Supplementary Materials for

Exogenous testosterone enhances cortisol and affective responses to social-evaluative stress in dominant men

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1. Supplementary Materials and Data

All materials and data for this publication can be found at the project's Open Science Framework (OSF) website: https://osf.io/9jy9n/

2. Supplementary Methods

2.1 Participant Screening and Recruitment.

We briefly reported screening and recruitment procedures in the main document. Here we provide a full list of exclusion conditions in the screening process. After being read the list, the participants self-reported if any of the conditions were true:

- Student-athlete or other professional for whom steroid hormone use is prohibited.
- Mental illness, including recurrent major depression, antisocial personality disorder, Schizophrenia, bipolar disorder, Tourette's syndrome, conduct disorder, serious emotional disturbance, intermittent explosive disorder
- Alcohol or drug dependency, including opiates, LSD, methamphetamine, cocaine, solvents, cannabis, or barbiturates
- A major neurologic condition such as recent head injury with loss of consciousness, tumor, stroke, or other brain lesions.
- History of autonomic failure
- History of clinically significant liver, heart, lung, obstructive respiratory, kidney, cerebrovascular disease, or metabolic syndrome
- Current periodontitis
- Diabetes
- Irregular sleep/wake rhythm (e.g., regular nightshifts or cross timeline travel)
- Any hormone disorders
- Any immune disorders
- Medical conditions affecting testosterone concentrations (such as hypogonadism or prostate cancer), taking psychotropic medications (such as SSRIs), or receiving medical treatment for conditions affecting cerebral metabolism and blood flow (such as hypertension)
- Receiving psychiatric treatment
- Receiving endocrine treatment, such as hormone replacement therapy
- Regularly using corticosteroids, like hydrocortisone
- Regularly using anabolic steroids

Participants who acknowledged that any of these situations, conditions, or disorders were true were excluded from recruitment for participation in the study.

2.2 Supplemental Information on Testosterone Gel

As reported in the main document, we used commercially-available testosterone gel (Androgel) to manipulate testosterone levels. In addition to testosterone, this gel contained several inactive ingredients, including carbomer 980, ethanol 67.0%, isopropyl myristate, purified water, and sodium hydroxide. The placebo was produced to exactly match these inactive ingredients.

2.3 Salivary Collection and Enzyme Immunoassay (EIA) Protocols

In order to collect saliva samples throughout the lab day, participants passively drooled approximately 2 mL in collection tubes, the saliva samples were immediately frozen in a -20 °C freezer before being transported to a -80 °C freezer for long-term storage. Consistent with standard procedures (Schultheiss & Stanton, 2009), saliva samples were later thawed and centrifuged at 3500 rpm for 10 minutes at room temperature. The remaining fluid was then aliquoted into 250 µL samples and frozen again before being thawed and analyzed for cortisol and testosterone in duplicate using enzyme immunoassay (EIA) kits (DRG, Germany).

2.4 Further Justification for Analytical Approach for Measuring Testosterone

Our analyses focus on testosterone vs. placebo treatment as categorical predictor of stress responses rather than using testosterone concentration. In order to ensure testosterone treatment significantly increased testosterone concentrations, we employed a conservative strategy to estimate testosterone concentrations that were above the enzyme immunoassay kits' upper limit. Other methods of determining testosterone concentration were deemed to be cost-prohibitive (e.g., more accurate LC/MS or multiple rounds of assays to dilute the samples) or unnecessarily risky (e.g., serum measures, requiring an indwelling catheter) given the purposes of the present study. Finally, recent work has highlighted inaccuracies apparent in commercially available salivary testosterone enzyme immunoassay (EIA) kits (Welker et al., 2016), which also influenced the decision to analyze group differences rather than changes linked to testosterone concentrations.

2.5 Analytical Plan

In the main document, we discuss the basic analytical plan; here we report the full multilevel model and results. Thus the model for Time x T/P was analyzed as follows (Equation S1):

Level I: $$Cortisol_{ij} = \beta_{0j} + \beta_{1j}Time_{ij} + \beta_{2j}Time_{ij}^2 + r_{ij}$$

Level II: $$\beta_{0j} = \gamma_{00} + \gamma_{01}TP_j + \gamma_{02}Blinding_j + \mu_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}TP_j + \mu_{1j}$$

$$\beta_{2j} = \gamma_{20} + \gamma_{21}TP_j + \mu_{2j}$$

Similarly, the Time x T/P x Dominance analyses consisted of the following model (Equation S2):

Level I: $$Cortisol_{ij} = \beta_{0j} + \beta_{1j}Time_{ij} + \beta_{2j}Time_{ij}^2 + r_{ij}$$

Level II: $$\beta_{0j} = \gamma_{00} + \gamma_{01}TP_j + \gamma_{02}Dominance_j + \gamma_{03}TP\ x\ Dominance_j + \gamma_{04}Blinding_j + \mu_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}TP_j + \gamma_{12}Dominance_j + \gamma_{13}TP\ x\ Dominance_j + \mu_{1j}$$

$$\beta_{2j} = \gamma_{20} + \gamma_{21}TP_j + \gamma_{22}Dominance_j + \gamma_{23}TP\ x\ Dominance_j + \mu_{2j}$$

For each set of models, we also explored models that included the two, earlier cortisol samples. In these models, time consisted of six epochs that were polynomial contrasted up to a quartic comparison (i.e., Time^4).

