

A SUPPLEMENTARY MATERIAL

The supplemental material contains additional details on the experiment. Table 1 shows the detailed prompts provided to experiment participants. Table 2 provides detailed statistics comparing the performance of the two HMD conditions to each other on naturalness ratings. Cumulative link models are checked for significance using Wald chi-square tests. The results of those tests are in Tables 3 for Social Signal responses and Table 4 for Naturalness responses.

Table 1: Description provided with the motion during the study.

Scale	Background	Rating
Attracted – Repulsed	“During this survey, you will watch a sequence of clips showing the motions of people looking at an object. After viewing each clip, you will rate it on two scales. The first scale rates how attracted or repulsed you think the person feels about the object.”	Very Repulsed to Very Attracted
Dominant – Shy	“...you will watch a sequence of clips showing the motions of people greeting another person... The first scale rates how dominant or shy you feel the person is.”	Very Shy to Very Dominant
Relaxed – Nervous	“...you will watch a sequence of clips showing the motions of people greeting another person.... The first scale rates how nervous or relaxed you think the person feels.”	Very Nervous to Very Relaxed
Interested – Disinterested	“...you will watch a sequence of clips showing the motions of people listening to a story told to them by another person.... The first scale rates how interested or disinterested they are in the other person.”	Very Disinterested to Very Interested
Energetic –Tired	“...you will watch a sequence of clips showing the motions of people saying that they are going to get a coffee....The first scale rates how tired or energetic the person seems.”	Very Tired to Very Energetic
Positive – Negative	“...you will watch a sequence of clips showing the motions of people reacting to an option they have been offered....The first scale rates how positively or negatively the person feels about the option.”	
Arm Posture	“...you will watch a sequence of clips showing the motions of people with different postures.... The first scale rates how dominant or shy you feel the person is.”	Very Shy to Very Dominant
Posture Range	“...you will watch a sequence of clips showing the motions of people with different postures.... The first scale rates how you view the person’s posture, ranging from collapsed to attentive.”	Very Collapsed to Very Attentive
Emotions	“The first scale asks you to identify the emotion. Specifically, you will answer the question: What emotion do you think the person is showing?... Then you will rate your confidence in that emotion. Specifically, you will answer the question: How confident are you in your answer?... Third, you will rate the intensity of the emotion. Specifically, you will answer the question: How intense do you think the emotion is?”	Happiness, Anger, Sadness, Surprise, Fear; Very Unconfident/Confident; Very Weak/Strong

Table 2: Summary of Naturalness ratings showing direct comparison between HMD1 and HMD2. HMD1 better refers to the HMD1 stimuli count that’s better than the HMD2, and vice versa. d_T denotes the total and d_M the mean values.

Category	HMD1 better	d_T	d_M	HMD2 better	d_T	d_M
Attracted vs. Repulsed	1	.40	.40	1	1.58	1.58
Dominant vs. Shy	2	1.10	.55	0	0	
Energetic vs. Tired	1	1.02	1.02	1	.40	.40
Interested vs. Disinterested	3	1.78	.59	0	0	
Positive vs. Negative	1	.74	.74	2	1.89	.94
Relaxed vs. Nervous	2	1.56	.78	0	0	
Arm Posture	3	4.42	1.47	1	.44	.44
Posture Range	4	4.50	1.12	2	2.52	1.26
Happiness	0	0		1	.76	.76
Anger	0	0		1	1.01	1.01
Sadness	0	0		1	.46	.46
Surprise	0	0		0	0	
Fear	0	0		1	.71	.71
Totals	17	15.51	.83	11	9.76	.89
Percent of total	32.7			21.1		

Table 3: Results of statistical tests on social signal scale ratings: Type I Analysis of Deviance Table with Wald chi-square tests.

