RESEARCH ARTICLE

Figures and figure supplements

Sense of control buffers against stress

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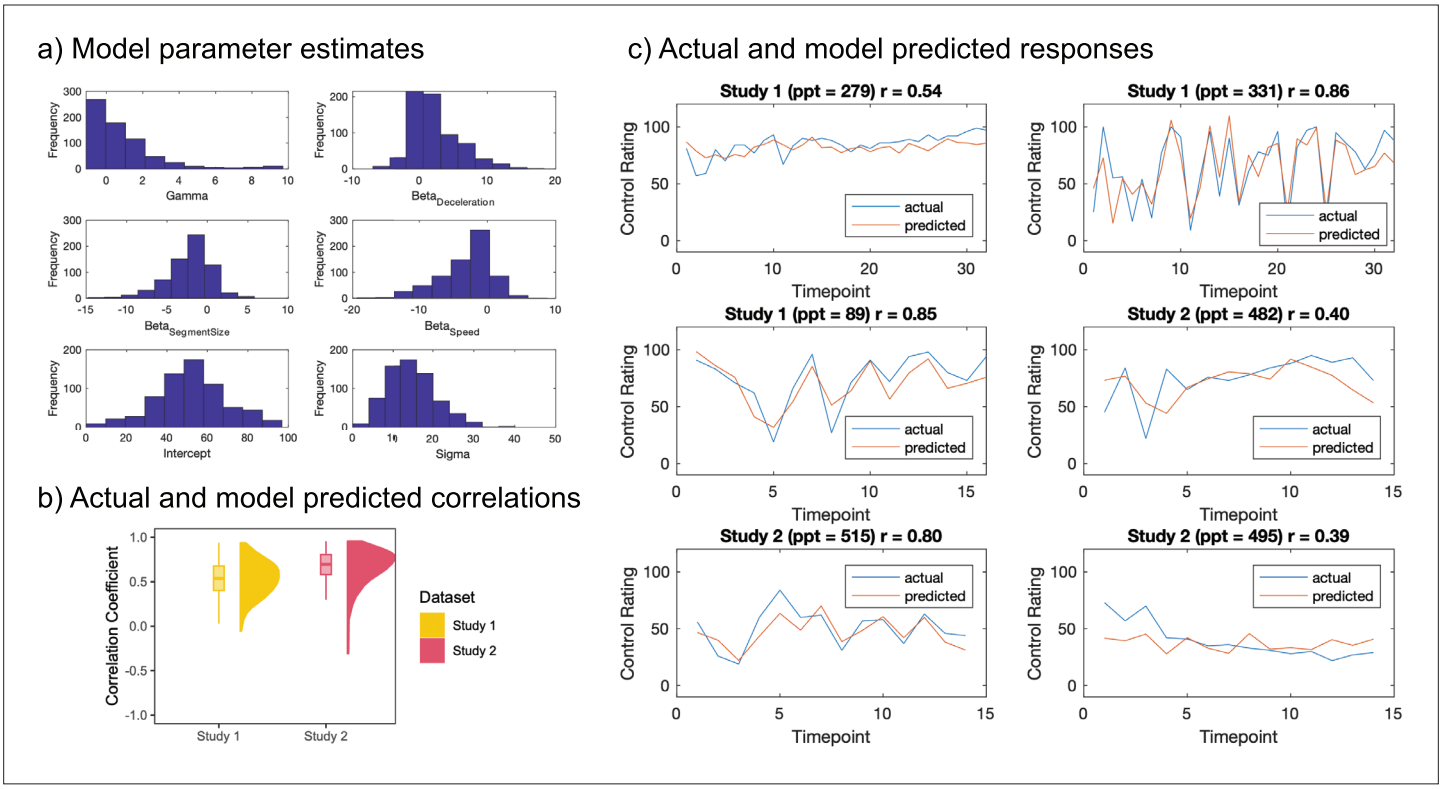

Figure 1. Linear model predicting sense of control from WS task parameters. (**a**) Parameter estimates across all participants who completed the WS task (n = 674). These were significantly different from 0 (one-sampled *t*-tests, FDR-corrected p values <0.001, see text for full statistical details). (**b**) Correlation coefficients between predicted and actual control ratings for both studies (Study 1 median = 0.54, Study 2 median = 0.69). Boxplots show the median and 25th and 75th percentiles. Whiskers extend to 1.5*IQR (inter-quartile range) from the quartiles. (**c**) Control rating responses over the time course of the experiment predicted from the model (red) plotted against the actual ratings (blue) for three randomly selected participants per study, with the correlation coefficient (r) per participant shown in the top right of each subplot.

