Supplemental Figures

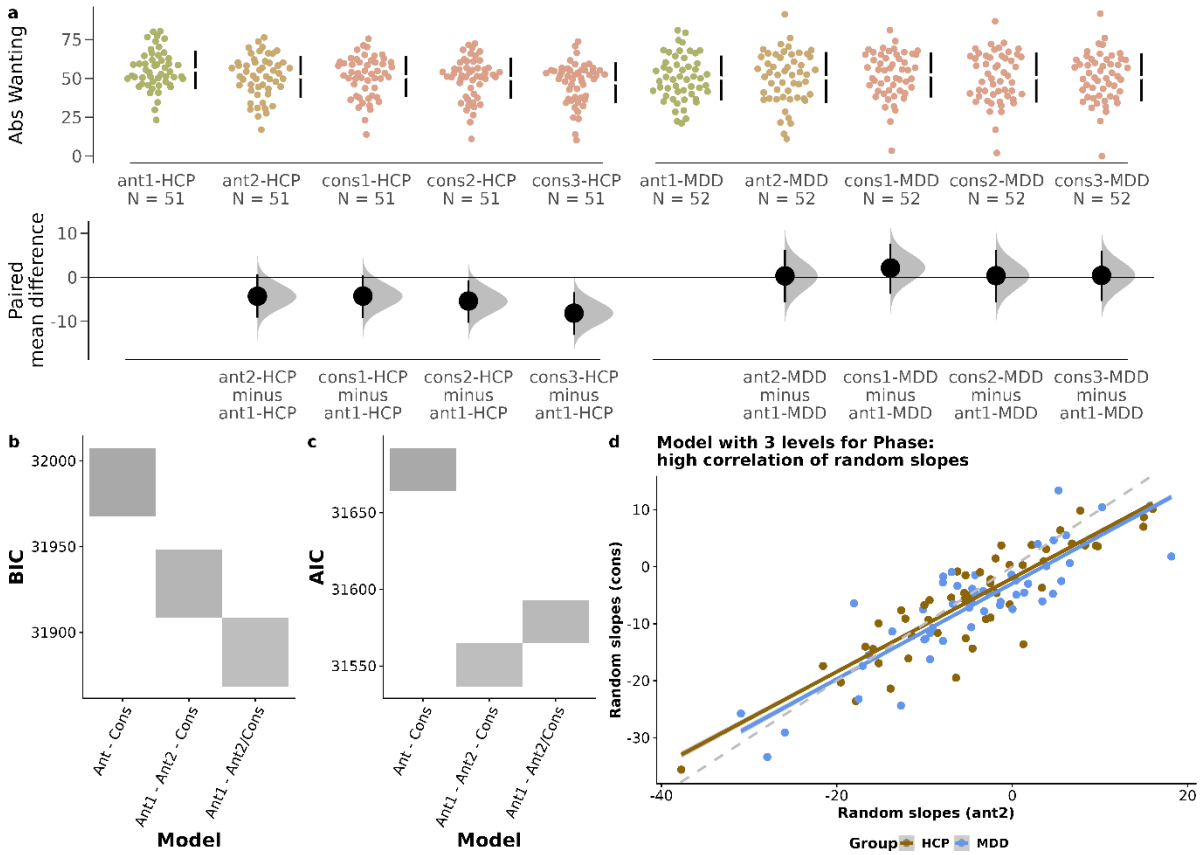

Fig. S1. Model comparison for coding of anticipatory and consummatory phases. **Related to Fig. 1B.** A. The taste test comprises 5 rounds moving gradually from anticipation to consummation. B. We compared 3 variants to model the factor "phase". (1) A 2-level factor with the first two phases (food cues, sight and smell of snacks) as one anticipatory phase, and the last three phases (repeated consummation) as one consummatory phase [Ant-Cons]. (2) A 3-level factor (1st anticipation, 2nd anticipation, consummation) [Ant1-Ant2-Cons] and (3) as a 2- level phase factor (1st anticipation, 2nd anticipation/consummation) [Ant1-Ant2/Cons]. The latter two models performed better than the first in a model comparison using the Bayesian and Akaike Information criteria, indicating a better fit-complexity trade-off. C. We found that the random slopes correlation for the 3-level phase factor was very high (r = 0.83), suggesting that the additional third phase does not differ qualitatively. Therefore, we used the 2-level phase factor to separate first anticipation (i.e., cued) from later anticipation (i.e., sight and smell) and consummation for all further analysis. Importantly, the conclusions for the group differences did not change qualitatively using different phase coding

.

