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Can I Make the Time or Is It Running Out? That Depends in Part on What Difficulty Implies About Me

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When thinking about a task or goal feels difficult, people can interpret this as signaling self-relevant value (difficulty-as-importance) and a reminder to stop wasting time on self-irrelevant things (difficulty-as-impossibility). Identity-based motivation theory predicts that both interpretations are available in memory, vary in momentary accessibility, and shape action in part through activating action-relevant judgments. We note that in situations calling for task engagement, action-relevant judgment entails making sense of time, an abstract concept that people reason about metaphorically. We test this novel prediction that difficulty mindsets shape action in part by shaping how people reason metaphorically about time by examining associations (N = 941) and documenting effects of mindset accessibility (using an autobiographical recall task, N = 1,676) on how much people endorse the time-as-limited and time-as-expandable aspects of the time-as-resource metaphor. Indeed, across experiments, people more strongly endorsed time-as-limited, less strongly endorsed time-as-expandable and saw these aspects of the time-as-resource metaphor as more negatively correlated if randomized to the difficulty-as-impossibility (vs. difficulty-as-importance) recall condition. Supporting our novel prediction, the consequence of accessible difficulty mindsets on task engagement (Experiments 2–3) and performance (Experiments 4–5), confidence in goal progress and experienced time to make progress (the length of the line they drew to represent the semester or year, Experiments 6–7) occurred partly through the effect of accessible mindsets on momentary judgments of time-as-limited and time-as-expandable, as revealed in statistical mediation analyses. In situations requiring task engagement and assessing goal certainty, accessible difficulty mindsets matter in part by momentarily shifting judgments about having time.

Statement of Limitations

In task or goal contexts, the accessible lens or mindset people apply matters; if they infer that the hard-to-think-about task or goal is important to them, they are more likely to believe they can find or make the time to act, engage with tasks, and infer that they can progress on important goals. In contrast, if they infer it is not for them, they are more likely to believe that time is a limited resource that cannot be found, engage less with tasks, and infer that they are unlikely to progress on important goals. Analytically, we demonstrate that in situations requiring engaging in tasks and assessing goal confidence, the effect of accessible difficulty mindsets is due in part to the effect of difficulty mindsets on momentary shift in time-as-limited and time-as-expandable beliefs. Our method does not permit us to infer that outside of these situations, activating time-limited or time-as-expandable would produce changes in task engagement and goal certainty, how often people think about difficulty or time in these ways, or what influences whether they do so on any given day. Our samples do not allow us to infer that results would be equally likely for people of all kinds (e.g., ages, cultures, nationalities, etc.). We cannot know if other ways of recalling or bringing to mind difficulty-as-importance and difficulty-as-impossibility beliefs capture more or less of the variance.

Keywords: difficulty mindsets, time perception, identity-based motivation, conceptual metaphors, metacognitive experiences

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Daphna Oyserman conceptualized the core theoretical framework. Both authors jointly devised the studies and wrote the article. Supervised by Daphna Oyserman, Su Young (Kevin) Choi collected the data and ran the studies and analyses. Daphna Oyserman and Su Young (Kevin) Choi revised the article.

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When a self-relevant task or goal feels hard to think about, people may interpret this metacognitive experience of difficulty as a reinforcing signal of its self-relevant importance ("no pain, no gain," termed difficulty-as-importance) and as a cautionary signal of its low odds and self-irrelevance ("know when to walk away," difficulty-as-impossibility). Identity-based motivation (IBM) theory proposes, and evidence reviewed below suggests, that these mindsets are distinct, available in memory, and that the momentary accessibility of each is recursively linked to identity (how people make sense of themselves) and goal-focused action (what they do, e.g., Oyserman, 2007, 2009, 2024). However, what is missing from both theorizing and research is an articulation of the underlying process by which accessible or endorsed difficulty mindsets affect engagement and self-goal certainty. We address these gaps in the present studies by offering a novel theoretical framework that synthesizes IBM and conceptual metaphor theory (CMT) and draws on the situated social cognition foundation of IBM theory. We propose that accessible difficulty-as-importance and difficulty-as-impossibility mindsets direct people to consider aspects of the time-as-resource metaphor differently and that this differential consideration partly explains how difficulty mindsets shape thinking and doing. We test our novel predictions across seven studies, finding the predicted pattern of effects.

IBM

IBM is a situated social cognition theory of motivation, goal pursuit, and self-regulation (Oyserman, 2007, 2009, 2024). It makes three relevant predictions. First, people experience themselves as having stable essences that they can use as guides; they are insensitive to the effect of the immediate situation on their self-inferences (Oyserman, 2019; Oyserman et al., 2015). Second, when thinking about their self-goals and current tasks feels hard, people can draw two inferences: difficulty-as-impossibility and difficulty-as-importance (Oyserman et al., 2017). Third, these inferences matter: Difficulty-as-impossibility directs attention to the possibility that the goal or task is not for them, leading to reduced effort and a reallocation of resources toward tasks or goals with higher odds of success; in contrast, difficulty-as-importance directs attention to the possibility that the task or goal is self-relevant, leading to increased effort and persistence.

Difficulty-as-Importance and Difficulty-as-Impossibility

Two Distinct Constructs

Critically, as predicted by IBM theory, people vary in how much they endorse each difficulty mindset, and the two mindsets are distinct (Oyserman, 2024). Brief reliable scales measuring endorsement of each mindset are available (for use with children, e.g., Burbidge et al., 2024; Oyserman et al., 2018, 2021; for use with adults, Fisher & Oyserman, 2017; O'Donnell et al., 2023; Yan, Oyserman, Kiper, & Atari, 2024). Congruent with IBM theory, studies reveal that people differ meaningfully in how much they endorse each difficulty mindset and that the extent to which a person endorses each difficulty mindset fluctuates across situations (Burbidge et al., 2024; Fisher & Oyserman, 2017). Following IBM theory, studies also reveal that difficulty-as-importance and difficulty-as-impossibility are distinct constructs, on average, scale scores show small to small-to-medium-sized negative correlations and confidence intervals often include zero (Fisher & Oyserman, 2017; O'Donnell et al., 2023; Yan et al., 2023).[1] These studies also reveal that on average, difficulty-as-importance scores are above the scale midpoint (i.e., people tend to agree), and endorsement does not vary across cultures while on average difficulty-as-impossibility scores are below the scale midpoint (people tend to disagree). Though always averaging below the midpoint, on average difficulty-as-impossibility is endorsed more in Australia, Canada, the United Kingdom, and the United States than China, India, Iran, and Türkiye (e.g., O'Donnell et al., 2023; Yan et al., 2024).

Each Mindset Has Distinct Effects

Incremental Validity. Not only are the two scales distinct, but each mindset scale score contributes uniquely to variance explained as revealed in studies addressing incremental validity. We describe four example study sets. First, Kiper et al. (2024) found that people scoring higher in difficulty-as-impossibility preferred less effortful means to attain their health and academic goals, whereas difficulty-as-importance scores were not consistently associated with a preference for effortful versus less effortful means. Second, Wingert et al. (2024) found that people scoring higher in difficulty-as-impossibility scored lower in attention control, whereas difficulty-as-importance scores were not consistently associated with attention control scores. Third, Kiper et al. (2023) found that people who scored higher in difficulty-as-importance saw more silver linings in the COVID-19 pandemic while difficulty-as-impossibility scores were not associated with seeing silver linings. Fourth, Burbidge et al. (2024) found recursive effects between difficulty-as-importance and certainty of attaining school-focused possible identities across three time points, controlling for prior school grades and scores on possible identity certainty, difficulty-as-impossibility, optimism, and fatalism. Higher difficulty-as-importance scores predicted greater subsequent certainty of progressing toward academic possible identities, which in turn predicted higher difficulty-as-importance and lower difficulty-as-impossibility scores. Difficulty-as-impossibility did not consistently predict identity certainty, and optimism and fatalism were not consistently associated with either mindset or possible identity scores.

Discriminant Validity. Beyond explaining unique variance, the difficulty mindset scales show discriminant validity, with difficulty-as-importance and difficulty-as-impossibility exhibiting distinct patterns of association with related motivational constructs. We describe four examples: First, daily diary data suggest that people report lower goal self-efficacy, self-esteem, and self-compassion on days they score higher on difficulty-as-impossibility, yielding small-to-moderate-sized associations (Burbidge et al., 2024). The parallel positive associations between difficulty-as-importance, goal self-efficacy, self-esteem, and self-compassion are significant but significantly smaller. Second, between-person comparisons reveal that the positive association between optimism and difficulty-as-importance scale scores is small-sized, while the negative association of

[1] Negative correlations suggest that when tasks or goals feel difficult to think about, people infer that succeeding is important (high difficulty-as-importance) and that success is not unlikely (low difficulty-as-impossibility) or not important (low difficulty-as-importance) but unlikely (high difficulty-as-impossibility). Confidence intervals including zero suggest that when a task or goal feels difficult to think about, people may infer that it is neither important nor unlikely, or both important and unlikely.

optimism and difficulty-as-impossibility scale scores is moderate-sized across three points in time (Burbidge et al., 2024). Third, scale scores on goal self-efficacy and locus of control were moderately correlated with each other and with difficulty-as-impossibility scores and showed correlations of approximately half that magnitude with difficulty-as-importance (Fisher & Oyserman, 2017). Fourth, scores on measures of self-regulatory focus including construal level, growth mindset, and grit were moderately correlated with one another and with difficulty-as-impossibility while their correlations with difficulty-as-importance were small-sized (Fisher & Oyserman, 2017).

Effects on Task Engagement, Performance, and Certainty Regarding Self-Goals. IBM theory predicts that people have both difficulty-as-importance and difficulty-as-impossibility cognitive frameworks available in memory and that the one which is accessible at the moment of judgment influences what they think and do (Oyserman, 2009, 2024). Evidence examining mindset effects on task engagement, performance, and self-relevant goal-certainty supports this prediction. For example, students randomly assigned to the accessible difficulty-as-importance mindset (vs. difficulty-as-impossibility mindset) subsequently invested more time (Raven's progressive matrices, Smith & Oyserman, 2015) and performed better on standardized tasks (Raven's Progressive Matrices, Elmore et al., 2016; writing, Oyserman et al., 2018). They also viewed academics as more central to their identity (Smith & Oyserman, 2015) and were more certain that they would attain their school-focused possible identities and use effective strategies to do so (Aelenei et al., 2017). This program of research documents the main effect of difficulty mindset accessibility in situations entailing task engagement or assessment of goal self-goal certainty. While important, what is missing from this program of research is process-level theorizing. We address this gap in the current article. As detailed next, we synthesize IBM and Conceptual Metaphor theories.

What Does an Accessible Difficulty Mindset Imply in Situation?

Prior research has focused on documenting main effects of accessible mindsets on task engagement and self-goal certainty; here, we focus on the underlying process by which accessible mindsets do so. Drawing on the situated social cognition foundation of IBM theory, we propose that the judgment demands of the context at hand shape how people apply their accessible difficulty mindsets. A key judgment demand in task engagement and goal progress contexts entails time—decerning whether one can find or make the time to engage and progress. An accessible difficulty-as-importance mindset implies that experiencing difficulty is a signal of value and that persisting is worthwhile. Hence, if a difficulty-as-importance mindset is accessible in task engagement and self-goal progress contexts, people should be more likely to infer that the task or goal is valuable and worth pursuing, implying that although time is limited, they can find or make the time to engage and make progress. In contrast, an accessible difficulty-as-impossibility mindset implies that experiencing difficulty signals low odds. Hence, if a difficulty-as-impossibility mindset is accessible in task engagement and self-goal progress contexts, people should be more likely to infer that engagement would waste their limited time and that self-goal progress is unlikely, implying that time is limited and cannot be found or made.

In sum, the implications of an accessible mindset on judgment should be tailored to the demands of the situation at hand. When a situation calls for engaging with a task or assessing certainty of self-goal progress, the judgment addressed by an accessible difficulty mindset is about time—can the needed time be made or found, or is it limited and finite? We build on the IBM theory implication that an accessible difficulty-as-importance mindset increases people's experience of time as expandable and reduces their experience of time as limited. If difficulty-as-importance is the mind, while still recognizing time's finiteness, people should also experience time as expandable, something they can make enough of to engage with and progress on self-relevant tasks and goals. In contrast, in these same situations, if a difficulty-as-impossibility mindset is accessible, people's recognition of time's finiteness may become salient at the expense of experiencing it as expandable. We predict that this is a mechanism through which an accessible difficulty-as-impossibility mindset yields reduced task engagement and performance and reduces self-goal confidence. Specifically, an accessible difficulty-as-impossibility mindset should increase people's sense that time cannot be made or found so that there may simply not be enough time, reducing engagement, performance, and confidence. In the next section, we integrate IBM and Conceptual Metaphor theories to fully articulate this posited process.