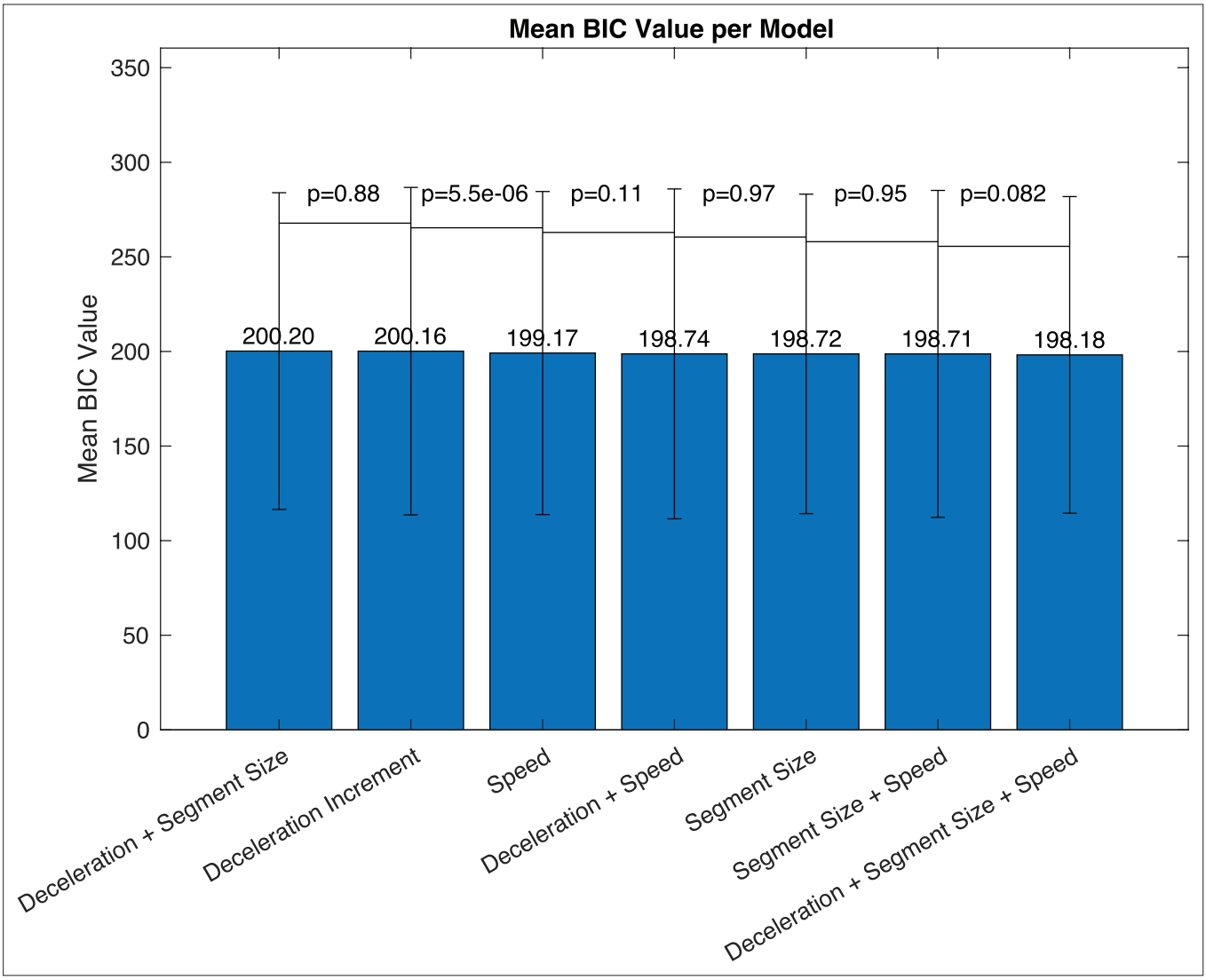

Figure 1—figure supplement 1. Mean BIC (across all participants and both studies) for each of the 7 models with different regressors. The bar shows the mean BIC (also added in text) for each model across all participants (n = 674). Error bars represent the standard deviation. The models are ordered in descending order of mean BIC left to right. The model furthest right was selected as the 'winning' model as it has the lowest BIC, although this was not significantly lower than the previous model. p values are from paired *t*-tests comparing BIC values between models in descending order.