Models for the affective responses to social-evaluative stress were similar to the models for cortisol, with random intercepts and random effects of linear time for each participant. For example, the Time x T/P x Dominance model consisted of the following (Equation S3):

$$\text{Level I:} \quad Affect_{ij} = \beta_{0j} + \beta_{1j} Time_{ij} + \beta_{2j} Time_{ij}^2 + r_{ij}$$

$$\text{Level I:} \quad \beta_{0j} = \gamma_{00} + \gamma_{01} TP_j + \gamma_{02} Dominance_j + \gamma_{03} TP\ x\ Dominance_j + \gamma_{04} Blinding_j + \mu_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11} TP_j + \gamma_{12} Dominance_j + \gamma_{13} TP\ x\ Dominance_j + \mu_{1j}$$

$$\beta_{2j} = \gamma_{20} + \gamma_{21} TP_j + \gamma_{22} Dominance_j + \gamma_{23} TP\ x\ Dominance_j$$

Separate models for positive and negative affect were analyzed for the main document. We explore the lower-level positive and negative subscales within these supplementary materials.

All analyses were run in R (ver. 3.3.1; R Core Team, 2016) using the lme4 package for multilevel models (Bates et al., 2015). The 95% confidence intervals for effect estimates were calculated via the sjPlot package (Lüdecke, 2016) and all graphs were produced in ggplot2 (Wickham, 2009).

3. Supplementary Analyses

3.1 Full model estimates

We report estimates and confidence intervals of the interactions of interest in the main document; here we report descriptive analyses (Table S1); the full results for each model of cortisol (**Table S2-S4**) and affective responses to social-evaluative stress (**Tables S5-S7** and **S9**).

3.2 Preliminary Analyses

3.2.1 Testosterone concentrations. Salivary testosterone concentrations were found to be non-normally distributed and, like cortisol concentrations, were submitted to square-root transformation. We did not expect baseline differences in testosterone levels between the testosterone and placebo groups prior to gel application; GLM testing of transformed testosterone concentrations confirmed testosterone concentrations were equivalent at baseline (T/P: B = 0.55, 95%CI[-0.34, 1.44]; see **Figure S3** for full-day testosterone concentrations). Trait dominance levels were not associated with testosterone concentrations at baseline (B = -0.60, 95%CI[-1.50, 0.31]).

3.2.2 Tests for baseline differences in self-report measures and cortisol. We examined if the T/P or blinding conditions or their interaction altered responses to the self-report measures via GLM analyses. Self-report trait dominance was not altered by T/P (B = -0.008, 95%CI[-0.19, 0.18]), blinding (B = 0.097, 95%CI[-0.09, 0.28]), or the T/P x blinding interaction (B = -0.004, 95%CI[-0.19, 0.18]). Negative affect at baseline was not altered by testosterone administration (B = -0.009, 95%CI[-0.05, 0.03]), blinding (B = -0.010, 95%CI[-0.05, 0.03]), or the T/P x blinding interaction (B = -0.010, 95%CI[-0.05, 0.03]). Positive affect at baseline was not altered by T/P (B = 0.07, 95%CI[-0.05,

0.18]), blinding (B = 0.005, 95%CI[-0.11, 0.12]), or the T/P x Blinding interaction (B = -0.02, 95%CI[-0.14, 0.09]).

We also explored if cortisol differed just before the social-evaluative stressor due to testosterone treatment or blinding conditions. The pre-TSST cortisol sample was not altered by T/P (B = -0.005, 95%CI[-0.023, 0.014]), blinding, (B = 0.003, 95%CI[-0.015, 0.022]) or the T/P x blinding interaction (B = 0.002, 95%CI[-0.017, 0.021]).

Similarly, we used general linear regression models with T/P, blinding, and trait dominance to investigate if trait dominance and the T/P x Trait Dominance interaction predicted baseline (pre-TSST) cortisol or affect. We found that trait dominance and the T/P x Dominance interaction did not predict differences in pre-TSST cortisol ($B_{Dominance}$ = -0.006, 95%CI[-0.024, 0.013]; $B_{T/P \times Dom}$ = -0.005, 95%CI[-0.024, 0.014]) or positive affect ($B_{Dominance}$ = 0.076, 95%CI[-0.040, 0.191]; $B_{T/P \times Dom}$ = 0.059, 95%CI[-0.056, 0.174]). Trait dominance did relate to increased negative affect at baseline ($B_{Dominance}$ = 0.064, 95%CI[0.024, 0.104]), but did not interact with T/P ($B_{T/P \times Dom}$ = -0.028, 95%CI[-0.068, 0.012]).

3.3 Exploratory Analyses

3.3.1 Cortisol changes prior to the social-evaluative stressor. In keeping with prior research on acute stress responses (Dickerson & Kemeny, 2004), our primary analyses examined salivary cortisol changes from immediately before the TSST to 0, 20, and 40 minutes after the TSST. Here we confirmed that T/P did not influence salivary cortisol changes across three pre-stressor samples: A basal sample collected soon after participants arrived in the laboratory, a sample collected approximately three hours after gel administration, and the Pre-TSST sample. Multilevel models revealed a main effect of time on cortisol measured before the TSST consistent with circadian decline (Time (linear): B = -0.123, 95%CI[-0.144, -0.101]), but there were no significant effects of T/P or T/P x trait dominance on salivary cortisol changes examined before the TSST. These results indicate that the effect of T/P can be attributed to cortisol responses to the social-evaluative stressor but not cortisol changes prior to the TSST.

