


## I'll take the high road: Paths to goal pursuit and identity-based interpretations of difficulty

Gülnaz Kiper, Daphna Oyserman & Veronica X. Yan


**To cite this article:** Gülnaz Kiper, Daphna Oyserman & Veronica X. Yan (14 Feb 2024): I'll take the high road: Paths to goal pursuit and identity-based interpretations of difficulty, *Self and Identity*, DOI: [10.1080/15298868.2024.2314920](https://doi.org/10.1080/15298868.2024.2314920)



**To link to this article:** <https://doi.org/10.1080/15298868.2024.2314920>

 [View supplementary material](#) 

 [Published online: 14 Feb 2024.](#)

 [Submit your article to this journal](#) 

 [Article views: 82](#)

 [View related articles](#) 

 [View Crossmark data](#) 



## I'll take the high road: Paths to goal pursuit and identity-based interpretations of difficulty

Gülnaz Kiper<sup>a</sup>, Daphna Oyserman<sup>a</sup> and Veronica X. Yan<sup>b</sup>

<sup>a</sup>Department of Psychology, University of Southern California, Los Angeles, California, USA; <sup>b</sup>Department of Educational Psychology, The University of Texas at Austin, Austin, Texas, USA

### ABSTRACT

When imagining their futures, people can prioritize getting there the easy way, prefer more demanding paths, or be indifferent to means and focus only on making progress. Identity-based motivation theory predicts and mixed effect regressions reveal that what people infer about themselves when facing unchosen life difficulties and when thinking about or working on goals feels hard shapes action ( $N = 537$  undergraduates, three studies). To varying degrees, they can infer that unchosen life difficulties build character (difficulty-as-improvement), that chosen goals are really not for them (difficulty-as-impossibility), and that chosen goals are valuable for them (difficulty-as-importance). The more people endorse difficulty-as-impossibility, the more they choose ease. The more they endorse difficulty-as-improvement the more they disdain ease and prefer the effortful way.

### ARTICLE HISTORY

Received 15 December 2022


Accepted 29 November 2023

### KEYWORDS

means-ends; identity-based motivation theory; academic goals; health goals; difficulty mindsets and possible selves

Say you want to gain core strength. Electrical pulses can strengthen your abdominal muscles. Would you go for that, or would the thought that the pulses do the work for you sour you on this? Would you instead prefer to take the high road and sweat to progress through floor exercises? Say you have a school-focused possible self. What seems like a more effective means to make progress, a means of studying that feels relatively easy to do or one that feels more effortful? Students often pursue both health-focused and academics-focused possible selves (e.g., Benau et al., 2019; Lowry et al., 2000; VanOra, 2019), and making progress requires taking action (for reviews, Choi & Oyserman, 2023; Oyserman & Horowitz, 2023). Prior studies have focused on whether people prefer means to attain or avoid failing to attain their goal but have not considered differences in preference for more or less effortful means (Danner et al., 2007). Yet means to goal attainment do differ in how much of one's own effort they require, and as a booming market in goal attainment aids suggests, people vary in which means make more sense to them (Whitney & Viswanath, 2004). In the current studies, we consider individual differences in the extent to which people believe they are likely to use more or less effortful means to progress toward attaining their possible selves. At first pass, it might seem to go

**CONTACT** Daphna Oyserman  [oyserman@usc.edu](mailto:oyserman@usc.edu)  Department of Psychology, University of Southern California, Los Angeles, California, USA

 Supplemental data for this article can be accessed online at <https://doi.org/10.1080/15298868.2024.2314920>.

© 2024 Informa UK Limited, trading as Taylor & Francis Group

without saying that the less personal effort the better. After all, when considering a product, no one prefers spending more to obtain a product available for less elsewhere. But, as highlighted by the so-called IKEA effect (Norton et al., 2012), sometimes people like products more if they expend effort on obtaining them (e.g., Inzlicht et al., 2018). The implication is that the easier or less effortful way is not always the more valued way.

We build on identity-based motivation theory to predict that preferring less or more effortful means is identity-based (Oyserman, 2007; Oyserman & Dawson, 2021). In particular, we focus on the path from the inferences people draw about themselves when they experience difficulty while thinking about or engaging in tasks or in their lives more generally. We predict that these inferences shape their preference for more or less personally effortful means to attain their self goals. Our predictions address a “means gap” in the goal literature (King et al., 1998, including health interventions, e.g.; Cugelman et al., 2011; learning, e.g.; Bereiter & Scardamalia, 2018; and achievement goals, e.g.; Dweck, 1986; Hulleman et al., 2010). The goal literature focuses on differences in the ends but not the means people prefer. For example, the achievement orientation literature highlights ends – individual differences in what students see as their academic goals, distinguishing between meeting or failing to meet a standard (performance goals) and attaining or failing to attain skills and proficiencies (mastery goals; Dweck, 1986; Hulleman et al., 2010). But it does not examine differences in preference for more or less personally effortful means to achieve these desired ends. Before proceeding, we describe Identity-based motivation theory (IBM) and articulate the bases for our predictions.

### Identity-based motivation theory (IBM)

IBM is a social psychological theory of self-regulation, goal pursuit, and motivation (O’Donnell et al., 2023; Oyserman, 2007, 2009; Oyserman et al., 2017). IBM describes a recursive relationship between what people do, how they make sense of themselves, and how they interpret their experiences of ease and difficulty while thinking about or working on tasks and goals. A unique feature of IBM theory is that it highlights that people can interpret their experiences of difficulty thinking about or working on tasks and goals in two ways. They can interpret it as signaling task importance (a difficulty-as-importance mindset) and as signaling low odds of task success (a difficulty-as-impossibility mindset). When difficulty implies that a task is important, people are more likely to infer that it is an identity-congruent, “me” or “us” thing to do. When difficulty implies that the odds of success at a task or goal is low, people are more likely to infer that engaging with the task or goal is an identity irrelevant or even incongruent, not “me” or “us” things to do. IBM theory also describes inferences people can make regarding why their experience unbidden life difficulties. People vary in the extent that they infer from these unbidden difficulties that they may become better, improved versions of themselves (a difficulty-as-improvement mindset). IBM theory focuses on the inferences people draw from their meta-cognitive experiences of difficulty. Theoretically, each mindset about difficulty is distinct, endorsing one does not imply rejecting another. Indeed, evidence suggests that the difficulty mindsets are distinct and independent rather than flip sides of the same coin (Oyserman et al., 2017; Yan et al., 2023).

### *Difficulty mindsets and action-readiness*

IBM theory predicts that the difficulty mindsets that are accessible at the moment of judgment shape whether and how people pursue their goals for their future selves (Oyserman & Horowitz, 2023) and how they face life's challenges (Yan et al., 2023). It predicts that people are more likely to take goal focused action if they apply a difficulty-as-importance rather than a difficulty-as-impossibility mindset and that endorsing difficulty-as-improvement can increase the chances of accepting setbacks without losing hope.

Regarding difficulty-as-importance and difficulty-as-impossibility, students spend more time on (Elmore et al., 2016; Smith & Oyserman, 2015), perform better on (Oyserman et al., 2018), and value (Aelenei et al., 2017) school tasks more when led to consider difficulty-as-importance rather than difficulty-as-impossibility. Similarly, people report that proactive health measures are less likely to work for them after experiencing difficulty imagining similarities between their group and people they think take these measures (Oyserman et al., 2007). Dieters report less temptation to overeat and eat less in a taste test if researchers lead them to view difficulties with dieting as signaling the importance and necessity of engagement rather than the impossibility of success (Lewis & Earl, 2018). One mechanism underlying these effects appears to be how people think about time: an accessible difficulty-as-impossibility mindset increases the likelihood that people think of time as a limited rather than an expandable resource (Choi & Oyserman, 2023). In contrast, an accessible difficulty-as-importance mindset increases the likelihood that people think of time as an expandable resource and that one can find or make time for important tasks and goals (Choi & Oyserman, 2023). If time is limited, efficiency may become a pressing concern.

Turning to difficulty-as-improvement, research documents that people who endorse difficulty-as-improvement focus on positives that may emerge from struggle. They are more likely to see silver linings for themselves and their communities emerging from the COVID-19 pandemic (Kiper et al., 2022). They are more likely to see themselves as optimistic, virtuous, and conscientious people who live lives of meaning – traits that predict resilience when faced with challenges (Yan et al., 2023). Diary studies suggest that difficulty-as-improvement is more trait-like (varies between people) than state-like (fluctuating across days, Kiper, Oyserman & Horowitz, 2023). The implication is that assessment of difficulty-as-improvement at one point in time would be predictive of difficulty-as-improvement at later points in time.