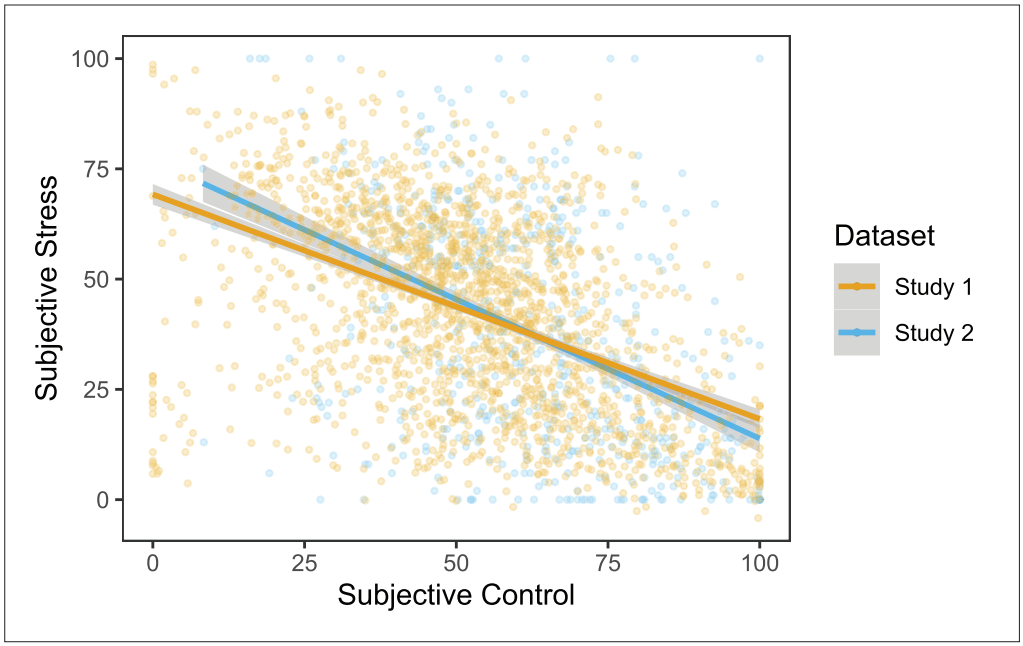

Figure 2. Negative association between subjective control and subjective stress during the Wheel Stopping task for both studies. Points represent raw data (Study 1: n = 473, 4 timepoints; Study 2: n = 201, 3 timepoints) and lines represent the estimated relationship from the linear mixed effects models in ***Table 1*** (Study 1) and ***Supplementary file 3A*** (Study 2), showing the relationship between subjective control and subjective stress (Study 1: β=–0.13, p<0.001; Study 2: β=–0.33, p<0.001), after accounting for perceived task difficulty and random effects of participant and timepoint. Shaded regions represent 95% confidence intervals.

