**Online Supplemental Materials**

These online supplemental materials are for the article, titled *Feeling Proud Today May Lead People to Coast Tomorrow: Daily Intraindividual Associations Between Emotion and Effort in Academic Goal Striving*. These materials are intended to appear only on a website linked to the article. The overall structure of the online supplemental materials is as follow:

Pages S2-S5: Measures (Studies 1-2)

Page S6: Person-Level Descriptive Statistics and Bivariate Correlations (Study 1)

Page S7: Daily Response Ns for the Key Variables (Study 1)

Page S8 Unstandardized Coefficients, Standard Errors, and P-values of the Results of Multilevel Cross-Lagged Panel Modeling (Study 1)

Page S9: Person-Level Descriptive Statistics and Bivariate Correlations (Study 2)

Page S10: Daily Response Ns for the Key Variables (Study 2)

Page S11: Unstandardized Coefficients, Standard Errors, and P-values of the Results of Multilevel Cross-Lagged Panel Modeling for Pride and Enjoyment (Study 2)

Pages S12-S14: Discussion of the nuanced findings (Studies 1-2)

Page S15: References

**Measures**

**Study 1**

**Positive emotions** (Watson, Clark, & Tellegen, 1988; 7-Likerst scale; 1: very slightly, 7: extremely; α = .95).Today how much did you feel the following emotions toward the goal? Determined (positive emotion), enthusiastic (positive emotion), excited (positive emotion), inspired (positive emotion), interested (positive emotion).

**Negative emotions** (Watson et al., 1988; 7-Likerst scale; 1: very slightly, 7: extremely; α = .91).Today how much did you feel the following emotions toward the goal? Distressed (negative emotion), jittery (negative emotion), scared (negative emotion), afraid (negative emotion), and upset (negative emotion).

**Goal effort** (items were developed for the study). Please specify when you worked toward the goal today. If you didn’t work toward the goal today, please leave the box blank.

How much time in minutes did you work toward the goal today? Please enter 0 if you did not work toward the goal today.

**Self-control** (Tangney, Baumeister, & Boone, 2004; 7-Likert scale: 1: Not like me at all; 7: Very much like me; α = .83). Please indicate how much each of the following statements reflects how you are typically: 1) I am good at resisting temptation, 2) I have a hard time breaking bad habit (reverse-coded), 3) I am lazy (reverse-coded), 4) I say inappropriate things (reverse-coded), 5) I do certain things that are bad for me, if they are fun (reverse-coded), 6) I refuse things that are bad for me, 7) I wish I had more self-discipline, 8) People would say that I have iron self-discipline, 9) Pleasure and fun sometimes keep me from getting work done (reverse-coded), 10) I have trouble concentrating (reverse-coded), 11) I am able to work effectively toward long-term goals, 12) Sometimes I can’t stop myself from doing something, even if I know it is wrong (reverse-coded), 13) I often act without thinking through all the alternatives.

**Goal difficulty** (Yearta, Maitlis, & Briner, 1995; 7-Likert scale; 1: not at all true, 7: very true; α = .81). 1) This goal is easy to achieve (reverse-coded), 2) This goal is very challenging, and 3) Attaining this goal demands a great deal of effort.

**Goal specificity** (items were developed for the study; α = .77)**.** 1) This goal is very clear, 2) This goal is very concrete, 3) This goal is very specific, and 4) This goal is vague (reverse-coded). For each item, participants rated on a 7-point Likert scale from 1 (not at all true) to 7 (very true).

**Social support** (Zimet, Dahlem, Zimet, & Farley, 1988; 7-Likert scale; 1: Very strongly disagree, 7: Very strongly agree; α = .90). 1) There is a special person who is around me when I am in need, 2) There is a special person with whom I can share my joys and sorrows, 3) I have a special person who is a real source of comfort to me, 4) There is a special person in my life who cares about my feelings, 5) My family really tries to help me, 6) I get the emotional help and support I need from my family, 7) I can talk about my problems with my family, 8) My family is willing to help me make decisions, 9) My friends really try to help me, 10) I can count on my friends when things go wrong, 11) I have friends with whom I can share my joys and sorrows, 12) I can talk about my problems with my friends. (Friend)

**Previous GPA** (items were developed for the study). What is your cumulative overall GPA? 1) Less than 2.0 , 2) 2.0 - 2.5 , 3) 2.6 - 2.9, 4) 3.0 - 3.5, 5) 3.6 - 4.0.