Time-as-Resource: A Metaphor With Two Aspects

CMT and Difficulty Mindsets

CMT articulates how people apply their knowledge of concrete concepts to reason about abstract ones (e.g., Lakoff & Johnson, 1980, 2020; Landau, 2016; Landau et al., 2010). In the case of time, time is an abstract concept, and people reason about it metaphorically. A common metaphor for time is time-as-resource in which people think about time as if it were a concrete resource, something that can be spent, wasted, and used (e.g., *time is running out, do not waste time*) as well as made, found, and expanded (e.g., *make time, find time, create time*; Lakoff & Johnson, 2020). The inference we draw is that people reason about time as if it were both a finite and nonexpandable resource and as a limited yet expandable one. As a finite and nonexpandable resource, time resembles gold: Once invested in one task, it cannot be reallocated to another. As a limited yet expandable resource, time resembles money: Through working and saving, a fixed sum can be expanded. Applying the finite aspect of the time-as-resource metaphor should yield an emphasis on efficiency and avoiding waste, whereas applying the expandable aspect of the time-as-resource metaphor should enable continued engagement in self-relevant tasks and goals.

Most existing conceptual metaphor-based research has focused on the limited aspect of the time-as-resource metaphor. For example, research reveals that constrained time horizons influence decision making (Barber et al., 2016; Fung et al., 1999; Layous et al., 2018), time pressure affects task performance (Fernbach et al., 2015; Shah et al., 2015), and the speed of time shapes behavior (Rutrecht et al., 2021; Witowska et al., 2020). While less explicitly studied, the expandable aspect of the time-as-resource metaphor is evident in cross-cultural differences between clock-time (events end when time runs out) and event-time (events end when they are over) orientations (Avnet & Sellier, 2011; Tang et al., 2023). We thus reason that people in modern contexts experience both aspects of the

time-as-resource metaphor: Parents "make time" for family despite the demands of their work schedules, academics "carve out" time for research alongside other duties, and dieters "create time" for health even under time constraints (Hamermesh & Lee, 2007; Roxburgh, 2004).

Linking Difficulty Mindsets, Time, and Engagement

We build from IBM and Conceptual Metaphor theories to propose that accessible difficulty-as-importance and difficulty-as-impossibility mindsets direct people to consider different aspects of the time-as-resource metaphor. We also propose that this differential consideration of the aspects of the time-as-resource metaphor partly explains how difficulty mindsets shape thinking and doing. Specifically, we predict that if difficulty-as-impossibility is on the mind, people become more sensitive to time's finite nature and less attuned to its expandable nature. In contrast, if difficulty-as-importance is on the mind, people become more attuned to time's expandable nature and less attuned to its finite nature. Taken together, we predict that in task and goal contexts, accessible difficulty mindsets momentarily shift the extent to which people endorse the time-as-limited versus time-as-expandable aspects of the time-as-resource metaphor and this, in turn partly shapes task engagement and performance as well as self-goal certainty and beliefs about making progress.

The Present Studies

We describe and test four hypotheses (H1–H4) derived from our synthesis of IBM theory and CMT as outlined above, in which difficulty-as-importance and difficulty-as-impossibility mindsets highlight different aspects of the time-as-resource metaphor, which in part explains the effects of an accessible mindset on task and goal engagement, performance, and certainty.

H1: Difficulty-as-Impossibility and Time-as-Limited (Studies 1 to 7)

Compared to those with an accessible difficulty-as-importance mindset, people with an accessible difficulty-as-impossibility mindset are more likely to see time as a limited resource (operationalized as higher scores on the time-as-limited scale).

H2: Difficulty-as-Importance and Time-as-Expandable (Studies 1 to 7)

Compared to those with an accessible difficulty-as-impossibility mindset, people with an accessible difficulty-as-importance mindset are more likely to see time as an expandable resource (as operationalized by higher scores on the time-as-expandable scale).

H3: Accessible Difficulty Mindset and Time-as-Resource Metaphor (Studies 1 to 7)

The size of the negative correlation between time-as-limited and time-as-expandable scores will be higher when difficulty-as-impossibility rather than difficulty-as-importance is on the mind.

H4: A Simultaneous Process (Studies 2 to 7)

The path from an accessible difficulty mindset to task engagement, performance, and certainty of self-relevant goal attainment is partly a function of the momentary shifts in time-as-limited and time-as-expandable endorsement, as tested statistically in parallel mediation path analysis using structural equation modeling (SEM).

Open Access

Our data, measures, preregistrations (Studies 3, 5, and 7), analysis scripts, and Supplemental Materials, including four preliminary studies and exploratory/supplemental analyses, are deposited at https://osf.io/5gdsq/ (Choi & Oyserman, 2025b). All figures and tables in Supplemental Materials are labeled with the letter S, starting with our preliminary studies, detailed in Supplemental Tables S1–S4. Supplemental Table S5 details each study's demographics and how many people each exclusion criterion excludes. Supplemental Table S6 provides scale means by condition. The Measures Section of Supplemental Materials includes all our scale items, measures, and instructions. In each study, we report how sample size was determined, all data exclusions (if any), manipulations, and measures.

Preliminary Studies

We ran four preliminary studies, PS1 to PS4, each with a distinct goal, as detailed next. The Preliminary Studies section of Supplemental Materials details each study.

The goal of PS1 ($n = 101$ adults on Amazon Mechanical Turk, MTurk) was to develop our time-as-limited and time-as-expandable scales and verify that the scales represent two distinct, though related, constructs rather than a single reverse-coded scale. Indeed, an exploratory factor analysis with the time-as-limited and time-as-expandable scale items revealed two separate factors, each including only the items from the intended scale. The two scales were moderately negatively correlated, $r(99) = -0.382$, $p < .001$, 95% CI [−0.537, −0.202]. A confirmatory factor analysis comparing a single-factor model (with reversed time-as-limited items) to a two-factor model, supported the latter as the superior fit (Chi-square difference = 128.26, $p < .001$).

The goals of PS2 and PS3 (combined $n = 359$, adults on Prolific) were two-fold. First, to verify that our time-as-limited and time-as-expandable scale scores have the expected pattern of association with difficulty-as-importance and difficulty-as-impossibility scale scores. Second, to test the predicted statistical parallel mediational pathways from difficulty mindset scale scores to theoretically relevant judgments via time-as-resource scale scores. Regarding the first goal, difficulty-as-impossibility scale scores were significantly positively associated with time-as-limited scores and negatively associated with time-as-expandable scores, while difficulty-as-importance scale scores were significantly positively associated with time-as-expandable and not significantly associated with time-as-limited scores. Regarding the second goal, four mediation analyses revealed the expected indirect effects. Higher time-as-expandable scores statistically mediated the positive relationship between higher difficulty-as-importance scores and more positive judgments about planning in work scenarios (Supplemental Figure S1) and self-reported ability to plan (Supplemental Figure S2). Higher time-

as-limited scores statistically mediated the negative relationship between higher difficulty-as-impossibility scores and more negative judgments about planning (scenario response, Supplemental Figure S3; self-report, Supplemental Figure S4).

Last, the goal of PS4 (n = 481 college students) was to bolster convergent and discriminant validity evidence for both the difficulty mindset and time-as-resource scales by testing them against established constructs: self-efficacy, optimism, and positive and negative affect (as operationalized by the Positive and Negative Affect Scale, PANAS, Watson, Clark, & Tellegen, 1988). Convergent validity was operationalized as a correlation significantly different from zero (Campbell & Fiske, 1959), and discriminant validity operationalized as correlations below .85 in magnitude (Kline, 2016). As shown in Supplemental Table S4, the results supported the distinctness of our measures. Difficulty-as-importance was distinct from negative affect, difficulty-as-impossibility, and time-as-limited (corresponding confidence intervals between these measures and difficulty-as-importance included zero). Supporting discriminant validity, difficulty-as-importance scores showed very small to small-sized positive correlations with positive affect, self-efficacy, optimism, and time-as-expandable (rs = .10 to .28). Difficulty-as-impossibility scores showed moderate-sized negative correlations with optimism (r = −.34) and efficacy (r = −.55), small negative correlations with time-as-expandable and positive affect, and small positive correlations with time-as-limited and negative affect scale score (rs = −.16 to +.28). Time-as-limited and time-as-expandable scores (r = −.43) were moderately negatively correlated. Each showed moderate correlations with self-efficacy (time-as-limited r = −.45, time-as-expandable r = .48) and optimism (time-as-limited r = −.32, time-as-expandable r = .28) and small correlations of .12 to .28 with other constructs.

Considered in conjunction with prior research presented in the Introduction, these PS results provide initial support for the theorized association of difficulty mindsets and time-as-limited and time-as-expandable beliefs. High and low difficulty-as-impossibility and difficulty-as-importance scorers differed systematically in their scores on time-as-limited and time-as-expandable scales. Moreover, each scale is psychometrically sound, performs as expected in correlational and mediational analyses, and is distinct from other motivational constructs. We therefore proceeded to test our predictions using experimental methods.

Study 1

Sample

Adults (n = 500) participated in a 5-min study on Prolific for $1.33. After applying our exclusion criteria, our final sample was n = 489 (55.7% female, age M = 35.87, SD = 11.42; see Supplemental Table S5 for detailed demographics and exclusions).

Method

Power, Stop Rules, and Exclusions

We had two exclusion criteria (missing data, failing the attention check). The missing data criteria excluded participants who skipped over half of the items or exited the survey before completion, and the attention check excluded those who responded other than *strongly disagree* to the item: *Indicate that you are reading the question and select strongly disagree as your answer*. A sensitivity power analysis with an α of .05 and a power of .80 revealed that our study was powered to detect an effect at f = 0.14, confirming that even our smallest effect in our main analyses was adequately powered (Faul et al., 2007).

Procedure

In Block 1, participants engaged in an autobiographical recall task (see below) and were randomized to one of three instruction sets (difficulty-as-importance, difficulty-as-impossibility, and control). In Block 2, they completed variations of an eight-item scale being developed for another study (filler for Study 1). In Block 3, they completed the time-as-limited and time-as-expandable scale items in randomized order. In Block 4, they provided demographics.

Autobiographical Recall Task. Participants in the difficulty-as-importance condition read: *Please take a moment to think of a time in your life when you felt that a difficult task or goal was an* ***important one for you, one that you valued, cared about, and found self-defining.*** *If you can, think of a specific episode from that time in your life when you experienced a difficult task as a* ***signal of task value and worth****. That is, a time when you* ***felt motivated to work on the task or goal because it reminded you of how much you valued and cared about making progress on that task or goal****. Take a moment to vividly recall the episode and how it felt like to be in that situation*. On the next screen, they read: *Please describe the episode (or time in your life) when difficulty reminded you of how much you* ***valued and cared*** *about progress on a task or goal*. An essay box appeared for participants to type their memories.

Respondents in the difficulty-as-impossibility condition read the same recall prompt except for the words in bold. *Please take a moment to think of a time in your life when you felt that a difficult task or goal was* ***just not for you,*** *not meant to be, irrelevant to who you were or were trying to become. If you can, think of a specific episode from that time in your life when you experienced a difficult task as a signal that* ***you should focus on something else****.* ***That is, you mentally quit and switched to something else, because it reminded you that the task or goal just wasn't worth your effort****. Take a moment to vividly recall the episode and how it felt like to be in that situation*. Their essay prompt was: *Please describe the episode (or time in your life) when difficulty reminded you that a task or goal just* ***wasn't worth your effort****.*

Participants in the control condition read: *Please take a moment to think of the last breakfast you have most recently eaten. Take a moment to vividly recall the episode. Please describe the episode in detail.*

Time-as-Expandable and Time-as-Limited. We used the four-item time-as-expandable (e.g., When I have something I really must do, I can make the time to do it.) and time-as-limited scales (e.g., When I am doing one thing, it means I will not have time for something else) created in our preliminary studies.

Analysis Plan

H1 and H2. We used a one-way between-subjects analysis of variance with autobiographical recall conditions (difficulty-as-importance, difficulty-as-impossibility, control) as the predictor, and the time-as-limited (H1) and time-as-expandable (H2) scale scores as the outcome variables. Significant omnibus effects were

followed up with pairwise comparisons using Bonferroni correction for multiple tests.

H3. Our preliminary SEM analysis assessed the relationship between our two time-as-resource scales. Results indicated that treating time-as-limited and time-as-expandable as correlated constructs provided a better fit for our data than considering them as orthogonal (see Supplemental Table S7). Given this, we tested H3 with multigroup SEM using *psych* (v. 2.2.9; Revelle, 2022) and *lavaan* (v. 0.6; Rosseel, 2012) packages in the R programming language (Core Team, 2022) with two discrete groups (difficulty-as-importance, difficulty-as-impossibility). We specified the model with unconstrained variance between our two latent constructs (time-as-limited and time-as-expandable, each with its respective four-item factor loadings) and used a Wald z test to formally assess whether the strength of the negative association between the two time-as-resource dimensions was significantly greater in the difficulty-as-impossibility than the difficulty-as-importance condition.

We tested model fit adequacy with chi-square (χ^2) with degrees of freedom (*df*), Comparative Fit Index, Tucker Lewis Index, and root-mean-square error of approximation following Hu and Bentler (1999). Our multigroup SEM models attained a good fit, and measurement invariance analyses using confirmatory factor analysis suggested that factor structures were stable across the two recall groups (see Supplemental Table S8 for model fit and Supplemental Table S9 for measurement invariance analyses).