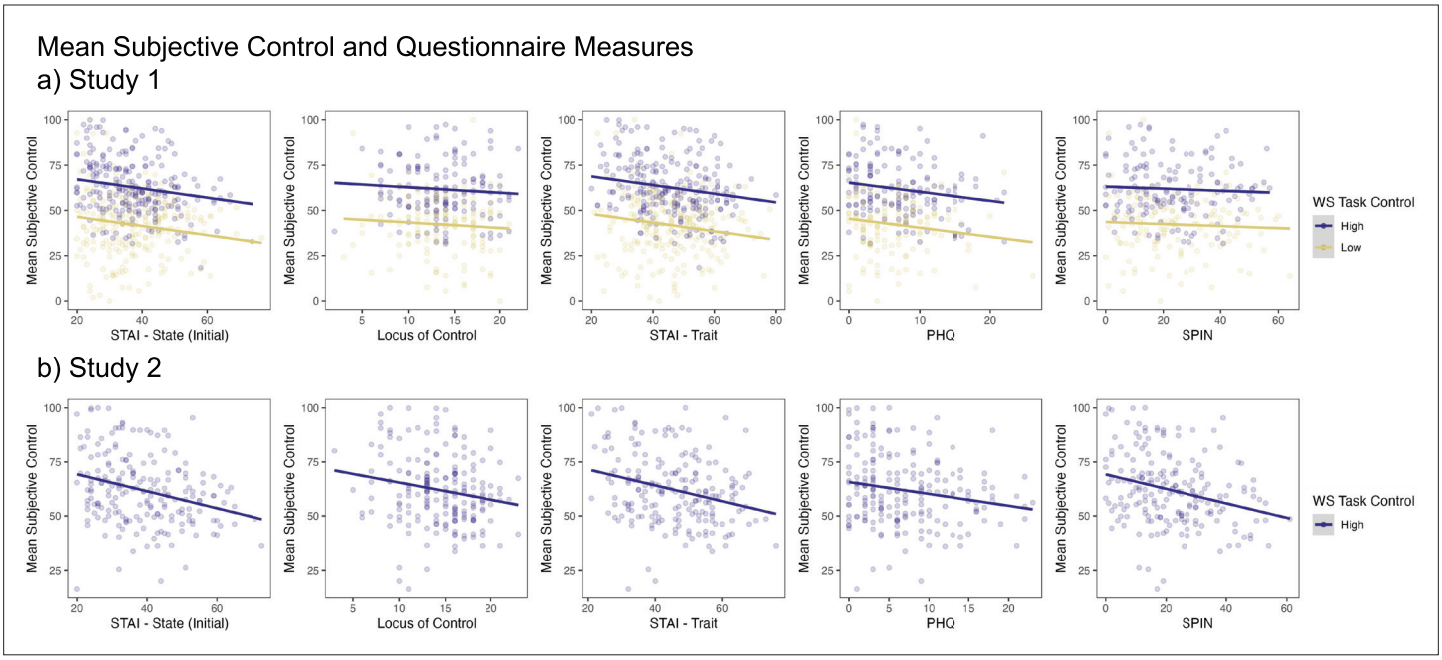

Figure 2—figure supplement 1. Associations between mean subjective control and questionnaire measures in (**a**) Study 1, and (**b**) Study 2. Data points are the data per participant (mean values), and the line represents the estimated relationship from the linear mixed effects models in ***Supplementary files 2A and B***.

