >0.9999 FE2 >0.5799 FE3 >0.9999 FE4 >0.9999	Figure legend	Bar Graph Interaction F (2, 54) = 0.08587 P=0.9178 Session F (2, 54) = 48.25 P<0.0001 Genotype F (1, 54) = 0.03758 P=0.8470 Time course F (1,18)= 0.7558 P= 0.3691 (genotype), F(3,54)= 34.25 P=0.0001 (session) F (3,54)= 0.7174 P=0.5459 (interaction)	
+ -	Supp Fig 1c	T-test	figure legend	3,3	mice/group	Figure legend	error bars are mean +/- SEM	Figure legend	p=0.3084	Figure legend		
+ -	Supp Fig 3a,b	K-S test	figure legend	9,11	cells/group	figure legend	error bars are mean +/- SEM	Figure legend	K-S p=0.677 (amp) p=0.193 (fre)	Figure legend		
+ -	Supp Fig 5c	T-test	figure legend	4,6	cells/group	figure legend	error bars are mean +/- SEM	Figure legend	p=0.63249	Figure legend		
+ -	Supp Fig 5d	T-test	figure legend	4,6	cells/group	figure legend	error bars are mean +/- SEM	Figure legend	p=0.80664	Figure legend		
+ -	Supp Fig 5g	T-test	figure legend	5,4	cells/group	figure legend	error bars are mean +/- SEM	Figure legend	p=0.87920	Figure legend		
+ -	Supp Fig 5h	T-test	figure legend	5,4	cells/group	figure legend	error bars are mean +/- SEM	Figure legend	p=0.5281	Figure legend		
+ -	Supp Fig 10a	T-test	figure legend	7,7	mice/group	figure legend	error bars are mean +/- SEM	Figure legend	p=0.12352	Figure legend		
+ -	Supp Fig 10b	T-test	figure legend	5,7	mice/group	figure legend	error bars are mean +/- SEM	Figure legend	p=0.17208	Figure legend		
+ -	Supp Fig 10c	T-test	figure legend	5,7	mice/group	figure legend	error bars are mean +/- SEM	Figure legend	p=0.34896	Figure legend		
+ -	Fig 1l	T-test	figure legend	9,8	cells/group	figure legend	error bars are mean +/- SEM	figure legend	p=0.4814	Figure legend		
+ -	Fig 1m	T-test	figure legend	9,8	cells/group	figure legened	error bars are mean +/- SEM	figure legend	p=0.2129	Figure legend		
+ -	Fig 2a	T-test	figure legend	7,8	cells/group	figure legend	error bars are mean +/- SEM	figure legend	p=0.336, 0.3425, 0.1421, 0.105, 0.029, 0.0155, 0.003, 0.006	Figure legend		

+ -	Fig 2c	Mann Whitney test	figure legend	10,10	cells/group	figure legend	error bars are mean +/- SEM	figure legend	p=0.317, Mann Whitney test; p=0.463, T-test	Figure legend		
+ -	Fig 2d	Mann Whitney test	figure legend	10,10	cells/group	figure legend	error bars are mean +/- SEM	figure legend	p=0.039, Mann Whitney test; p=0.0156, T-test	Figure legend		
+ -	Fig 3g	T-test	figure legend	5,5	cells/group	figure legend	error bars are mean +/- SEM	figure legend	p=0.758	Figure legend		
+ -	Fig 3h	T-test	figure legend	5,5	cells/group	figure legend	error bars are mean +/- SEM	figure legend	p=0.4688	Figure legend		
+ -	Fig 4c	T-test	figure legend	8,5	cells/group	figure legend	error bars are mean +/- SEM	figure legend	p=0.2198 0.6059 0.7423 0.7423 0.6469 0.2770 0.5681 0.0897 0.2216 0.1509 0.8033 0.6469 0.5042 0.8323 0.3591 0.2913 0.4533 0.5463 0.4425 0.2600	Figure legend		
+ -	Fig 4d	T-test	figure legend	8,5	cells/group	figure legend	error bars are mean +/- SEM	figure legend	p=1.0 0.7361 0.4533 0.4533 1 0.4533 0.3873 0.1845 0.9213 0.8255 0.3716 0.2947 0.0424 0.0494 0.0053 0.0419 0.0121 0.0203 0.0502 0.0144	Figure legend		
+ -	Fig 4h	T-test	figure legend	8,9	cells/group	figure legend	error bars are mean +/- SEM	figure legend	p=0.0079	Figure legend		
+ -	Fig 5c (left)	T-test	figure legend	5,4	mice/group	figure legend	error bars are mean +/- SEM	figure legend	p=0.3098	Figure legend		
+ -	Fig 5c (right)	T-test	figure legend	5,4	mice/group	figure legend	error bars are mean +/- SEM	figure legend	p=0.0079	Figure legend		
+ -	Fig 5f	T-test	figure legend	182,352	events/group	figure legend	error bars are mean +/- SEM	figure legend	p=0.00005	Figure legend		
+ -	Fig 5g	T-test	figure legend	182,352	events/group	figure legend	error bars are mean +/- SEM	figure legend	p=0.0000001	Figure legend		