Scale	Scale Level					
Attracted vs. Repulsed	VeryRepulsed	Repulsed	Neutral	Attracted	VeryAttracted	
	$\chi^2(2) = 2.33, p = .31$	$\chi^2(2) = 1.4, p = .5$	$\chi^2(2) = 1.31, p = .52$	$\chi^2(2) = 2.76, p = .25$	$\chi^2(2) = 20.15, p < .0001$	
Dominant vs. Shy	VeryShy	Shy	Neutral	Dominant	VeryDominant	
	$\chi^2(2) = 25.49, p < .0001$	$\chi^2(2) = 9.6, p = .01$	$\chi^2(2) = 24.57, p < .0001$	$\chi^2(2) = 10.25, p = .01$	$\chi^2(2) = 20.18, p < .0001$	
Energetic vs. Tired	VeryTired	Tired	Neutral	Energetic	VeryEnergetic	
	$\chi^2(2) = 26.56, p < .0001$	$\chi^2(2) = 6.66, p = .04$	$\chi^2(2) = 4.51, p = .1$	$\chi^2(2) = 5.22, p = .07$	$\chi^2(2) = 8.49, p = .01$	
Interested vs. Disinterested	VeryDisinterested	Disinterested	Neutral	Interested	VeryInterested	
	$\chi^2(2) = 15.46, p = .00044$	$\chi^2(2) = 14.3, p = .00079$	$\chi^2(2) = 6.48, p = .04$	$\chi^2(2) = 21.74, p < .0001$	$\chi^2(2) = 35.51, p < .0001$	
Positive vs. Negative	VeryNegative	Negative	Neutral	Positive	VeryPositive	
	$\chi^2(2) = .85, p = .65$	$\chi^2(2) = 5.55, p = .06$	$\chi^2(2) = 27.04, p < .0001$	$\chi^2(2) = 61.5, p < .0001$	$\chi^2(2) = 55.32, p < .0001$	
Relaxed vs. Nervous	VeryNervous	Nervous	Neutral	Relaxed	VeryRelaxed	
	$\chi^2(2) = 5.82, p = .05$	$\chi^2(2) = 73.13, p < .0001$	$\chi^2(2) = 60.44, p < .0001$	$\chi^2(2) = 66.37, p < .0001$	$\chi^2(2) = 44.94, p < .0001$	
Arm Posture	VeryShy	Shy	Neutral	Dominant	VeryDominant	
	$\chi^2(2) = 8.26, p = .02$	$\chi^2(2) = 72.57, p < .0001$	$\chi^2(2) = 21.35, p < .0001$	$\chi^2(2) = 21.63, p < .0001$	$\chi^2(2) = 28.33, p < .0001$	
Posture Range	Collapsed	Dejected	Limp	Neutral	Attentive	Alert
	$\chi^2(2) = .81, p = .67$	$\chi^2(2) = 4.09, p = .13$	$\chi^2(2) = 31.47, p < .0001$	$\chi^2(2) = 45.99, p < .0001$	$\chi^2(2) = 6.01, p = .05$	$\chi^2(2) = 27.94, p < .0001$
						Military
						$\chi^2(2) = 52.9, p < .0001$

Table 4: Results of statistical tests on Naturalness scale ratings: Type I Analysis of Deviance Table with Wald chi-square tests.

Scale	Scale Level					
Attracted vs. Repulsed	VeryRepulsed	Repulsed	Neutral	Attracted	VeryAttracted	
	$\chi^2(2) = 26.07, p < .0001$	$\chi^2(2) = 48.05, p < .0001$	$\chi^2(2) = 87.98, p < .0001$	$\chi^2(2) = 47.91, p < .0001$	$\chi^2(2) = 67.87, p < .0001$	
Dominant vs. Shy	VeryShy	Shy	Neutral	Dominant	VeryDominant	
	$\chi^2(2) = 59.9, p < .0001$	$\chi^2(2) = 45.41, p < .0001$	$\chi^2(2) = 56.26, p < .0001$	$\chi^2(2) = 27.32, p < .0001$	$\chi^2(2) = 29.5, p < .0001$	
Energetic vs. Tired	VeryTired	Tired	Neutral	Energetic	VeryEnergetic	
	$\chi^2(2) = 85.44, p < .0001$	$\chi^2(2) = 60.24, p < .0001$	$\chi^2(2) = 80.78, p < .0001$	$\chi^2(2) = 68.45, p < .0001$	$\chi^2(2) = 19.51, p < .0001$	
Interested vs. Disinterested	VeryDisinterested	Disinterested	Neutral	Interested	VeryInterested	
	$\chi^2(2) = 34.7, p < .0001$	$\chi^2(2) = 62.92, p < .0001$	$\chi^2(2) = 38.07, p < .0001$	$\chi^2(2) = 62.33, p < .0001$	$\chi^2(2) = 45.77, p < .0001$	
Positive vs. Negative	VeryNegative	Negative	Neutral	Positive	VeryPositive	
	$\chi^2(2) = 40.16, p < .0001$	$\chi^2(2) = 19.02, p < .0001$	$\chi^2(2) = 22.78, p < .0001$	$\chi^2(2) = 65.86, p < .0001$	$\chi^2(2) = 81.49, p < .0001$	
Relaxed vs. Nervous	VeryNervous	Nervous	Neutral	Relaxed	VeryRelaxed	
	$\chi^2(2) = 28.9, p < .0001$	$\chi^2(2) = 36.91, p < .0001$	$\chi^2(2) = 31.18, p < .0001$	$\chi^2(2) = 40.54, p < .0001$	$\chi^2(2) = 55.7, p < .0001$	
Arm Posture	VeryShy	Shy	Neutral	Dominant	VeryDominant	
	$\chi^2(2) = 87.41, p < .0001$	$\chi^2(2) = 33.27, p < .0001$	$\chi^2(2) = 2.45, p = .29$	$\chi^2(2) = 56.09, p < .0001$	$\chi^2(2) = 48.96, p < .0001$	
Posture Range	Collapsed	Dejected	Limp	Neutral	Attentive	Alert
	$\chi^2(2) = 42.52, p < .0001$	$\chi^2(2) = 94.99, p < .0001$	$\chi^2(2) = 64.43, p < .0001$	$\chi^2(2) = 44.78, p < .0001$	$\chi^2(2) = 34.94, p < .0001$	$\chi^2(2) = 12.5, p = .0019$
						Military
						$\chi^2(2) = 31.2, p < .0001$