**Study 2**

**Worker requirements.** We specified the following requirements for workers to prevent the participation from bot workers. First, workers’ previous HIT approval rate should be 97 or greater. Second, workers should have at least 100 previous HITS approved. We also forbid the participants from participating in the initial survey more than once through the Qualtrics system.

**Screening questions for daily survey invitation.** Additionally, we asked the following five questions to all workers before inviting them to the daily surveys. Only participants whose answers met our criteria were invited to daily surveys. All response options are presented in square brackets and the passing answers are bolded: 1) “Are you from the United States?” [**Yes**, No], 2) “Are you currently pursuing a post-secondary degree (e.g., B.A., B.S., etc)?” [**Yes**, No], 3) “Will you be taking a course towards your degree during the upcoming week?” [**Yes**, No, Not applicable], 4) “Do any of your classes meet at least twice a week?” [**Yes**, No], 5) “Please write a name of a course that you are currently taking and meets at least twice a week. If you are taking multiple courses, please choose only one of them in this answer.” [**Participants who provided text responses that are relevant to the question (e.g., Spanish II) were invited to the daily surveys**], 6) “What is your year of birth? Please enter a four-digit number only (e.g., 1985).” **[Participants’ text response should be greater than or equal to 1993]**.

**Attention check.** “How are you feeling right now? Although we would like to know how you are feeling, please select “very untrue of me” so we know you are paying attention.” The location of the question and the requested response option varied in each daily survey.

**Emotions** (Goetz et al., 2016; 5-Likert scale: 1: Not at all; 5: Very strongly)**.** Today how much did you feel the following emotions toward the class? Enjoyment (positive, current activity), pride (positive, retrospective outcome), boredom (negative, current activity), shame (negative, retrospective outcome), anxiety (negative prospective outcome), anger (negative, current activity).

**Goal effort** (items were developed for the study). Please specify when you studied or prepared for the class today. Based on your answer to the first question, how much time in minutes did you study or prepare for the class today Please enter 0 if you did not study or prepare for the class today.

**Self-control** (Tangney et al., 2004; 7-Likert scale: 1: Not at all true; 7: Very much true; α = .80)**.** Please indicate how much each of the following statements reflects how you are typically: 1) I am good at resisting temptation, 2) I do certain things that are bad for me, if they are fun (reverse-coded), 3) Pleasure and fun sometimes keep me from getting work done (reverse-coded), 4) Sometimes I can’t stop myself from doing something, even if I know it is wrong (reverse-coded).

Table S1.

*Descriptive Statistics and Bivariate Correlations (Study 1)*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 |
| 1. Daily positive emotions | --- | .26\*\*\* | .45\*\*\* | --- |
| 1. Daily negative emotions | .46\*\*\* | --- | .25\*\*\* | --- |
| 1. Daily goal effort (minutes) | .34\*\*\* | .16\* | --- | --- |
| 1. Self-control | .19\*\* | -.14 | .19\*\* | --- |
| Mean | 3.06 | 2.39 | 90.61 | 4.31 |
| Standard deviation | 1.25 | 1.17 | 83.29 | 0.92 |

*Note.* Person-level/day-level correlations are presented below/above the diagonal. *N* = 194.

\* *p* < .05. \*\* *p* < .01. \*\*\* *p* < .001.

Table S2.

*Daily Response Ns for the Key Variables (Study 1)*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Day | | | | | | | | | | | | | |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| Positive emotion | 188 | 177 | 177 | 186 | 180 | 181 | 187 | 188 | 179 | 181 | 185 | 181 | 178 | 179 |
| Negative emotion | 188 | 177 | 177 | 186 | 180 | 181 | 187 | 188 | 179 | 181 | 185 | 181 | 178 | 179 |
| Goal effort | 187 | 176 | 175 | 182 | 179 | 180 | 188 | 188 | 179 | 178 | 184 | 180 | 177 | 178 |

*Note*. Total *N* = 194.