+ -	Fig 5h	T-test	figure legend	182,352	events/group	figure legend	error bars are mean +/- SEM	figure legend	p=0.00000001	Figure legend		
+ -	Fig 5i	T-test	figure legend	5,4	mice/group	figure legend	error bars are mean +/- SEM	figure legend	p=0.198	Figure legend		
+ -												
+ -												

▶ Representative figures

1. Are any representative images shown (including Western blots and immunohistochemistry/staining) in the paper?

   If so, what figure(s)?

   > Yes, electrophysiology traces and immuno-histochemistry
   > Fig 1a,d,e,f,g,j,k
   > Fig 2a,b,c,d,e
   > Fig 3b,f,j,n
   > Fig 4c,d,f
   > Fig 5a,d,j
   > Supp Fig 1b
   > Supp Fig 2b
   > Supp Fig 3a,b
   > Supp Fig 5b,f
   > Supp Fig 7a,c
   > Supp Fig 8a,b
   > Supp Fig 9a,b,c

2. For each representative image, is there a clear statement of how many times this experiment was successfully repeated and a discussion of any limitations in repeatability?

   If so, where is this reported (section, paragraph #)?

   > The representative figures are of electrophysiology recordings and the the 'n' (figure legend) in each data set represents the repetitions.

▶ Statistics and general methods

1. Is there a justification of the sample size?

   If so, how was it justified?

   Where (section, paragraph #)?

   Even if no sample size calculation was performed, authors should report why the sample size is adequate to measure their effect size.

   > No justification of sample size is included in the manuscript. However, sample size for behavioral experiments was based on previously published work (Xu & Sudhof, 2013)

2. Are statistical tests justified as appropriate for every figure?

   Where (section, paragraph #)?

   > No, we did not include a justification for the statistical tests in the text, however, we consistently used statistical tests that have been previously used for similar experiments.

   a. If there is a section summarizing the statistical methods in the methods, is the statistical test for each experiment clearly defined?

   > No, the statistical methods for different experiments are described within the subtitle for the methods (for example statistical methods used for electrophysiology are described under 'electrophysiology' and for behavior are described in 'behavioral data analysis').

   b. Do the data meet the assumptions of the specific statistical test you chose (e.g. normality for a parametric test)?

   Where is this described (section, paragraph #)?

   > -

c. Is there any estimate of variance within each group of data?

Is the variance similar between groups that are being statistically compared?

Where is this described (section, paragraph #)?

-

d. Are tests specified as one- or two-sided?

Two sided, as mentioned in the methods

e. Are there adjustments for multiple comparisons?

NA

3. Are criteria for excluding data points reported?

Was this criterion established prior to data collection?

Where is this described (section, paragraph #)?

4. Define the method of randomization used to assign subjects (or samples) to the experimental groups and to collect and process data.

If no randomization was used, state so.

Where does this appear (section, paragraph #)?

