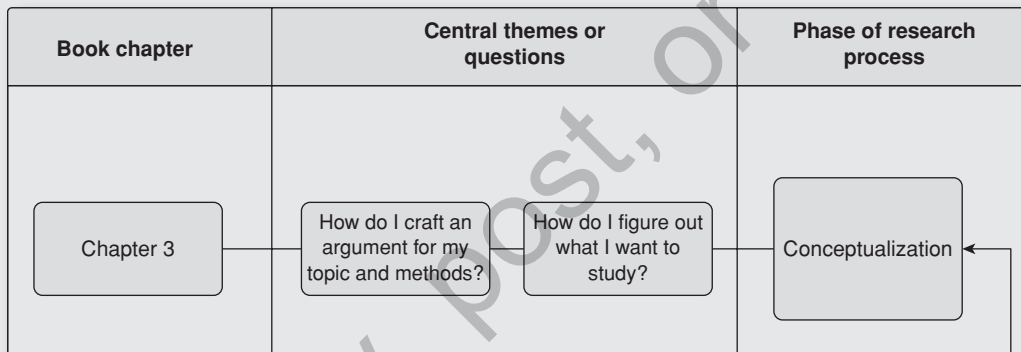


CHAPTER 3

Origins of a Conceptual Framework

The Birth of Grit



Throughout this book, we argue that good research is built on a strong conceptual framework. The chapters that follow specifically focus on how conceptual frameworks shape research design, data collection, analysis, and writing. But where do good conceptual frameworks come from? How do you figure out what matters to you, and once you do, how does that get shaped into a framework that can guide your research?

In this chapter, we trace a conceptual framework from its earliest incarnations into a final, published form—and beyond. We focus on “Grit: Perseverance and Passion for Long-Term Goals,” authored by Angela L. Duckworth, Christopher Peterson, Michael D. Matthews, and Dennis R. Kelly (2007). This was Duckworth’s first publication on grit, an idea that would profoundly influence research, policy, and practice in psychology

and education. It is therefore an ideal case for examining the question of where ideas come from and how they evolve into conceptual frameworks. We begin by situating the article within the wider context of Duckworth's work, and then introduce an excerpt from the published article. We next turn to the question of how this work came to fruition. In particular, we focus on the story of grit as an idea—how its formation emerged from different lines of inquiry. In particular, we highlight the interplay of thinking and intuition, experience, review of literature, methodological choices, and data collection and analysis in giving shape to both the central concept of grit and the argument for its importance.

△ **About the Author**

Dr. Angela Lee Duckworth is an associate professor of psychology at the University of Pennsylvania and a 2013 MacArthur Fellow. Duckworth received a BA in neurobiology from Harvard in 1992 and, as a Marshall Scholar, a Masters in neuroscience from Oxford. She completed her PhD in psychology at the University of Pennsylvania. Prior to her career in research, Duckworth founded a nonprofit summer school for low-income children which won the Better Government Award for the state of Massachusetts and was profiled as a Harvard Kennedy School case study. Angela has also been a McKinsey management consultant and, for five years, a math teacher in the public schools of San Francisco, Philadelphia, and New York City.

△ **Background and Context: An Overview of the Work in Focus**

Angela Duckworth knew that grit was important before she had a name for it. In her five years as a math teacher, she repeatedly saw students succeed or struggle not so much due to their ability, but rather their willingness to sustain effort and follow through. Her inability to help some students travel the last mile proved an ongoing source of frustration and disappointment. “It was a strong intuition I had from five years of classroom experience that many of my students would just give up too early,” she reflected in her interview with us. “I could just see what was over the hill but I couldn't get them to come over the hill with me so they could see that things were really going to be okay on the other side. From the very beginning of graduate school, I knew that I wanted to study persistence.”

Persistence, however, was not the initial focus of Duckworth's research. Instead, she began by studying self-control—another quality she intuited to be critical to students' success in the classroom, and an ongoing focus of her research. At the heart of both of these lines of inquiry was a common, and old, question: What explains why some people achieve more and others less? And more specifically, what explains it even when those people inhabit similar social contexts and have similar abilities?