Table S3.

*Unstandardized Coefficients, Standard Errors, and P-values of the Results of Multilevel Cross-Lagged Panel Modeling (Study 1)*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Positive emotion | | |  | Negative emotion | | |
|  | *b* | *SE* | *p* |  | *b* | *SE* | *p* |
| **Day-level** |  |  |  |  |  |  |  |
| Emotion |  |  |  |  |  |  |  |
| Prior-day emotion | .07 | .03 | .048 |  | .30 | .03 | <.001 |
| Prior-day effort | .06 | .02 | .001 |  | .04 | .01 | .003 |
| Time | -.11 | .02 | <.001 |  | -.05 | .01 | <.001 |
| Effort |  |  |  |  |  |  |  |
| Prior-day emotion | **-.07** | **.03** | **.029** |  | **.17** | **.05** | **<.001** |
| Prior-day effort | .26 | .04 | <.001 |  | .22 | .03 | <.001 |
| Time | -.09 | .02 | <.001 |  | -.07 | .02 | .001 |
| Prior-day emotion |  |  |  |  |  |  |  |
| Time | -.09 | .02 | <.001 |  | -.06 | .01 | <.001 |
| Prior-day effort |  |  |  |  |  |  |  |
| Time | -.12 | .03 | <.001 |  | -.12 | .03 | <.001 |
| COV(emotion, effort) | .99 | .07 | <.001 |  | .32 | .05 | <.001 |
| COV(prior-day emotion, effort) | .96 | .07 | <.001 |  | .36 | .05 | <.001 |
| **Person-level** |  |  |  |  |  |  |  |
| Emotion |  |  |  |  |  |  |  |
| Self-control | .25 | .11 | .017 |  | -.17 | .10 | .069 |
| Effort |  |  |  |  |  |  |  |
| Self-control | .28 | .14 | .040 |  | .28 | .14 | .038 |
| COV(emotion, effort) | .45 | .13 | <.001 |  | .28 | .11 | .009 |

*Note.* All independent variables are listed with a left indentation under each corresponding dependent variable. Focal paths of the interest (i.e., coasting and pushing) are bolded. Time ranges from 0 to 13 to indicate each subsequent participating day. COV = covariance.

Table S4.

*Descriptive Statistics and Bivariate Correlations (Study 2)*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1. Daily pride | --- | .51\*\*\* | -.16\*\* | -.21\*\*\* | -.22\*\*\* | -.22\*\*\* | .08 | --- |
| 1. Daily enjoyment | .78\*\*\* | --- | -.14 | -.36 | -.21\*\*\* | -.33\*\*\* | .06 | --- |
| 1. Daily shame | .24\* | .25\* | --- | .21 | .25\*\*\* | .31\*\*\* | -.03 | --- |
| 1. Daily boredom | -.21 | -.29\*\* | .34\*\* | --- | .22\*\*\* | .35\*\*\* | -.06 | --- |
| 1. Daily anxiety | .05 | .06 | .54\*\*\* | .61\*\*\* | --- | .27\*\*\* | .03 | --- |
| 1. Daily anger | .16 | .17 | .67\*\*\* | .55\*\*\* | .66\*\*\* | --- | .09 | --- |
| 1. Daily goal effort | .19 | .15 | .06 | .04 | .22 | .08 | --- | --- |
| 1. Self-control | .10 | .07 | -.26\* | -.37\*\* | -.41\*\*\* | -.27\* | -.18 | --- |
| Mean | 2.87 | 3.03 | 1.42 | 1.91 | 1.85 | 1.45 | 85.99 | 4.40 |
| Standard deviation | 1.25 | 1.18 | 0.83 | 0.91 | 0.83 | 0.76 | 50.20 | 1.27 |

*Note.* Person-level/day-level correlations are presented below/above the diagonal. *N* = 80.

\* *p* < .05. \*\* *p* < .01. \*\*\* *p* < .001.

Table S5.