### *Difficulty-mindsets and means to goal attainment*

While prior studies document that difficulty mindsets matter for action-readiness, these prior studies do not address means of goal pursuit and whether difficulty mindsets also direct people's attention toward a particular means of goal pursuit. We address this gap in the current studies. Building on identity-based motivation theory, we predicted that people who endorse difficulty-as-impossibility and people who endorse difficulty-as-improvement prefer particular kinds of means.

Specifically, IBM theory implies that people who score high in difficulty-as-impossibility should prefer the less effortful means of attaining a goal. After all, this mindset highlights the odds of success. If easy means do not exist, it might be better to shift to another task

or goal rather than fruitlessly persist. Regarding difficulty-as-improvement, people who score high on difficulty-as-improvement should prefer effortful means for two reasons. First, they may carry over their inference that unbidden life difficulties can have a positive character-building effect, resulting in a sense that the hard way is the better way to work on their possible selves. Second, difficulty-as-improvement emerges from culture-based explanations for suffering, including religious and spiritual explanations that link being moral to doing hard things (e.g., religious beliefs regarding restricting, fasting, and abstaining, Yan et al., 2023). People higher in difficulty-as-improvement might see virtue in taking the high road, the effortful route to a goal.

## Current studies

We conducted three studies. Across studies we considered three goals, attaining core strength and muscle, Study 1; maintaining or attaining ideal weight, Study 2, and being a successful student, Study 3. While not a random draw from all possible self goals, we chose three different ones to reduce the chances that any results would be overly rooted in the particular possible self or particular means associated with it.

In each study, we presented participants with higher personal effort and lower personal effort means of goal attainment. Then we asked participants to rate each means of goal attainment in terms of personal effort (DV1, the value of one's own effort when using this means), effectiveness (DV2, how effective the means would be), and how likely they were to use the means to reach the goal in question (DV3). We explored whether our three dependent (predicted) variables could form a single favorability rating. We asked participants to rate each means for hardness and used this hardness rating as a control since people vary in how hard each means of goal attainment might feel, and there is no way to calibrate a priori how hard each means is relative to the others.

We enumerated plausible means to attain the core strength and the ideal weight goals. As the list of plausible means for the student goal is extensive, we conducted a pilot test with a comprehensive list of 24 means to attain the good grades goal (detailed in Supplemental Materials Study S2). In this pilot, we asked students ( $N = 196$ ; 91 females;  $Mage = 20.34$ ) to rate each means on effortfulness. We chose three means they rated as higher-effort, three they rated as lower-effort, and as fillers, three they rated as mid-range in effort to use in Study 3. To increase ecological validity, we also asked students in Study 3 to describe and rate their own goals and explored the pattern of effects for piloted mid-range effort and for students' own goals. If patterns are consistent across higher-effort, mid-range effort, and students' own means of attaining a good student possible self, then we can be more confident in the stability of effects. Moreover, since researchers studying school performance may be more familiar with considering what goal students are trying to attain – a learning or performance goal – than they are with considering lower and higher effort means of goal attainment, we also explored the relationship between our difficulty mindset scales and these goals. Because these so-called achievement orientations are about ways of framing rather than means of goal attainment, EQ4 was purely exploratory. While not necessarily increasing ecological validity, connecting or distinguishing new and familiar constructs helps situate results and provide links to other literatures.

We predict **H1**: People who score higher in difficulty-as-impossibility are more likely to use lower-effort means of goal attainment and less likely to use higher-effort means of goal attainment. **H2**: People who score higher in difficulty-as-improvement are more likely to use higher effort means of goal attainment, and believe that their own effort matters for doing so.

We explore whether **E1**: People who score higher in difficulty-as-improvement are less likely to use lower-effort means of goal attainment or to believe that their own effort matters for doing so. **E2**: Are people who score higher in difficulty-as-importance more likely to use higher-effort means and less likely to use lower-effort means of goal attainment or are they agnostic as to means?

The design of Study 3 (student goals) allowed us to explore two additional questions, **E3**—Are these processes replicated for the means students report that they use and for means that are mid-range effortful? – and **E4**—How are difficulty mindsets associated with the way students frame their goals (i.e., their achievement orientations)?

We present our two predictions, H1, H2 as green and red solid lines, exploratory questions EQ1, EQ2, and EQ3 as dashed red and green lines, and EQ4 as dashed black lines in [Figure 1](#). Green lines depict positive, red lines to depict negative, and black depicts no a priori predicted directional relationship.<sup>1</sup> Panel A shows the hypotheses common across all three studies (H1, H2, E1, E2); panel B shows the hypotheses specific to Study 3 (E3, E4).

### *Open science and stop rules*

The link [https://osf.io/u7dbm/?view\\_only=235c171b61a842ff989f292bfc995c0](https://osf.io/u7dbm/?view_only=235c171b61a842ff989f292bfc995c0) to the Open Science Framework provides all data, R scripts, the pre-registrations for Studies 2 and 3, and Supplemental Materials, which includes questionnaires, measurement construction, detailed race-ethnicity descriptives including for groups representing < 10% of samples, supplemental analyses, and pre-registered linear regression analyses separating lower- and higher-effort means.

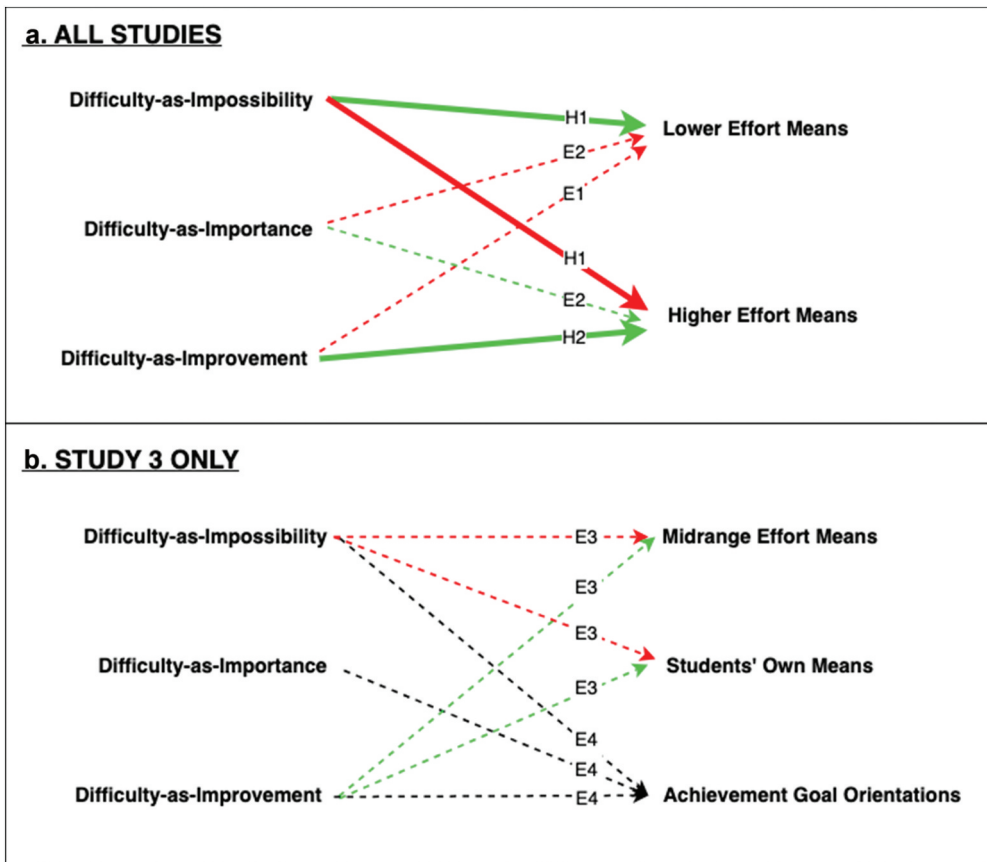
In Studies 1 and 3, we aimed for 200 people and in Study 2 for 330 people with at least 200 women for exploratory sex analyses. The semester ended before we could reach the desired sample size for Study 2. We included all data except the data from the eight who failed the Study 2 attention check – the only study with an attention check.

### *Samples*

Students participated in a 10–15 minute study for subject pool course credit. Study 1,  $N = 197$ ,  $n = 22$  The University of Texas at Austin,  $n = 175$  University of Southern California (USC), 131 female,  $M_{age} = 19.95$ ,  $SD_{age} = 3.09$ ; Study 2,  $N = 136$  USC, 89 females,  $M_{age} = 20.06$ ,  $SD_{age} = 1.35$ ; Study 3  $N = 204$  USC, 130 females,  $M_{age} = 20.17$ ,  $SD_{age} = 2.06$ ). Groups representing at least 10% of a sample were: Study 1, 42% white, 25% Asian, 13% Hispanic; Study 2, 44% white, 22% Asian, 12% Hispanic; and Study 3, 41% white, 28% Asian, 13% Hispanic.