Additional exploratory multilevel models provided evidence that testosterone marginally increased the cortisol response to social-evaluative stress even when including all six samples, from across the full laboratory protocol ($Time^2$ x T/P: *B* = 0.016, 95%CI[-0.002, 0.034]; $Time^3$ x T/P: *B*= -0.021, 95%CI[-0.046, 0.004]). The interactive effects of testosterone and trait dominance were also found to impact cortisol responses when including the earlier samples (Time x T/P x Dominance: *B* = 0.032, 95%CI[0.003, 0.061]; $Time^3$ x T/P x Dominance: *B* = -0.035, 95%CI[-0.059, -0.011]). Visual inspection of the results supports the analyses in the main document, indicating that these differences were most readily apparent in the cortisol responses to the social-evaluative stressor (**Figures S1** and **S2**).

3.3.2 Cortisol AUC_I Simple Slope Analyses. We reported the interactive effects of testosterone and trait dominance on the cortisol response to stress as indexed by AUC_I in the main document. Here we report the simple slope analyses of the effects of testosterone at high (+1 SD) vs. low (-1SD) trait dominance. Unlike the main document, which demonstrated the simple slope as a function of time split by testosterone vs. placebe and high vs. low trait dominance, in the AUC_I analyses the simple slope is a

function of testosterone vs. placebo treatment condition split by high vs. low trait dominance.

For individuals high in trait dominance, testosterone was associated with a significant increase in cortisol AUC_I compared to placebo ($B_{T/P}$ = 0.150, 95%CI[0.061, 0.238]). But for individuals low in trait dominance, testosterone vs. placebo treatment did not relate to cortisol AUC_I ($B_{T/P}$ = -0.004, 95%CI[-0.095, 0.087]), indicating that no differences were evident between the treatment groups.

3.3.3 Cortisol Reactivity and Recovery. The multilevel models in the main document revealed that a three-way interaction was evident for the cortisol response to the social-evaluative stressor. We also examined separate measures of cortisol reactivity and recovery to the social-evaluative stressor. Reactivity was calculated by subtracting pre-stress cortisol concentration from cortisol concentration twenty minutes after the stressor (the +20 sample); recovery was calculated by subtracting pre-stress cortisol concentration from cortisol concentration forty minutes after the stressor (the +40 min sample). A positive recovery score indicates that cortisol levels had not returned to baseline forty minutes after the end of the stressor; a negative recovery score indicates that cortisol levels had fallen below the baseline levels.

These measures also confirmed the main effects of testosterone treatment and the interactive effects of T/P x dominance discussed in the main paper are evident in cortisol reactivity ($B_{T/P}$ = 0.035, 95%CI[0.003, 0.068]; $B_{T/P \times Dominance}$ = 0.038, 95%CI[0.006, 0.070]; **Figures S4A** & **S4B**) and recovery ($B_{T/P}$ = 0.026, 95%CI[0.002, 0.049]; $B_{T/P \times Dominance}$ = 0.026, 95%CI[0.002, 0.049]; **Figure S4C** & **S4D**): High dominant men given testosterone compared to placebo showed greater reactivity and weaker recovery (i.e., more positive values of recovery). No differences between testosterone and placebo are evident at lower levels of trait dominance.

3.3.4 Blinding. As discussed in the main document, we manipulated blinding across single- vs. double-blind conditions in order to control for potential expectancy effects of testosterone treatment (Eisenegger et al., 2010). In the single-blind condition, participants were told whether they had received the testosterone or placebo treatment. In the double-blind condition, participants were only told they had an equal chance to receive testosterone or placebo. The experimenters never knew which condition the participant was in. We controlled for this experimental manipulation in all analyses in the main document. Examining the effect of blinding the original models revealed no main effects of blinding on the cortisol (**Table S2**) or affect responses (**Table S5**) to the social-evaluative stressor. We further explored models that tested for effects of blinding on changes in cortisol and affect across time, and again found no significant effects of blinding condition (Cortisol: Time x Blinding, B = -0.008, 95%CI[-0.026, 0.011]; $Time^2$ x Blinding, B = 0.006, 95%CI[-0.013, 0.024]; Affect: Time x Blinding, B = 0.012, 95%CI[-0.049, 0.072]; $Time^2$ x Blinding, B = -0.021, 95%CI[-0.065, 0.023]).

As a follow-up analysis, we also examined the extent to which participants' belief in what treatment they were given altered stress responses. Participants self-reported which treatment they felt they received (testosterone or placebo). This analysis was only conducted on the double-blind condition as a question of this nature is uninterpretable in the single-blind condition where participants already know which treatment they were

given. Results indicate that treatment expectancy did not predict changes in cortisol (Time x Treatment Expectancy: B = -0.013, 95%CI[-0.046, 0.018]; $Time^2$ x Treatment Expectancy: B = 0.012, 95%CI[-0.016, 0.040]) or negative affect (Time x Treatment Expectancy: B = -0.043, 95%CI[-0.151, 0.066]; $Time^2$ x Treatment Expectancy: B = 0.019, 95%CI[-0.061, 0.098]) in response to stress.