Before she could mount an argument that grit was an important part of the answer to those questions, she had to define it, and show that it was distinct from other characteristics, such as ability or “Big Five” personality traits. The article at the center of this chapter is her attempt to do just that. This work serves three important purposes: to define and explain what grit is, establish that it is a unique and distinct construct, and make the case that it matters.

Duckworth's research falls within a broader body of work that has steadily gained traction in policy circles in recent years. In education, research has long focused on a relatively narrow set of outcome measures to both evaluate programs and identify factors that predict success or struggle. Similarly, policy has centered heavily on standardized test scores as a means to evaluate both schools and teachers. Meanwhile, research on the workplace has continued to try to unravel the question of what makes some people successful while others struggle, with most work focused either cognitive ability (g) or personality traits (Heckman & Rubinstein, 2001).

Recently, however, social scientists have begun to question this narrow focus, advancing different but related theories about what predicts success in school and at work. James Heckman, a labor economist at the University of Chicago, has published a string of books and articles since 2000 advancing the argument that “noncognitive” skills such as persistence are critical to educational and labor market success, and that narrow measures of achievement are a poor predictor of long-term outcomes (Heckman & Rubenstein, 2001; Heckman, Stixrud & Urzua, 2006; Heckman, 2014). Carol Dweck, a psychologist at Stanford, has argued that “mindset”—one's beliefs about whether ability is fixed or mutable—is in fact a stronger predictor of success than ability, and that mindset can be taught and learned (Dweck, 2006). In 2012, the Consortium for Chicago School Research published a report arguing, in part, that grades were a better measure of academic performance than test scores, in large part because they encompassed noncognitive factors such as academic behaviors and persistence (Farrington et al., 2012). Collectively, this work is pushing educators, policymakers, and business leaders to rethink what skills or abilities should be prioritized and how they should be measured.

In the sections that follow, we first present an excerpt of “Grit: Perseverance and Passion for Long-Term Goals.” The excerpt focuses on the literature review and methods discussion included in the published work. Following the excerpt, we break the argument down into a series of logical steps, making the paper’s conceptual framework explicit. We then turn to the primary focus of this chapter: the evolution of grit as a concept, the framework that developed around it, and processes that informed that development.

We focus on the evolution of the idea itself, highlighting the process that led to both the coining and definition of grit as a term. Importantly, this process drew on three distinct forms of research: literature review, interviews, and survey design. Each of these forms served to shape and refine the concept and to bolster the argument for it. The interplay between concept and method is also critical: the definition of grit shaped the means to study it, but the reverse was also true. Each in turn helped to frame the argument that grit is real and important, the conceptual framework that serves as the foundation for this important and influential work.

Duckworth, A. D., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, 92(6), 1087–1101.

Talent and Achievement

- [1] Intelligence is the best-documented predictor of achievement (Gottfredson, 1997; Hartigan & Wigdor, 1989). Reliable and valid measures of IQ have made it possible to document a wide range of achievement outcomes affected by IQ, including college and graduate school grade point average (GPA; e.g., Bridgeman, McCamley-Jenkins, & Ervin, 2000; Kuncel, Hezlett, & Ones, 2001), induction into Phi Beta Kappa (Langlie, 1938), income (Fergusson, Horwood, & Ridder, 2005), career potential and job performance (Kuncel, Hezlett, & Ones, 2004), and choice of occupation (Chown, 1959)...
- [2] However, in the Terman longitudinal study of “mentally gifted” children, the most accomplished men were only 5 points higher in IQ than the least accomplished men (Terman & Oden, 1947)... More predictive than IQ of whether a mentally gifted Terman subject grew up to be an accomplished professor, lawyer, or doctor were particular noncognitive qualities: “Perseverance, Self-Confidence, and Integration toward goals” (Terman & Oden, 1947, p. 351). Terman

and Oden, who were close collaborators of Cox, encouraged further inquiry into why intelligence does not always translate into achievement: “Why this is so, what circumstances affect the fruition of human talent, are questions of such transcendent importance that they should be investigated by every method that promises the slightest reduction of our present ignorance” (p. 352).