### *Method and procedure*

We programmed and administered studies in Qualtrics. Each study had the four step method presented graphically in [Figure 2](#).



**Figure 1.** Hypothesized relationships between difficulty mindset and means of goal attainment. Note. Panel A presents the hypotheses shared across all three studies; Panel B presents exploratory hypotheses specific to Study 3 (student goals).

### Step 1

After providing consent, participants read, “Reaching any goal consists of multiple steps that get you progressively closer and closer to your goal. Imagine that your goal was [study-specific goal]. There are several different ways you might work toward that goal.” The study-specific goal in Study 1 was attaining core and abdominal muscles, in Study 2, it was reaching or maintaining an ideal weight, and in Study 3, being a good student with good grades.

### Step 2

Participants learned that they would see different means to reach that goal and saw each of the six means summarized in Table 1 separately in randomized order. Each means was described in two or three sentences. For example, in Study 1, “This piece of equipment is an ab roller. You use it by laying your head down on the cushion, grasping the sides of the bar, and rolling your upper body up.” Descriptions in Studies 1 and 3 were accompanied by a picture (e.g., of a person using an ab roller). In Study 3, we included three filler midrange-effortful academic means in randomized order with the six more and less effortful ones. We also obtained an open-ended response to “Finally, we want to ask you about the

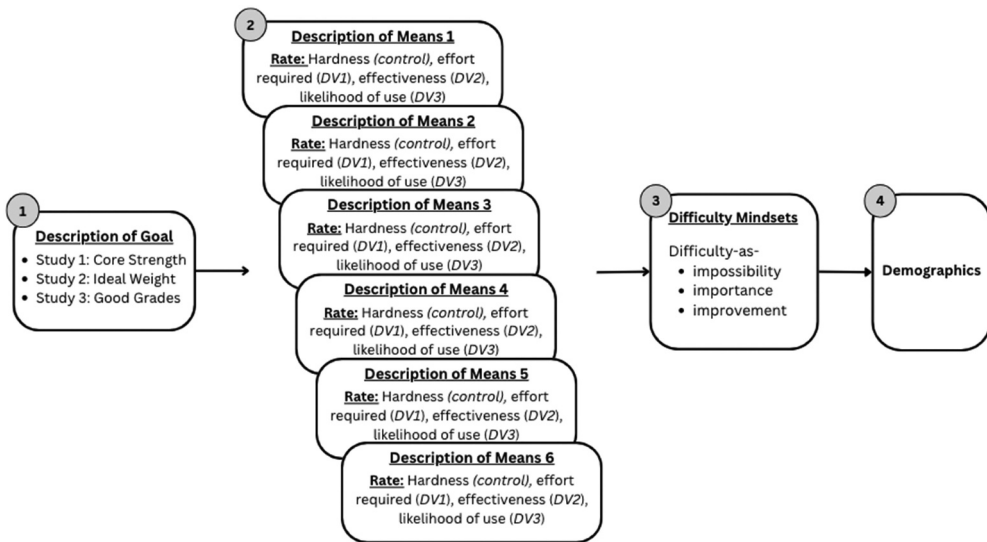


Figure 2. Studies 1 to 3: sequence of data collection method.

Table 1. Studies 1 to 3: higher and lower effort means of goal attainment.

Means	Study and Goal		
	Study 1: Core and Abdominal Strength	Study 2: Attain and Maintain Ideal Weight	Study 3: Be a Successful Student with Good Grades
Higher Effort	(1) Ab roller (2) Ab bench (3) Floor mat (4) Exercise ball	(1) Fasting (2) Weight loss program (3) Calorie tracking (4) Restriction	(1) Study 4–5 hours a day (2) Re-read chapters (3) Re-watch lectures
Lower Effort	(1) Surgery (2) Ab stimulator	(1) Surgery (2) Liposuction	(1) Paraphrase (2) Find assignments online (3) Get answers

Note: Study 3 also had three mid-range effort filler means to goal attainment. These were: *talk through and explain important concepts [whether to yourself or someone else]; create flashcards; write a summary of key points at the end of each paper or while I am reading.*

method you most often use when you try to get good grades from classes. In the box below, type in the strategy you most often use.” Students saw what they wrote (e.g., “I rewatch lecture videos”).

After each means of goal attainment, including the self-generated one, participants rated how hard it would be to use (control variable), how much of their own effort they would need to expend to be successful (DV1), how effective the means of goal attainment would be (DV2), and their likelihood of using it (DV3), on a 6-pt scale (1 = not at all, 6 = very). Table 2 presents the specific items used to assess each DV in each Study. To assess hardness in Study 1 we asked “How difficult would [means] be to use for you?” and “How much discomfort would you feel while using [means]?” and took an average of the two responses. In Study 2 we asked “How difficult is it for you to use or imagine using [means]?” In Study 3 we asked “How difficult would it be for you to use [means]?” Students rated lower-effort means on average as harder in Study 1 ( $M = 3.48, SD = 1.57$ ) and Study 2 ( $M =$



**Table 2.** Studies 1–3: predicted (dependent) variables (DV).

Dependent Variable (DV)	Study 1	Study 2	Study 3
DV1: My Own Effort Matters	If you use [means], how much does success depend on your own efforts? How much effort would [means] require of you?	If you used [means], how much of your own effort would you need to expend to attain your goal?	If you were to [means], how much would success depend on your own efforts?
DV2: This Means is Effective	How effective do you think [means] would be for you?	How effective do you think [means] would be for you?	How effective would it be for you to [means]?
DV3: I am Likely to Use This Means	Putting aside concerns about cost or access, how likely would you be to use [means] to reach your goal?	How likely is it that you will use [means] to reach your goal?	How likely are you to [means] as a way of getting good grades?

4.60,  $SD = 1.76$ ) than higher effort means (Study 1  $M = 2.68$ ,  $SD = 1.32$ ; Study 2  $M = 3.28$ ,  $SD = 1.75$ ). This reversal may be due to the fact that in the core strength (Study 1) and ideal weight (Study 2) goal studies, the lower-personal effort means entailed risk, cost, and someone else's intervention as can be seen in Table 1. The successful student goal study (Study 3) did not reveal this reversal, students rated lower-effort means as less hard ( $M = 2.42$ ,  $SD = 1.37$ ) than higher-effort means (Study 3  $M = 3.70$ ,  $SD = 1.52$ ). As reflected in Table 1, in this study, lower-effort means did not involve machinery or someone else's intervention.

### Step 3

Students rated how much they agreed or disagreed (1 = strongly disagree, 6 = strongly agree) with 12 statements (4-items each, Oyserman & Lewis's, 2017 difficulty-as-importance and difficulty-as-impossibility scales and Yan et al., 2023 difficulty-as-improvement scale. The items used are presented in Table 3.

In Study 2, at the end of Step 3, participants also responded to four questions about current or previous weight goals.<sup>2</sup> In Study 3, at the beginning of Step 3, they rated (1 = strongly disagree, 6 = strongly agree) 12 face-valid achievement orientation statements based on Hulleman et al. (2010). They rated six mastery (e.g., "learning as much as I can," "not being able to apply what I learned") and six performance (e.g., "getting a good GPA") items in randomized order. Mastery and performance items each included three approach-success and three avoid-failure items. Fit indices suggested a four factor solution (Table S6) with four correlated measures: mastery success, mastery failure, performance success, and performance failure (Table S7).

### Step 4

Students provided demographics (age, race-ethnicity, gender) for sample description.

## Results

### Preliminary analyses

We used multilevel Exploratory Factor Analysis (EFA) using Mplus (Muthén & Muthén, 1998–2017) to test whether the three predicted variables (my effort matters, this means is effective, I am likely to use it) might load onto a single factor. They did not and are distinct

**Table 3.** Studies 1 to 3: difficulty-mindset scale statements.

Item	Scale Name		
	Difficulty-as- Impossibility	Difficulty-as- Importance	Difficulty-as- Improvement
1	Sometimes if a task feels difficult, my gut says it is impossible for me.	Sometimes if a task feels difficult to me my gut says that it really matters for me.	In a way, the struggles I have today are strengthening my character to meet tomorrow's challenges.
2	If a goal feels difficult to work on, I often think it might not be for me.	If a goal feels difficult to work on, I often think it might be a critical one for me.	Experiencing difficulty makes me grow stronger.
3	When a task feels difficult, the experience of difficulty sometimes informs me that succeeding in the task is just not possible for me.	When a task feels difficult, the experience of difficulty sometimes informs me that succeeding in the task is important for me.	Experiencing difficulty is the strongest of teachers; I may temporarily feel broken but in the long run, I will be better.
4	Often when a goal feels difficult to attain it turns out to be out of my reach.	Often when a goal feels difficult to attain it turns out to be worth my effort.	Life is not complete without difficulty, hardship, and suffering.

at both the within and between levels (Table S9, Supplemental Materials). Hence, we conducted separate regressions for each predicted variable.