3.3.5 Exploratory Analyses of Affect Subscales. The main document focused on the higher-order positive and general negative affect scales, but the PANAS-X also contains lower-order subscales that distinguish the specific affective content of the general positive and negative mood states. Here we explore the interactive effects of testosterone and trait dominance on the lower-order subscales that make up general negative affect (fear, hostility, guilt, sadness) and general positive affect (joviality, self-assurance, attentiveness). Within the negative subscales, significant three-way Time x T/P x Trait Dominance interactions were found for fear and hostility, but not guilt or sadness (**Table S6**). Testosterone increased fear and hostility in anticipation of the social-evaluative stressor in high trait dominance participants; no differences between testosterone and placebo were found in the low trait dominance participants **(Figure S5**). These effects on fear suggest that the threat to one's status inherent in social-evaluative stress is accentuated in men high in trait dominance who were given exogenous testosterone. Further, the results related to hostile affect extend prior work on dominance, testosterone, and aggression (Carré et al., *in press*) by showing that the interactive effects of trait dominance and exogenous testosterone impacts self-reported hostility. No Time x T/P x Trait Dominance effects were found for any of the lower-order positive affect subscales.

3.3.6 Prestige. The main document analyzes interactive effects of trait dominance and T/P in a Time x T/P x Dominance interaction. Here we show that trait dominance's complement, trait prestige, does not moderate testosterone treatment's effects on cortisol (**Table S4**) or negative affect responses (**Table S7**) to the social-evaluative stressor. This is in keeping with prior work suggesting that trait dominance, and not prestige, is associated with enhanced responses to status-threatening situations (Case & Maner, 2014).

3.3.7 Panel Gender Makeup. As reported in the main document, a majority of participants performed the social-evaluative stressor in front of a mixed-gender panel but due to panelist scheduling constraints, a subset of participants performed in front of an all male or all female panel. Because of evidence that panel gender influences cortisol responses to the TSST (Goodman et al., 2017), we investigated effects of the panelists' gender on stress responses. We added a covariate term to the multi-level model that dummy coded for Mixed Gender vs. Male panel and Mixed Gender vs. Female panel and interacted with the polynomial contrasts of time. These models did not reveal any significant changes in the interactive effects of testosterone and trait dominance on cortisol (Time x T/P x Dominance: B = 0.019, 95%CI[0.001, 0.038]; $Time^2$ x T/P x Dominance: B = -0.021, 95%CI[-0.039, -0.003]) or negative affect (Time x T/P x Dominance: B = 0.83, 95%CI[0.023, 0.142]; $Time^2$ x T/P x Dominance: B = -0.040, 95%CI[-0.080, 0.003]). Because there were relatively few instances in which an all-

female panel was employed (4 out of 120 participants), we also explored if the presence of any female on the panel altered stress responses by pooling mixed-gender and all-female panels into one category. These analyses revealed null differences between Mixed or Female panels vs. Male panels for either cortisol (Time x T/P x Dominance: B = 0.020, 95%CI[0.002, 0.038]; $Time^2$ x T/P x Dominance: B = -0.021, 95%CI[-0.039, -0.003]) or negative affect (Time x T/P x Dominance: B = 0.82, 95%CI[0.023, 0.141]; $Time^2$ x T/P x Dominance: B = -0.040, 95%CI[-0.080, 0.007]).

4. Additional Acknowledgements

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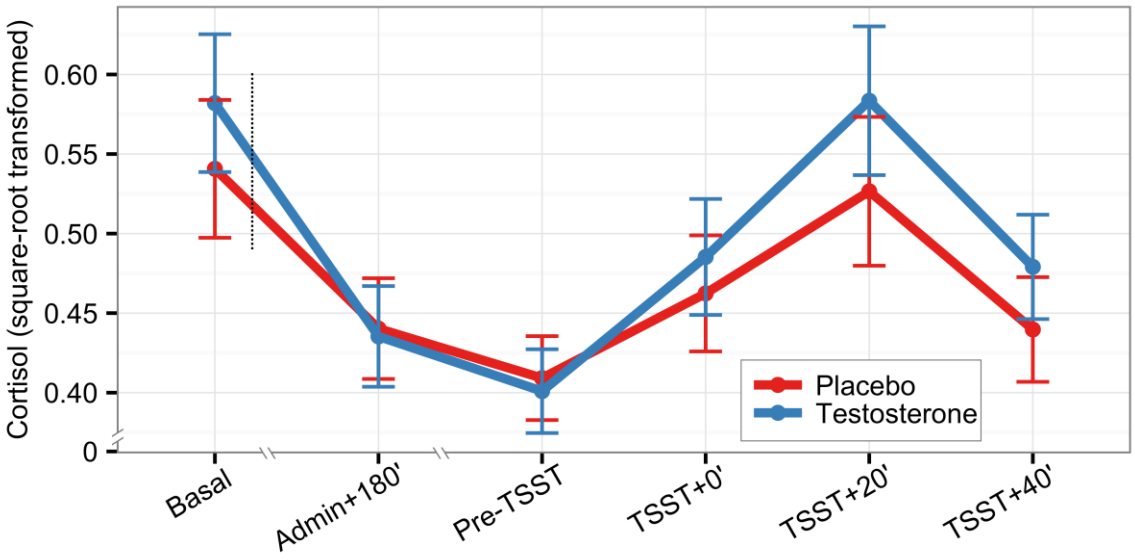

Fig. S1

Estimated marginal means of cortisol concentrations across lab day. The dashed line represents gel administration. The second saliva sample, "Admin+180,'" was collected 3 hours after gel administration. Error bars are 95%CIs.