*Daily Response Ns for the Key Variables (Study 2)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Day | | | | |
|  | 1 | 2 | 3 | 4 | 5 |
| Pride | 73 | 57 | 56 | 58 | 49 |
| Enjoyment | 73 | 57 | 56 | 58 | 49 |
| Shame | 73 | 57 | 56 | 58 | 49 |
| Boredom | 73 | 57 | 56 | 58 | 49 |
| Anxiety | 73 | 57 | 56 | 58 | 49 |
| Anger | 73 | 57 | 56 | 58 | 49 |
| Goal effort | 73 | 57 | 56 | 58 | 49 |

*Note*. Total *N* = 80.

Table S6.

*Unstandardized Coefficients, Standard Errors, and P-values of the Results of Multilevel Cross-Lagged Panel Modeling for Pride and Enjoyment (Study 2)*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Pride | | |  | Enjoyment | | |  | Shame | | |  | Boredom | | |  | Anxiety | | |  | Anger | | |
|  | *b* | *SE* | *p* |  | *b* | *SE* | *p* |  | *b* | *SE* | *p* |  | *b* | *SE* | *p* |  | *b* | *SE* | *p* |  | *b* | *SE* | *p* |
| **Day-level** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Emotion |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Prior-day emotion | -.24 | .06 | <.001 |  | -.25 | .05 | <.001 |  | -.19 | .06 | .001 |  | -.12 | .08 | .151 |  | -.32 | .06 | <.001 |  | -.25 | .10 | .014 |
| Prior-day effort | .08 | .06 | .177 |  | -.05 | .08 | .520 |  | .09 | .05 | .071 |  | -.09 | .07 | .189 |  | .04 | .06 | .577 |  | -.07 | .04 | .057 |
| Effort | -.06 | .04 | .123 |  | -.08 | .05 | .120 |  | .02 | .03 | .378 |  | .01 | .04 | .786 |  | -.01 | .05 | .852 |  | .01 | .03 | .679 |
| Effort |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Prior-day emotion | **-.14** | **.07** | **.038** |  | **-.03** | **.05** | **.561** |  | **-.34** | **.20** | **.088** |  | **-.08** | **.07** | **.248** |  | **-.07** | **.06** | **.253** |  | **.03** | **.07** | **.661** |
| Prior-day effort | -.49 | .06 | <.001 |  | -.49 | .05 | <.001 |  | -.51 | .06 | <.001 |  | -.49 | .05 | <.001 |  | -.49 | .05 | <.001 |  | -.50 | .05 | <.001 |
| Effort | -.15 | .04 | .001 |  | -.14 | .04 | .001 |  | -.13 | .04 | .002 |  | -.14 | .04 | <.001 |  | -.14 | .04 | .002 |  | -.14 | .04 | .002 |
| Prior-day emotion |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Effort | -.05 | .04 | .230 |  | -.09 | .05 | .082 |  | .04 | .03 | .150 |  | .05 | .05 | .334 |  | -.02 | .05 | .722 |  | .02 | .03 | .468 |
| Prior-day effort |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Effort | -.09 | .04 | .012 |  | -.09 | .04 | .017 |  | -.09 | .04 | .016 |  | -.09 | .04 | .013 |  | -.09 | .04 | .014 |  | -.09 | .04 | .016 |
| COV(emotion, effort) | .04 | .06 | .462 |  | .02 | .06 | .766 |  | .01 | .02 | .677 |  | -.06 | .04 | .145 |  | .02 | .05 | .642 |  | .04 | .03 | .139 |
| COV(prior-day emotion, effort) | .04 | .06 | .506 |  | .03 | .06 | .604 |  | -.01 | .02 | .590 |  | -.01 | .04 | .758 |  | .04 | .05 | .323 |  | .03 | .03 | .204 |
| **Person-level** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Emotion |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Self-control | .10 | .12 | .402 |  | .05 | .09 | .591 |  | -.17 | .06 | .003 |  | -.25 | .05 | <.001 |  | -.27 | .06 | <.001 |  | -.17 | .05 | <.001 |
| Effort |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Self-control | -.12 | .07 | .099 |  | -.12 | .07 | .094 |  | -.13 | .07 | .084 |  | -.12 | .07 | .092 |  | -.13 | .07 | .090 |  | -.12 | .07 | .092 |
| COV(emotion, effort) | .19 | .10 | .054 |  | .15 | .10 | .125 |  | -.02 | .08 | .787 |  | -.08 | .08 | .320 |  | .02 | .07 | .774 |  | -.06 | .07 | .445 |