We found consistent average responses to our three predicted variables (my effort matters, this means is effective, I am likely to use it) across studies as detailed in Table 4. Average scores for seeing one's effort as valuable ranged from 2.22 to 2.92 for lower-effort and 4.27 to 4.64 for higher-effort means. For seeing this means as effective, they ranged from 2.75 to 2.82 for lower-effort and 3.93 to 4.27 for higher-effort means. For likelihood of using this means, they ranged from 1.73 to 2.18 for lower-effort and 3.22 to 3.82 for higher-effort means.

Next, as we display in Table 5, we verified that our difficulty mindset measures were reliable. Then we verified that each is distinct using Cohen's (1988) for correlational analyses. They are. Thus, we found small, not always significant correlations between how much a person endorsed difficulty-as-impossibility and their difficulty-as-importance (Study 1  $r = -.21, p = .003$ ; Study 2  $r = -.22, p = .010$ ; Study 3  $r = -.08, p = .228$ ) or difficulty-as-improvement scores (Study 1  $r = -.26, p < .001$ ; Study 2  $r = -.22, p = .009$ ; Study 3  $r = -.22, p = .002$ ). Similarly, the correlations between difficulty-as-importance and difficulty-as-improvement (Study 1  $r = .48, p < .001$ ; Study 2  $r = .55, p < .001$ ; Study 3  $r = .58, p < .001$ ) also suggested that the indices were distinct, though correlated. Hence in our analyses,

**Table 4.** Mean and SD for the predicted variables grouped by type of means.

Predicted Variable	Means of Goal Pursuit	Mean (SD) by Study		
		Study 1 <i>N</i> = 197	Study 2 <i>N</i> = 136	Study 3 <i>N</i> = 204
Value of effort for...	lower-effort	2.78 (1.31)	2.92 (1.65)	2.22 (1.27)
	higher-effort	4.27 (1.22)	4.56 (1.34)	4.64 (1.22)
Effectiveness of...	lower-effort	2.82 (1.50)	2.75 (1.60)	2.79 (1.48)
	higher-effort	3.93 (1.39)	4.05 (1.52)	4.27 (1.32)
Likelihood of using...	lower-effort	2.12 (1.43)	1.73 (1.27)	2.18 (1.29)
	higher-effort	3.82 (1.59)	3.22 (1.59)	3.48 (1.56)

Note: In Study 3, lower effort = three items, higher effort = three items. In Studies 1 and 2 lower effort = four items, higher effort = four items. The items are listed in Table 1.

**Table 5.** Difficulty-Mindset Scale Means (M), Standard Deviations (SD), and cronbach reliability ( $\alpha$ ).

Study	Scale Name								
	Difficulty-as-Impossibility			Difficulty-as-Importance			Difficulty-as-Improvement		
	M	SD	$\alpha$	M	SD	$\alpha$	M	SD	$\alpha$
1	2.55	1.01	0.89	4.28	0.93	0.89	4.97	0.89	0.88
2	2.67	1.04	0.91	4.30	0.92	0.90	4.97	0.86	0.88
3	3.09	1.18	0.83	4.44	0.92	0.83	4.87	0.94	0.84

Note: Study 1  $N = 197$ , Study 2  $N = 136$ , Study 3  $N = 204$ .

we consider the effect of each difficulty mindset on preference for means. Across studies, on average, as we show in Table 5, people tended not to agree with difficulty-as-impossibility and to agree more strongly with difficulty-as-importance and difficulty-improvement. While our participants were undergraduates, the patterns of endorsement we found are consistent with findings from prior literature with American non-college student adults (Kiper et al., 2022; O'Donnell et al., 2023; Yan et al., 2023).

### Analytic approach

We pre-registered separate linear regressions for the higher-effort and lower-effort means of goal attainment but report a much more parsimonious analysis simultaneously predicting results for the higher- and lower-effort means.<sup>3</sup> Our rationale is threefold: The parsimonious approach was strongly suggested in the editorial process. Results are not affected by approach. The simpler approach (detailed next) supports parsimonious visualization and reporting.

We performed analyses using the *psych* (v. 2.1; Revelle, 2022) and *lme4* (v. 1.1–23; Bates et al., 2015) packages in R (R Core Team, 2022). To test our hypotheses and exploratory questions, we ran two-level cross-classified multilevel models, nesting means of goal attainment-rating pairs (e.g., exercise ball-effectiveness) within persons, and person-rating pairs within means of goal attainment. Separate linear regressions were conducted for each DV (own effort matters, effectiveness, likely to use). We decomposed the “perceived hardness” variable into its level-1 (within-person) and level-2 (between-person) effects – we did so by computing each person’s mean perceived hardness score (level-2 effect), and then subtracting this from the hardness rating of each item the person rated (level-1 effect). In each regression, we controlled for both the level-1 and level-2 effects of perceived hardness. We centered each difficulty mindset around its average. We added in the interaction between goal attainment means (lower-effort vs. higher-effort means of goal attainment) and each centered difficulty mindset (difficulty-as-impossibility, difficulty-as-importance, difficulty-as-improvement) simultaneously to the model.

For example, this is the equation for the regression model testing the effectiveness DV in an individual dataset:

$$\text{Rating level: } y_{ij} (\text{effectiveness}) = \beta_{0j} + \beta_1(\text{perceived hardness})_{ij} + r_{ij}$$

Person level:  $\beta_{0j} = \gamma_{00} + \gamma_{01} (\text{perceived hardness})_j + \gamma_{02} (\text{difficulty-as-impossibility})_j * (\text{effort level of means of goal attainment}) + \gamma_{03} (\text{difficulty-as-importance})_j * (\text{effort level of means of goal attainment}) + \gamma_{04} (\text{difficulty-as-improvement})_j * (\text{effort level of means of goal attainment}) + u_{0j} + u_{0i}$

Where,  $y_{ij}$  is the  $j$ 'th person's effectiveness rating for the  $i$ th means of goal attainment;  $\beta_{0j}$  is the  $j$ th person's average effectiveness rating;  $\beta_1$  is the within-person effect of perceived hardness; and  $r_{ij}$  is the level-1 random error term.

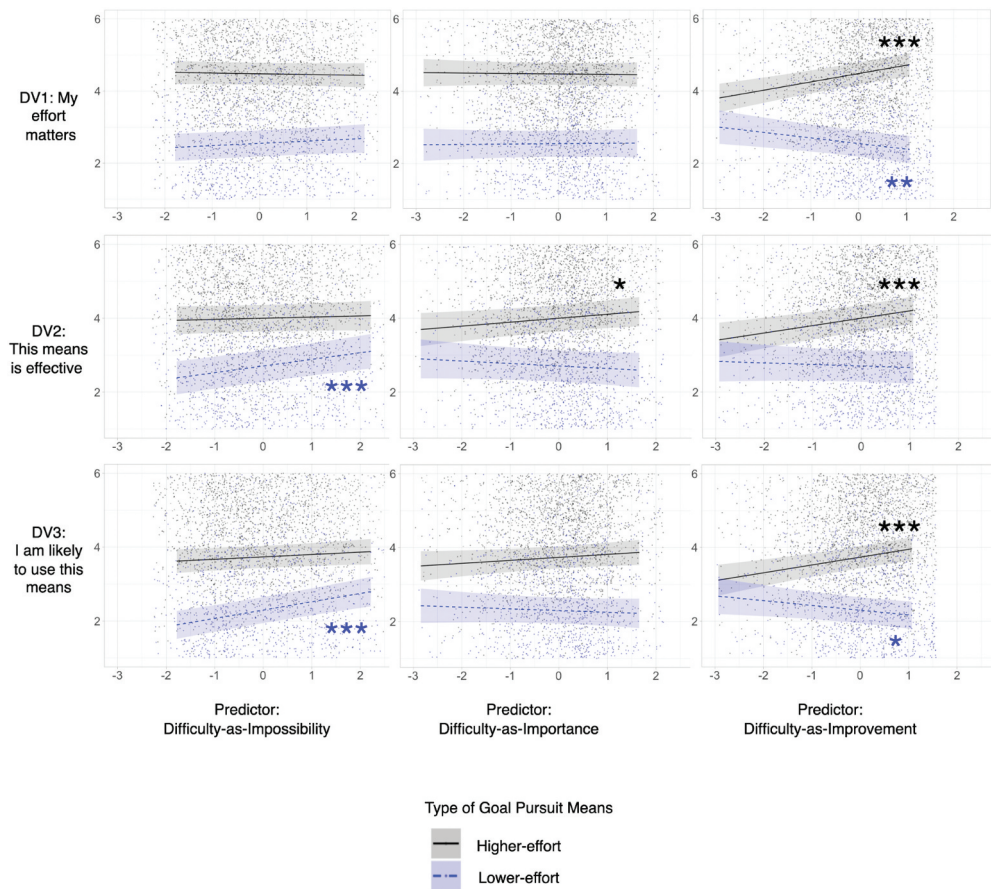
$\gamma_{00}$  is the grand mean for effectiveness;  $\gamma_{10}$  is the between-person effect of perceived hardness;  $\gamma_{02}$  is the regression coefficient of the difficulty-as-impossibility  $\times$  effort level interaction;  $\gamma_{03}$  is the regression coefficient of the difficulty-as-importance  $\times$  effort level interaction;  $\gamma_{04}$  is the regression coefficient of the difficulty-as-improvement  $\times$  effort level interaction;  $u_{0j}$  is the deviation of the mean effectiveness rating of the  $j$ th person from the grand mean of effectiveness; and  $u_{0i}$  is the deviation of the mean effectiveness rating of the  $i$ th means of goal attainment from the grand mean.