Animals were randomized for all behavioral assays, with each randomized group containing an equal number of animals from each genotype and viral injection. the experimenter was blind to both the genotype and the viral injection within an assigned group.

5. Is a statement of the extent to which investigator knew the group allocation during the experiment and in assessing outcome included?

If no blinding was done, state so.

Where (section, paragraph #)?

The experimenter was blind to the genotype of animal in all the experiments and analyses. In addition, All behavioral data collected was automated through the use of video tracking software.
Methods Section.

6. For experiments in live vertebrates, is a statement of compliance with ethical guidelines/regulations included?

Where (section, paragraph #)?

Methods section, paragraph 2

7. Is the species of the animals used reported?

Where (section, paragraph #)?

Methods section, paragraph 1

8. Is the strain of the animals (including background strains of KO/transgenic animals used) reported?

Where (section, paragraph #)?

No. All animals including were maintained on a C57BL/6 background.

9. Is the sex of the animals/subjects used reported?

Where (section, paragraph #)?

Only male animals were used in this study

10. Is the age of the animals/subjects reported?

Where (section, paragraph #)?

Yes, methods sections- paragraphs 2, 6

11. For animals housed in a vivarium, is the light/dark cycle reported?

Where (section, paragraph #)?

Animals were housed in a light (from 7AM-7PM) and dark (from 7PM to 7AM) cycle

12. For animals housed in a vivarium, is the housing group (i.e. number of animals per cage) reported?

Where (section, paragraph #)?

> Animals were group housed with no more than 4 mice in an individual cage

13. For behavioral experiments, is the time of day reported (e.g. light or dark cycle)?

Where (section, paragraph #)?

> All behavioral experiments were conducted in the light cycle, between 7AM and 7PM

14. Is the previous history of the animals/subjects (e.g. prior drug administration, surgery, behavioral testing) reported?

Where (section, paragraph #)?

> For behavioral experiments, all mice were monitored for at least 3 days prior to the start of the behavior.
> For electrophysiological experiments, all animals were monitored for 5 days post surgery.

   a. If multiple behavioral tests were conducted in the same group of animals, is this reported?

   Where (section, paragraph #)?

> No animals were used for multiple behavioral experiments.

15. If any animals/subjects were excluded from analysis, is this reported?

Where (section, paragraph #)?

> Animals were excluded for the following reasons.
> 1. Low/no viral injection

   a. How were the criteria for exclusion defined?

   Where is this described (section, paragraph #)?

> No expression of GFP/Venus in the hippocampus

   b. Specify reasons for any discrepancy between the number of animals at the beginning and end of the study.

   Where is this described (section, paragraph #)?

> NA

▶ Reagents

1. Have antibodies been validated for use in the system under study (assay and species)?

> Yes

   a. Is antibody catalog number given?

   Where does this appear (section, paragraph #)?

> Yes- in the methods section, under immuno-histochemistry

   b. Where were the validation data reported (citation, supplementary information, Antibodypedia)?

   Where does this appear (section, paragraph #)?

> No

2. Cell line identity

    a.   Are any cell lines used in this paper listed in the database of commonly misidentified cell lines maintained by ICLAC and NCBI Biosample?

        Where (section, paragraph #)?

NA

    b.   If yes, include in the Methods section a scientific justification of their use--indicate here in which section and paragraph the justification can be found.

NA

    c.   For each cell line, include in the Methods section a statement that specifies:

        - the source of the cell lines

        - have the cell lines been authenticated? If so, by which method?

        - have the cell lines been tested for mycoplasma contamination?

    Where (section, paragraph #)?

NA

▶ Data deposition

Data deposition in a public repository is mandatory for:

    a. Protein, DNA and RNA sequences
    b. Macromolecular structures
    c. Crystallographic data for small molecules
    d. Microarray data

Deposition is strongly recommended for many other datasets for which structured public repositories exist; more details on our data policy are available here. We encourage the provision of other source data in supplementary information or in unstructured repositories such as Figshare and Dryad.

We encourage publication of Data Descriptors (see Scientific Data) to maximize data reuse.

