

# Supplementary Information (SI)

## The Impact of Odor Category Similarity on Multimedia Experience

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Video	Condition	Frequency band	Count of odor pairs				X <sup>2</sup> -value
			FO1 – FO2	FO1 – CO1	FO2 – CO1	Total	
Flower	Within group	Delta	447	120	433	1000	205.09***
		Theta	577	55	368	1000	414.14***
		Alpha	193	728	79	1000	720.44***
		Beta	47	647	306	1000	543.37***
		Gamma	41	323	636	1000	531.50***
	Random sampling	Delta	335	325	340	1000	0.34 (n.s)
		Theta	337	314	349	1000	1.90 (n.s)
		Alpha	317	327	356	1000	2.46 (n.s)
		Beta	332	335	333	1000	0.01 (n.s)
		Gamma	356	302	342	1000	4.71 (n.s)

24 **Table S1. K-means results in each frequency band depending on categories of odors in each**  
25 **video.** All k-means clustering results were repeated 1000 times. The number of odor pairs was  
26 calculated during the repetitions. The clustering number of odor pairs in the flower video depending on  
27 the five frequency bands. Chi-square test was conducted in this table. \*:p value < 0.05, \*\*:p value <  
28 0.01, \*\*\*:p value < 0.001, n.s, not significant.

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Video	Condition	Frequency band	Count of odor pairs				X <sup>2</sup> -value
			CO1 – CO2	CO1 – FO1	CO2 – FO1	Total	
Coffee	Within group	Delta	438	281	281	1000	49.30***
		Theta	608	244	148	1000	353.32***
		Alpha	456	306	238	1000	74.65***
		Beta	211	386	403	1000	67.77***
		Gamma	31	708	261	1000	711.05***
	Random sampling	Delta	334	350	316	1000	1.74 (n.s)
		Theta	330	348	322	1000	1.06 (n.s)
		Alpha	326	355	319	1000	2.19 (n.s)
		Beta	348	321	331	1000	1.12 (n.s)
		Gamma	340	334	326	1000	0.30 (n.s)

30 **Table S2. K-means results in each frequency band depending on categories of odors in each**  
31 **video.** All k-means clustering results were repeated 1000 times. The number of odor pairs was  
32 calculated during the repetitions. The clustering number of odor pairs in the coffee video depending on  
33 the five frequency bands. Chi-square test was conducted in this table. \*:p value < 0.05, \*\*:p value <  
34 0.01, \*\*\*:p value < 0.001, n.s, not significant.

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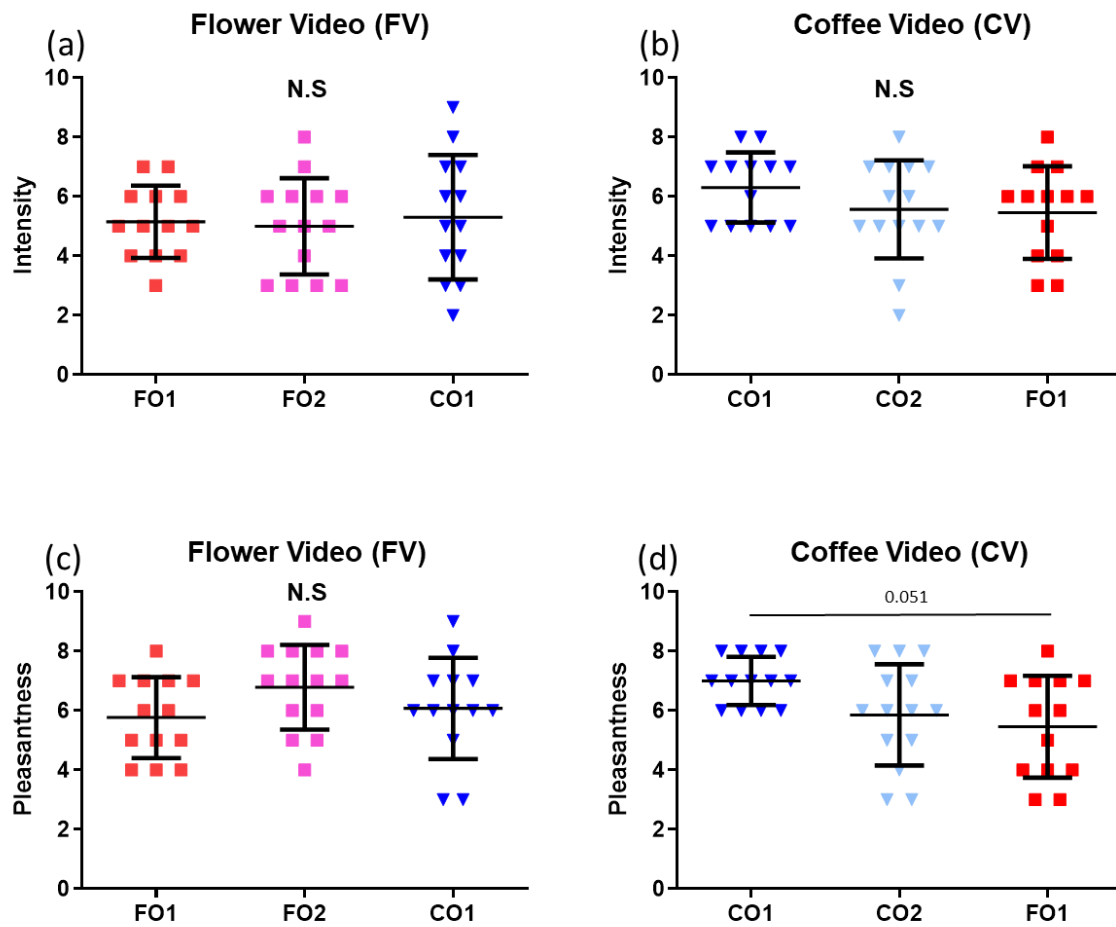
Video clip	Condition	Frequency band	Accuracy	
			Model	Test
			FO1 vs CO1 (Average of 5 fold Cross validation)	FO1 vs CO1 / FO2
Flower	Within group	Delta	50.0	64.4
		Theta	53.8	78.7
		Alpha	53.8	44.6
		Beta	73.1	33.6
		Gamma	57.7	70.3
	Random sampling	Delta	50.0	51.6
		Theta	50.0	54.9
		Alpha	61.5	55.4
		Beta	57.7	49.3
		Gamma	53.8	54.5