We tested our predictions for each DV first on each individual dataset, then we combined the Studies 1–3 datasets, assigning each participant a unique ID, to conduct an integrative data analysis. For the integrative analysis across the three studies, we grand-mean centered each difficulty mindset and added a “study” variable to each of the above-described models. The “study” variable accounts for the sample size of each study. We included “study” as a fixed effect and did not model varying intercepts across studies, as the specific means to pursue a goal and the “study” variable were perfectly collinear. Thus, we modeled randomly varying intercepts across goal pursuit means and across persons but not across studies. We modeled fixed slopes given our focus on making general inferences about the relationship between difficulty mindsets and higher and lower effort means of goal pursuit. Our models allowed us to think about the means of goal pursuit in our studies as being sampled from a broader universe of possible means of goal pursuit in accord with our goal of drawing generalizations to that universe. Our models do not allow us to generalize from the specific possible self goals highlighted in each study to all possible self goals – that awaits future studies.

We graphically present the results of the integrative analysis in [Figure 3](#). We show difficulty-as-impossibility effects in the left panels of [Figure 3](#), difficulty-as-importance effects in the middle panels, and difficulty-as-improvement effects in the right panels. The top row represents DV1 results (*my effort matters*), the middle row represents DV2 results (*this means is effective*), and the bottom row represents DV2 results (*I am likely to use this means*). Regression lines (with 95% confidence interval shading) for lower-effort means are presented as a dashed blue line and those for higher-effort means are presented as a solid black line. We focus on these integrative results in our discussion of results to avoid overinterpreting study-level fluctuations that may not be stable. However, we also present the separate analyses for each study as well as the results of the integrative regressions in [Tables 6–8](#).

To test our Study 3 exploratory E3 and E4 questions, we ran linear regressions predicting each DV separately for midrange-effortful methods and students' own methods (E3). To test E4—how difficulty mindsets are related to achievement orientations – we first ran bivariate correlations, then we entered the three difficulty mindsets simultaneously as predictors of each achievement orientation in four linear regression analyses.

**H1:** People who score higher in difficulty-as-impossibility will be more likely to use lower-effort means and less likely to use higher-effort means.



**Figure 3.** Effect of difficulty mindsets on Believing Own Effort Matters, finding a Means Effective, and Believing one will use it for higher-Effort (black) and lower Effort (blue) Means. Note. Black solid lines represent the higher-effort strategies, blue dashed lines represent the lower-effort strategies. Shaded areas represent 95% Confidence Intervals of the estimates. One asterisk indicates  $p < .05$ , two indicate  $p < .01$ , three indicate  $p < .001$ .

We found support for H1 for the lower-effort means. People who endorsed difficulty-as-impossibility rated lower-effort means of goal attainment as effective (DV2) and said they were likely to use them (DV3). Effects were directionally consistent but not always significant at the level of each study. They were no more or less likely to prefer higher-effort means as reflected in the non-significant patterns for these dependent variables. These results from the integrative models that control for perceived hardness, difficulty-as-importance, and difficulty-as-improvement and are reflected in Tables 6–8 and the left panels of Figure 3.

**H2:** People who score higher in difficulty-as-improvement will report that they are more likely to use higher-effort means and that their own effort matters.

**Table 6.** Difficulty mindset regression results for DV1: my effort matters.

Study	Predictor	Higher-effort means		Lower-effort means		Model R <sup>2</sup>
		Estimate [95% CI]	<i>p</i>	Estimate [95% CI]	<i>p</i>	
1	Impossibility	−0.02 [−0.12, 0.07]	.699	0.15 [0.04, 0.26]	.009	.40***
	Importance	−0.05 [−0.15, 0.06]	.373	−0.03 [−0.16, 0.11]	.685	
	Improvement	0.21 [0.10, 0.33]	<.001	−0.01 [−0.15, 0.13]	.913	
2	Impossibility	0.10 [−0.04, 0.25]	.154	0.07 [−0.10, 0.25]	.420	.27***
	Importance	−0.15 [−0.33, 0.04]	.122	0.24 [0.01, 0.47]	.045	
	Improvement	0.28 [0.08, 0.48]	.008	−0.35 [−0.60, −0.10]	.006	
3	Impossibility	−0.13 [−0.22, −0.04]	.005	−0.01 [−0.10, 0.08]	.852	.55***
	Importance	0.15 [0.02, 0.29]	.028	−0.03 [−0.16, 0.11]	.689	
	Improvement	0.21 [0.08, 0.35]	.002	−0.18 [−0.31, −0.04]	.010	
Integrative analysis	Impossibility	−0.02 [−0.08, 0.04]	.523	0.06 [−0.01, 0.13]	.073	.42***
	Importance	−0.01 [−0.09, 0.07]	.775	0.01 [−0.08, 0.10]	.836	
	Improvement	0.23 [0.15, 0.31]	<.001	−0.15 [−0.25, −0.06]	.002	

Note: Study 1 *N* = 197, Study 2 *N* = 136, Study 3 *N* = 204. The asterisks next to R<sup>2</sup> values in the rightmost column indicate the significance level of the *F*-statistic of the model, with \*\*\* for *p* < .001.

**Table 7.** Difficulty mindset regression results for DV2: this means is effective.

Study	Predictor	Higher-effort means		Lower-effort means		Model R <sup>2</sup>
		Estimate [95% CI]	<i>p</i>	Estimate [95% CI]	<i>p</i>	
1	Impossibility	0.02 [−0.09, 0.13]	.705	0.29 [0.14, 0.44]	<.001	.15*
	Importance	0.08 [−0.06, 0.21]	.256	0.10 [−0.08, 0.27]	.271	
	Improvement	0.21 [0.07, 0.35]	.003	−0.04 [−0.23, 0.14]	.654	
2	Impossibility	0.02 [−0.13, 0.17]	.806	0.13 [−0.05, 0.31]	.172	.26***
	Importance	−0.01 [−0.20, 0.19]	.921	−0.32 [−0.56, −0.08]	.010	
	Improvement	0.26 [0.05, 0.47]	.017	0.11 [−0.15, 0.37]	.408	
3	Impossibility	0.00 [−0.11, 0.10]	.927	0.08 [−0.02, 0.18]	.135	.24***
	Importance	0.22 [0.06, 0.38]	.008	−0.05 [−0.20, 0.11]	.577	
	Improvement	0.17 [0.01, 0.33]	.037	−0.07 [−0.23, 0.09]	.371	
Integrative analysis	Impossibility	0.03 [−0.04, 0.10]	.390	0.18 [0.10, 0.26]	<.001	.18***
	Importance	0.11 [0.01, 0.20]	.026	−0.07 [−0.18, 0.04]	.226	
	Improvement	0.20 [0.10, 0.30]	<.001	−0.04 [−0.15, 0.07]	.471	

Note: Study 1 *N* = 197, Study 2 *N* = 136, Study 3 *N* = 204. The asterisks next to R<sup>2</sup> values in the rightmost column indicate the significance level of the *F*-statistic of the model, with \* for *p* < .05; \*\*\* for *p* < .001.