Personality and Achievement

- [3] The Big Five model has provided a descriptive framework for much of the contemporary empirical work on traits that predict success (Goldberg, 1990; John & Srivastava, 1999; McCrae & Costa, 1987; Tupes & Christal, 1992). In a 1991 meta-analysis, Barrick and Mount concluded that Big Five Conscientiousness related more robustly to job performance than did Big Five Extraversion, Openness to Experience, Neuroticism, or Agreeableness (Barrick & Mount, 1991). Uncorrected correlations between conscientiousness and job performance ranged from $r = .09$ to $r = .13$, depending on the occupational group. In a meta-analysis of confirmatory studies of personality measures as predictors of job performance, Tett, Jackson, and Rothstein (1991) observed a sample-weighted mean correlation between conscientiousness and job performance of $r = .12$.
- [4] One might conclude from these meta-analyses that at best, any given personality trait accounts for less than 2% of variance in achievement. If so, compared with IQ, personality would seem inconsequential. Alternatively, it is possible that more narrowly defined facets of Big Five factors may more robustly predict particular achievement outcomes (Paunonen & Ashton, 2001). It is also possible that there exist important personality traits not represented as Big Five facets...
- [5] Although we recognize the utility of the Big Five taxonomy as a descriptive framework in which newly characterized personality traits should be situated, we do not believe that it provides an exhaustive list of traits worth studying.
- [6] Conscientious individuals are characteristically thorough, careful, reliable, organized, industrious, and self-controlled. Whereas all of these qualities bear a plausible contribution to achievement, their relative importance likely varies depending upon the type of achievement considered. For example, Galton (1892) suggested that self-control—the ability to resist temptation and control impulses—is a surprisingly poor predictor of the very highest achievements...

- [7] Hough (1992) distinguished between achievement and dependability aspects of conscientiousness. According to Hough, the achievement-oriented individual is one who works hard, tries to do a good job, and completes the task at hand, whereas the dependable person is self-controlled and conventional (p. 144). In a meta-analysis, Hough found scales classified as measuring achievement orientation predicted job proficiency ($r = .15$) and educational success ($r = .29$) better than did dependability ($r = .08$ and $r = .12$, respectively).
- [8] Grit overlaps with achievement aspects of conscientiousness but differs in its emphasis on long-term stamina rather than short-term intensity. The gritty individual not only finishes tasks at hand but pursues a given aim over years. Grit is also distinct from dependability aspects of conscientiousness, including self-control, in its specification of consistent goals and interests. An individual high in self-control but moderate in grit may, for example, effectively control his or her temper, stick to his or her diet, and resist the urge to surf the Internet at work—yet switch careers annually. As Galton (1892) suggested, abiding commitment to a particular vocation (or avocation) does not derive from overriding “hourly temptations.”
- [9] Grit also differs from need for achievement, described by McClelland (1961) as a drive to complete manageable goals that allow for immediate feedback on performance. Whereas individuals high in need for achievement pursue goals that are neither too easy nor too hard, individuals high in grit deliberately set for themselves extremely long-term objectives and do not swerve from them—even in the absence of positive feedback. A second important distinction is that need for achievement is by definition a non-conscious drive for implicitly rewarding activities and, therefore, impossible to measure using self-report methods (McClelland, Koestner, & Weinberger, 1992). Grit, in contrast, can entail dedication to either implicitly or explicitly rewarding goals. Further, we see no theoretical reason why individuals would lack awareness of their level of grit.

Development of the Grit Scale

- [10] The aforementioned reasoning suggests that grit may be as essential as IQ to high achievement. In particular, grit, more than self-control or conscientiousness, may set apart the exceptional individuals who James thought made maximal use of their abilities. To test these hypotheses, we sought a brief, stand-alone measure of grit that met

four criteria: evidence of psychometric soundness, face validity for adolescents and adults pursuing goals in a variety of domains (e.g., not just work or school), low likelihood of ceiling effects in high-achieving populations, and most important, a precise fit with the construct of grit.