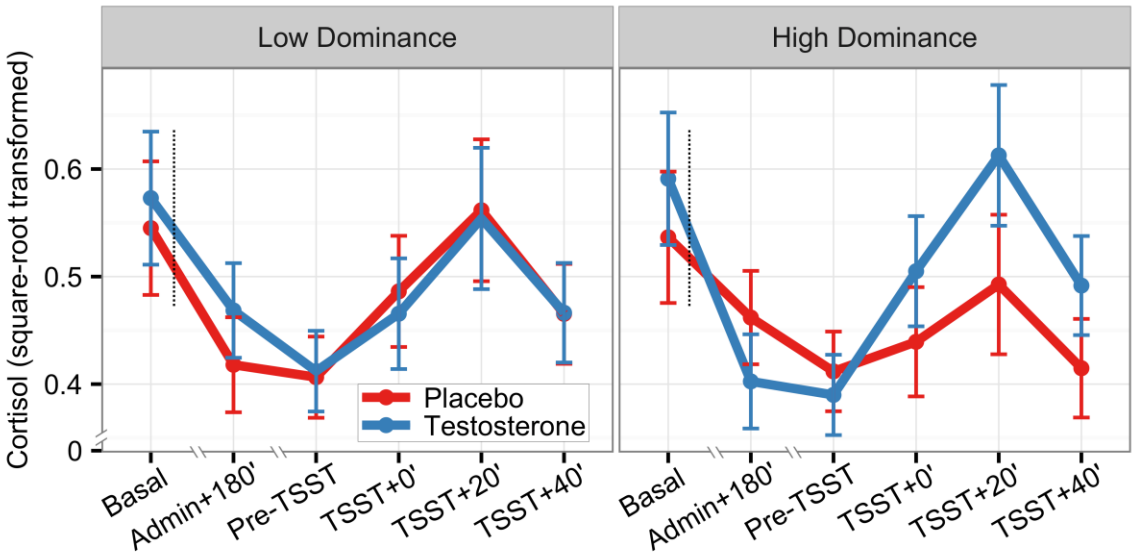

Fig. S2

Estimated marginal means of cortisol concentrations across lab day plotted at +/-1SD of trait dominance. The dashed line represents gel administration. The second saliva sample, "Admin+180,'" was collected 3 hours after gel administration. Error bars are 95%CIs.

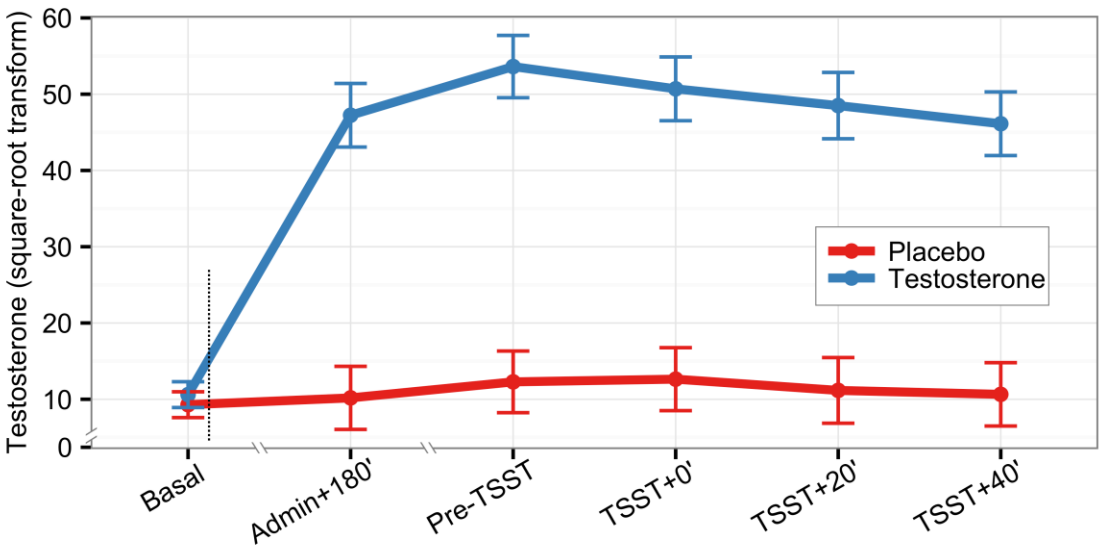

Fig. S3

Estimated marginal means of testosterone concentrations after exogenous testosterone or placebo application. The dashed line represents gel administration. The second saliva sample, "Admin+180,'" was collected 3 hours after gel administration. Error bars are 95%CIs.