**Table 8.** Difficulty mindset regression results for DV3: I Am likely to use this means.

Study	Predictor	Higher-effort means		Lower-effort means		Model R <sup>2</sup>
		Estimate [95% CI]	<i>p</i>	Estimate [95% CI]	<i>p</i>	
Study 1	Impossibility	0.02 [-0.10, 0.15]	.712	0.36 [0.21, 0.52]	<.001	.27***
	Importance	-0.05 [-0.20, 0.09]	.467	0.02 [-0.17, 0.20]	.851	
	Improvement	0.38 [0.23, 0.53]	<.001	-0.08 [-0.27, 0.12]	.443	
Study 2	Impossibility	0.03 [-0.10, 0.16]	.659	0.13 [-0.03, 0.30]	.110	.43***
	Importance	0.08 [-0.09, 0.26]	.353	-0.02 [-0.23, 0.19]	.838	
	Improvement	0.20 [0.02, 0.39]	.032	-0.01 [-0.24, 0.22]	.920	
Study 3	Impossibility	0.07 [-0.03, 0.18]	.183	0.14 [0.03, 0.25]	.010	.23***
	Importance	0.22 [0.06, 0.39]	.008	-0.07 [-0.23, 0.09]	.385	
	Improvement	0.06 [-0.10, 0.22]	.489	-0.21 [-0.37, -0.05]	.012	
Integrative Analysis	Impossibility	0.06 [-0.01, 0.14]	.078	0.22 [0.14, 0.30]	<.001	.27***
	Importance	0.08 [-0.01, 0.18]	.093	-0.05 [-0.15, 0.06]	.411	
	Improvement	0.21 [0.11, 0.31]	<.001	-0.13 [-0.24, -0.02]	.024	

Note: Study 1  $N = 197$ , Study 2  $N = 136$ , Study 3  $N = 204$ . The asterisks next to R<sup>2</sup> values in the rightmost column indicate the significance level of the  $F$ -statistic of the model, with \*\*\* for  $p < .001$ .

We found support for H2. People who endorsed difficulty-as-improvement believed that their efforts mattered for higher-effort means of goal attainment (DV1). They found higher-effort means of goal attainment effective (DV2) and reported that they were likely to use them (DV3). These integrative results are reflected in Tables 6–8 and the solid black regression lines in the right panels of Figure 3. These effects are significant at the study level with the exception of Study 3, DV3. However, as we discuss in E3, the pattern is consistent in this study for participants' own and mid-range means.

### ***E1: Do people who score higher in difficulty-as-improvement disdain lower-effort means of goal attainment?***

People who score higher in difficulty-as-improvement were less likely to find their own effort to matter (DV1) for lower-effort means and were less willing to use them (DV3). These integrative results are reflected in Tables 6–8 and the dashed blue regression lines in the right panels of Figure 3. These effects are significant or directionally consistent across each study.

### ***E2: Do people who score higher in difficulty-as-importance rate higher-effort means more favorably and lower-effort means less favorably?***

As depicted in the middle panels of Figure 3 and specified in Tables 6–8, we did not find a consistent pattern of associations between difficulty-as-importance and preference for

means. Controlling for perceived hardness, difficulty-as-impossibility, and difficulty-as-improvement, people higher in difficulty-as-importance find higher-effort means more effective (DV2). However, they were no more or less likely to see their own effort as mattering (DV1) or believe they would use (DV3) either higher or lower-effort means. At the study level, we see large variability as well, with the effect of own effort for higher effort means significant in the student goal study and directionally consistent in the core strength goal study.

### ***E3: Are the relationships between means and difficulty mindsets stable for students' own reported means and for means that are mid-range in effort?***

As detailed in Supplemental Materials (Figure S1 and Table S10), students scoring higher in difficulty-as-improvement were more likely to see their own effort to matter and were more likely to say they would use their own study method. Furthermore, as detailed in Supplemental Materials (Figure S2 and Table S11), controlling for the effects of the other difficulty mindsets and perceived hardness of these means, students scoring higher in difficulty-as-improvement were more likely to report that their own effort mattered for, that these means were effective, and that they would use mid-range effortful means. In contrast, students scoring higher in difficulty-as-impossibility were less likely to see their own effort as mattering for these mid-range effortful means.

### ***E4: What is the relationship between difficulty mindsets and achievement goal orientations?***

Bivariate correlations suggest each difficulty mindset is correlated with a mastery-success achievement orientation with correlations ranging from  $-.15$  (95% CI  $[-.28, -.01]$ ,  $p = .032$ ) for difficulty-as-impossibility, to  $.25$  (95% CI  $[.11, .37]$ ,  $p < .001$ ) for difficulty-as-importance, and  $.37$  (95% CI  $[.24, .48]$ ,  $p < .001$ ) for difficulty-as-improvement. As detailed in Table S13, relationships were smaller and less consistent for the other achievement orientation scales. Mastery-failure has a small-sized correlation with difficulty-as-importance; performance-success has a small-sized correlation with difficulty-as-improvement; and performance-failure is not significantly correlated with any of the difficulty mindsets. Importantly, multiple linear regression analyses predicting goal orientation from difficulty mindsets revealed that only difficulty-as-improvement was uniquely and positively associated with mastery-success goal orientation; no other relationships were statistically significant (see Table 9). The implication we draw is that the way students conceptualize what school achievement means (achievement orientation) is distinct from how they make sense of difficulties. Though students who believe that life difficulties are a chance for self-improvement are also likely to conceptualize school achievement as successfully learning and mastering content, the predictive power is such that clearly other factors need to also be considered.

## **General discussion**

An old saying about procedural flexibility admonishes that there are many ways to skin a cat. The implication is that people can and do have multiple means of goal attainment at



**Table 9.** Study 3: predicting achievement orientations from difficulty mindsets.

Outcome	Unstandardized Beta Coefficients (and SE) in Each Model		
	Difficulty-as-Impossibility	Difficulty-as-Importance	Difficulty-as-Improvement
Mastery-Success	-0.05 [-0.14, 0.04] $p = .264$	0.05 [-0.09, 0.18] $p = .497$	0.26 [0.13, 0.39] $p = <.001$
Mastery-Failure	0.06 [-0.06, 0.17] $p = .347$	0.14 [-0.04, 0.32] $p = .118$	0.04 [-0.14, 0.22] $p = .650$
Performance-Success	-0.04 [-0.14, 0.06] $p = .423$	-0.004 [-0.16, 0.15] $p = .955$	0.12 [-0.03, 0.27] $p = .126$
Performance-Failure	0.06 [-0.07, 0.19] $p = .361$	0.11 [-0.09, 0.31] $p = .285$	-0.03 [-0.23, 0.17] $p = .745$

Note. Success means: mastering the material, understanding the content, learning as much as I can (Mastery items), getting As, doing well on assignments, getting a good GPA (Performance item). Failure Means: forgetting what I learned, not being able to apply what I learned, not being able to apply what I learned in one class to what I learned in another even when it is relevant (Mastery items), not getting As, doing poorly on assignments, getting a low GPA (Performance items). Values in square brackets indicate the 95% confidence interval.

their disposal. Our studies focus attention on individual differences in the extent to which people prefer more or less effortful means of goal attainment. We considered common goals among college students – attaining core and abdominal strength (Study 1), attaining-maintaining ideal weight (Study 2), and being a good student with good grades (Study 3). We tested the prediction that people who prefer less or more effortful ways of attaining their goals also differ in what they infer about themselves from task or life difficulties. We assessed three operationalizations of preference (my own effort matters, this is an effective way to make progress, and I will use this means of making progress) for each of six different ways of making progress toward each goal.

Building on identity-based motivation theory, we focused on individual differences in the extent to which students endorse each of three distinct inferences about what experienced difficulty implies – difficulty-as-impossibility, difficulty-as-improvement, difficulty-as-importance. Difficulty-as-impossibility is the inference that finding a task or goal hard to think about or work on signals that it is not for you. Difficulty-as-improvement entails inferring chances for becoming a better person from life difficulties. In contrast, difficulty-as-importance is the inference that when a task or goal feels difficult to think about or do, it is valuable for you.

We predicted and found that people who endorse difficulty-as-impossibility find the easy way more effective and report a higher likelihood of using it. People who scored higher in difficulty-as-impossibility were indifferent to the more effortful way – higher scores were not associated with either preference for or rejection of higher-effort means. We predicted and found that people who endorse difficulty-as-improvement believe that their own effort matters for the more effortful way, find the more effortful way more effective, and report a higher likelihood of using the more effortful way. Moreover, endorsers of difficulty-as-improvement do not see their own effort as mattering for lower-effort means and predict that they are less likely to use them. While difficulty-as-impossibility and difficulty-as-improvement mindsets focus attention to means, a difficulty-as-importance mindset focuses on the outcomes and is agnostic as to means. People who endorse difficulty-as-importance find the higher-effort way more effective, yet they are no

more or less likely to say that success depends on their own efforts, nor to say that they plan on using this way. They are indifferent to the lower-effort route. People who scored higher in difficulty-as-importance were no more or less likely to prefer lower-effort means than people who scored lower.