1. Are accession codes for deposit dates provided?

    Where (section, paragraph #)?

NA

▶ Computer code/software

Any custom algorithm/software that is central to the methods must be supplied by the authors in a usable and readable form for readers at the time of publication. However, referees may ask for this information at any time during the review process.

1. Identify all custom software or scripts that were required to conduct the study and where in the procedures each was used.

NA

2. If computer code was used to generate results that are central to the paper's conclusions, include a statement in the Methods section under "**Code availability**" to indicate whether and how the code can be accessed. Include version information as necessary and any restrictions on availability.

NA

▶ Human subjects

1. Which IRB approved the protocol?

    Where is this stated (section, paragraph #)?

    NA

2. Is demographic information on all subjects provided?

    Where (section, paragraph #)?

    NA

3. Is the number of human subjects, their age and sex clearly defined?

    Where (section, paragraph #)?

    NA

4. Are the inclusion and exclusion criteria (if any) clearly specified?

    Where (section, paragraph #)?

    NA

5. How well were the groups matched?

    Where is this information described (section, paragraph #)?

    NA

6. Is a statement included confirming that informed consent was obtained from all subjects?

    Where (section, paragraph #)?

    NA

7. For publication of patient photos, is a statement included confirming that consent to publish was obtained?

    Where (section, paragraph #)?

    NA

▶ fMRI studies

For papers reporting functional imaging (fMRI) results please ensure that these minimal reporting guidelines are met and that all this information is clearly provided in the methods:

1. Were any subjects scanned but then rejected for the analysis after the data was collected?

    NA

    a. If yes, is the number rejected and reasons for rejection described?

        Where (section, paragraph #)?

        NA

2. Is the number of blocks, trials or experimental units per session and/ or subjects specified?

    Where (section, paragraph #)?

    NA

3. Is the length of each trial and interval between trials specified?

    NA

4. Is a blocked, event-related, or mixed design being used? If applicable, please specify the block length or how the event-related or mixed design was optimized.

NA

5. Is the task design clearly described?

   Where (section, paragraph #)?

NA

6. How was behavioral performance measured?

7. Is an ANOVA or factorial design being used?

8. For data acquisition, is a whole brain scan used?

   If not, state area of acquisition.

   a. How was this region determined?

9. Is the field strength (in Tesla) of the MRI system stated?

NA

   a. Is the pulse sequence type (gradient/spin echo, EPI/spiral) stated?

   b. Are the field-of-view, matrix size, slice thickness, and TE/TR/ flip angle clearly stated?

10. Are the software and specific parameters (model/functions, smoothing kernel size if applicable, etc.) used for data processing and pre-processing clearly stated?

NA

11. Is the coordinate space for the anatomical/functional imaging data clearly defined as subject/native space or standardized stereotaxic space, e.g., original Talairach, MNI305, ICBM152, etc? Where (section, paragraph #)?

12. If there was data normalization/standardization to a specific space template, are the type of transformation (linear vs. nonlinear) used and image types being transformed clearly described? Where (section, paragraph #)?

13. How were anatomical locations determined, e.g., via an automated labeling algorithm (AAL), standardized coordinate database (Talairach daemon), probabilistic atlases, etc.?

14. Were any additional regressors (behavioral covariates, motion etc) used?

15. Is the contrast construction clearly defined?

16. Is a mixed/random effects or fixed inference used?

a.   If fixed effects inference used, is this justified?

17. Were repeated measures used (multiple measurements per subject)?

a.   If so, are the method to account for within subject correlation and the assumptions made about variance clearly stated?

18. If the threshold used for inference and visualization in figures varies, is this clearly stated?

19. Are statistical inferences corrected for multiple comparisons?

a.   If not, is this labeled as uncorrected?

20. Are the results based on an ROI (region of interest) analysis?

a.   If so, is the rationale clearly described?

b.   How were the ROI's defined (functional vs anatomical localization)?

21. Is there correction for multiple comparisons within each voxel?

22. For cluster-wise significance, is the cluster-defining threshold and the corrected significance level defined?

▶ Additional comments

Additional Comments