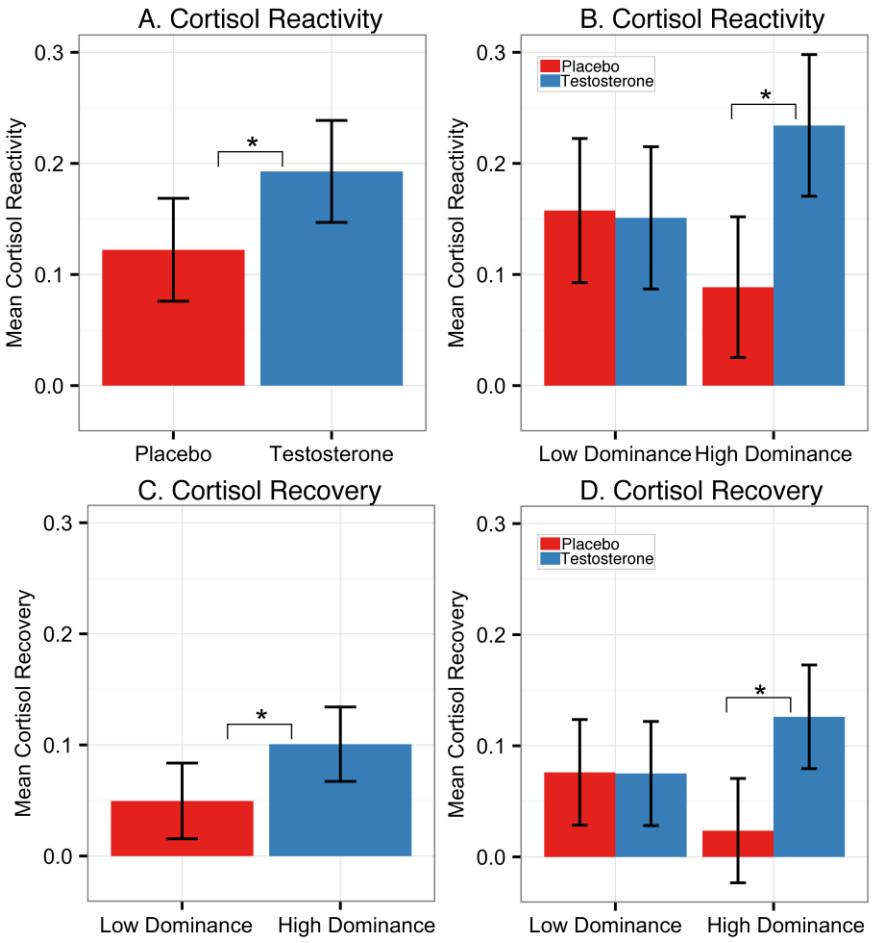

Figure S4
Follow-up analyses of cortisol response to social-evaluative stress. All values are estimated marginal means from relevant models and all error bars are 95% confidence intervals. * = group means differ with 95% confidence. **Panel A:** Main effects of T/P on cortisol reactivity, calculated by subtracting cortisol levels at baseline from cortisol levels 20 minutes after the end of the social-evaluative stressor. **Panel B:** T/P x Dominance effects on cortisol reactivity. **Panel C:** Main effect of cortisol recovery, calculated by subtracting baseline cortisol levels from cortisol levels 40 minutes after the stressor. **Panel D.** T/P x Dominance effects on cortisol recovery.

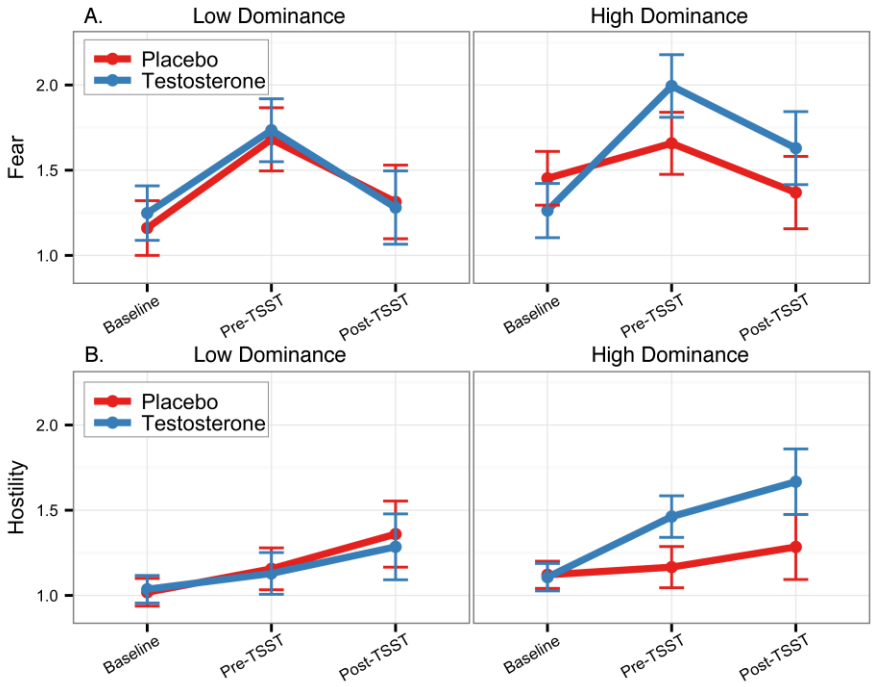

Fig. S5

Estimated marginal means from exploratory analyses of the Time x T/P x Dominance effects on the fear and hostility subscales of the PANAS-X. "Pre-TSST" was measured after giving instructions for the social-evaluative stress task but before beginning the task and is therefore a measure of anticipatory fear or hostility. Error bars represent 95%CI. **Panel A.** Fear subscale. **Panel B.** Hostility subscale.

Table S1.

Descriptive statistics [Mean (SE), full sample & split by treatment condition] and correlations (full sample) for main dependent variables.

	Testosterone Treatment Condition, Mean (SE)		Full Sample, Mean (SE)	1.	2.	3.	4.	5.	6.	7.	8.
	T	P									
1. Dominance	3.28 (0.12)	3.29 (0.12)	3.29 (0.09)								
2. Prestige	5.12 (0.10)	5.26 (0.19)	5.19 (0.08)	0.167							
3. Baseline Testosterone (pg/mL)	137.1 (22.6)	112.8 (24.5)	125.0 (16.6)	0.050	-0.031						
4. Baseline Cortisol (ng/mL)	0.36 (0.03)	0.32 (0.02)	0.34 (0.02)	-0.039	-0.025	0.239**					
5. Cortisol AUC_I	0.37 (0.05)	0.23 (0.04)	0.29 (0.03)	0.023	0.030	0.080	0.179				
6. Baseline Negative Affect	1.19 (0.02)	1.20 (0.03)	1.20 (0.02)	0.225*	-0.034	-0.042	0.126	-0.074			
7. Pre-TSST Negative Affect	1.59 (0.07)	1.43 (0.05)	1.51 (0.04)	0.092	-0.227*	-0.075	0.029	0.091	0.504***		
8. Post-TSST Negative Affect	1.52 (0.07)	1.43 (0.05)	1.46 (0.05)	0.134	-0.073	0.023	0.097	0.055	0.398***	0.692***	

* = p < .05; ** = p <.01; *** = p < .001

Table S2.