- [11] We reviewed several published self-report measures but failed to find any that met all four of our criteria. The only stand-alone measure of perseverance we found, the Perseverance Scale for Children (Lufi & Cohen, 1987), is not face valid for adults. The Passion Scale (Vallerand et al., 2003) assesses commitment to a subjectively important activity but not perseverance of effort. The tenacity scale used by Baum and Locke (2004) and derived from Gartner, Gatewood, and Shaver (1991) was developed for entrepreneurs and is not face valid for adolescents. Similarly, the Career Advancement Ambition Scale (Desrochers & Dahir, 2000) refers to attitudes toward one's "profession" and "firm." Cassidy and Lynn (1989) developed a need for achievement questionnaire that taps work ethic and desire for excellence, which are consonant with the construct of grit, but also several irrelevant qualities such as the needs for money, domination of others, superiority over competitors, and social status. Finally, the goal commitment scale by Hollenbeck, Williams, and Klein (1989) assesses state-level, not trait-level, goal commitment.
- [12] In the absence of adequate existing measures, we developed and validated a self-report questionnaire called the Grit Scale. We expected grit to be associated with Big Five Conscientiousness and with self-control but, in its emphasis on focused effort and interest over time, to have incremental predictive validity for high accomplishment over and beyond these other constructs.
- [13] We also tested the hypothesis that grit would be unrelated to IQ. Whereas personality and IQ represent independently flourishing literatures, few contemporary investigations have incorporated both kinds of measures. Thus, we have learned surprisingly little about how personality traits and intelligence are related and about their relative contributions to performance. There are notable exceptions to this trend (cf. Ackerman & Heggestad, 1997; Chamorro-Premuzic & Furnham, 2005), but in general, psychology has ignored the recommendations of Wechsler (1940) and R. B. Cattell and Butcher (1968), who cautioned that the independent study of either noncognitive or cognitive individual differences, to the exclusion of the other, would be impoverished.

Method

- [14] *Development of the Grit Scale.* We began by generating a pool of 27 items tapping the construct of grit. Our overarching goal for scale development was to capture the attitudes and behaviors characteristic of the high-achieving individuals described to us in early, exploratory interviews with lawyers, businesspeople, academics, and other professionals. We intentionally wrote items that would be face valid for both adolescents and adults and that did not specify a particular life domain (e.g., work, school). We included items that tapped the ability to sustain effort in the face of adversity (e.g., “I have overcome setbacks to conquer an important challenge,” “I finish whatever I begin”). We also considered that some people sustain effort not because of subjective interest but rather because they are afraid of change, compliant with the expectations of others, or unaware of alternative options. Thus, several Grit Scale items ask about the consistency of interests over time. For example, two reverse-scored items were “My interests change from year to year” and “I have difficulty maintaining my focus on projects that take more than a few months to complete.” Items are rated on a 5-point scale from 1 _ not at all like me to 5 _ very much like me.
- [15] We considered item-total correlations, internal reliability coefficients, redundancy, and simplicity of vocabulary to eliminate 10 items. On the remaining 17 items, we conducted an exploratory factor analysis on half of the observations chosen at random ($n = 772$). We sought a solution that satisfied tests for number of factors (e.g., R. B. Cattell’s scree test), retained 5 or more items with loadings of at least .40, yielded internally consistent factors that made psychological sense, and best approximated simple structure. A two-factor oblique solution with promax rotation satisfied these criteria. See Table 1 for the 12 retained items and corrected item-total correlations with each item’s respective factor. We considered the possibility that these two factors were an artifact of positively and negatively scored items but were convinced that the factor structure reflected two conceptually distinct dimensions. The first factor contained 6 items indicating consistency of interests, and the second factor contained 6 items indicating perseverance of effort. Because we expected that stamina in the dimensions of interest and effort would be correlated, we accepted this oblique solution in which the two factors were correlated at $r = .45$.

- [16] To test the integrity of the final two-factor solution, we confirmed that the specificity of each factor (i.e., the portion of reliable variance not shared by the other factor) was larger than the error variance for that factor. Further, confirmatory factor analysis with the remaining 773 observations in our sample supported this two-factor solution (comparative fit index = .83 and root-meansquare error of approximation = .11). The resulting 12-item Grit Scale demonstrated high internal consistency ($\alpha = .85$) for the overall scale and for each factor (Consistency of Interests, $\alpha = .84$; Perseverance of Effort, $\alpha = .78$). In subsequent analyses, neither factor was consistently more predictive of outcomes than the other, and in most cases, the two together were more predictive than either alone. Therefore, we proceeded using total scores from the full 12-item scale as our measure of grit.