Results

Supporting H1, people scored higher on the time-as-limited scale if they were randomly assigned to the difficulty-as-impossibility rather than the difficulty-as-importance recall condition, F (2, 487) = 12.38, $p < .001$. A Bonferroni-corrected post hoc test confirmed that time-as-limited scores were significantly higher in the difficulty-as-impossibility ($M = 4.08$, $SD = 1.14$) than in the other conditions (difficulty-as-importance, $M = 3.55$, $SD = 1.02$, adjusted $p < .001$; control $M = 3.62$, $SD = 0.97$, adjusted $p < .001$). People in the difficulty-as-importance and control conditions did not significantly differ in their time-as-limited scores, adjusted $p = .895$.

Supporting H2, people scored higher on the time-as-expandable scale if they were randomly assigned to the difficulty-as-importance rather than the difficulty-as-impossibility recall condition, $F(2, 487) = 8.01$, $p < .001$. A Bonferroni-corrected post hoc test confirmed that people in the difficulty-as-importance recall condition endorsed time-as-expandable ($M = 4.57$, $SD = 0.73$) more than those in the other conditions (difficulty-as-impossibility, $M = 4.22$, $SD = 0.96$, adjusted $p < .001$, control $M = 4.32$, $SD = 0.72$, $p = .017$). People randomized to the difficulty-as-impossibility and control conditions did not differ in their time-as-expandable scores, adjusted $p = .833$.

Supporting H3, the negative association between scores on the two time-as-resource scales was significantly stronger among those randomly assigned to the difficulty-as-impossibility ($r = -.597$) rather than the difficulty-as-importance ($r = -.302$) recall condition, $z = 3.09$, $p < .001$. The expected pattern was also revealed relative to the control condition: the negative correlation between time-as-limited and time-as-expandable significantly weaker in the control ($r = -.412$) than in the difficulty-as-impossibility condition ($z = 2.18$, $p = .015$) and marginally stronger in the control than the difficulty-as-importance condition ($z = 1.13$, $p = .129$).

Discussion

People score lower on the time-as-expandable and higher on the time-as-limited scales, if they have difficulty-as-impossibility rather than difficulty as importance on the mind. Moreover, the negative correlation between the two scale scores is stronger, such that if difficulty-as-impossibility is on the mind, they experience time as a limited *and not* expandable resource, but if difficulty-as-importance is on the mind, time is experienced as a limited *yet* expandable resource. Relative to people in the control condition, those in the difficulty-as-importance condition scored higher on the time-as-expandable scale and those in the difficulty-as-impossibility condition scored higher on the time-as-limited scale. The inference we draw is that accessible difficulty mindsets yield shifts in endorsement of both the time-as-limited and time-as-expandable aspects of the time-as-resource metaphor.

Studies 2 and 3

Samples

Undergraduates participated for course credit (Study 2, $n = 242$, 66.7% female, age $M = 20.5$, $SD = 5.72$; preregistered; Study 3, $n = 248$, 73.8% female, age $M = 20.1$, $SD = 2.39$, Supplemental Table S5 details demographics and exclusions) in online studies programmed in Qualtrics.

Method

Power, Stop Rules, and Exclusions

We used Kline (2016), $n = 100$ per group sample size rule-of-thumb for multigroup structural equation models to determine our target sample. Given preliminary studies S2 and S3 results, a sensitivity analysis using Whillans and Dunn (2015) shinyapp, pwrSEM, revealed that a sample size of 180 would provide 0.9 power to detect indirect effects in our parallel mediation model. We had two conditions, so as a conservative estimate, we planned to collect data from 250 participants. As in Study 1, exclusion criteria were skipping over half of the items or exiting the survey before completion and failing the attention check embedded at the end of the survey: *This is a memory check. We asked students to recall an episode in their life when they experienced difficulty in one of two different ways. Please read the two options below and choose the one that describes the episode you were asked to imagine.* 1 = *I was asked to remember an episode in which the difficulty I was having with a task or goal reminded me of its value and worth*; 2 = *I was asked to remember an episode in which the difficulty I was having with a task or goal reminded me to invest my efforts elsewhere*.

Procedure

In Block 1, participants completed the Study 1 recall task with random assignment to either the difficulty-as-importance or difficulty-as-impossibility condition. In Block 2, they completed the time-as-resource scales with items presented in randomized order. In Block 3, they read a modified version of Whillans and Dunn's

(2015) environmental decision task, in which they imagined learning about everyday pro-environmental behaviors (e.g., using a travel mug instead of a disposable cup) and reported their likelihood of returning to pick up their mug if they left it at home (1 = *not at all likely*; 6 = *very likely*; see the Measures section of Supplemental Materials). In Block 4, they completed the difficulty-as-importance and difficulty-as-impossibility scales with items presented in randomized order (see the Measures for the full instructions and items section of Supplemental Materials).

Analysis Plan

Accessible Difficulty Mindsets. There is no direct way to verify whether the recall task increased the *accessibility* of the recalled difficulty mindset. Hence, we applied an indirect test, an independent samples *t* test to test whether randomization to the difficulty-as-importance recall condition affected endorsement of the difficulty-as-importance scale and randomization to the difficulty-as-impossibility condition affected endorsement of the difficulty-as-impossibility scale.

H1 and H2. We used independent samples *t* tests with recall task condition as the predictor and as dependent variables, (H1) time-as-limited and (H2) time-as-expandable scale scores.

H3. We followed the same analysis plan as in Study 1.

H4. We used SEM path analysis to conduct parallel mediation analyses (Preacher & Hayes, 2008; VanderWeele & Vansteelandt, 2014) with time-as-limited and time-as-expandable as mediators of the effects of difficulty mindsets on willingness to return for the travel mug. We selected SEM because unlike traditional regression-based approaches, SEM enables the simultaneous estimation of multiple indirect paths while accounting for shared variance among mediators (Hayes, 2017; Kline, 2023), models latent constructs to correct for measurement error, and provides global fit indices to evaluate overall model fit (Hu & Bentler, 1999). We used bootstrapped estimates to obtain indirect effects (MacKinnon et al., 2002, 2004), and model fit adequacy was assessed using the H3 criteria (see Supplemental Tables S10 for details).

Results

Accessible Difficulty Mindsets

As detailed in Table 1, difficulty-as-importance and difficulty-as-impossibility scales were reliable. On average, people "somewhat agreed" with difficulty-as-importance and "somewhat disagreed" with difficulty-as-impossibility. Condition mattered: People scored higher on the difficulty-as-importance scale if randomly assigned to the difficulty-as-importance rather than the difficulty-as-impossibility recall condition, Study 2, $t(237) = 1.50$, $p = .07$; Study 3, $t(241) = 1.61$, $p = .05$. Conversely, they scored higher on the difficulty-as-impossibility scale if randomly assigned to the difficulty-as-impossibility rather than the difficulty-as-importance recall condition, Study 2, $t(237) = -1.52$, $p = .07$; Study 3, $t(241) = -1.71$, $p = .044$. Supplemental Table S6 details means and standard deviations by condition.

Tests of H1 to H4

Table 1 reveals that the time-as-limited and time-as-expandable scales were reliable. Average scores for both scales were in the "somewhat agree" range.

Supporting H1, people randomized to the difficulty-as-impossibility recall condition scored higher on the time-as-limited scale than those randomized to the difficulty-as-importance condition, Study 2, $t(241) = -2.65$, $p = .004$; Study 3, $t(246) = -2.41$, $p = .008$.

Supporting H2, people randomized to the difficulty-as-importance recall condition scored higher on the time-as-expandable scale than those randomized to difficulty-as-impossibility condition, Study 2, $t(241) = 1.48$, $p = .07$; Study 3, $t(246) = -2.41$, $p = .008$.

Supporting H3, people with an accessible difficulty-as-impossibility mindset were more likely to experience time as both limited *and not* expandable (scales more negatively correlated), while those with an accessible difficulty-as-importance mindset were more likely to experience it as limited *yet* expandable (scales less negatively correlated). The negative correlation between the time-as-limited and time-as-expandable scale scores was significantly stronger among those randomized to the difficulty-as-impossibility, Study 2, $r(108) = -0.56$, $p < .001$; Study 3, $r(127) = -0.61$, $p < .001$, versus the difficulty-as-importance recall condition, Study 2, $r(127) = -0.22$, $p = .012$; Study 3, $r(117) = -0.29$, $p = .001$; Study 2, $z = 3.11$, $p = .002$; Study 3, $z = 3.19$, $p = .001$.

Regarding H4, predicted engagement was in the "somewhat unlikely" range (see Table 2). People randomized to the difficulty-as-impossibility recall condition reported less willingness to return for the travel mug than those randomized to the difficulty-as-importance condition, Study 2, $t(241) = 1.71$, $p = .045$; Study 3, $t(246) = 2.53$, $p = .006$. As Figure 1 shows, the effect of an accessible difficulty mindset on engagement was significantly mediated by time-as-limited scores, controlling for time-as-expandable scores. Controlling for time-as-limited scores, the path via the time-as-expandable was significant in Study 3 and marginally significant in Study 2.

Table 1

Studies 2 to 7: Inferences From Difficulty and Time-as-Resource Scale Descriptive Statistics

	Difficulty-as-importance			Difficulty-as-impossibility			Time-as-expandable			Time-as-limited		
Study	*M*	*SD*	α	*M*	*SD*	α	*M*	*SD*	α	*M*	*SD*	α
2	3.96	0.85	.85	2.54	0.90	.86	4.52	0.87	.87	4.02	1.07	.90
3	4.14	0.90	.83	2.82	1.08	.89	4.33	0.82	.86	4.19	1.04	.90
4	—	—	—	—	—	—	4.51	0.93	.82	3.88	1.09	.85
5	3.86	0.95	.89	2.61	0.93	.87	4.55	0.78	.84	3.81	1.00	.84
6	—	—	—	—	—	—	4.57	0.77	.81	3.86	0.99	.78
7	—	—	—	—	—	—	4.73	0.81	.86	3.84	0.98	.80

Note. Response scales: 1 = *strongly disagree* to 6 = *strongly agree*. – = data not collected

Table 2
Studies 2 to 7 Outcome Measures Descriptive Statistics

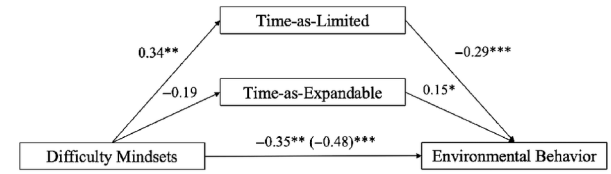
Study	Environmental decision task		% reading comprehension		% recall accuracy		Likelihood of goal progress		Length of line drawn in cm	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
2	2.98	1.23	—	—	—	—	—	—	—	—
3	2.95	1.34	—	—	—	—	—	—	—	—
4	—	—	89.5	15.6	74.6	27.2	—	—	—	—
5	—	—	89.1	16.8	75.0	26.9	—	—	—	—
6	—	—	—	—	—	—	3.40	1.33	22.92	4.93
7	—	—	—	—	—	—	3.34	1.38	23.33	5.07

Note. Response scales: scenario task, likelihood of goal progress (1 = *not at all likely*; 6 = *very likely*); reading comprehension and recall accuracy are % accurate scores; and the length of line drawn is the length of a freehand drawn semester or year in centimeters. – = data not collected

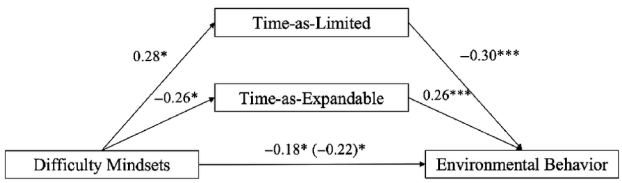
Discussion

We found small but consistent effects of accessible difficulty mindset on time-as-limited and time-as-expandable scale scores and on willingness to return home for the travel mug. We also found partial support for the prediction that an accessible difficulty mindset shaped this willingness to return home for the travel mug in part by differentially spotlighting the two aspects of the time-as-resource metaphor. In Studies 2 and 3, participants were students, and the predictor was engagement with a scenario-based task; to test generalizability, in Studies 4 and 5, vary each of these parameters by using adults, a different task, and behavioral outcomes.

Figure 1
Studies 2 to 3: Accessible Difficulty Mindset to Willingness to Act (Pro-Environmental Behavior)



Study 2
Indirect Effect via Time-as-Limited: β = −0.10, 95% CI [−0.19, −0.02]
Indirect Effect via Time-as-Expandable: β = −0.03, 95% CI [−0.08, 0.01]



Study 3
Indirect Effect via Time-as-Limited: β = −0.08, 95% CI [−0.18, −0.01]
Indirect Effect via Time-as-Expandable: β = −0.07, 95% CI [−0.16, −0.003]

Note. Difficulty mindset condition: 0 = difficulty-as-importance, 1 = difficulty-as-impossibility. CI = confidence interval. * $p < .05$, ** $p < .01$, *** $p < .001$

Studies 4 and 5

Sample

Adults (Study 4, $n = 100$; Study 5, $n = 250$, Supplemental Table S5 for demographics and exclusions) on Prolific participated in a 15-min study for $4.00. After applying our exclusion criteria, our final samples were Study 4, $n = 100$, 66.2% female, age $M = 33.12$, $SD = 14.2$; Study 5, $n = 231$, 62.4% female, age $M = 36.92$, $SD = 11.9$.