We also explored the association between difficulty mindsets and how people conceptualize achievement goals: Controlling for how much they endorsed difficulty-as-importance and difficulty-as-impossibility, people who endorsed difficulty-as-improvement were more likely to endorse mastery success. They saw succeeding in school as being about mastering and applying content knowledge.

We also explored the patterns of effects across our three possible self goals, finding that the difficulty-as-improvement preference for more effortful means seems consistent across core strength, weight, and student possible selves. We find a significant preference for more effortful means in all three studies. In the student goal study, people who endorse difficulty-as-improvement are also more likely to say they will use the mid-range effortful studying means and their own self-generated means. The same is the case for difficulty-as-impossibility: the general association with preference for less effortful means is found in the core strength and student goal studies (though not for the ideal weight study). Regarding difficulty-as-importance, generally endorsing difficulty-as-importance does not relate to a preference for more or less effortful means. This null result replicates in the core strength and ideal weight goal studies. While difficulty-as-importance was associated with higher effort means in the student goal study, this result did not replicate when we examined mid-range effortful means or the self-generated means. We infer that a parsimonious interpretation is that a difficulty-as-importance mindset focuses on the importance of the goal and is indifferent to means.

### **Contributions**

Our study results address a gap in the goal pursuit, identity-based motivation, goal orientation, and means-ends literature, which is that prior research documents effects on goal progress but has not considered how preference for means to attain goals comes about. Our results add to this literature in five ways, which we outline next.

Our results suggest that endorsing difficulty-as-impossibility does not imply that people will not pursue goals but that they will if an easy way is available – they find the less personally effortful way effective and say they are likely to use it. Second, people who score higher in difficulty-as-improvement rate the more effortful route to goal attainment more favorably (see their own effort as mattering, find effective, and are likely to use it) and disdain the less personally effortful way (do not see their own effort as mattering and are less likely to use it).

Third, people who endorse difficulty-as-importance find the effortful way effective but are no more or less likely to use it or to see their own effort as mattering. The more effortful way can sometimes be more effective. At the same time, we infer that the general proclivity people who scored high in difficulty-as-improvement have for the hard way is a spillover from the belief that enduring difficulty can be morally uplifting – a way of taking the high road. Just as the more personally effortful way is not always the most effective way, the less personally effortful way may or may not be effective. Both elevating and disdaining ease may make pursuing a possible self unnecessarily complicated.

Fourth, our results add to prior research and theorizing about social identities and the inferences people draw when thinking about or working on a possible self feels difficult (e.g., Elmore & Oyserman, 2012; Elmore et al., 2016; O'Donnell et al., 2023; Oyserman et al., 2006, 2007; Oyserman & Lewis, 2107). This prior literature highlighted the ways in which people who are marginalized structurally may be vulnerable to inferring from difficulty thinking about or engaging in a task that the task is not for them (a difficulty-as-impossibility mindset). We find that everyone experiences lower effort means as ones that require less of their own effort than higher effort means. However, people who endorse difficulty-as-impossibility prefer these less effortful means to attain their possible self goals, saying they are likely to be effective and that they will use them. While our study designs cannot address why that might be, from a social identity perspective, people may choose means that feel possible for people like themselves.

Fifth, our results add to prior research on the relationship between effort and perceived value (for a review, Inzlicht et al., 2018). After exerting effort, people find the product they worked for *less* hedonically valuable and like it *less* (e.g., Marcowski et al., 2022) but see it as *more* expensive (monetarily valued, see Norton et al., 2012). Similarly, people may value group membership more if the group is hard to get into (e.g., hazing, costly admissions, Aronson & Mills, 1959). While prior research has not examined the circumstances in which people prefer easier or harder means to attain their goals, our results suggest that people who endorse difficulty-as-improvement and people who reject difficulty-as-impossibility may be more prone to find the more personally effortful way the more valuable way to attain their goals. We believe that our results have practical applications for intervention and service delivery. For example, when considering a path to attaining a goal such as smoking cessation, less personally effortful means such as wearing a nicotine patch may be more appealing to high endorsers of difficulty-as-impossibility and less appealing to high endorsers of difficulty-as-improvement. Our results imply that because this preference would be driven by identity congruence rather than actual efficacy, this aspect of identity-based preferences should be part of public health communication strategies. Similarly, because obesity is moralized (Ringel & Ditto, 2019), public health initiatives that allow people to lose weight effortlessly may be stigmatized as the wrong means to attain this goal.

### Limitations, future directions, and concluding comments

Like any research, ours has limitations. We focus on three: design, sample, and predicted variables. To our knowledge, these are the first studies documenting that difficulty-as-impossibility and difficulty-as-improvement mindsets – the ways people make sense of their difficulties with tasks and in life – carry over to a preference for means. Our designs were cross-sectional. We focused on how difficulty mindsets are associated with preferring more and less effortful paths toward goals. Though we focus on difficulty mindsets, we cannot tell if people incline toward less versus more personally effortful means because of their difficulty mindsets or the reverse. It is conceivable that people endorse difficulty mindsets because of their prior inclination toward less versus more personally effortful ways to attain their goals. Moreover, our design allowed us to focus on individual differences. It might equally be the case that people vary across time and situations such that accessible difficulty mindset shapes preference for means. Future studies using

priming procedures, diaries, and ecological-momentary-assessment techniques could test these possibilities. We considered likelihood of using, belief that own effort matters, and that the means was effective as outcomes. Future research could also manipulate these to see if they shift people's endorsement of each difficulty mindset.

Second, regarding the sample, we showed effects with common goals among students in the U.S. who were diverse as to self-reported racial-ethnic background. However, there is some evidence that how much people endorse each difficulty mindset varies across cultures (O'Donnell et al., 2023; Yan et al., 2023). These studies suggest that adults in the U.S. score higher in difficulty-as-impossibility and lower in difficulty-as-improvement than adults in other, more collectivistic cultures. Given our finding that difficulty-as-improvement is associated with preference for more effortful means to goal attainment and that difficulty-as-impossibility is associated with preference for less effortful ones, people in collectivistic societies might have a weaker inclination for the easy way and a stronger inclination for the hard way than in the U.S. Future studies could test this possibility.

Third, regarding predicted variables, we showed effects for how much participants believed their own effort mattered if they used the given means, how effective they believed the means would be, and how likely they were to use it. We thought our indicators would be related, but they were not. Given the number of analyses, we focused on the integrative analysis summaries of effects across studies to reduce over-reliance on single effects and single goals. Future research is needed to unpack why effectiveness and likelihood of use were distinct. Moreover, we used self-reports and contrasted more and less effortful means as a first step. It is tricky to obtain behavioral data on what people *do* to work toward health and academic possible selves, as these require repeated engagement over time. Hence researchers typically measure outcomes related to a possible self (e.g., grades for a good student possible self) rather than means (what people do to become a good student) over time. However, future research could use more within-subjects ecological data obtained via methods such as a daily diary approach to explore within and between-person variation in the means people use over time. Moreover, we did not study the recursive relationship between effort and fluctuations in value (Marcowski et al., 2022). Future research could test the links between difficulty mindsets and willingness to disengage from valued but unattainable goals.

The results of our studies support the idea that the inferences people draw about themselves from their experiences of difficulty matter, in part, by shaping the extent to which they prefer the less or more personally effortful path when pursuing possible self goals. Each difficulty mindset adds to each individual's profile of preference for less or more effortful means to goal attainment. Our current set of three studies was not intended as a sampling of all possible self goals so we cannot confidently generalize from our results to the relationship between difficulty mindsets and means preference for all domains of possible selves. Moreover, neither focusing on ease nor valuing effort are themselves always the better way. Focusing on ease can be beneficial – easier means may preserve energy to pursue other goals. Focusing on the hard way can also be beneficial – if it is the more effective way to progress.

Since how much people endorse difficulty-as-impossibility, difficulty-as-importance, and difficulty-as-improvement are relatively independent, whether people choose the less or more personally effortful way at a particular moment may depend in part on which mind

set is momentarily accessible. At the same time, given differences in mean endorsement of difficulty mindsets across societies, it might also be the case that social structural factors shape which difficulty mindsets are chronically on the mind. We infer from our results that people are more likely to prefer doing things in a way that requires more personal effort when they believe that life difficulties can be self-improving and are more likely to do things in a way that requires less personal effort when they believe that difficulty may imply impossibility. Doing things the more effortful way might or might not be the better strategy in the longer run. Looking for lower effort means and avoiding wasted effort might be efficient. Rather than assume that one mindset is better than the other, effective goal pursuers are likely to be people who can toggle between mindsets given situational affordances and constraints.