The Present Research

- [17] In the absence of adequate existing measures, we developed and validated a self-report questionnaire called the Grit Scale. We expected grit to be associated with Big Five Conscientiousness and with self-control but, in its emphasis on focused effort and interest over time, to have incremental predictive validity for high accomplishment over and beyond these other constructs... We also tested the hypothesis that grit would be unrelated to IQ.

The Argument △

As we define it, a conceptual framework is a grounded argument about why the topic of a study matters to its various and often intersecting fields, why the methodological approach used to explore that topic is valid, and the ways in which the research design is appropriate and the methods are rigorous. In “Grit: Perseverance and Passion for Long-Term Goals,” the authors first introduce and define the term:

We define grit as perseverance and passion for long-term goals. Grit entails working strenuously toward challenges, maintaining effort and interest over years despite failure, adversity, and plateaus in progress. The gritty individual approaches achievement as a marathon; his or her advantage is stamina. Whereas disappointment or boredom signals to others that it is time to

change trajectory and cut losses, the gritty individual stays the course. (pp. 1087–88)

The authors then advance an initial hypothesis that grit is “essential to high achievement,” and construct an argument for this position. That argument can be summarized as follows:

1. While measures of intelligence have been shown to predict achievement in a number of ways, the effect is smaller than we might expect, and other, noncognitive factors such as perseverance and self-confidence appear to play an important role (paragraphs 1–2).
2. Another potential predictor of achievement is personality. Yet the so-called Big Five personality traits have not been shown to predict achievement in any meaningful way (paragraphs 3–4).
3. This is most likely because there are important traits that the Big Five framework fails to include. Specifically, conscientiousness encompasses a diverse set of characteristics, some of which appear to predict achievement more robustly than the overall construct (paragraphs 5–7).
4. Grit overlaps with some of these characteristics, but is also conceptually distinct from them, particularly in its emphasis on pursuit of long-term goals (paragraphs 8–9).
5. There is therefore reason to think that grit may be a more robust predictor of achievement than other characteristics. Yet no measure of grit currently exists (paragraphs 10–11).
6. The grit scale was developed to determine whether grit could be distinguished from other characteristics, and whether it would predict achievement more robustly (paragraphs 12–13).
7. Developing the scale consisted of first creating a set of self-report items that, collectively, described the core tenets of grit using a variety of terms and expressions. Redundant or confusing items were omitted, and factor analysis was used to construct the final scale, which included two related dimensions: consistency of interests and perseverance of effort (paragraphs 14–16).
8. Analyzing data from six different studies, regression analysis was used to measure the relationship between grit and achievement in a variety of domains, and extent to which grit predicts achievement over and above ability or conscientiousness (paragraph 17 forward).

The relationship between literature review and methods in the structure of this argument is emblematic of a strong conceptual framework. In

discussing what is already known about what predicts or explains achievement, Duckworth and her coauthors use literature to show that, while our understanding of this important topic is incomplete, we have some idea of the shape and size of the piece that is missing from the picture. This sets up the argument that grit may be that missing piece, but it also establishes a strong rationale for the methods employed. If the literature suggests that there *should be* a construct distinct from personality (specifically conscientiousness) and intelligence that predicts achievement better than either of them, then the modes of collecting and analyzing data should allow the authors to test those two conjectures. Consequently, the authors propose to develop a scale using factor analysis (which identifies the underlying cohesive factors of a large number of survey items), test it alongside established measures of intelligence and personality (to demonstrate that it is distinct from either), and analyze the extent to which the new construct (grit) predicts achievement over and above either of them. The ideas that are discussed speculatively in the literature are tested and validated empirically through data collection and analysis.

Origins: Conversations With the Dead and the Living ▲

While the methodological specifics of this article could warrant a chapter of their own, we are primarily concerned here with where the idea for a conceptual framework comes from. What types of thinking or processes give form to the argument as it appears here? What questions do the authors ask before they are ready to posit an answer?

