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**Article:** Pfister, R., Janczyk, M., Wirth, R., Dignath, D., & Kunde, W. (2014). Thinking with portals: Revisiting kinematic cues to intention. *Cognition*, 133(2), 464-473. doi: 10.1016/j.cognition.2014.07.012

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**Background:** Experiment 1 and 2 reported in this article were performed in the context of an experimental psychology practical in 2012 (German summer semester) and were run together. This led to a somewhat strange participant numbering: Participant 1-10 and 21-30 are for Experiment 1, participant 11-20 and 31-40 are for Experiment 2. By accident, we also recruited a 41<sup>st</sup> participant but decided not to include this participant in the analyses to have equal sample sizes across experiments. These data are still in the logfiles though, and adding them does not change the results in any meaningful way. The same applies for Experiment 3 for which we recruited 21 participants and ended up not using the data of participant 20 due to rather low numbers of trials in comparison to the rest of the sample. Adding these data to the analyses also does not alter the results.

For this experiment, I opted to upload not only the raw data but also the processed trajectory data. The processed data are a little more crowded than the raw data but they have the added benefit that Matlab or advanced coding skills are not required to run the main analyses. A note on the trajectory analysis follows below.

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## File list

Icon key:  = tab-delimited data;  = SPSS syntax

	Preprocessing	Folder containing all relevant data and analysis scripts to re-run the trajectory analysis (see below).
	Pfister_et_al_2014_Cognition_Exp1_and_2_Preprocessed.dat	Data of Exp. 1 and 2
	Pfister_et_al_2014_Cognition_Exp1_and_2_Syntax.sps	Syntax for Exp. 1 and 2
	Pfister_et_al_2014_Cognition_Exp3_Preprocessed.dat	Data of Exp. 3
	Pfister_et_al_2014_Cognition_Exp3_Syntax.sps	Syntax for Exp. 3

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## Experiment 1: Variable coding

Subject	Subject number
Group	1 = Experiment 1, 2 = Experiment 2
Block	Block number
Trial	Continuous trial number
Blocktrial	Trial number within block
FreeForced	Essentially meaningless. We had initially planned to perform follow-up experiments with either freely chosen (=1) or forced choice (=2) movements but never got round to running these experiments. The variable therefore is simply 2 (forced choice) throughout.
Compatibility	-1 = incompatible, 1 = compatible
TarDir	Intended direction of the movement; -1 = left, 1 = right
DT	Decision time in ms; i.e., time until approaching the door in the bottom center
RT	Reaction / initiation time in ms
RTx	Cursor x coordinate when measuring RT; in px
RTy	Cursor y coordinate when measuring RT; in px
MT	Movement time in ms
MTx	Cursor x coordinate when measuring MT; in px
MTy	Cursor y coordinate when measuring MT; in px
RespDir	Actual response direction; -1 = left, 1 = right
ErrorType	0 = correct, 2 = wrong response, 3 = random error (collision with wall etc.)
OK	0 = error, 1 = correct
	*** Variables from here onwards are not part of the raw data and have been generated during preprocessing***
FreeForced_N1	Choice (i.e., value of FreeForced) in the preceding trial; -99 = there was no preceding trial (at the beginning of a block)
Comp_N1	Compatibility in the preceding trial
TarDir_N1	TarDir in the preceding trial
ErrorType_N1	ErrorType in the preceding trial
OK_N1	OK in the preceding trial
ZDT	z-score for DT, computed separately for each participant and condition

ZRT	z-score for RT, computed separately for each participant and condition
ZMT	z-score for MT, computed separately for each participant and condition
MAD	MAD of the current movement; in px. Computed only for correct trials that would eventually be entered in the analysis
AUC	AUC of the current movement; in px. Computed only for correct trials that would eventually be entered in the analysis
Curv1	Curvature of the current movement; computed as the ratio of the actual trajectory length relative to the length of the optimal trajectory
Curv2	Remnant of the development process of the trajectory analysis script. I'm not entirely sure what this does and have never gotten back to check this part of the script.
TTPVeloc	Time to peak velocity in %MT
Z_Filter	Dummy variable

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### Experiment 3: Variable coding




Variable coding is essentially as in Experiment 1. There are four additional variables though that code for the memory task.




MemoryPos	-1 = left, 1 = right
MemoryCol	Red vs. yellow. Which color is signaled by which number (1 vs 2) was counterbalanced across participants
Match	0 = to-be-memorized item doesn't match target, 1 = item matches target
MatchType	1 = match, 2 = wrong location, correct color, 3 = correct location, wrong color, 4 = wrong location, wrong color.






Furthermore, the variable ErrorType now also incorporates information about the memory task with 4 signalling a memory error and 1 signalling an anticipation (early keypress before movement completion). Values 0, 2, and 3 are as in Experiment 1 and 2.

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### Preprocessing of the trajectory data

The Preprocessing folder contains raw data and a number of Matlab scripts. Icon key:  = tab-delimited data;  = Matlab .m file,  zip folder

 MData.zip	Raw trajectory data (x/y coordinates for each trial)
 comp_ad.m	Custom Matlab function to compute absolute distances
 comp_auc.m	Custom Matlab function to compute areas under the curve

 dlmcell.m	Custom Matlab function to save cell arrays as tab-delimited text files
 Portal_Exp3_Ges.dat	Raw data of Exp. 3
 Portal_Ges.dat	Raw data of Exp. 1 and 2
 Tracking_Exp1_and_2.m	Matlab scripts to perform trajectory analysis of Exp. 1 and 2
 Tracking_Exp3.m	Matlab scripts to perform trajectory analysis of Exp. 3

To run the preprocessing, simply extract the content of the MData.zip so that the two contained folders are in the same directory as the other .m-files. You can then run Tracking\_Exp1\_and\_2.m and Tracking\_Exp3.m to preprocess the data, extract trajectory coordinates for each trial etc. [Cave: The functions comp\_ad.m and comp\_auc.m that come with this experiment contain a slight bug that has the effect of treating segments of the trajectory as contributing 0 px<sup>2</sup> to the trajectory when one of the points lies exactly on the straight line from start- to endpoint of the movement. The effect of this bug is almost nil for all real-world data sets; if you wanted to use an up-to-date, corrected version of these files, please see [http://www.roland-pfister.net/downloads\\_matlab.htm#trajectories](http://www.roland-pfister.net/downloads_matlab.htm#trajectories)].

Additional comments regarding the trajectory analyses are contained in the individual .m-files.

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