## Notes

1. For specifics, see our pre-registration documents at [https://osf.io/u7dbm/?view\\_only=235c171b61a842ff989f292bfc995c0](https://osf.io/u7dbm/?view_only=235c171b61a842ff989f292bfc995c0).
2. Goals may be gender-linked (Benau et al., 2019) so we pre-registered exploratory analyses asking if experience with weight goals or being a woman moderates effects (see Supplemental Materials for questions and analyses). Weight goal salience did not moderate any of our significant relationships. We were underpowered to run moderation analyses with gender. We describe these results in Supplemental Materials, Results, and Supplemental Analyses sections.
3. The less parsimonious but preregistered analyses are reported in Supplemental Materials.

## Disclosure statement

No potential conflict of interest was reported by the authors.

## Funding

This work was supported by the John Templeton Foundation [61083].

## References

- Aelenei, C., Lewis, N., & 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>
- Aronson, E., & Mills, J. (1959). The effect of severity of initiation on liking for a group. *The Journal of Abnormal and Social Psychology, 59*(2), 177. <https://doi.org/10.1037/h0047195>
- Bates, D., Mächler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software, 67*(1), 1–48. <https://doi.org/10.18637/jss.v067.i01>
- Benau, E., Plumhoff, J., & Timko, C. (2019). Women's dieting goals (weight loss, weight maintenance, or not dieting) predict exercise motivation, goals, and engagement in undergraduate women: A self-determination theory framework. *International Journal of Sport and Exercise Psychology, 17*(6), 553–567. <https://doi.org/10.1080/1612197X.2017.1421683>
- Bereiter, C., & Scardamalia, M. (2018). Intentional learning as a goal of instruction. In L. Resnick (Ed.), *Knowing, learning, and instruction: Essays in honor of Robert Glaser* (pp. 361–392). Routledge. <https://doi.org/10.4324/9781315044408>

- Choi, S. Y. K., & Oyserman, D. (2023). Can I make the time or is time running out? The role of metacognitive experiences of difficulty. Competitive Paper. Association for Consumer Research Annual Conference, Seattle WA.
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed. Routledge.
- Cugelman, B., Thelwall, M., & Dawes, P. (2011). Online interventions for social marketing health behavior change campaigns: A meta-analysis of psychological architectures and adherence factors. *Journal of Medical Internet Research*, 13(1), e1367. <https://doi.org/10.2196/jmir.1367>
- Danner, U. N., Aarts, H., & de Vries, N. K. (2007). Habit formation and multiple means to goal attainment: Repeated retrieval of target means causes inhibited access to competitors. *Personality and Social Psychology Bulletin*, 33(10), 1367–1379. <https://doi.org/10.1177/0146167207303948>
- Dweck, C. (1986). Motivational processes affecting learning. *American Psychologist*, 41(10), 1040–1048. <https://doi.org/10.1037/0003-066X.41.10.1040>
- Elmore, K. C., & Oyserman, D. (2012). If ‘we’ can succeed, I can too: Identity-based motivation and gender in the classroom. *Contemporary Educational Psychology*, 37(3), 176–185.
- 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), 233285841666471. <https://doi.org/10.1177/2332858416664714>
- Hulleman, C., Schrager, S., Bodmann, S., & Harackiewicz, J. (2010). A meta-analytic review of achievement goal measures: Different labels for the same constructs or different constructs with similar labels? *Psychological Bulletin*, 136(3), 422–449. <https://doi.org/10.1037/a0018947>
- Inzlicht, M., Shenhav, A., & Olivola, C. Y. (2018). The effort paradox: Effort is both costly and valued. *Trends in Cognitive Sciences*, 22(4), 337–349. <https://doi.org/10.1016/j.tics.2018.01.007>
- King, L., Richards, J., & Stemmerich, E. (1998). Daily goals, life goals, and worst fears: Means, ends, and subjective well-being. *Journal of Personality*, 66(5), 713–744. <https://doi.org/10.1111/1467-6494.00030>
- Kiper, G., Atari, M., Yan, V. X., & Oyserman, D. (2022). The upside: How people make sense of difficulty matters during a crisis. *Self and Identity*: 1–23. <https://doi.org/10.1080/15298868.2022.2033309>
- Lewis, N., & Earl, A. (2018). Seeing more and eating less: Effects of portion size granularity on the perception and regulation of food consumption. *Journal of Personality and Social Psychology*, 114(5), 786–803. <https://doi.org/10.1037/pspp0000183>
- Lowry, R., Galuska, D., Fulton, J., Wechsler, H., Kann, L., & Collins, J. (2000). Physical activity, food choice, and weight management goals and practices among US college students. *American Journal of Preventive Medicine*, 18(1), 18–27. [https://doi.org/10.1016/S0749-3797\(99\)00107-5](https://doi.org/10.1016/S0749-3797(99)00107-5)
- Marcowski, P., Mizak, S. B., Winkielman, P., & Białaszek, W. (2022). Modeling the effort paradox: Effort can have positive and negative influence on value within an individual, across individuals, and across choice situations. Obtained from psyarxiv.com. <https://doi.org/10.31234/osf.io/6xkmy>
- Muthén, L., & Muthén, B. (1998–2017). *Mplus User's Guide* (Eighth ed.). Muthén & Muthén.
- Norton, M., Mochon, D., & Ariely, D. (2012). The IKEA effect: When labor leads to love. *Journal of Consumer Psychology*, 22(3), 453–460. <https://doi.org/10.1016/j.jcps.2011.08.002>
- O'Donnell, S., & Oyserman, D. (2023). Apt and actionable possible identities matter: The case of academic outcomes. *Journal of Adolescence*, 95(2), 354–371. <https://doi.org/10.1002/jad.12118>
- O'Donnell, S. C., Yan, V. X., Bi, C., & Oyserman, D. (2023). Is difficulty mostly about impossibility? What difficulty implies may be culturally variant. *Personality & Social Psychology Bulletin*, 49(2), 309–328.
- 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. T. 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., Bybee, D., & Terry, K. (2006). Possible selves and academic outcomes: How and when possible selves impel action. *Journal of Personality and Social Psychology*, 91(1), 188–204. <https://doi.org/10.1037/0022-3514.91.1.188>

- 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., Elmore, K., Novin, S., Fisher, O., & Smith, G. (2018). Guiding people to interpret their experienced difficulty as importance highlights their academic possibilities and improves their academic performance. *Frontiers in Psychology*, 9, 9. <https://www.frontiersin.org/articles/10.3389/fpsyg.2018.00781>
- Oyserman, D., Fryberg, S., & Yoder, N. (2007). Identity-based motivation and health. *Journal of Personality and Social Psychology*, 93(6), 1011–1027. <https://doi.org/10.1037/0022-3514.93.6.1011>
- Oyserman, D., & Horowitz, E. (2023). Future self to current action: 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., & Lewis, N., Jr. (2017). Seeing the destination and the path: Using identity-based motivation to understand and reduce racial disparities in academic achievement. *Social Issues and Policy Review*, 11(1), 159–194. <https://doi.org/10.1111/sipr.12030>
- 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>
- R Core Team. (2022). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. <https://www.R-project.org/>
- Revelle, W. (2022). *Psych: Procedures for psychological, psychometric, and personality research*. Northwestern University. R package version 2.2.5. <https://CRAN.R-project.org/package=psych>
- Ringel, M., & Ditto, P. H. (2019). The moralization of obesity. *Social Science & Medicine*, 237, 112399. <https://doi.org/10.1016/j.socscimed.2019.112399>
- Smith, G. C., & 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>
- VanOra, J. P. (2019). “I wanted to know more”: A narrative exploration of community college students' goals and aspirations. *The Qualitative Report*, 24(5), 1168–1180. <https://doi.org/10.46743/2160-3715/2019.3961>
- Whitney, R., & Viswanath, K. (2004). Lessons learned from public health mass media campaigns: Marketing health in a crowded media world. *Annual Review of Public Health*, 25(1), 419–437. <https://doi.org/10.1146/annurev.publhealth.25.101802.123046>
- Yan, V. X., Oyserman, D., Kiper, G., & Atari, M. (2023). Difficulty-as-improvement: The courage to keep going in the face of life's difficulties. *Personality and Social Psychology Bulletin*. <https://doi.org/10.1177/01461672231153680>