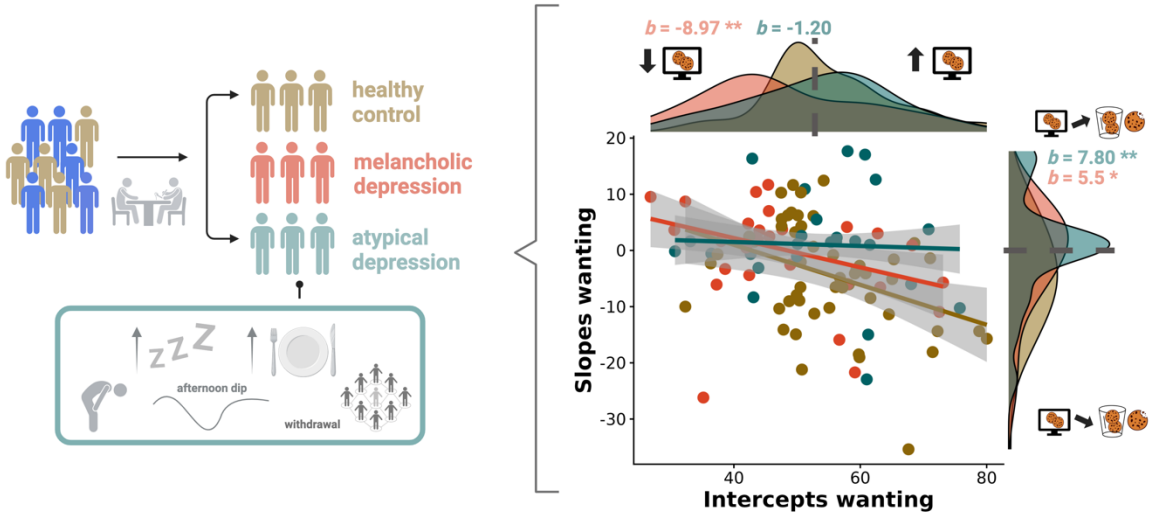

Fig. S2. Lower wanting in melancholic MDD. **Related to Fig. 1**. For participants with MDD extend of atypical symptoms were evaluated using the atypical balance score from the SIGH-ADS. Lower wanting during cued anticipation was driven by participants with melancholic (b = -8.97, p = .004) and not atypical MDD (b = -1.20, p = .70). Both, melancholic (b = 5.5, p = .044) and atypical MDD (b = 7.80, p = .008) increased their wanting ratings after cued anticipation.

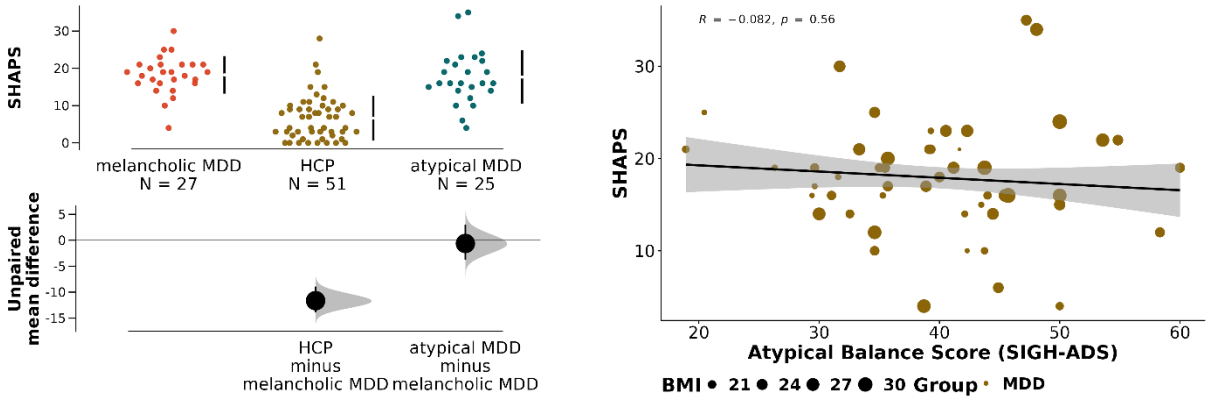

Fig. S3. SHAPS does not differ between depression subtypes. Related to Fig. 2 and S2. Cumming estimation plots show no difference in SHAPS ratings between melancholic and atypical MDD (left). Effect size and bootstrapped 95% CIs are plotted below the raw data. Within participants with depression, atypical balance score was also not associated with SHAPS (r = -.082, p = .56, right).