Time x T/P (Model 1) and Time x T/P x Dominance (Model 2) effects on cortisol response from four time points (pre-stressor and +0, +20, +40 minutes after stressor).

	Model 1			Model 2		
	B	*CI*	*P*	*B*	*CI*	*p*
Fixed Parts						
(Intercept)	0.471	0.450 – 0.493	**<.001**	0.472	0.450 – 0.493	**<.001**
Time (linear)	0.063	0.044 – 0.081	**<.001**	0.063	0.045 – 0.081	**<.001**
$Time^2$ (quad.)	-0.096	-0.114 – -0.078	**<.001**	-0.096	-0.114 – -0.078	**<.001**
T/P	0.014	-0.008 – 0.035	.216	0.014	-0.008 – 0.035	.222
Blinding	-0.000	-0.016 – 0.016	.965	0.000	-0.016 – 0.017	.971
Time x T/P	0.020	0.001 – 0.038	**.038**	0.020	0.001 – 0.038	**.037**
$Time^2$ x T/P	-0.013	-0.031 – 0.005	.163	-0.013	-0.031 – 0.005	.164
Dominance				-0.004	-0.026 – 0.017	.697
Time x Dominance				-0.001	-0.020 – 0.017	.877
$Time^2$ x Dominance				-0.003	-0.021 – 0.014	.710
T/P x Dominance				0.016	-0.005 – 0.038	.141
Time x T/P x Dominance				0.020	0.002 – 0.038	**.035**
$Time^2$ x T/P x Dominance				-0.021	-0.039 – -0.003	**.023**
Random Parts						
N_{SUBID}		116			116	
ICC_{SUBID}		0.805			0.804	
Observations		462			462	
R^2 / Ω_0^2		.922 / .918			.922 / .918	

Table S3.
Full model results for interactive effects of T/P and trait dominance on the cortisol response to social-evaluative stress as indexed by AUC_I.

A.	Model 1			Model 2		
	B	*CI*	*p*	*B*	*CI*	*p*
(Intercept)	0.265	0.173 – 0.358	**<.001**	0.262	0.171 – 0.354	**<.001**
T/P	0.073	0.007 – 0.138	**.030**	0.073	0.008 – 0.137	**.027**
Blinding	0.062	-0.069 – 0.193	.352	0.066	-0.063 – 0.195	.313
Trait Dominance				0.011	-0.053 – 0.076	.724
T/P x Trait Dominance				0.077	0.013 – 0.141	**.019**
Observations	116			116		
R^2 / adj. R^2	.048 / .031			.095 / .062		

Table S4.
Full model results for interactive effects of time, T/P, and trait prestige on the cortisol response to social-evaluative stress.

	Prestige Model		
	B	*CI*	*p*
Fixed Parts			
(Intercept)	0.472	0.45 – 0.49	**<.001**
Time (linear)	0.063	0.04 – 0.08	**<.001**
$Time^2$ (quad.)	-0.096	-0.11 – -0.08	**<.001**
TP	0.013	-0.01 – 0.04	.231
Prestige	-0.003	-0.03 – 0.02	.783
Blinding	-0.001	-0.02 – 0.02	.938
Time x TP	0.020	0.00 – 0.04	**.038**
$Time^2$ x TP	-0.013	-0.03 – 0.01	.164
Time x Prestige	0.003	-0.02 – 0.02	.746
$Time^2$ x Prestige	-0.003	-0.02 – 0.02	.774
TP x Prestige	0.001	-0.02 – 0.02	.949
Time x TP x Prestige	0.007	-0.01 – 0.03	.503
$Time^2$ x TP x Prestige	-0.008	-0.03 – 0.01	.392
Random Parts			
N_{SUBID}		116	
ICC_{SUBID}		0.807	
Observations		462	
R^2 / Ω_0^2		.922 / .918	

Table S5.
Time x T/P (Model 1) and Time x T/P x Dominance (Model 2) effects on negative affect in response to social evaluative stressor.

	Model 1			Model 2		
	B	*CI*	*p*	*B*	*CI*	*p*
Fixed Parts						
(Intercept)	1.389	1.328 – 1.450	**<.001**	1.388	1.329 – 1.448	**<.001**
Time (linear)	0.187	0.126 – 0.247	**<.001**	0.187	0.127 – 0.246	**<.001**
$Time^2$ (quad.)	-0.150	-0.194 – -0.106	**<.001**	-0.150	-0.193 – -0.107	**<.001**
T/P	0.044	-0.017 – 0.105	.158	0.044	-0.015 – 0.103	.149
Blinding	-0.001	-0.048 – 0.046	.976	-0.007	-0.053 – 0.040	.775
Time x T/P	0.050	-0.010 – 0.111	.107	0.049	-0.010 – 0.109	.106
$Time^2$ x T/P	-0.044	-0.088 – -0.001	**.048**	-0.044	-0.087 – -0.001	**.047**
Dominance				0.068	0.009 – 0.127	**.027**
Time x Dominance				0.008	-0.051 – 0.067	.787
$Time^2$ x Dominance				0.002	-0.041 – 0.045	.937
T/P x Dominance				0.043	-0.016 – 0.102	.154
Time x T/P x Dominance				0.080	0.021 – 0.139	**.009**
$Time^2$ x T/P x Dominance				-0.036	-0.079 – 0.007	.099
Random Parts						
N_{SUBID}		116			116	
ICC_{SUBID}		0.578			0.581	
Observations		348			348	
R^2 / Ω_0^2		.764 / .748			.781 / .768	

Table S6.
Full model results for interactive effects of time, T/P, and trait dominance on the specific negative affect subscales, fear and hostility.