Quantitative research is often associated with logical positivism: a willingness to accept that things are what they are in an objective sense. This is an overly reductive view, however, and in this instance it is clearly not the case. As a concept, grit has its roots in experience, intuition, and qualitative methods. As we described earlier, the original impetus for focusing on grit and self-control emerged from Duckworth's experience as a teacher and her intuition about what enabled some children to succeed. As a graduate student working with Martin Seligman at the University of Pennsylvania, her ideas about grit evolved primarily through conversation with others about success and achievement. As she shared with us,

I would meet weekly with Marty and we would talk about people we knew who were successful. We would just try to do the old style armchair psychology that William James did, like “what about your friend Sarah Z., tell me about her?” And I would say to Marty, “what

makes Robert Sternberg so productive?" We had an intuition from our own personal observations that this kind of extraordinary stamina, this kind of singular purpose maintained over very long periods of time, was one of the defining characteristics of the people who are really at top of their fields. It was something different from talent.

These conversations helped sharpen Duckworth and Seligman's ideas of what they really wanted to know—the questions they needed to be asking. The next step was to include more people in their discussions. Duckworth conducted a series of interviews with leaders in a variety of fields based on the same set of questions she and Seligman were asking each other. As she and her coauthors explain in the article:

Our hypothesis that grit is essential to high achievement evolved during interviews with professionals in investment banking, painting, journalism, academia, medicine, and law. Asked what quality distinguishes star performers in their respective fields, these individuals cited grit or a close synonym as often as talent. In fact, many were awed by the achievements of peers who did not at first seem as gifted as others but whose sustained commitment to their ambitions was exceptional. Likewise, many noted with surprise that prodigiously gifted peers did not end up in the upper echelons of their field. (p. 1088)

Though she had no training in interviewing, Duckworth intuited one of its basic premises: inviting participants to tell stories, describe specific people or situations, and then ask them to interpret those reflections. In this case, that consisted of asking participants to think of people in their field who have been highly successful, describe them, and then reflect on the qualities or characteristics that most contributed to their success.

These interviews were exploratory; they were designed to get at the same themes and questions that had emerged in Duckworth's conversations with Seligman. They were also intended to give her a sense of the language people used to describe what she ultimately called grit, including terms like passion, stamina, interest, and effort. These different framings of a common concept would inform the development of items in the next stage of the research process. Before that, however, Duckworth faced the question of when to shift from exploratory interviewing to writing survey items. As it turned out, the work of an earlier generation of psychologists provided a useful lens to answer these questions. "I was very influenced by doing this historical reading," she reflected:

I went back to Francis Galton and Eysenck and a lot of great psychologists had actually taken upon themselves the question of who is successful in life. So, reading Catherine Cox, William James, these characteristics of stamina in the domains of interest and effort, the two parts of grit, it emerged in that too. I think if I hadn't seen this resonance between my interviews and then also observations of long dead psychologists, I probably would have kept going a little further [with interviews].

This reflection offers two important lessons. First, when reviewing literature, there is often a bias toward the novel. Particularly among graduate students, an up-to-the-minute literature review suggests topical and methodological currency. Yet in many disciplines, some of the most influential work is also the oldest. Older work is also more likely to be focused on big, general questions (like what makes people successful in life), because it was conducted before detailed specialization became a hallmark of academic work.

The second lesson focuses on the idea of convergence, and is applicable to both literature review and data collection. Duckworth interviewed until she found a point of “resonance” between what she was hearing in the interviews and what she had seen in the early literature. Essentially, this meant that she reached a stage where the themes emerging in the interviews were well defined and consistent with what she had seen in the literature: She had the approximate shape and size of her concept, and collecting additional data was not altering or adding to it in any significant way. “I think that when the next data point doesn't teach you that much because you've already seen that before, that seems to me a marginal return on the new data,” she noted. This is also true of literature review: For practical purposes, you know you have done enough when the literature no longer teaches you anything new about your topic.

Formulating the Concept: Δ From Conversing to Inquiring

The interviews informed and reinforced Duckworth's thinking about the qualities that made people successful, and gave her different ways to describe those qualities. The ability to use different framings and descriptions to talk about a common set of ideas was critical to the next stage of her research: writing survey items in what would become the grit scale.