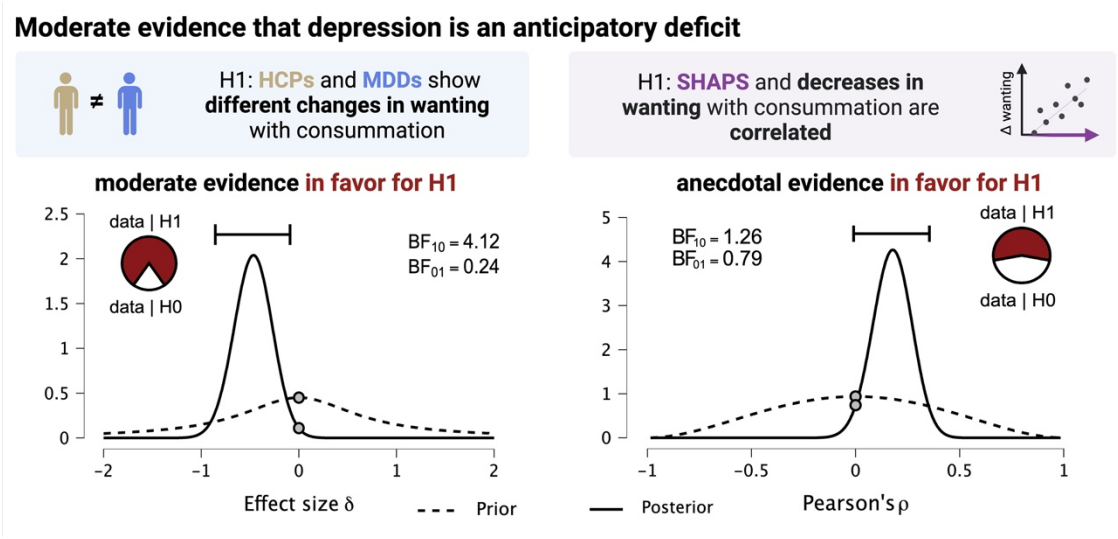

Fig. S4. Depression as anticipatory but not consummatory deficit. Related to Fig. 3. Bayesian hypothesis testing showing moderate evidence for the hypothesis that participants with MDD (vs HCPs) show different wanting changes from anticipation to consummation (left panel; two-sided Bayesian independent samples *t*-test). Anecdotal evidence for the hypothesis that SHAPS (i.e., lower "hedonic tone") is associated with stronger wanting decreases during consummation (bottom panel; Bayesian Correlation). *BF* = Bayes factor (with levels of evidence: 1-3 anecdotal, 3-10 moderate, 10-30 strong). A probability wheel on an area of size 1 represents the BF10, respectively. Created with BioRender.com