Method

Power, Stop Rules, and Exclusions

In Study 4, we collected data from 100 participants based on a predetermined stopping rule. In Study 5, we conducted a power analysis using the effect size observed in Study 4 and a power of .80 with Whillans and Dunn (2015) shinyapp, pwrSEM. The analysis yielded a sample size of 210, so we aimed for 250 to account for possible exclusions, implying that our Study 4 results are underpowered. Again, our exclusion criteria were skipping over half of the items or exiting the survey before completion and failing the attention check embedded in our time-as-resource scale: *Indicate that you are reading the question and select "strongly disagree"' as your answer.* Failing entailed not responding *strongly disagree* to this item.

Procedure

The procedure paralleled that of Study 3: In Block 1, we randomly assigned participants to one of two autobiographical recall conditions (difficulty-as-importance, difficulty-as-impossibility). In Block 2, they completed a modified version of Miele, Molden, and Gardner's 's (2009) five-paragraph reading comprehension task with each paragraph presented on a separate page (see the Measures Section of Supplemental Materials for task, instructions, and items). We modified the text to be relevant to adults while maintaining the conceptual difficulty and grammatical complexity of the original text, as verified by readability metrics (e.g., Flesch-Kincaid grade level = 12.7; Flesch Reading ease score = 36.3). Participants had the option to navigate back and forth before proceeding to the comprehension items in Block 3 (six multiple-choice statements, one per screen). In Block 4, participants completed a free recall task, recalling up to 10 details from the text. Our performance measures were the percentage

correct on the (a) reading comprehension items (Block 3) and (b) free recall task (Block 4). In Block 5, participants responded to time-as-limited and time-as-expandable scale items in randomized order, and in Study 5, they completed the difficulty mindset scale items in a randomized order in Block 6 before proceeding to the demographics.

Analysis Plan

H1 to H3. The analysis plan followed Studies 2 and 3.

H4. We conducted two independent sample *t* tests to examine the effect of randomization to recall a condition on reading comprehension and accurate recall. We then conducted two SEM path analyses to statistically test parallel mediation (Preacher & Hayes, 2008; VanderWeele & Vansteelandt, 2014), with time-as-limited and time-as-expandable as measured mediators of the effects of difficulty mindset condition on reading comprehension and accurate recall.

Results

Accessible Difficulty Mindset

As Table 1 details, the difficulty-as-importance and difficulty-as-impossibility scales were reliable. People on average "somewhat agreed" with difficulty-as-importance and "somewhat disagreed" with difficulty-as-impossibility. People randomized to the difficulty-as-importance versus the difficulty-as-impossibility recall condition scored higher on the difficulty-as-importance scale, Study 5, $t(229) = 3.67$, $p < .001$. Those randomized to the difficulty-as-impossibility versus difficulty-as-importance recall condition scored higher on the difficulty-as-impossibility scale, Study 5, $t(229) = -1.97$, $p = .025$. Means and standard deviations by condition are in Supplemental Table S6.

Tests of H1 to H4

As shown in Table 1, the time-as-limited and time-as-expandable scales were reliable. Average scores on both scales corresponded to a "somewhat agree" response.

Supporting H1, people randomized to the difficulty-as-impossibility rather than the difficulty-as-importance recall condition scored higher on the time-as-limited scale, Study 4 $t(98) = -2.45$, $p = .008$; Study 5 $t(229) = -2.09$, $p = .019$.

Supporting H2, people randomized to the difficulty-as-importance versus the difficulty-as-impossibility recall condition scored higher on the time-as-expandable scale, marginally significant in underpowered, Study 4, $t(98) = 1.54$, $p = .063$; Study 5, $t(229) = 2.55$, $p = .006$.

Supporting H3, the negative correlation between time-as-limited and time-as-expandable scale scores was significantly higher among people randomized to the difficulty-as-impossibility, Study 4, $r(44) = -0.61$, $p < .001$; Study 5 $r(118) = -0.56$, $p < .001$ versus the difficulty-as-importance recall condition, Study 4, $r(52) = -0.29$, $p = .032$; Study 5, $r(113) = -0.35$, $p < .001$; Study 4, $z = 1.98$, $p = .048$; Study 5, $z = 2.01$, $p = .045$.

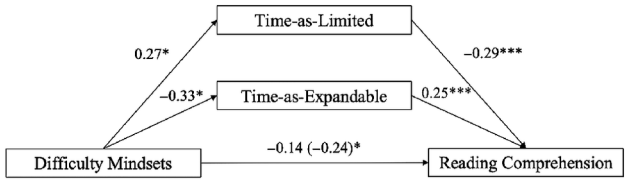
Average reading comprehension and recall accuracy scores were high (see Table 2), suggesting high task engagement. Supporting H4, we found a main effect of accessible difficulty mindset on both, reading comprehension, Study 4, $t(98) = 2.29$, $p = .011$; Study 5, $t(229) = 2.13$, $p = .017$; recall accuracy, Study 4, $t(98) = 1.72$, $p = .044$; Study 5, $t(229) = 1.72$, $p = .043$. Specifically, those randomized to the difficulty-as-importance recall condition outperformed those randomized to difficulty-as-impossibility in reading comprehension (Study 4, 92% vs. 86%; Study, 5 91% vs. 86%) and recall accuracy (Study 4, 78% vs. 71%; Study 5, 79% vs. 71%). Statistical parallel mediation analyses revealed that the accessible mindset shaped these outcomes partly by shifting time-as-limited and time-as-expandable scale scores. Results are depicted graphically for Study 5 in Figure 2 (top panel: reading comprehension; bottom panel: recall accuracy). Both the time-as-limited and time-as-expandable paths were significant for recall accuracy in both Study 4 and Study 5. For reading comprehension the time-as-expandable path was significant across both Studies, and the time-as-limited path was significant in Study 5 and directional in underpowered Study 4.

Discussion

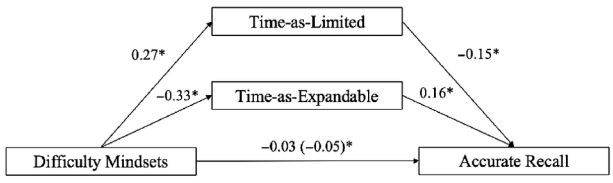
Studies 4 and 5 demonstrate generalizability by conceptually replicating Studies 2 and 3 while using different samples, tasks, and outcome measures. Having difficulty-as-importance versus difficulty-as-impossibility on the mind increases task engagement and performance. Statistical parallel mediation analyses support the prediction that when the context calls for task engagement, accessible difficulty mindsets shape engagement and performance in part by momentarily changing how much people endorse the time-as-limited and time-as-expandable aspects of the time-as-resource metaphor. In task situations, if difficulty-as-impossibility is on the mind, engaging is viewed more through a time-as-limited lens and less through a time-as-expandable lens, undermining performance. In contrast, if difficulty-as-importance is on the mind, engaging is viewed more through a time-as-expandable lens and less through a time-as-limited lens, bolstering performance. While Study 4 was underpowered, Study 5 was powered, preregistered, and replicated the Study 4 results. Indeed, in task situations across Studies 2 to 5 results consistently reveal that

Figure 2

Study 5: Indirect Paths From Difficulty Mindsets to Reading Comprehension (Top) and Accurate Recall (Bottom)



Indirect Effect via Time-as-Limited: β = −0.08, 95% CI [−0.18, −0.01]
Indirect Effect via Time-as-Expandable: β = −0.08, 95% CI [−0.17, −0.02]



Indirect Effect via Time-as-Limited: β = −0.04, 95% CI [−0.11, 0.01]
Indirect Effect via Time-as-Expandable: β = −0.05, 95% CI [−0.13, −0.001]

Note. CI = confidence interval. * $p < .05$, ** $p < .01$, *** $p < .001$

accessible difficulty mindsets affect behavior in part by shifting endorsement of both aspects of the time-as-resource metaphor.

Studies 6 and 7

We test the prediction that in self-goal contexts, accessible difficulty mindsets affect how certain people are that they can make progress and how large their representation of a set unit of time and do so in part by momentarily shifting their scores on the time-as-limited and time-as-expandable scales.

Samples

Undergraduates participated for course credit (Study 6: $n = 150$, 46.3% female, age $M = 20.8$, $SD = 3.02$; preregistered; Study 7: $n = 239$, 49.3% female, age $M = 21.5$, $SD = 3.32$, see Supplemental Table S5 for detailed demographics).

Method

Power, Stop Rules, and Exclusions

In Study 6, we collected data until the end of the semester, using this as a stop rule. In Study 7, we conducted a power analysis in G*Power (Faul et al., 2007) based on the effect size observed in Study 6 to determine the sample size needed for .80 power, yielding a target of $n = 216$. This implies that our Study 6 ($n = 150$) results are underpowered. Our exclusion criteria were the same as in Studies 1 to 5 regarding missing data and failing the attention check: *Indicate that you are reading the question and select "strongly disagree" as your answer.* Failing the attention check entailed responding other than *strongly disagree* to this item.

Procedure

In Block 1, participants were randomly assigned to either the difficulty-as-importance or difficulty-as-impossibility recall condition. In Block 2, they received an open-ended writing task in which they described an important goal they were currently pursuing. In Block 3, they reported how likely they were to progress on this goal during a typical week (our first predicted variable). In Block 4, they completed our second predicted variable, a freehand line-drawing task: *In the box below, draw a line representing the semester (academic year), with the left indicating today and the right indicating the end of the semester (academic year).* In Block 5, they filled out the time-as-limited and time-as-expandable scales with items in randomized order. In Block 6, they provided demographic information. Detailed instructions are in the Measures section of Supplemental Materials.

Analysis Plan

H1 to H4. Analyses followed the plan described in Studies 4 and 5.

Results

Preliminary Analyses

One researcher and a research assistant blind to condition and predictions independently categorized each goal into content categories ($\kappa = .86$). Almost two-thirds of goals focused on school (e.g., *to maintain a 4.0* GPA [grade point average]; 37.6%) or work (e.g., *to find a summer internship*; 26.4%), and about one-third were about self-care (e.g., *to be kind to myself*; 24.5%) and health (e.g., *to exercise and lose weight*; 4.3%); social goals were less common at 7.2% (e.g., *to make new friends*). Comparable results were obtained using ChatGPT (Chew et al., 2023) as summarized in Supplemental Materials. Condition did not affect these proportions (see Supplemental Figure S5).

People on average scored slightly-agree-to-agree on the time-as-expandable scale and slightly-disagree-to-disagree on the time-as-limited scale (see Table 1). Both scales were reliable. On average, people believed that it would be relatively easy for them (to the left of the scale midpoint) to find the time to work on their important goal during a typical school week and represented a semester with a 22.92-cm line and a year with a 23.33-cm line (see Table 2).

Tests of H1 to H4

Supporting H1, people scored higher on the time-as-limited scale if they were randomized to the difficulty-as-impossibility rather than the difficulty-as-importance recall condition, Study 6, $t(148) = -2.02$, $p = .023$; Study 7, $t(237) = -2.04$, $p = .021$.

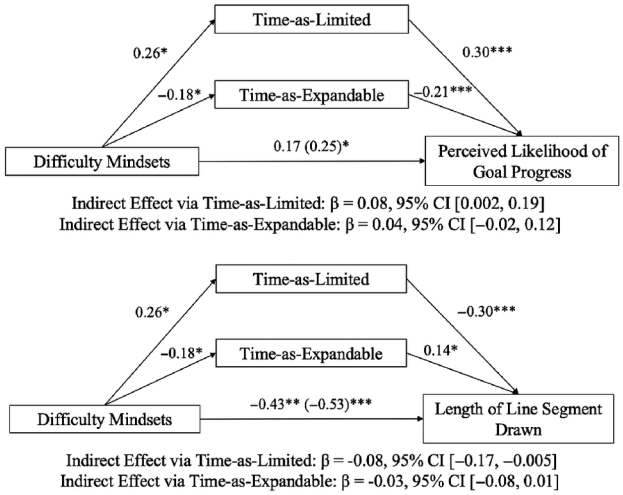
Directionally supporting H2, people scored higher on the time-as-expandable scale if they were randomized to the difficulty-as-importance rather than the difficulty-as-impossibility recall condition, Study 6, $t(148) = 0.96$, $p = .16$; Study 7, $t(237) = 1.36$, $p = .087$.

Supporting H3, the negative correlation between time-as-limited and time-as-expandable scale scores was significantly higher among people randomly assigned to the difficulty-as-impossibility, Study 6, $r(69) = 0.58$, $p < .001$; Study 7, $r(117) = 0.66$, $p < .001$ rather than the difficulty-as-importance recall condition, Study 6, $r(79) = 0.32$, $p = .004$; Study 7, $r(120) = 0.39$, $p < .00$, Study 6, $z = 1.98$, $p = .047$; Study 7, $z = 2.90$, $p = .002$.