	Fear			Hostility		
	B	*CI*	*p*	*B*	*CI*	*p*
Fixed Parts						
(Intercept)	1.482	1.409 – 1.555	**<.001**	1.233	1.181 – 1.284	**<.001**
Time (linear)	0.083	0.009 – 0.157	**.029**	0.232	0.162 – 0.302	**<.001**
$Time^2$ (quad.)	-0.349	-0.417 – -0.281	**<.001**	0.005	-0.034 – 0.045	.794
T/P	0.043	-0.030 – 0.116	.251	0.048	-0.003 – 0.100	.067
Blinding	0.079	0.006 – 0.152	**.036**	0.069	0.017 – 0.120	**.010**
Time x T/P	-0.006	-0.076 – 0.063	.856	0.006	-0.029 – 0.041	.725
$Time^2$ x T/P	0.058	-0.015 – 0.132	.123	0.054	-0.016 – 0.124	.136
Dominance	-0.067	-0.134 – 0.001	.055	-0.023	-0.063 – 0.016	.253
Time x Dominance	0.017	-0.056 – 0.091	.647	0.024	-0.046 – 0.093	.509
$Time^2$ x Dominance	0.024	-0.043 – 0.092	.481	-0.021	-0.061 – 0.018	.295
T/P x Dominance	0.025	-0.048 – 0.098	.502	0.062	0.011 – 0.114	**.018**
Time x T/P x Dominance	0.101	0.028 – 0.174	**.008**	0.087	0.017 – 0.156	**.017**
$Time^2$ x T/P x Dominance	-0.056	-0.124 – 0.011	.105	-0.023	-0.062 – 0.017	.264
Random Parts						
N_{SUBID}		116			116	
ICC_{SUBID}		0.454			0.502	
Observations		348			348	
R^2 / Ω_0^2		.696 / .672			.771 / .756	

Table S7. Full model results for interactive effects of time, T/P, and trait prestige on the negative affect response to social-evaluative stress.

	Prestige Model		
	B	*CI*	*p*
Fixed Parts			
(Intercept)	1.399	1.34 – 1.46	**<.001**
Time (linear)	0.181	0.12 – 0.24	**<.001**
$Time^2$ (quad.)	-0.150	-0.20 – -0.10	**<.001**
TP	0.036	-0.03 – 0.10	.267
Prestige	-0.072	-0.14 – -0.01	**.031**
Blinding	-0.001	-0.05 – 0.05	.977
Time x TP	0.057	-0.00 – 0.12	.073
$Time^2$ x TP	-0.046	-0.09 – 0.00	.063
Time x Prestige	-0.025	-0.09 – 0.04	.447
$Time^2$ x Prestige	0.070	0.02 – 0.12	**.006**
TP x Prestige	0.036	-0.03 – 0.10	.270
Time x TP x Prestige	0.011	-0.05 – 0.07	.727
$Time^2$ x TP x Prestige	0.007	-0.04 – 0.06	.783
Random Parts			
N_{SUBID}		116	
ICC_{SUBID}		0.572	
Observations		348	
R^2 / Ω_0^2		.772 / .757	

Table S8. Time x T/P (Model 1) and Time x T/P x Dominance (Model 2) effects on positive affect in response to social evaluative stressor.

	Model 1			Model 2		
	B	*CI*	*p*	*B*	*CI*	*p*
Fixed Parts						
(Intercept)	2.155	2.056 – 2.254	**<.001**	2.155	2.057 – 2.254	**<.001**
Time (linear)	-0.437	-0.503 – -0.371	**<.001**	-0.437	-0.503 – -0.371	**<.001**
$Time^2$ (quad.)	0.028	-0.027 – 0.083	.324	0.027	-0.028 – 0.082	.332
T/P	0.039	-0.060 – 0.138	.443	0.038	-0.060 – 0.137	.445
Blinding	0.042	-0.057 – 0.141	.405	0.037	-0.061 – 0.136	.459
Time x T/P	-0.012	-0.077 – 0.054	.730	-0.012	-0.078 – 0.055	.731
$Time^2$ x T/P	0.046	-0.010 – 0.101	.110	0.046	-0.009 – 0.101	.103
Dominance				0.052	-0.046 – 0.151	.302
Time x Dominance				-0.002	-0.068 – 0.064	.945
$Time^2$ x Dominance				0.045	-0.009 – 0.100	.107
T/P x Dominance				0.074	-0.024 – 0.172	.142
Time x T/P x Dominance				0.004	-0.062 – 0.070	.903
$Time^2$ x T/P x Dominance				-0.030	-0.084 – 0.025	.286
Random Parts						
N_{SUBID}		116			116	
ICC_{SUBID}		0.743			0.744	
Observations		347			347	
R^2 / Ω_0^2		.883 / .874			.889 / .879	

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