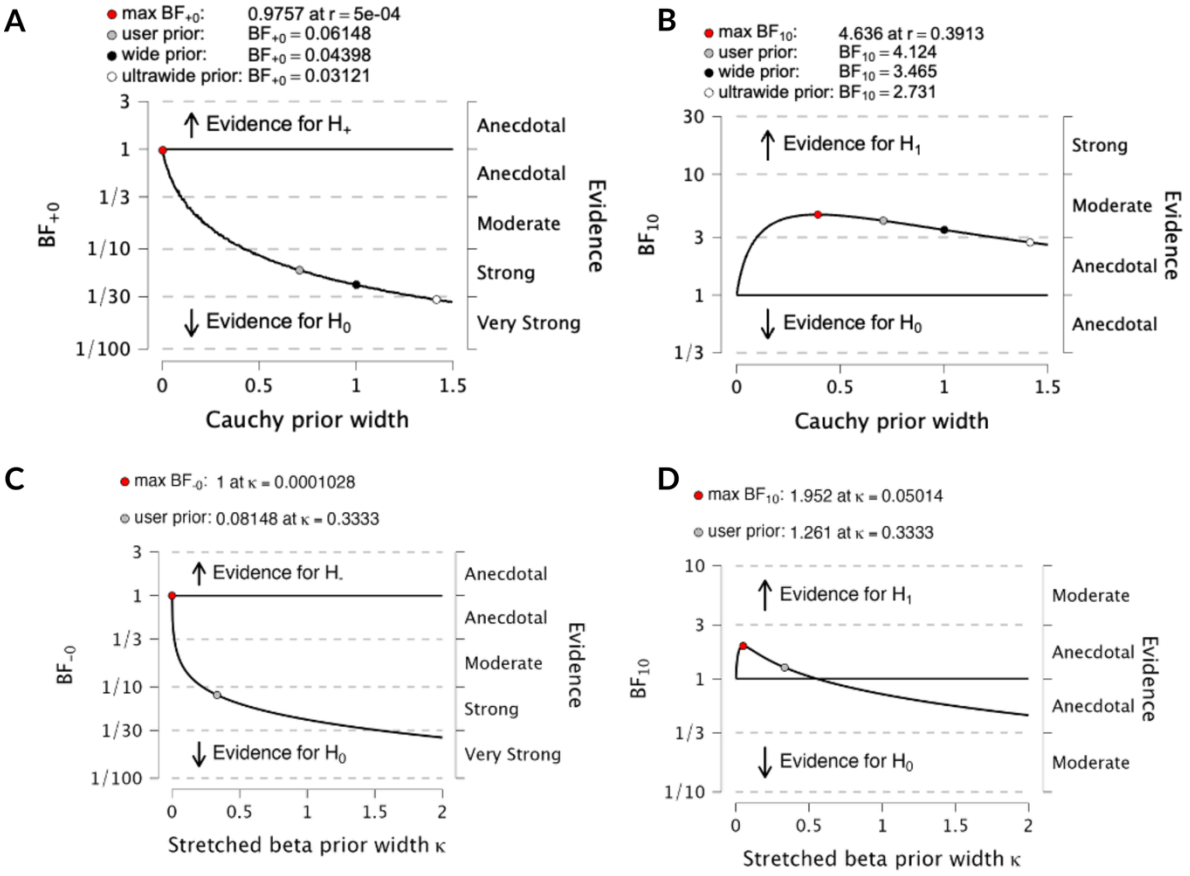

Fig. S5. Robustness Check for the Bayesian Tests. Related to Fig. 3. And S4. A. Robustness check for the one-sided Indedendent Samples T-Test that HCPs show greater wanting during consummation than patients with MDD compared to anticipation. B. Robustness check for the two-sided Independent Samples T-Test that HCPs and patients with MDD differ in their wanting adjustments during consummation. C. Robustness Check for the Bayesian directed Correlation that SHAPS is negatively associated with changes in wanting with consummation. D: Robustness check for the correlation test whether SHAPS is correlated with changes in wanting with consummation.