Supporting H4, people randomly assigned to the difficulty-as-importance rather than the difficulty-as-impossibility recall condition differed in their self-goal progress estimates, Study 6, $t(148) = -2.06$, $p = .021$; Study 7, $t(237) = -2.01$, $p = .023$, and the length of the line segment they drew to represent the semester, Study 6, $t(122) = 2.54$, $p = .006$, or year, Study 7, $t(237) = 4.30$, $p < .001$. If difficulty-as-impossibility was on the mind, people said it would be harder to progress on their important self-goals (Study 6, $M = 3.63$, $SD = 1.21$; Study 7, $M = 3.52$, $SD = 1.44$) and drew shorter lines to represent the semester (Study 6, $M = 21.81$, $SD = 5.45$) or academic year (Study 7, $M = 21.96$, $SD = 5.36$) than if difficulty-as-importance was on the mind (goal progress: Study 6, $M = 3.17$, $SD = 1.41$; Study 7, $M = 3.16$, $SD = 1.29$; line length: Study 6, $M = 24.03$, $SD = 4.10$; Study 7, $M = 24.69$, $SD = 4.38$). As depicted in Figure 3, statistical parallel mediation analyses revealed that controlling for the time-as-expandable path, time-as-limited scores mediated the accessible difficulty mindset effect on likelihood of making goal progress, Study 6, $b = .08$, 95% CI [0.002, 0.20]; Study 7, $b = 0.08$, 95% CI [0.002, 0.19], and line length, Study 6, $b = -0.07$, 95% CI [−0.18, −0.003];

Figure 3

Study 7: Time-as-Limited Significantly and Time-as-Expandable Directionally Mediated the Effects of Accessible Difficulty Mindset



Note. CI = confidence interval. * $p < .05$, ** $p < .01$, *** $p < .001$

Study 7, $b = -0.08$, 95% CI [−0.17, −0.005]. Controlling for the time-as-limited path, time-as-expandable scores directionally affected goal progress: Study 6, $b = 0.05$, 95% CI [−0.04, 0.14]; Study 7, $b = 0.04$, 95% CI [−0.02, 0.12], and line length: Study 6, $b = -0.03$, 95% CI [−0.10, 0.02]; Study 7, $b = -0.03$, 95% CI [−0.08, 0.01].

Discussion

IBM theory predicts and we find that people are more likely to feel they can progress on their important self-goals when, at the moment of judgment, difficulty-as-importance rather than difficulty-as-impossibility is on the mind. Participants with an accessible difficulty-as-importance rather than a difficulty-as-impossibility mindset were more likely to believe they would have the time to progress on important self-goals and drew longer lines representing the time until the end of the semester or academic year. IBM theory also predicts that this occurs partly because accessible difficulty mindsets shape how people experience time in task and goal situations. Our statistical mediation results are aligned with this prediction: The mediational paths via time-as-limited scores, controlling for the time-as-expandable paths were significant. The mediational paths via time-as-expandable scores, controlling for time-as-limited paths were directionally (but not at $p < .05$ levels) consistent. This pattern differs from Studies 4 and 5; when the outcomes were reading comprehension and recall accuracy, the stronger mediational path was through time-as-expandable. We infer that the specific features of task and goal contexts may affect the relative strength of these ways that accessible difficulty mindsets matter. Specifically, goal progress (un)certainty and (short) time seemed more shaped by time-as-limited, whereas task engagement and performance seemed more shaped by time-as-expandable, potentially because taking action and feeling certain entail somewhat different aspects of the time-as-resource metaphor. Acting requires time, whereas uncertainty may be triggered by the feeling of lack of time.

Summative Analysis

Replication can increase confidence in the robustness of effects. As detailed next, we found support for small or small-to-moderate effects for each of our predictions using the appropriate way to examine the robustness of effects given the hypothesis.

H1 and H2

We used three distinct methods to examine the robustness of H1 (time-as-limited scale scores are higher if difficulty-as-impossibility rather than difficulty-as-importance is on the mind) and H2 (time-as-expandable scale scores are higher if difficulty-as-importance rather than difficulty-as-impossibility is on the mind). As detailed next, synthesizing across methods, we found consistent support for both predictions and an estimated small-to-moderate effect size for each.

The first method is a box score, a tally of the number of times the p values were significant. This conventional frequentist approach relies on p values and confidence intervals to address the question of whether a no difference null hypothesis can be rejected. H1 yielded a significant result in each study. H2 yielded a significant (three studies) or directional (four studies, p values ranging from .07 to .16) effect. Using this method implies weaker confidence in H2 than in H1.

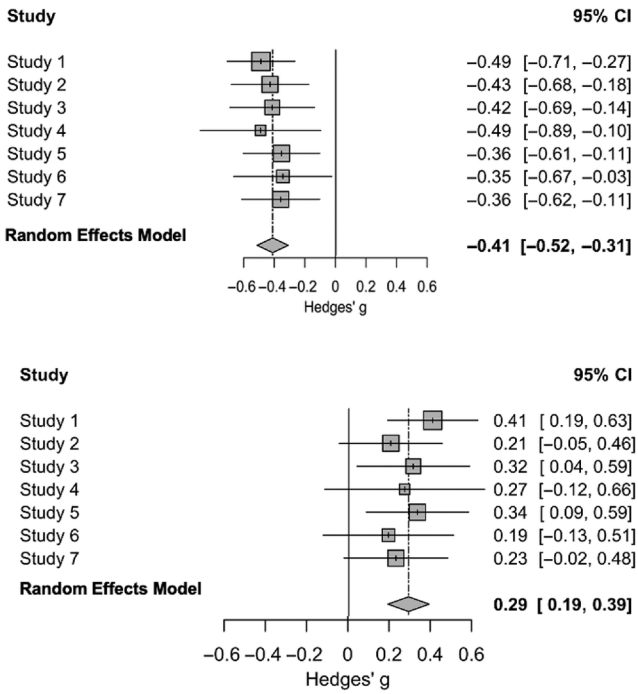
The second method is a Bayesian approach, which examines the likelihood that variations across studies occur within a single population (Etz & Vandekerckhove, 2018; Kruschke, 2013) by estimating the posterior probability that a prediction is true given the observed data and model. Using the brms package in R (Bürkner, 2017) with weak priors and Markov Chain Monte Carlo sampling, our Bayesian analysis revealed that the posterior probability of the H2 hypothesized effects being in the predicted direction exceeded 95% across all studies.[2] Using this method implies confidence in H2.

The third method is a mini-meta-analytic synthesis that focuses on the likely size of effects, provides a more stable estimate of effect sizes, and quantifies the likelihood of cross-study heterogeneity (McShane & Böckenholt, 2025). We followed Goh et al.'s (2016) approach by fitting a random effects model (see also Lakens & Etz, 2017; McShane & Böckenholt, 2017). We depict the H1 and H2 effects in Figure 4. The top panel illustrates the significant, small-to-moderate effect of accessible difficulty mindset on time-as-limited scores, and the bottom panel illustrates the significant, small-to-moderate effect of accessible difficulty mindset on time-as-expandable scores. Overlapping confidence intervals across the time-as-limited and time-as-expandable effects of accessible difficulty mindsets suggest that mindset effects on these scales are of similar magnitude. We also did not find evidence of cross-study heterogeneity, as reflected in nonsignificant Q tests for both time-as-limited $Q(6) = 1.15$, $p = .979$, and time-as-expandable, $Q(6) = 2.28$, $p = .892$. As a final check, we included the exploratory study reported in the Supplemental Materials; results remained consistent (see Supplemental Figure S6). Using

[2] Weak priors do not have much effect on posterior distributions; Markov Chain Monte Carlo uses an iterative process to generate parameter values to produce a posterior distribution. Based on the posterior distribution of means in our difficulty-as-importance and difficulty-as-impossibility conditions, we extracted the probability that endorsement of time-as-limited is lower and time-as-expandable is higher for people with an accessible difficulty-as-importance mindset than people with an accessible difficulty-as-impossibility mindset.

Figure 4

Studies 1–7: Accessible Mindset Affects Time-as-Limited (Top Panel) and Time-as-Expandable Scores (Bottom Panel)



Note. The top forest plot refers to the effects of an accessible difficulty mindset on time-as-limited, and the bottom forest plot to time-as-expandable. Negative Hedges's g values indicate higher values in the difficulty-as-impossibility condition compared with the difficulty-as-importance condition ($g = 0$ indicates no between-condition difference). CI = confidence interval.

this method supports confidence that, on average, accessible difficulty mindsets shape time-as-limited and time-as-expandable beliefs in the pattern predicted by H1 and H2, with small-to-moderate effect sizes.

H3

We applied a meta-analytic synthesis to examine the robustness of H3 (accessible difficulty mindset shapes the extent time-as-expandable and time-as-limited are experienced as mutually exclusive, operationalized as the size of the negative correlation). The overall weighted mean effect, $r = 0.165$, 95% CI [0.113, 0.216], was significant and small-to-moderate sized. The negative correlation between time-as-limited and time-as-expandable is stronger if difficulty-as-impossibility (limited *and not* expandable) rather than difficulty-as-importance is on the mind (limited *yet* expandable). The nonsignificant Q test, Q (6) = 1.60, $p = .901$, reveals no evidence of between-study heterogeneity.

H4

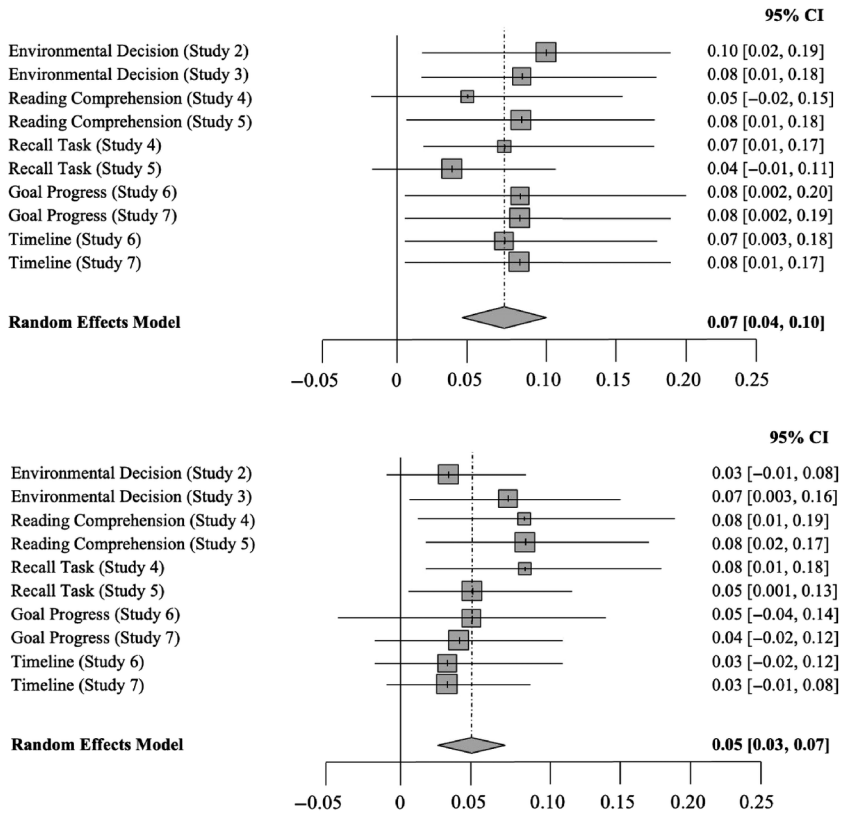
We tested H4 (accessible difficulty mindsets affect task engagement, performance, and certainty of attaining self-relevant goals in part by momentarily shaping time-as-expandable and time-as-limited beliefs) with scenario-based task engagement in Studies 2 and 3. In Studies 4 and 5, we assessed task engagement and performance as reading comprehension and recall accuracy. In Studies 6 and 7, we assessed goal certainty as certainty of making progress on important self-goals and the length of a line segment drawn to represent time (a semester, Study 6; a year, Study 7). To examine the robustness of effects, we followed modern approaches (e.g., Cheung, 2022) and the metaSEM package (Cheung, 2015) to calculate the pooled indirect effects of time-as-limited and time-as-expandable across studies. Results, depicted graphically in Figure 5, revealed significant indirect effect via time-as-limited, $b = 0.07$, $z = 5.25$, $p < .001$, 95% CI [0.04, 0.10], and via time-as-expandable, $b = 0.05$, $z = 4.34$, $p < .001$, 95% CI [0.03, 0.07]. We infer from the overlapping confidence intervals that both paths are of similar strength and infer no evidence of cross-study heterogeneity from the nonsignificant Q tests, time-as-limited, Q (8) = 1.98, $p = .961$, time-as-expandable, Q (8) = 1.74, $p = .973$.

General Discussion

We predicted and found that accessible difficulty-as-importance and difficulty-as-impossibility mindsets affected time-as-limited and time-as-expandable scale scores, task engagement and performance and estimates of goal progress in contexts requiring task or goal

Figure 5

Studies 1–7: Indirect Effects of Time-as-Limited (Top Panel) and Time-as-Expandable (Bottom Panel)



Note. The top forest plot refers to the effects of the time-as-limited pathway and the bottom forest plot to the time-as-expandable pathway in our parallel mediation models. CI = confidence interval.

focus. We predicted that in these contexts, accessible difficulty mindsets affect task and goal engagement and performance in part by their effects on how much people endorse time-as-limited and time-as-expandable beliefs in the moment. We statistically assessed the path from accessible mindset to outcomes via measured time-as-limited and time-as-expandable scores. As we predicted, if difficulty-as-importance (vs. difficulty-as-impossibility) was on the mind, people endorsed the expandable aspect of the time-as-resource metaphor more, the limited aspect less, and experienced these aspects as less incompatible (time is limited *yet* expandable). In situations about task engagement and goal attainment, an accessible difficulty-as-importance (vs. difficulty-as-impossibility) mindset increased engagement, performance, and goal progress certainty. Statistical analysis reveals that having difficulty-as-importance on the mind boosts people's belief that time is a resource that, though limited, can be found or made to work on important tasks and goals, and that this partly mediates the effect of an accessible difficulty-as-importance mindset on engagement, performance, and goal progress certainty. Findings were robust across seven experiments, as supported by Bayesian and mini meta-analytic syntheses. The meta-analytic synthesis reveals that effects were consistently significant and of small-to-moderate size.