*Note.* All independent variables are listed with a left indentation under each corresponding dependent variable. Focal paths of the interest (i.e., coasting and pushing) are bolded. Time ranges from 0 to 4 to indicate each subsequent participating day. COV = covariance.

**Discussion of the Nuanced Findings**

**The positive relation between positive emotion and effort on a same day (Study 1)**

When examining the concurrent (on the same day) correlations between positive emotions and goal effort, we found that they were positively, rather than negatively, correlated (See Table 1). We believe that the results indicate the differential functions of positive emotions depending on the time points. When the behavior is already underway, positive emotions may function as a direct (and often unconscious) cause for persisting at goal-consistent behaviors (Custers & Aarts, 2005; Handley, Lassiter, Nickell, & Herchenroeder, 2004). That is, positive emotions operate as psychological rewards that sustain the current behavior. However, on the next day when the behavior has already ceased, positive emotion is likely to influence behavior indirectly, having previously shaped one’s cognitive evaluation that progress is better than planned (Carver & Scheier, 1998). This cognitive evaluation then directs goal pursuers to reduce effort toward the goal on subsequent days so that they can attend to other pressing goals (Carver, 2003).

**The positive relation between negative emotion and effort on a same day (Study 1)**

Negative emotions at a given moment, such as distress, may elicit cessation of any goal-related activities to avoid the negative feelings (i.e., flight or avoidance response) or initiation of goal-consistent behaviors to fight off or alleviate them (i.e., fight or approach response). Although both reaction systems are viable (Carver, 2004; Higgins, 1997), we predict that experiencing chronic negative emotions repeatedly over a prolonged length of time tends to result in flight responses (e.g., goals being ignored or abandoned, consistent with findings from between-person designs) whereas temporal experience of state negative emotions tends to result in fight responses[[1]](#footnote-1). The day’s negative emotions signal the cognitive evaluation that the current goal progress is not sufficient and in turn, goal-consistent behavior will continue to be needed to remedy the situation on a given day and the next day (see concurrent correlations between negative emotions and effort in Table 1).

**Discrepancies between Study 1 and Study 2**

We noticed several discrepancies between Study 1 and Study 2 in paths that were not our focal interest, including the correlated paths and autoregressive paths. Although there is no definitive answer to these discrepancies, we suspect that the difference may be due to the dissimilarity in the characteristics of samples and measures in the two studies. Study 1 sampled students from a competitive university and assessed their emotions and effort toward an academic goal. Study 2 sampled students from diverse universities and assessed their emotions and effort toward one college class they were taking during the semester. Although this difference might have not led to differences in next-day coasting and pushing behaviors across samples, it might have changed the concurrent relation between emotions and effort (i.e., correlated paths) as well as their daily stability (i.e., autoregressive pahts). For example, academic goals for the semester (e.g., to finish the semester with a 4.0 GPA) tended to require more overall effort than effort toward one college class (e.g., to get an A in the class). Schools in Study 2 might also place less emphasis on achievement than those in Study 1. Consequently, coasting might have occurred only a few hours or even minutes after feeling pride in Study 2, resulting in the relatively weak concurrent correlations between emotions and effort. Similarly, emotions and effort towards a singular class (Study 2) might be less stable than goals that require steady effort (Study 1), resulting in the negative autoregressive paths in Study 2.

1. Aart and his colleagues (2007) showed that priming negative emotions (using words like “trash”) may lead to disengagement from the current unconscious goal pursuit (e.g., partying), which is the opposite from our prediction. However, the researchers also note that the effect occurred only when the emotions were linked to the goals (e.g., partying is negative) and in other cases “negative emotions … may cause people to reformulate and work harder on their goals” (p. 166). [↑](#footnote-ref-1)