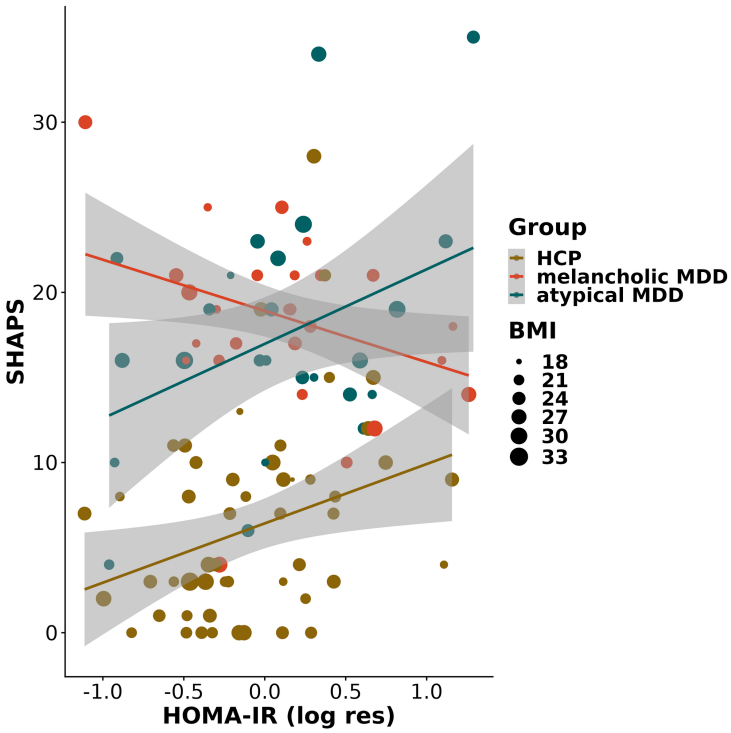

Fig. S6. HOMA-IR and SHAPS depending on depression subtype. Related to Fig. 2. A. Robustness check for the one-sided Indedendent Samples T-Test that HCPs show greater wanting during consummation than patients with MDD compared to anticipation. B. Robustness check for the two-sided Independent Samples T-Test that HCPs and patients with MDD differ in their wanting adjustments during consummation. C. Robustness Check for the Bayesian directed Correlation that SHAPS is negatively associated with changes in wanting with consummation. D: Robustness check for the correlation test whether SHAPS is correlated with changes in wanting with consummation.

Supplemental Tables

Table S1. Participant comorbidities. Related to Table 1.

Characteristic	HCP (N=51)	MDD (N=52)	Overall (N=103)
Obsessive compulsive disorder (lifetime)	1 (2.0%)	5 (9.6%)	6 (5.8%)
Post-traumatic stress disorder (lifetime)	1 (2.0%)	4 (7.7%)	5 (4.9%)
Attention Deficit Disorder			
Inattentive type	4 (7.8%)	1 (1.9%)	5 (4.9%)
Combined type	0 (0%)	4 (7.7%)	4 (3.9%)
Binge eating disorder (lifetime)	1 (2.0%)	1 (1.9%)	2 (1.9%)
Alcohol substance use disorder			
Lifetime	7 (13.7%)	8 (15.4%)	15 (14.6%)
Severity: moderate (else light)	0 (0%)	2 (3.8%)	2 (1.9%)
Current	3 (5.9%)	6 (11.5%)	9 (8.7%)
Other substance use disorder			
Lifetime	2 (3.9%)	4 (7.7%)	6 (5.8%)
Severity: moderate (else light)	1 (2.0%)	1 (1.9%)	2 (1.9%)
Current	2 (3.9%)	2 (3.8%)	4 (3.9%)
Social anxiety		11 (21.2%)	11 (10.7%)
Generalized anxiety		6 (11.5%)	6 (5.8%)
Panic disorder		8 (15.4%)	8 (7.8%)

Note. Listed are comorbidities that were no exclusion criteria. Current refers to fulfilment of diagnostic criteria within the last 12 months. Severe substance abuse was excluded. Social anxiety, generalized anxiety, and panic disorder are only mentioned for MDD to strengthen that they were exclusion criteria for HCPs. Values are counts with percentage of respective group.

Table S2. Including Liking in the Wanting Models does not render main conclusions

model	term	estimate	Std. Error	p-value
MDD and Wanting	MDD	**-5.01**	**2.32**	**.03**
	Liking	**0.19**	**0.05**	**.0005**
	MDD * Liking	-0.01	0.07	.85
	MDD * Phase	**6.12**	**2.16**	**.005**
	Liking * Phase	**0.18**	**0.04**	**<.001**
	Liking * Phase * MDD	-0.11	0.06	.067
Anhedonia and Wanting	SHAPS	**-0.38**	**0.14**	**.008**
	Liking	**0.18**	**0.03**	**<.001**
	SHAPS * Liking	-0.006	0.004	.16
	SHAPS * Phase	**0.29**	**0.13**	**.035**
	Liking * Phase	**0.12**	**0.03**	**<.001**
	Liking * Phase * SHAPS	0.004	0.004	.33

Table S3. Bias of non-parametric method using wild bootstrapped results for linear mixed effects models (N_B = 1000).