In our first experiment, we included a "reflect on your last breakfast" control group as well as the relevant difficulty-as-importance and difficulty-as-impossibility autobiographical recall groups. We found that participants in the control group experienced time as less limited than those with difficulty-as-impossibility on the mind, and less expandable than those with difficulty-as-importance on the mind. While these findings focus on the momentary effects of accessible difficulty mindsets, our preliminary correlational studies also revealed consistent trait-level associations: Individuals higher in difficulty-as-importance scored higher in time-as-expandable and lower in time-as-limited, whereas those higher in difficulty-as-impossibility scored higher in time-as-limited and lower in time-as-expandable.

Theoretical Implications

As detailed next, our studies have theoretical implications across four areas: goal pursuit, goal disengagement, future selves, and time perception.

Goal Pursuit

A main focus of the goal pursuit literature is stick-to-it-ness, confidence, and persistence. In this vein, intervention studies that

apply IBM theory aim to increase belief that difficulty with school tasks and goals can imply importance and not just impossibility (Oyserman et al., 2021, 2025). These studies report positive effects on grade point averages and reduced course failures; as revealed statistically, these occur in part by affecting endorsement of difficulty-as-importance and difficulty-as-impossibility (end-of-year, Oyserman et al., 2021; following year, Oyserman et al., 2025). Results are congruent with the results of experiments and correlational studies applying IBM theory: Experiments show that an accessible difficulty-as-impossibility (vs. difficulty-as-importance) mindset dampens certainty in attaining important future possible identities and the strategies needed to realize them (Aelenei et al., 2017; Oyserman et al., 2018). Correlational studies show that controlling for their difficulty-as-importance scores, people who score higher difficulty-as-impossibility prefer less effortful means of goal attainment (Kiper et al., 2024) and scored lower in attention control (Wingert et al., 2024). IBM theory suggests that these effects are partly explained by how people experience time, such that difficulty-as-impossibility directs attention to the limited aspect of the time-as-resource metaphor (Oyserman, 2007, 2024; Oyserman et al., 2017).

Our results support and expand on this prediction by adding concretization of the time-as-resource metaphor, expanding focus beyond time-as-limited to including time-as-expandable aspects of the time-as-resource metaphor and documenting that both time-as-limited and time-as-expandable aspects of the time-as-resource metaphor are associated with difficulty mindsets and difficulty mindset effects. Specifically, across seven experiments, we show that an accessible difficulty-as-importance mindset focuses attention on the limited yet expandable nature of time, whereas an accessible difficulty-as-impossibility mindset shifts the focus to the limited and not expandable aspects of time. Having difficulty-as-importance (vs. difficulty-as-impossibility) on the mind dampened momentary endorsement of time-as-limited, lifted momentary endorsement of time-as-expandable, bolstered task engagement and performance (Studies 2 to 5), certainty one could progress on important self-goals (Studies 6 and 7), and how long a semester (Study 6) or year felt (Study 7). Statistical analyses reveal that, in these task and goal contexts, time-as-limited scores (controlling for time-as-expandable) undermined engagement, performance, and goal progress certainty, whereas time-as-expandable scores (controlling for time-as-limited) enhanced engagement, performance, and goal progress certainty. We infer that in task and goal engagement contexts, accessible difficulty-as-impossibility mindsets may undermine people in part by highlighting scarcity of time while accessible difficulty-as-importance mindsets support people in part by highlighting the expandable nature of time. Our studies suggest that accessible difficulty mind shapes the judgment about having time in situations calling for task and goal engagement, the initiating and sustaining engagement aspect of goal pursuit (Hoyle & Davisson, 2016; Moshontz & Hoyle, 2021).

Goal Disengagement

After initiating task or goal engagement, people must at some point judge whether to keep going or stop and whether if they do not stop, they are continuing to invest in a course of action that is no longer in their best interest, a goal that is unattainable. Stopping, letting go of tasks or goals one has been pursuing, can be painful (Wrosch & Scheier, 2020). Disengaging entails both the letting go and shifting investment toward other tasks and goals (new or alternative ones, Brandstätter & Bernecker, 2022). Our results suggest that in contexts calling for engaging and assessing certainty of goal progress, an accessible difficulty-as-impossibility (vs. difficulty-as-importance) mindset reduces engagement and certainty and time-as-expandable scores, while increasing time-as-limited scores. We infer, though our studies did not directly test, that an accessible difficulty-as-impossibility (vs. difficulty-as-importance) mindset may support the transition from engagement to disengagement. We infer that in situations calling for consideration of whether a course of action is no longer in their best interest, a difficulty-as-impossibility mindset may support people's likelihood of disengaging in part by highlighting the limited nature of time and discouraging wasted investments on quixotic pursuits.

Future Selves

While the goal pursuit and disengagement literature focuses on those tasks and goals that have already been initiated, the literature on the future self focuses on the fact that people do not necessarily start at all. The central question in this literature is *when* do future self-goals result in goal engagement—taking future-focused action. A large body of research suggests that imagining a future self is one route to get there, but an integration of this research highlights three competing ways future selves have been found to do so (for a full review, Oyserman & Horowitz, 2023). First, the future self can feel continuous with or close to the current self. Second, the opposite can also work—that is, the future self can feel distinct and separate from the current self, if people feel efficacious about reducing this separation. Third, neither connection nor distinctness may be needed, rather, people can experience specific possible selves with distinct valence, content, or links to strategies.

Oyserman and Horowitz (2023) posited that though any of these competing processes could support future-focused action if thinking about a future self (as connected or as separate or in terms of a specific possible identity) feels easy, it often feels hard. If thinking about a future self feels hard and that difficulty is interpreted with an accessible difficulty-as-impossibility mindset, then none of these ways of imagining a future self will trigger future-focused action. At the same time, if that difficulty is interpreted with an accessible difficulty-as-importance mindset, then any of these routes (connecting, separating, or imagining the specific possible identity) is likely to trigger future-focused action. Though difficulty mindsets have neither been assessed nor manipulated in this literature, Oyserman and Horowitz posited that they are the hidden moderators that could integrate this seemingly disparate body of research. Our results further refine this prediction by implying that when thinking about a future self feels difficult, the difficulty mindset accessible at that moment may matter in part by momentarily shifting the extent to which people believe they have or can make the time to engage in future-focused action.

Time Perception

Research on time perception builds on socioemotional selective theory (a developmental psychology perspective, Carstensen, 2006) and CMT (Lakoff & Johnson, 2020). Extant work grounded in socioemotional selective theory focuses on future time horizons, operationalized as how close or far that horizon is or feels. Research using socioemotional selective theory reveals a relationship between experiencing a more expansive (rather than

limited) horizon and taking future-focused action (Carstensen et al., 2003), taking on new goals (Zauberman & Lynch, 2005), and prioritizing experiential goals (Fung et al., 1999, 2020). CMT-based research focuses on the time-as-limited aspect of the time-as-resource metaphor (e.g., Etkin, 2019; Rudd, 2019; Shah et al., 2012). We build on these single concept formulations (a future horizon is close or far, that time is limited is salient or not). We posit and our results document that time is experienced along two dimensions, the extent that it feels limited and the extent that it feels makeable, findable, creatable, and that accessible difficulty mindsets can trigger both. In task engagement and goal progress situations, accessible difficulty mindsets shift momentary time-as-limited and time-as-expandable beliefs and these in turn partly shape task engagement, performance, and confidence in attaining important self-goals. Time is experienced as both more or less limited but also as more or less expandable; both matter.

Table 3

Limitations By Type and Consequence for Generalization

Limitation Type	Consequence for Generalization
Sample	Results focus on adult community samples and college student samples across American racial–ethnic heritages However, we did not sample across cultures and are not powered to conduct subgroup analyses. Such samples could address how yet unmeasured subculture differences in difficulty mindsets and time-as-resource metaphors might interact to shape our results. Culturally consistent inferences feel fluent, and people experience them as the "right" inference to draw (Oyserman, 2011). Culture-as-situated cognition theory (Oyserman, 2017) predicts that cultures can differ in which inference about difficulty is chronically accessible Indeed, societies differ in the fluent inferences their members draw from difficulty (Oyserman, 2007). For example, Americans associate difficulty with impossibility more strongly than with importance, while Indian and Chinese participants associate difficulty with impossibility and importance equally (O'Donnell et al., 2023). Cultures also differ in how they conceptualize time (e.g., Fulmer et al., 2014). In clock-time cultures, time is an economic resource, a measure of efficiency, and people tend to switch tasks when time is up (Levine & Norenzayan, 1999). In event-time cultures, time is a fluid, context-dependent resource, and people tend to complete one task before moving to another (Avnet & Sellier, 2011). We infer that the strength and direction of associations between accessible difficulty mindsets and time-as-resource beliefs may vary across societies and cultures
Method	Identity-based motivation theory predicts that difficulty-as-importance and difficulty-as-impossibility are both adaptive (Oyserman, 2007). Our methods allow us to assess the effects of accessible difficulty mindsets in momentary situations, "single-shot" associations, and between-person differences. We show the predicted pattern of associations between difficulty mindsets and how much people endorse time-as-limited and time-as-expandable aspects of the time-as-resource metaphor as well as on task engagement, performance, and goal confidence. Our study designs do not assess the dynamics of within-person mindset switching over time. Having documented momentary effects, future studies could use methods designed to capture within-person changes over time such as (e.g., experience sample, daily diaries, longitudinal methods). Indeed, it seems from emerging evidence from daily diary studies that people do experience meaningful variation in their daily endorsement of each difficulty mindset (Burbidge et al., 2024). We also do not examine how culture-based exposure to metaphors about time (e.g., Pfeffer & Carney, 2018; Pfeffer & DeVoe, 2012) might matter, which could be a topic of future research. Moreover, we did not consider effects of accessible difficulty mindsets on well-being although daily fluctuations in difficulty mindset endorsements are associated with well-being (Burbidge et al., 2024) as is engaging with time in ways that emphasize its expandability (e.g., Mogilner et al., 2012). Future research could integrate these disparate results.
Measures	We developed face-valid measures of time-as-expandable and time-as-limited resource beliefs and operationalized our outcomes using multiple indicators We do not intend our operationalizations to be the only operationalizations of these constructs, which may not be relevant for people in other developmental or life phases.
Predicted variables	We study the relationship between accessible difficulty mindsets, engaging with tasks and feeling certain about making progress on self-relevant goals. We examine if in these situations, accessible mindset matter in part by momentarily shifting how much people experience time-as-limited and time-as-expandable as complementary or conflicting aspects of time. Future research could examine generalizability to other difficult goal engagement choices (e.g., saving for the future, Lewis & Oyserman, 2015) and choices that may be driven by action or productivity goals (e.g., Keinan & Kivetz, 2011) either experimentally as "one shot" choices or longitudinally. We focused on engagement, future research could explore disengaging (e.g., "the pain of letting go," Wrosch et al., 2007).
Process model	We ask if, in contexts entailing tasks and goals, accessible difficulty mindsets shape engagement, performance, and goal confidence in part by differentially cuing the two aspects of the time-as-resource metaphor. In these situations, a key judgment task is whether one has or can make the time. We predict that an accessible difficulty-as-importance mindset increases the likelihood that people endorse time-as-expandable while reducing the likelihood that they endorse time-as-limited or experience these two aspects of the time-as-resource metaphor as strongly incompatible. We manipulate difficulty mindset accessibility, measure effects on time-as-limited and time-as-expandable scale scores and statistically assess mediation. Our findings show that, in situations calling for engaging, accessible difficulty mindsets matter partly by activating relevant aspects of the time-as-resource metaphor. Our account explains part, not all, of the variance. We did not intend to suggest that this is the only way in which an activated difficulty mindset matters. The effects we show for time beliefs are in the context of an activated difficulty mindset. We do not know if activating these beliefs outside the context of a difficulty mindset would yield the same effects (see Spencer et al., 2005). Following identity-based motivation theory, another mediator of task engagement and performance could be effort beliefs—whether effort matters (Negru-Subtirica et al., 2026) or signals low ability (succeed-with-ease norms, O'Donnell et al., 2023; Oyserman & Dawson, 2021). When people experience fluency, researchers can document subtle increases in positive affect (Winkielman et al., 2012), and culturally fluent experiences often feel right (Oyserman, 2011). However, neither early research (e.g., Burbidge et al., 2024) nor our post hoc sentiment analysis (see Supplemental Materials) supports the possibility that positive mood or optimism mediate the effects of difficulty mindsets on task engagement and performance. Finally, we focused on psychological processes. Future work could examine social-contextual ones, including cross-cultural variation in the accessibility of difficulty-as-impossibility which may be associated with "succeed-with-ease" norms that devalue effort as a sign of low talent (O'Donnell et al., 2023; Oyserman & Dawson, 2021).

