**Supplementary materials**

**Unconditional means models (Study 1)**

The unconditional means models (see Table S1, models 1 and 5) indicated that approximately half the variance in strength of desire was attributable to differences across participants (51%) and half to within-person fluctuation (49%). The variance in goal value was attributed somewhat more to differences across participants (60%) than within-person variation (40%).

**The temporal pattern of the temptation to stop and goal strength.**

Results from the unconditional growth models can be seen in Table S1. Sequentially adding linear (model 2), quadratic (model 3), and cubic (model 4) parameters led to a final model for desire strength which best described a cubic function. Plotting the equation (see Figure S1) revealed that participants’ strength of desire began low and increased as the trial progressed. The rate of increase slowed across most of the trial, but then began to increase again as the trial neared its completion. Significant random effects indicated that the intercept, linear and quadratic rates of change varied across participants, but not the cubic rate of change.

The analysis also suggested a final model for goal strength that best described a cubic function (see models 6, 7, and 8). The cubic term was not statistically significant; however, it was retained in the final model because the variance of the cubic term (as well as the linear and quadratic terms) varied across participants. Figure S1 shows that participants’ performance goal strength began high but decreased as the trial progressed. The rate of decrease slowed across most of the trial. Figure 1 shows an increase in goal strength as the trial neared its completion but, as noted above, this was not statistically significant.

**A measure of frustration in Study 2**

A separate component of Study 2 examined whether autonomous motivation was negatively associated with frustration following a disruption to goal pursuit. To achieve this, halfway through the cycling trial in Study 2, participants were informed that the aim was now to work at a higher intensity than originally requested. A measure of frustration was taken at the end of the trial.

Autonomous motivation was negatively correlated with the amount of frustration experienced after a disruption (*r* = -.42, *p* = .01). However, a subsequent linear regression demonstrated that the relationship between autonomous motivation and frustration became non-significant (β = -.14, *p* = .42), when controlling for trial performance (β = -.49, *p* = .01).

This latter finding may imply that participants were reporting frustration about their overall performance, rather than the unexpected change in difficulty as intended.

Figure S1: *Temporal trajectories of temptation and performance goal value during the Study 1 cycling trial*

Temptation/Goal Strength

Time (minutes)

Table S1

*Unstandardized estimates from models describing initial values and change in temptation to reduce effort and performance goal value*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Temptation to reduce effort | | | | Performance goal value | | | |
| *Fixed effects: b*(*SE*) | Unconditional means  (model 1) | Linear change (model 2) | Quadratic change (model 3) | Cubic change (model 4) | Uncond. means (model 5) | Linear change (model 6) | Quadratic change (model 7) | Cubic change (model 8) |
| Intercept | **12.25 (0.74)** | **8.54 (0.78)** | **4.84 (1.15)** | **3.22 (1.44)** | **10.10 (0.73)** | **13.20 (0.67)** | **15.84 (0.91)** | **16.88 (1.11)** |
| Linear term |  | **0.84 (0.14)** | **2.94 (0.53)** | **4.54 (1.02)** |  | **-0.70 (0.14)** | **-2.19 (0.41)** | **-3.19 (0.81)** |
| Quadratic term |  |  | **-0.21 (0.05)** | **-0.61 (0.21)** |  |  | **0.15 (0.04)** | **0.39 (0.18)** |
| Cubic term |  |  |  | **0.03 (0.01)** |  |  |  | -0.02 (0.01) |
| *Level 2 variance:* σ2u (*SE*) | |  |  |  |  |  |  |  |
| Intercept | **19.41 (4.88)** | **17.71 (5.41)** | **40.49 (11.79)** | **52.47 (18.75)** | **19.63 (4.77)** | **13.97 (4.02)** | **24.75 (7.34)** | **29.54 (11.12)** |
| Linear |  | **0.49 (0.16)** | **8.60 (2.54)** | **19.99 (9.40)** |  | **0.57 (0.16)** | **4.84 (1.49)** | **12.47 5.97)** |
| Quadratic |  |  | **0.06 (0.02)** | **0.62 (0.40)** |  |  | **0.03 (0.01)** | **0.54 (0.29)** |
| Cubic |  |  |  | 0.003 (0.002) |  |  |  | **0.003 (0.001)** |

*Note.* For brevity, covariance terms and Level 1 variance terms are not reported. Bold figures indicate statistical significance (*p* ≤ .05)