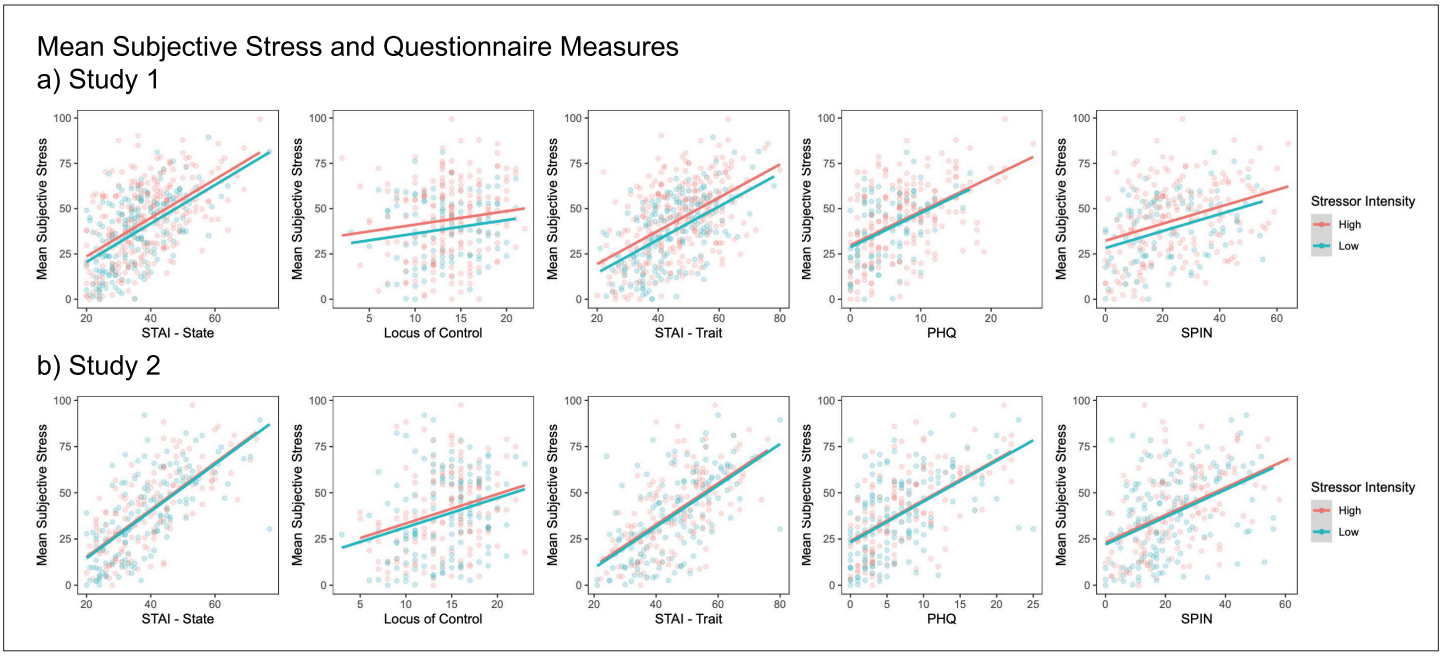

Figure 2—figure supplement 2. Associations between mean subjective stress and questionnaire measures in (**a**) Study 1, and (**b**) Study 2. Data points are the data per participant (mean values), and the line represents the estimated relationship from the linear mixed effects models in ***Supplementary files 2E and F***.