Limitations and Future Directions

Table 3 addresses limitations regarding samples, measures, predicted variables, methods, and process models. We consider each limitation here. First, our diverse but U.S.-based samples raise questions about generalizability to other cultural contexts. Prior research reveals culture-based differences in whether a difficulty-as-importance or difficulty-as-impossibility mindset is more chronically on the mind (O'Donnell et al., 2023) and in how people conceptualize time (e.g., the grammar of time, Dahl, 2000; use of clock-time vs. event time, Tang et al., 2023). Each of these may be associated with how much people chronically endorse the time-as-limited and the time-as-expandable aspects of the time-as-resource metaphor, making cross-cultural variations an important direction for future research.

Regarding our measures, we assessed our predictors (difficulty mindsets) with validated scales and used face-valid, ideographic autobiographical recall tasks to make them momentarily accessible. We operationalized our predicted (outcome) variables with scenario-based and actual task engagement and performance, ideographic assessment of certainty of attaining self-relevant goals, and a behavioral measure of time (a freehand drawing of a line segment). Future research could try different methods of making mindsets accessible, examine within-person fluctuations over time in mindset endorsement and predicted measures, the means people choose to pursue their goals (Kiper et al., 2024), or measure other domains of task engagement (e.g., savings for the future, Lewis & Oyserman, 2015; health-promoting choices, Fisher & Oyserman, 2018; Oyserman et al., 2014; or leisure, Keinan & Kivetz, 2011).

Regarding our methods, we used correlational and experimental methods to evaluate our predictions. These methods are well-suited for documenting immediate effects. We demonstrated that momentary shifts in accessible difficulty mindsets produce corresponding shifts in time-as-limited and time-as-expandable beliefs, task engagement and performance, and alter the degree to which these beliefs are negatively correlated. However, our methods cannot address whether these processes operate within people over time or support sustained engagement and goal striving. To address these questions, future research could use observational methods, daily diaries, experience-sampling, panel studies, or simulation designs, assess developmental trajectories, cultural variations, and cohort-based differences. Each method addresses a different question and together they provide a more complete picture of the stability and generalizability of the effects we document here.

Last, regarding our process model, we focus on task and goal situations entailing engaging, performing, and gauging the likelihood of goal progress. In these situations, a key judgment is whether one has or can make the time; we predict that the judgment people draw about time is shaped by their accessible difficulty mindset. We manipulate whether difficulty-as-importance or difficulty-as-impossibility is on the mind to test the prediction that, in these task and goal situations, accessible mindset affects engagement, performance and goal confidence, in part, by shifting judgments about time-as-limited and time-as-expandable. We measure mediation statistically and do not expect or find that time-as-limited and time-as-expandable beliefs fully mediate the effect of an accessible mindset on task engagement, performance, and goal certainty. It is unclear if, outside of these task or goal situations, making salient the time-as-limited or time-as-expandable aspects of the time-as-resource metaphor would affect these outcomes. We do not test this possibility, which would require using the Spencer, Zanna, and Fong (2005) approach of manipulating the proposed mediator to test causality.

Future research could also assess the robustness of our process model across relevant cultural differences. Two culture-based differences seem relevant. First, the already documented differences in the chronic accessibility of difficulty-as-impossibility versus difficulty-as-importance mindsets (e.g., O'Donnell et al., 2023). Second, the possibility that work cultures yield differentially well-practiced access to the time-as-limited or time-as-expandable aspects of the time-as-resource metaphor (e.g., Pfeffer & DeVoe, 2012). While we focused on psychological processes, these social-contextual ones may matter by shifting chronic endorsement and accessibility of both concepts of difficulty and of time-as-resource.

In the present studies, we distinguish between time-as-limited and time-as-expandable as aspects of the time-as-resource metaphor. We ask if, in contexts entailing tasks and goals, accessible difficulty mindsets shape engagement, performance, and goal confidence in part by differentially cuing these two aspects of the time-as-resource metaphor. In these situations, a key judgment task is whether one has or can make the time. We predict that an accessible difficulty-as-importance (vs. difficulty-as-impossibility) mindset increases the likelihood that people endorse time-as-expandable while reducing the likelihood that they endorse time-as-limited or experience these two aspects of the time-as-resource metaphor as strongly incompatible. We manipulate difficulty mindset accessibility, measure effects on time-as-limited and time-as-expandable scale scores and statistically assess mediation. Hence, our findings are best understood as showing that in situations calling for engaging, accessible difficulty mindsets matter partly by activating relevant aspects of the time-as-resource metaphor. Our account explains part, not all, of the variance and we did not intend to suggest that this is the only way in which an activated difficulty mindset matters. The effects we show for time beliefs are in the context of an activated difficulty mindset. We do not know if activating these beliefs outside the context of a difficulty mindset would yield the same effects; this would require manipulating time beliefs to test causality (Spencer et al., 1998).

Following IBM theory, another mediator of task engagement and performance could be effort beliefs—whether effort matters (Negru-Subtirica et al., 2026) or signals low ability (succeed-with-ease norms, O'Donnell et al., 2023; Oyserman & Dawson, 2021). Fluency tends to be accompanied by subtle increases in positive affect (Winkielman et al., 2012), and culturally fluent experiences often feel right (Oyserman, 2011). The implication that another mediator is positive mood or optimism, has not been borne out by evidence from early research (e.g., Burbidge et al., 2024) or our post hoc sentiment analysis (see Supplemental Materials). However, it is possible that an accessible difficulty mindset also subtly effects mood or optimism, making these open lines for future research.

Last, our time-as-resource process model built on IBM-based predictions about the role of reasoning about time in potentiating the effects of difficulty mindsets on task engagement, performance, and certainty of attaining self-relevant goals. Future research could consider other situations, including situations in which people have already engaged and may need to reassess whether continuing in a course of action is still in their best interests or if they should disengage and reallocate their efforts elsewhere (Choi & Oyserman,

2025a; e.g., sunk cost, Roth et al., 2015; escalation of commitment, Sleesman et al., 2012).

Conclusion

When a task or goal feels hard to think about, people may assume it is not for them. When such a difficulty-as-impossibility mindset is accessible, time is experienced as a limited *and not* expandable resource. In task and goal situations, this reduces people's belief that they can progress on their goals, makes them feel that they have less time, and diminishes their focus on the task at hand. In contrast, the same metacognitive experience of difficulty can lead people to infer "no pain, no gain," that difficulty implies value. When such a difficulty-as-importance mindset is accessible, people experience time as a limited *yet* expandable resource. In task and goal situations, this bolsters their belief that they can progress on their important goals, provides them with a sense that a set period is longer, and increases their focus on the task at hand, improving performance. Our findings have practical and theoretical significance. We show that what difficulty seems to imply about the self in the moment affects task engagement and goal progress certainty in task and goal situations. In these situations, an accessible difficulty mindset matters in part by momentarily shifting how people think about time, whether they have or do not have enough to progress on their own goals.

References

Aelenei, C., Lewis, N. A., Jr., & Oyserman, D. (2017). No pain no gain? Social demographic correlates and identity consequences of interpreting experienced difficulty as importance. *Contemporary Educational Psychology*, *48*, 43–55. https://doi.org/10.1016/j.cedpsych.2016.08.004

Avnet, T., & Sellier, A. (2011). Clock time vs. event time: Temporal culture or self-regulation? *Journal of Experimental Social Psychology*, *47*(3), 665–667. https://doi.org/10.1016/j.jesp.2011.01.006

Barber, S., Opitz, P., Martins, B., Sakaki, M., & Mather, M. (2016). Thinking about a limited future enhances the positivity of younger and older adults' recall: Support for socioemotional selectivity theory. *Memory & Cognition*, *44*(6), 869–882. https://doi.org/10.3758/s13421-016-0612-0

Brandstätter, V., & Bernecker, K. (2022). Persistence and disengagement in personal goal pursuit. *Annual Review of Psychology*, *73*, 271–299. https://doi.org/10.1146/annurev-psych-020821-110710

Burbidge, A., Zhu, S., Cheung, S.-H., & Oyserman, D. (2024). Believing that difficulty signals importance improves school outcomes by bolstering academic possible identities, a recursive analysis. *PLOS ONE*, *19*(10), Article e0308376. https://doi.org/10.1371/journal.pone.0308376

Bürkner, P. C. (2017). brms: An R package for Bayesian multilevel models using Stan. *Journal of Statistical Software*, *80*(1), 1–28. https://doi.org/10.18637/jss.v080.i01

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin*, *56*(2), 81–105. https://doi.org/10.1037/h0046016

Carstensen, L. (2006). The influence of sense of time on human development. *Science*, *312*(5782), 1913–1915. https://doi.org/10.1126/science.1127488

Carstensen, L., Fung, H., & Charles, S. (2003). Socioemotional selectivity theory and the regulation of emotion in the second half of life. *Motivation and Emotion*, *27*, 103–123. https://doi.org/10.1023/A:1024569803230

Cheung, M. W. (2022). Synthesizing indirect effects in mediation models with meta-analytic methods. *Alcohol and Alcoholism*, *57*(1), 5–15. https://doi.org/10.1093/alcalc/agab044

Cheung, M. W. L. (2015). metaSEM: An R package for meta-analysis using structural equation modeling. *Frontiers in Psychology*, *5*, Article 1521.https://doi.org/10.3389/fpsyg.2014.01521

Chew, R., Bollenbacher, J., Wenger, M., Speer, J., & Kim, A. (2023). *LLM-assisted content analysis: Using large language models to support deductive coding*. arXiv preprint. https://doi.org/10.48550/arXiv.2306.14924

Choi, S. Y., & Oyserman, D. (2025a). *Let go or hold on: How interpretations of difficulty shape disengagement from goals, sunk costs, and escalation of commitment* [Manuscript]. University of Southern California.

Choi, S. Y., & Oyserman, D. (2025b). *Open science data repository for the Studies in this paper*. OSF. https://osf.io/5gdsq

R Core Team (2022). R: A Language and Environment for Statistical Computing. *R Foundation for Statistical Computing, Vienna, Austria*. https://www.R-project.org/.

Dahl, Ö. (2000). The grammar of future time reference in European languages. In Ö. Dahl (Ed.), *Tense and aspect in the languages of Europe* (pp. 309–328). Mouton de Gruyter.https://doi.org/10.1515/9783110197099

Elmore, K., Oyserman, D., Smith, G., & Novin, S. (2016). When the going gets tough: Implications of reactance for interpretations of experienced difficulty in the classroom. *AERA Open*, *2*(3). https://doi.org/10.1177/2332858416664714

Etkin, J. (2019). Time in relation to goals. *Current Opinion in Psychology*, *26*, 32–36. https://doi.org/10.1016/j.copsyc.2018.04.013

Etz, A., & Vandekerckhove, J. (2018). Introduction to Bayesian inference for psychology. *Psychonomic Bulletin & Review*, *25*, 5–34. https://doi.org/10.3758/s13423-017-1262-3

Faul, F., Erdfelder, E., Lang, A., & Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*(2), 175–191. https://doi.org/10.3758/BF03193146

Fernbach, P., Kan, C., & Lynch, J., Jr. (2015). Squeezed: Coping with constraint through efficiency and prioritization. *Journal of Consumer Research*, *41*(5), 1204–1227. https://doi.org/10.1086/679118

Fisher, O., & Oyserman, D. (2017). Assessing interpretations of experienced ease and difficulty as motivational constructs. *Motivation Science*, *3*(2), 133–163. https://doi.org/10.1037/mot0000055

Fulmer, C. A., Crosby, B., & Gelfand, M. J. (2014). Cross-cultural perspectives on time. In A. J. Shipp & Y. Fried (Eds.), *Time and work: Vol. 2. How time impacts groups, organizations and methodological choices* (pp. 53–75). Psychology Press.https://doi.org/10.4324/9781315798370

Fung, H., Carstensen, L., & Lutz, A. (1999). Influence of time on social preferences: Implications for life-span development. *Psychology and Aging*, *14*(4), 595–604. https://doi.org/10.1037/0882-7974.14.4.595

Fung, H., Chu, S., Jiang, D., Chen, A., & Ng, C. (2020). Contrasting the effects of mortality salience and future time limitation on goal prioritization in older and younger adults. *The Journals of Gerontology: Series B*, *75*(10), 2112–2121. https://doi.org/10.1093/geronb/gbz133

Goh, J., Hall, J., & Rosenthal, R. (2016). Mini meta-analysis of your own studies: Some arguments on why and a primer on how. *Social and Personality Psychology Compass*, *10*(10), 535–549. https://doi.org/10.1111/spc3.12267

Hamermesh, D., & Lee, J. (2007). Stressed out on four continents: Time crunch or yuppie kvetch? *The Review of Economics and Statistics*, *89*(2), 374–383. https://doi.org/10.1162/rest.89.2.374

Hayes, A. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). Guilford Press.ISBN 978-1-60918-230-4

Hoyle, R., & Davisson, E. (2016). Varieties of self-control and their personality correlates. In K. Vohs & R. Baumeister (Eds.), *Handbook of self-regulation: Research, theory, and applications* (3rd ed., pp. 396–413). Guilford Press.