36 **Table S3. SVM accuracy results in each frequency band depending on categories of odors in the**  
37 **flower video clip.**

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Video clip	Condition	Frequency band	Accuracy	
			Model	Test
			CO1 vs FO1 (Average of 5 fold Cross validation)	CO1 vs FO1 / CO2
Coffee	Within group	Delta	65.4	65.4
		Theta	50.0	79.5
		Alpha	53.8	68.7
		Beta	50.0	96.5
		Gamma	53.8	58.6
	Random sampling	Delta	52.4	52.4
		Theta	55.7	55.7
		Alpha	53.3	53.3
		Beta	50.4	50.4
		Gamma	52.8	52.8

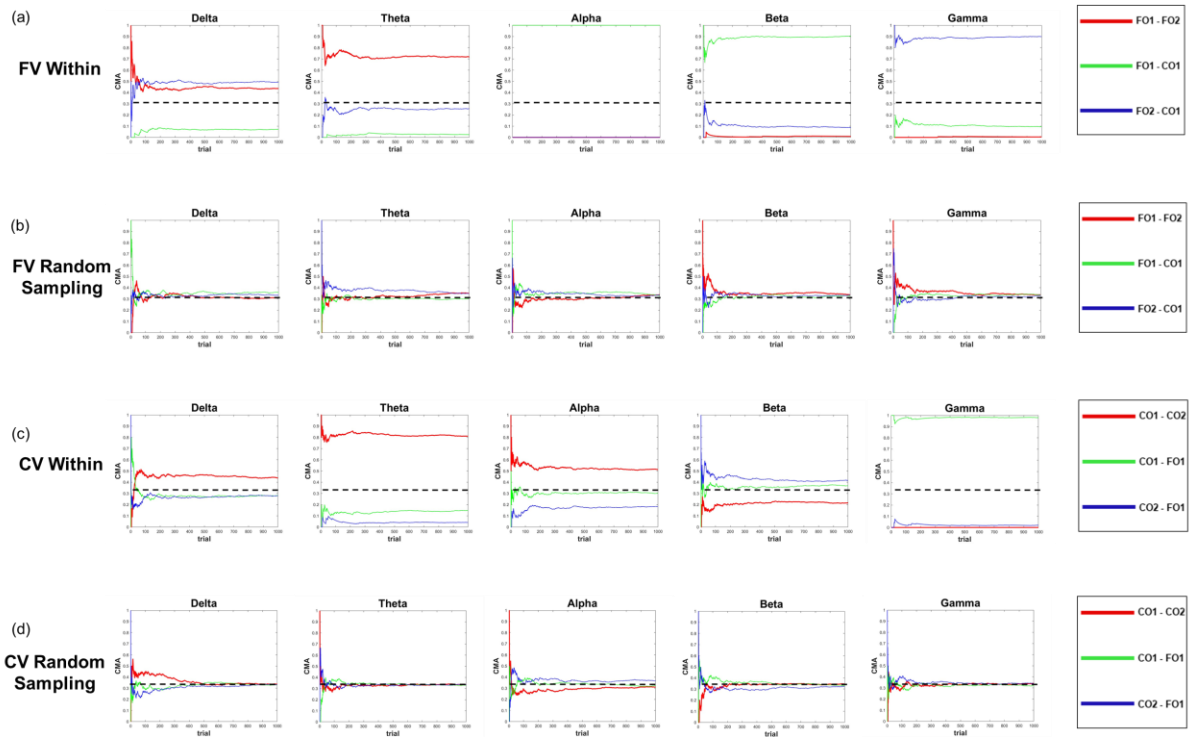
40 **Table S4. SVM accuracy results in each frequency band depending on categories of odors in the**  
41 **coffee video clip.**



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44 **Fig. S1. Intensity and pleasantness in each video.** Y-axes show the pleasantness and intensity  
 45 scores of the odors evaluated by using a 9-point Likert scale questionnaire. \* $p < 0.05$ .

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48 **Fig. S2. Cumulative moving average (CMA) plots in agglomerative hierarchical clustering (AHC)**  
 49 **of 1000 repetitions.** AHC of the ERSP data of the videos presented with the odors depending on  
 50 frequency bands repeated 1000 times. X-axis is the number of repeated trials, and Y-axis is the  
 51 cumulative moving average in the closest odor pairs rate. AHC was repeated 1000 times by changing  
 52 the participants' order of the ERPS data as "within group condition" and "random sampling group  
 53 condition." **a. b.** CMA plots in AHC of EEG data of the flower video (FV). **c. d.** CMA plots in AHC of EEG  
 54 data of the coffee video (CV). EEG, electroencephalography.