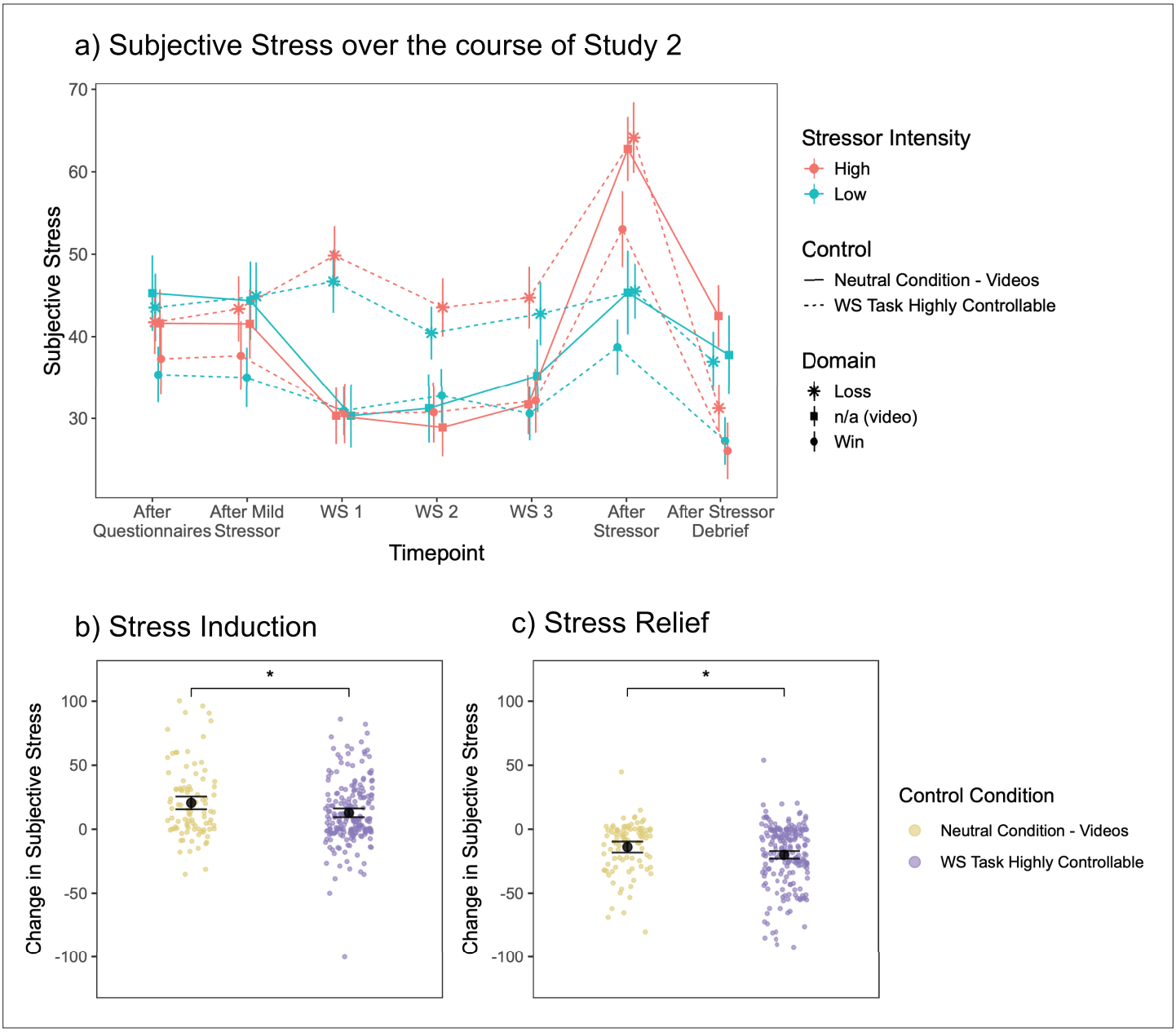

Figure 3. Stress induction and stress relief in Study 2. (**a**) Subjective stress ratings across the entire experiment (Study 2, n = 295) in the different experimental conditions. The point represents the mean per group, and the error bar represents standard error of the mean. Timepoints labelled WS 3, After Stressor, and After Stressor Debrief are the three timepoints isolating the stress induction and stress debrief (coded as timepoints 1, 2, 3). Jitter added to avoid overlap. (**b**) Stress Induction – the change in subjective stress from before to after the stressor. Data points show the difference between timepoints per participant. The black points show the mean estimate of the contrast between the two timepoints from the linear mixed effects models in ***Table 2*** (with 95% confidence intervals as error bars). The comparison is the difference between these contrasts, showing that the stress induction was lower for the high control group than for the neutral control group (β=–7.78, SE = 3.07, t(291)=-2.54, p=0.012). (**c**) Stress Relief – the change in subjective stress from after the stressor to after the stressor debrief. Data points show the difference between timepoints per participant. The black points show the mean estimate of the contrast between the two timepoints from the linear mixed effects models in ***Table 2*** (with 95% confidence intervals as error bars). The comparison is the difference between these contrasts, showing that the stress relief was greater for the high control group than for the neutral control group (β=–6.06, SE = 2.64, t(291)=-2.30, p=0.022).

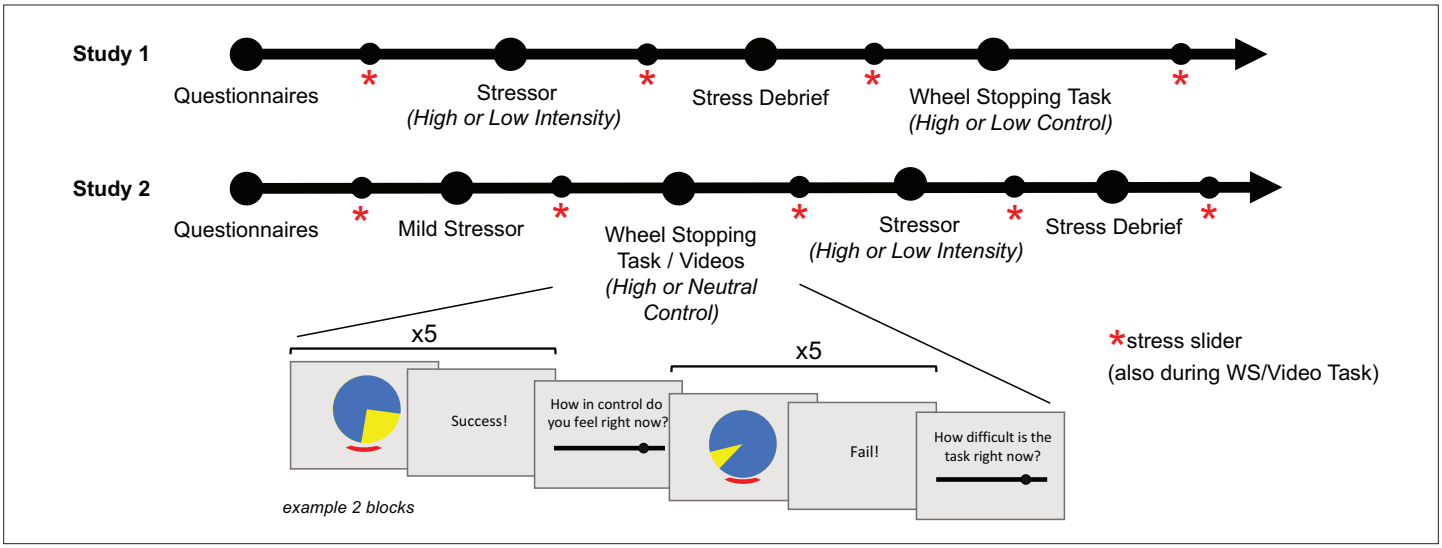

Figure 4. Summary of task procedure for Studies 1 and 2. The arrow shows the overall procedure with a simplified schematic of two Wheel Stopping task blocks. Participants also rated subjective stress levels on similar slider rating scales (not shown here) during the WS/Video tasks.