Hu, L., & Bentler, P. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives.

Structural Equation Modeling: A Multidisciplinary Journal, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Keinan, A., & Kivetz, R. (2011). Productivity orientation and the consumption of collectible experiences. *Journal of Consumer Research*, *37*(6), 935–950. https://doi.org/10.1086/657163

Kiper, G., Atari, M., Yan, V. X., & Oyserman, D. (2023). The upside: How people make sense of difficulty matters during a crisis. *Self and Identity*, *22*(1), 19–41. https://doi.org/10.1080/15298868.2022.2033309

Kiper, G., Oyserman, D., & Yan, V. X. (2024). I'll take the high road: Paths to goal pursuit and identity-based interpretations of difficulty. *Self and Identity*, *23*(1–2), 1–22. https://doi.org/10.1080/15298868.2024.2314920

Kline, R. (2016). *Principles and practice of structural equation modeling* (4th ed.). Guilford.

Kruschke, J. (2013). Bayesian estimation supersedes the *t* test. *Journal of Experimental Psychology: General*, *142*(2), 573–603. https://doi.org/10.1037/a0029146

Lakens, D., & Etz, A. (2017). Too true to be bad: When sets of studies with significant and nonsignificant findings are probably true. *Social Psychological and Personality Science*, *8*(8), 875–881. https://doi.org/10.1177/1948550617693058

Lakoff, G., & Johnson, M. (1980). Conceptual metaphor in everyday language. *The Journal of Philosophy*, *77*(8), 453–486. https://doi.org/10.2307/2025464

Lakoff, G., & Johnson, M. (2020). Conceptual metaphor in everyday language. In *Shaping entrepreneurship research* (pp. 475–504). Routledge.

Landau, M. (2016). *Conceptual metaphor in social psychology: The poetics of everyday life*. Psychology Press.

Landau, M., Meier, B., & Keefer, L. (2010). A metaphor-enriched social cognition. *Psychological Bulletin*, *136*(6), 1045–1067. https://doi.org/10.1037/a0020970

Layous, K., Kurtz, J., Chancellor, J., & Lyubomirsky, S. (2018). Reframing the ordinary: Imagining time as scarce increases well-being. *The Journal of Positive Psychology*, *13*(3), 301–308. https://doi.org/10.1080/17439760.2017.1279210

Levine, R., & Norenzayan, A. (1999). The pace of life in 31 countries. *Journal of Cross-Cultural Psychology*, *30*(2), 178–205. https://doi.org/10.1177/0022022199030002003

Lewis, N., Jr., & Oyserman, D. (2015). When does the future begin? Time metrics matter, connecting present and future selves. *Psychological Science*, *26*(6), 816–825. https://doi.org/10.1177/0956797615572231

MacKinnon, D., Lockwood, C., Hoffman, J., West, S., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, *7*(1), 83–104. https://doi.org/10.1037/1082-989X.7.1.83

MacKinnon, D., Lockwood, C., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research*, *39*(1), 99–128. https://doi.org/10.1207/s15327906mbr3901_4

McShane, B., & Böckenholt, U. (2017). Single-paper meta-analysis: Benefits for study summary, theory testing, and replicability. *Journal of Consumer Research*, *43*(6), 1048–1063. https://doi.org/10.1093/jcr/ucw085

McShane, B., & Böckenholt, U. (2025). Single paper meta-analysis is unavoidable. *Journal of Consumer Psychology*. Advance online publication. https://doi.org/10.1002/jcpy.1462

Miele, D., Molden, D. & Gardner, W. (2009). Motivated comprehension regulation: Vigilant versus eager metacognitive control. *Memory & Cognition*, *37*(6), 779–795. https://doi.org/10.3758/MC.37.6.779

Mogilner, C., Chance, Z., & Norton, M. I. (2012). Giving time gives you time. *Psychological Science*, *23*(10), 1233–1238. https://doi.org/10.1177/0956797612442551

Moshontz, H., & Hoyle, R. (2021). Resisting, recognizing, and returning: A three-component model and review of persistence in episodic goals. *Social and Personality Psychology Compass*, *15*(1), Article e12576. https://doi.org/10.1111/spc3.12576

Negru-Subtirica, O., Florea, A., Daria, D., & Oyserman, D. (2026). The longitudinal interplay of academic achievement, difficulty and ease mindsets, and effort beliefs in a grade-driven cultural context [Manuscript under editorial review].

O'Donnell, S., Yan, V. X., Bi, C., & Oyserman, D. (2023). Is difficulty mostly about impossibility? What difficulty implies may be culturally variant. *Personality and Social Psychology Bulletin*, *49*(2), 309–328. https://doi.org/10.1177/01461672211065595

Oyserman, D. (2007). Social identity and self-regulation. In A. Kruglanski & E. Higgins (Eds.), *Social psychology: Handbook of basic principles* (pp. 432–453). Guilford Press.

Oyserman, D. (2009). Identity-based motivation and consumer behavior. *Journal of Consumer Psychology*, *19*(3), 276–279. https://doi.org/10.1016/j.jcps.2009.06.001

Oyserman, D. (2019). The essentialized self: Implications for motivation and self-regulation. *Journal of Consumer Psychology*, *29*(2), 336–343. https://doi.org/10.1002/jcpy.1093

Oyserman, D. (2024). Identity-based motivation and the motivational consequences of difficulty. *Social and Personality Psychology Compass*, *18*(12), Article e70028, https://doi.org/10.1111/spc3.70028

Oyserman, D., & Dawson, A. (2021). Successful learning environments support and harness students' identity-based motivation: A primer. *The Journal of Experimental Education*, *89*(3), 508–522. https://doi.org/10.1080/00220973.2021.1873091

Oyserman, D., Destin, M., & Novin, S. (2015). The context-sensitive future self: Possible selves motivate in context, not otherwise. *Self and Identity*, *14*(2), 173–188. https://doi.org/10.1080/15298868.2014.965733

Oyserman, D., Elmore, K., Novin, S., Fisher, O., & Smith, G. C. (2018). Guiding people to interpret their experienced difficulty as importance highlights their academic possibilities and improves their academic performance. *Frontiers in Psychology*, *9*, Article 781. https://doi.org/10.3389/fpsyg.2018.00781

Oyserman, D., & Fisher, O. (2018). Social stigma and health: An identity-based motivation perspective. In B. Major, J. Dovidio, & B. Link, (Eds.), *The Oxford handbook of stigma, discrimination, and health* (pp. 317–334). Oxford Academic. https://doi.org/10.1093/oxfordhb/9780190243470.013.11

Oyserman, D., & Horowitz, E. (2023). From possible selves and future selves to current action: An integrated review and identity-based motivation synthesis, Advances in *Motivation Science*, *10*, 73-147, https://doi.org/10.1016/bs.adms.2022.11.003.

Oyserman, D., Lai, M., Burbidge, A., & Sorensen, N. (2025). Supporting identity-based motivation matters: Next-year continuation effects of experiencing high-fidelity pathways-to-success intervention. *Journal of Experimental Education*. Advance online publication. https://doi.org/10.1080/00220973.2025.2565170

Oyserman, D., Lewis, N., Jr., Yan, V. X., Fisher, O., O'Donnell, S., & Horowitz, E. (2017). An identity-based motivation framework for self-regulation. *Psychological Inquiry*, *28*(2–3), 139–147. https://doi.org/10.1080/1047840X.2017.1337406

Oyserman, D., O'Donnell, S., Sorensen, N., & Wingert, K. (2021). Process matters: Teachers benefit their classrooms and students when they deliver an identity-based motivation intervention with fidelity. *Contemporary Educational Psychology*, *66*, Article 101993. https://doi.org/10.1016/j.cedpsych.2021.101993

Oyserman, D., Smith, G. C., & Elmore, K. (2014). Identity-based motivation: Implications for health and health disparities. *Journal of Social Issues*, *70*(2), 206–225. https://doi.org/10.1111/josi.12056

Pfeffer, J., & Carney, D. (2018). The economic evaluation of time can cause stress. *Academy of Management Discoveries*, *4*(1), 74–93. https://doi.org/10.5465/amd.2016.0017

Pfeffer, J., & DeVoe, S. E. (2012). The economic evaluation of time: Organizational causes and individual consequences. *Research in Organizational Behavior*, *32*, 47–62. https://doi.org/10.1016/j.riob.2012.11.001

Preacher, K., & Hayes, A. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*(3), 879–891. https://doi.org/10.3758/BRM.40.3.879

Revelle, W. (2022). *psych: Procedures for personality and psychological research* (R package Version 2.2.5) [Computer software]. https://CRAN.R-project.org/package=psych

Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, *48*(2), 1–36. https://doi.org/10.18637/jss.v048.i02

Roth, S., Robbert, T., & Straus, L. (2015). On the sunk-cost effect in economic decision-making: A meta-analytic review. *Business Research*, *8*, 99–138. https://doi.org/10.1007/s40685-014-0014-8

Roxburgh, S. (2004). There just aren't enough hours in the day: The mental health consequences of time pressure. *Journal of Health and Social Behavior*, *45*(2), 115–131. https://doi.org/10.1177/002214650404500201

Rudd, M. (2019). Feeling short on time: Trends, consequences, and possible remedies. *Current Opinion in Psychology*, *26*, 5–10. https://doi.org/10.1016/j.copsyc.2018.04.007

Rutrecht, H., Wittmann, M., Khoshnoud, S., & Igarzábal, F. (2021). Time speeds up during flow states: A study in virtual reality with the video game Thumper. *Timing & Time Perception*, *9*(4), 353–376. https://doi.org/10.1163/22134468-bja10033

Shah, A., Mullainathan, S., & Shafir, E. (2012). Some consequences of having too little. *Science*, *338*(6107), 682–685. https://doi.org/10.1126/science.1222426

Shah, A., Shafir, E., & Mullainathan, S. (2015). Scarcity frames value. *Psychological Science*, *26*(4), 402–412. https://doi.org/10.1177/0956797614563958

Sleesman, D. J., Conlon, D. E., McNamara, G., & Miles, J. E. (2012). Cleaning up the big muddy: A meta-analytic review of the determinants of escalation of commitment. *Academy of Management Journal*, *55*(3), 541–562. https://doi.org/10.5465/amj.2010.0696

Smith, G., & Oyserman, D. (2015). Just not worth my time? Experienced difficulty and time investment. *Social Cognition*, *33*(2), 85–103. https://doi.org/10.1521/soco.2015.33.2.1

Tang, Y., Huang, Z., & Su, L. (2023). The influence of event-time (vs. clock-time) scheduling style on satiation. *Journal of Consumer Psychology*, *33*(1), 123–132. https://doi.org/10.1002/jcpy.1301

VanderWeele, T., & Vansteelandt, S. (2014). Mediation analysis with multiple mediators. *Epidemiologic Methods*, *2*(1), 95–115. https://doi.org/10.1515/em-2012-0010

Wang, Y., & Rhemtulla, M. (2021). Power analysis for parameter estimation in structural equation modeling: A discussion and tutorial. *Advances in Methods and Practices in Psychological Science*, *4*(1). https://doi.org/10.1177/2515245920918253

Whillans, A., & Dunn, E. (2015). Thinking about time as money decreases environmental behavior. *Organizational Behavior and Human Decision Processes*, *127*, 44–52. https://doi.org/10.1016/j.obhdp.2014.12.001

Wingert, K. M., Oyserman, D., & Ball, B. (2024, May 23–26). Metacognitive experience of difficulty and cognitive abilities. In K. M. Wingert (Chair), *Fueling the flame: Mechanisms and factors that promote learning* [Symposium]. Annual APS Convention, San Francisco, CA, United States.

Winkielman, P., Huber, D. E., Kavanagh, L., & Schwarz, N. (2012). Fluency of consistency: When thoughts fit nicely and flow smoothly. In B. Gawronski & F. Strack (Eds.), *Cognitive consistency: A fundamental principle in social cognition* (pp. 89–111). Guilford Press.

Witowska, J., Schmidt, S., & Wittmann, M. (2020). What happens while waiting? How self-regulation affects boredom and subjective time during a real waiting situation. *Acta Psychologica*, *205*, Article 103061. https://doi.org/10.1016/j.actpsy.2020.103061

Wrosch, C., Miller, G., Scheier, M., & De Pontet, S. (2007). Giving up on unattainable goals: Benefits for health? *Personality and Social Psychology Bulletin*, *33*(2), 251–265. https://doi.org/10.1177/0146167206294905

C.M. https://doi.org/Advances in motivation science. Wrosch, C., & Scheier, M. (2020). Adaptive self-regulation, subjective well-being, and physical health: The importance of goal adjustment capacities. *Advances in Motivation Science*, *7*, 199-238. https://doi.org/10.1016/bs.adms.2019.07.001.

Yan, V. X., Oyserman, D., Kiper, G., & Atari, M. (2024). Difficulty-as-improvement: The courage to keep going in the face of life's difficulties. *Personality and Social Psychology Bulletin*, *50*(7), 1006–1022. https://doi.org/10.1177/01461672231153680

Zauberman, G., & Lynch, J. G. *Jr*. (2005). Resource slack and propensity to discount delayed investments of time versus money. *Journal of Experimental Psychology: General*, *134*(1), 23–37. https://doi.org/10.1037/0096-3445.134.1.23

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