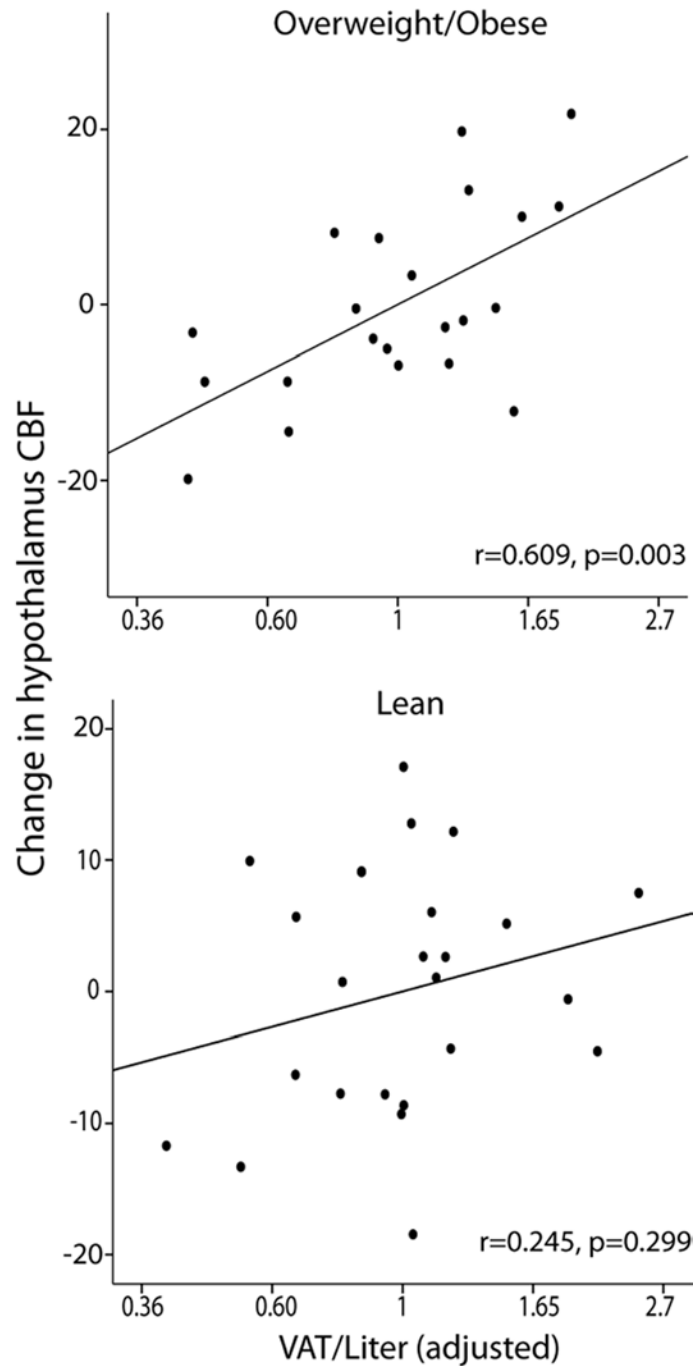


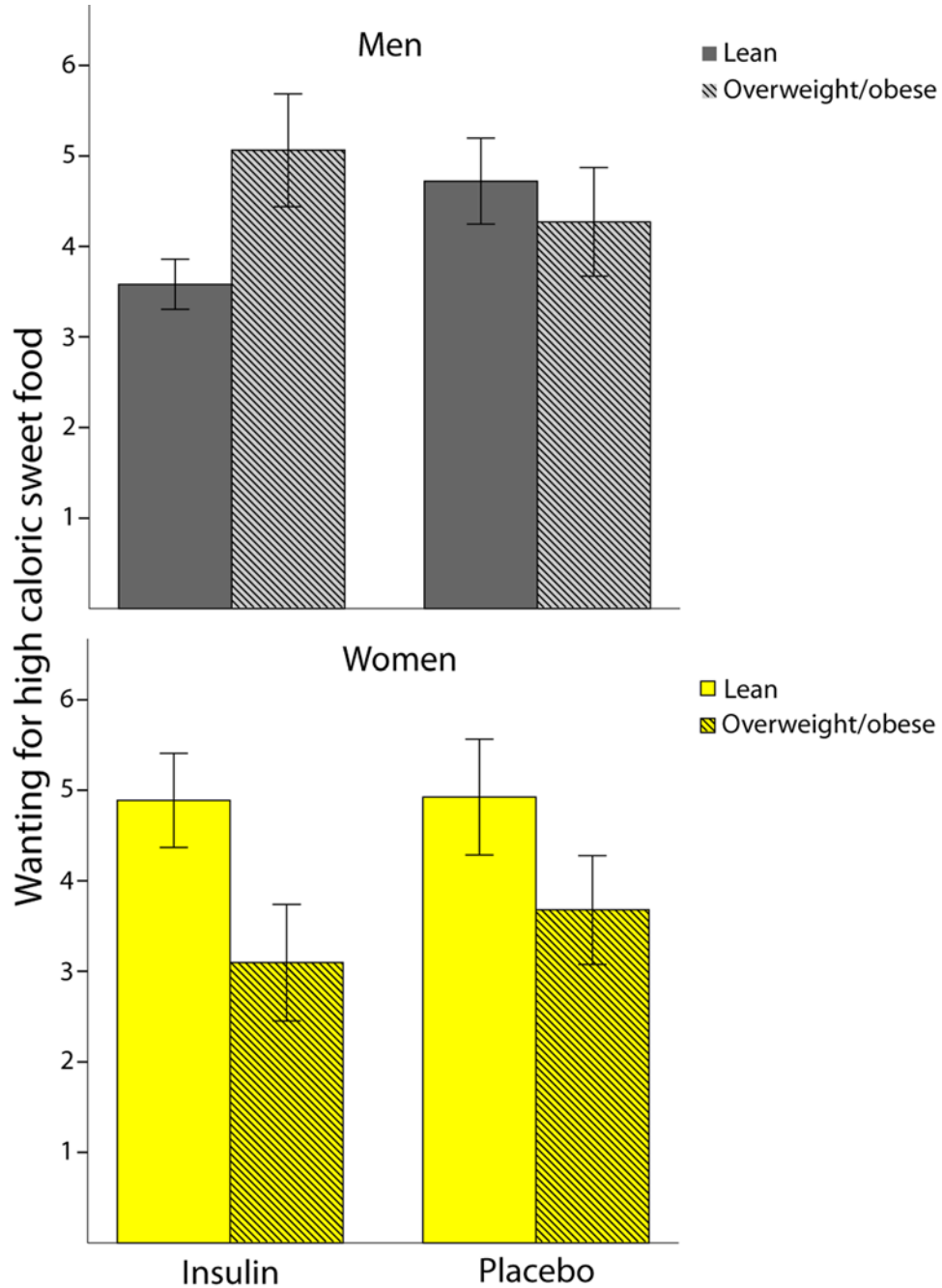
SUPPLEMENTARY DATA

Supplementary Figure 1. The top scatter plots shows in overweight and obese participants a significant positive correlation between the change in hypothalamic CBF 15 min after insulin application and visceral adipose tissue ($r=0.306$, $p=0.003$). The bottom scatter plot shows that there is no significant correlation between the change in hypothalamic and visceral adipose tissue in the lean group ($p>0.05$).



SUPPLEMENTARY DATA

Supplementary Figure 2. Significant group-by-gender-by-condition interaction for the “wanting” rating of high caloric sweet food stimuli ($F=8.56$, $p=0.006$). The top bar diagram shows the rating of lean and overweight/obese **men** 60 min after insulin and placebo application. The bottom bar diagram shows the rating of lean and overweight/obese **women** 60 min after insulin and placebo application.



SUPPLEMENTARY DATA

Supplementary Table 1. Effect of intranasal insulin versus placebo on CBF measurements in lean and overweight/obese adults

Regions	Hem	BA	MNI (mm) (x,y,z)	F value*	Directional T-contrasts (T value*)
Main effect of group					Lean < overweight/obese
Lingual gyrus	Right	18	18, -85, -2	22.78	4.77
Main effect of condition					Insulin < Placebo
Hypothalamus	Left		-6, -10, -8	13.4†	3.66†
Group-by-condition interaction					Interaction: Lean Insulin < Placebo; overweight/obese Insulin > Placebo
Superior/Middle frontal gyrus	Right	9	39, 29, 31	20.99	4.58

Data were analyzed using a full factorial model with group (lean vs. overweight/obese) as between-subject factor and condition (insulin vs. placebo) and time (15 min vs 30 min) as within-subject factors correcting for repeated measurement. * $p < 0.05$, family wise error corrected for multiple comparisons, cluster level; †small volume corrected.