model	term	test	estimate	se	lower	upper
Liking and depression	MDD	P	0.21	3.44	-6.54	6.96
		NP	0.21	3.29	-6.32	6.56
		bias	**0**	**+0.15**		
	MDD* Phase[con summation]	P	2.65	2.33	-1.91	7.23
		NP	2.66	2.32	-1.75	7.34
		bias	**+0.01**	**-0.01**		
Liking and SHAPS	SHAPS	P	-0.36	0.20	-0.76	0.04
		NP	-0.36	0.21	-0.78	0.06
		bias	**0**	**+0.01**		
	SHAPS* Phase[con summation]	P	0.25	0.14	-0.03	0.52
		NP	0.25	0.13	-0.004	0.52
		bias	**0**	**-0.01**		
Wanting and depression	MDD	P	-5.17	2.56	-10.19	-0.15
		NP	-5.17	2.64	-10.40	-0.08
		bias	**0**	**-0.08**		
	MDD* Phase[con summation]	P	6.73	2.32	2.19	11.28
		NP	6.74	2.41	2.17	11.60
		bias	**+0.01**	**-0.09**		
Wanting and SHAPS	SHAPS	P	-0.40	0.15	-0.70	-0.10
		NP	-0.40	0.17	-0.73	-0.08
		bias	**0**	**+0.02**		
	SHAPS* Phase[con summation]	P	0.30	0.14	0.02	0.58
		NP	0.30	0.13	0.06	0.57
		bias	**0**	**-0.01**		

Note. Wild bootstrapping makes no distribution assumptions and allows for heteroskedasticity[1]. For the four main models, we show the terms of interest (i.e., fixed effects for MDD or SHAPS and their interaction with phase), the coefficient (estimate), the standard error (se) and the 95% confidence interval (upper, lower) for the parametric test (P) and the non-parametric (NP) bootstrapping. The bias of the parametric method was determined by calculating the difference to the non-parametric parameter estimate and standard error.

Table S4. Model results for liking and wanting with depression

	Liking depression			Wanting depression		
Predictors	*Estimates*	*std. Error*	*p*	*Estimates*	*std. Error*	*p*
(Intercept)	12.65	2.45	**<0.001**	55.36	1.84	**<0.001**
fMDD [MDD]	0.21	3.44	0.952	-5.17	2.56	**0.046**
fPhase dicho FCR TT [taste_test]	1.20	1.66	0.471	-5.74	1.69	**0.001**
fSnack1	0.56	1.70	0.741	0.10	1.74	0.954
fSnack2	26.25	2.45	**<0.001**	22.96	2.19	**<0.001**
fSnack3	-7.09	2.91	**0.016**	-6.54	2.40	**0.008**
fSnack4	8.22	2.74	**0.003**	9.27	2.29	**<0.001**
fSnack5	9.51	1.52	**<0.001**	8.99	1.71	**<0.001**
fSnack6	-17.43	3.42	**<0.001**	-14.19	2.58	**<0.001**
cBMI	-0.52	0.42	0.223	-0.59	0.37	0.115
cAge	-0.04	0.19	0.843	-0.30	0.16	0.067
cSex	-3.71	2.58	0.154	-3.71	2.27	0.106
fMDD [MDD] × fPhase dicho FCR TT [taste_test]	2.66	2.33	0.257	6.74	2.32	**0.004**
Random Effects						
σ^2	221.73			214.74		
τ_{00}	276.79 $_{ID}$			147.01 $_{ID}$		
τ_{11}	260.04 $_{ID.fSnack1}$			273.77 $_{ID.fSnack1}$		
	581.41 $_{ID.fSnack2}$			455.06 $_{ID.fSnack2}$		
	831.97 $_{ID.fSnack3}$			556.49 $_{ID.fSnack3}$		
	733.81 $_{ID.fSnack4}$			503.93 $_{ID.fSnack4}$		
	198.62 $_{ID.fSnack5}$			263.82 $_{ID.fSnack5}$		
	1166.24 $_{ID.fSnack6}$			646.77 $_{ID.fSnack6}$		
	102.99 $_{ID.fPhase\_dicho\_FCR\_TTtaste\_test}$			113.24 $_{ID.fPhase\_dicho\_FCR\_TTtaste\_test}$		
ρ_{01}	0.08			0.03		
	-0.15			-0.03		
	0.05			0.21		
	-0.09			-0.03		
	0.06			0.01		
	0.06			-0.03		
	-0.62			-0.37		
ICC	0.79			0.73		
N	103 $_{ID}$			103 $_{ID}$		
Observations	3605			3605		
Marginal R^2 / Conditional R^2	0.187 / 0.826			0.207 / 0.789		

