Ho, Maloney, & Landy (2006)
Supplementary materials

We ran a control experiment in this study with the same experimental design as Ho, Landy, & Maloney (2006): we varied the angle between the punctate light source and the surface, but the viewer's viewpoint was always fronto-parallel. The results shown in the following tables and figure demonstrate that observers in this study exhibited the same roughness judgment biases as observers in our previous study when only illuminant position was varied. The effect of varying illuminant position on perceived roughness is strong; furthermore, any effect found in our current study is most likely not unique to our sample of observers.

Table S1. All 5 parameters estimated from the roughness discrimination model for each observer (control experiment). Sub-scripted values for slope estimates ($\hat{c}$) indicate the pair of illuminant elevations compared. Values of $\hat{c}$ that were found to be significantly different from one in a *z*-test at the Bonferroni-corrected alpha level 0.0125 are highlighted. Notice that values of $\hat{\gamma}$ are close to one for all observers.

Observer	$\hat{c}_{70°,60°}$	$\hat{c}_{60°,50°}$	$\hat{c}_{70°,50°}$	$\hat{\sigma}$	$\hat{\gamma}$
JF	0.708	0.747	0.520	0.180	0.981
LF	0.871	0.747	0.426	0.660	0.932
SS	0.765	0.859	0.660	0.464	0.777
YXH	0.697	0.742	0.550	0.299	0.704

Table S2. Percentage of variance-accounted-for (VAF) for the full linear cue combination model and corresponding estimated cue coefficients (control experiment). Highlighted values were found to be significantly different from zero at the Bonferroni-corrected alpha level 0.0125.

Observer	VAF	$\hat{a}_p$	$\hat{a}_m$	$\hat{a}_s$	$\hat{a}_c$
JF	71	6.904	0.011	-0.341	14.231
LF	62	-18.75	0.053	-0.982	29.518
SS	56	-2.272	0.028	-0.088	7.082
YXH	89	8.204	0.024	-0.221	12.998

Figure S1. Results from the control experiment. PSEs are plotted for each viewpoint test-match comparison for each of the four observers. The dashed line represents the results expected of a roughness-constant observer. The solid lines are linear fits using the roughness discrimination model for each comparison between a test and match illuminant position, $\varphi_{p_{test}}$ and $\varphi_{p_{match}}$, respectively. Notice that almost all PSEs fall *below* the line of roughness constancy. All slope estimates $\hat{c}$ derived from the roughness discrimination model, except for one (LF, in comparison $\varphi_{p_{test}} = 70°$ vs. $\varphi_{p_{match}} = 60°$), were significantly different from one (at the Bonferroni-corrected α level of 0.0125 per test). Error bars on the PSEs represent 95% confidence intervals estimated by a bootstrap method (Efron & Tibshirani, 1993).