Table S5. Model results for liking and wanting with depression

Model	Term	Estimate	Std. error	p-value
Wanting	MDD	**-5.22**	**2.56**	**.045**
	MDD*Phase[anticipation2]	4.66	2.63	.079
	MDD*Phase[consumption]	**7.43**	**2.36**	**.002**
	SHAPS	**-0.40**	**0.15**	**.0097**
	SHAPS*Phase[anticipation2]	0.22	0.16	.17
	SHAPS*Phase[consumption]	**0.25**	**0.009**	**.027**
Liking	MDD	0.21	3.44	.95
	MDD*Phase[anticipation2]	1.77	2.49	.48
	MDD*Phase[consumption]	2.96	2.40	.22
	SHAPS	-0.36	0.20	.081
	SHAPS*Phase[anticipation2]	0.15	0.15	.32
	SHAPS*Phase[consumption]	**0.28**	**0.14**	**.054**

Table S5. Similar results for wanting using the 3-level coding of the factor phase. Results are shown for using three phases (ant1 – ant2 – consummation). Results are highlighted in green when they correspond to the results reported using the winning model (Ant1 – Ant2/consummation; reported main manuscript). The table shows that the conclusions derived in the manuscript do not depend critically on choosing the Ant1 – Ant2/consummation model over the (ant 1 – ant2 – consummation).

Table S6. Model results for liking and wanting with anhedonia

	Liking anhedonia			**Wanting anhedonia**		
Predictors	*Estimates*	*std. Error*	*p*	*Estimates*	*std. Error*	*p*
(Intercept)	12.73	1.71	**<0.001**	52.74	1.29	**<0.001**
cSHAPS sum	-0.36	0.20	0.081	-0.40	0.15	**0.010**
fPhase dicho FCR TT [taste_test]	2.55	1.17	**0.032**	-2.34	1.23	0.060
fSnack1	0.56	1.70	0.741	0.10	1.74	0.954
fSnack2	26.25	2.45	**<0.001**	22.96	2.19	**<0.001**
fSnack3	-7.09	2.91	**0.016**	-6.54	2.40	**0.008**
fSnack4	8.22	2.74	**0.003**	9.27	2.29	**<0.001**
fSnack5	9.51	1.52	**<0.001**	8.99	1.71	**<0.001**
fSnack6	-17.43	3.42	**<0.001**	-14.19	2.58	**<0.001**
cBMI	-0.45	0.42	0.293	-0.54	0.37	0.147
cAge	-0.10	0.19	0.608	-0.33	0.16	**0.047**
cSex	-3.35	2.58	0.198	-3.80	2.23	0.092
cSHAPS sum × fPhase dicho FCR TT [taste_test]	0.25	0.14	0.080	0.30	0.14	**0.037**
Random Effects						
σ^2	221.72			214.74		
τ_{00}	267.46 $_{ID}$			140.42 $_{ID}$		
τ_{11}	260.05 $_{ID.fSnack1}$			273.76 $_{ID.fSnack1}$		
	581.62 $_{ID.fSnack2}$			455.03 $_{ID.fSnack2}$		
	831.83 $_{ID.fSnack3}$			556.48 $_{ID.fSnack3}$		
	734.28 $_{ID.fSnack4}$			503.95 $_{ID.fSnack4}$		
	198.54 $_{ID.fSnack5}$			263.83 $_{ID.fSnack5}$		
	1165.72 $_{ID.fSnack6}$			646.70 $_{ID.fSnack6}$		
	101.19 $_{ID.fPhase\_dicho\_FCR\_TTtaste\_test}$			117.75 $_{ID.fPhase\_dicho\_FCR\_TTtaste\_test}$		
ρ_{01}	0.06			0.04		
	-0.14			-0.01		
	0.04			0.19		
	-0.09			-0.03		
	0.10			-0.01		
	0.07			-0.03		
	-0.60			-0.37		
ICC	0.79			0.73		
N	103 $_{ID}$			103 $_{ID}$		
Observations	3605			3605		
Marginal R^2 / Conditional R^2	0.187 / 0.825			0.208 / 0.789		

References

1. Modugno, L., and Giannerini, S. (2015). The Wild Bootstrap for Multilevel Models. Commun. Stat. - Theory Methods *44*, 4812–4825. https://doi.org/10.1080/03610926.2013.802807.