Originally, the grit scale was not supposed to be a scale. At the strong urging of Seligman, Duckworth began with the assumption that persistence should not be studied with a self-reported questionnaire, but rather

through some kind of performance task. Her original, exploratory work involved designing different exercises and observing children as they worked to complete them. The rationale for this approach was sensible: A measure based on what people actually do should be more reliable than a survey on which they rate themselves, simply because people tend not to assess their own abilities or characteristics objectively.

Yet the performance task approach turned out to be a poor fit for what Duckworth wanted to study. The problem was time. In reviewing literature and doing interviews, she had become convinced that to really understand persistence, she needed a measure that would encompass interest and effort sustained over long periods of time—years rather than hours. There was no way to capture that element using a performance task. “The kind of persistence I was interested in as a former teacher was not...can you do this for 10 minutes, can you do this for half an hour,” she recalled. “I wanted to know about the persistence where you have a bad day and you get up and the next day you’re still committed to your goal.”

This realization underscores an important aspect of conceptual frameworks: the link between *what* to study and *how* to study it. As her idea of persistence evolved to include long-term pursuit of goals, the original method Duckworth envisioned for studying it became infeasible, prompting her to step away from the work and reconsider her options. When she returned to it a year later, the option that had been off the table when she began her work—developing a scale—now seemed the most logical approach.

Writing items is in some ways the sausage making of survey research. For all of the analytic precision of the stages that follow, item writing itself is subjective, interpretive, and even literary. The very rationale for scale development is that people interpret words and phrases differently; hence any single item is subject to interpretations other than that intended by the researcher. By collapsing multiple items together, the aim is to measure the overarching concept in ways that are less susceptible to varying interpretation and therefore more stable.

Duckworth used the language she heard in her interviews to craft her draft survey items. As described in the article (paragraph 14), the goal was to develop items that could be used with different aged populations and would not be dependent on a particular context or setting. Through interviews and reviewing literature, Duckworth knew she needed items that looked at both interest and persistence. But even using what she heard in the interviews, finding the right language proved challenging. She shared,

I wanted to communicate passion sustained over time but the items that I came up with, as a second year graduate student, [were] interests over time. So in a way there is this rift between the idea of passion sustained over time and just the consistency of your interests. Now, there is obviously overlap between interest and passion but I don't think people would say they are exactly synonymous.

Other attempts to get at the underlying ideas that make up grit proved too subjective to perform well as survey items. Early attempts included references to sprints and marathons, tortoises and hares. These are cultural references that hold meaning to some people and not others. Like all expressions, their power lies in the meaning they imply rather than their literal definition. But those meanings are not shared universally and therefore do not translate well to item construction.

Duckworth began with 27 items. Ten items were eliminated either because they were redundant or were too subjective to yield any consistent measurement. She then performed a factor analysis on the remaining 17 items. Put simply, factor analysis allows a researcher to see how different survey items perform relative to one another, with a focus on which items cluster together. These clusters, which are identified and measured by looking at how item responses correlate, are called factors. As the article explains, the factor analysis yielded a “two-factor solution”; that is, two clusters of items. Five items from the original 17 were dropped because their “factor loadings” (the strength of their correlation with one of the two factors) were not sufficiently strong to warrant inclusion, resulting in a final scale that included 12 items.

Duckworth referred these two factors as “consistency of interests” and “perseverance of effort.” But the process of naming and describing the factors was itself interpretive. The emergence of the two-factor solution was actually shaping Duckworth's thinking about what grit was. “I was first interested in what the factors were saying and whether I could discern that there was something different about Factor 1 and Factor 2,” she recalled. “And then of course, the very next thought was—well what are these things?”

By looking at what, specifically, the items asked about, Duckworth was able to rather quickly transition from Factor 1 and Factor 2 to “consistency of interests” and “perseverance of effort,” an important step in refining her concept of grit. As she shared in her interview,

I could see there were two major factors, and the interest factor was different from the effort factor. It was kind of a back-and-forth process between looking at data and thinking, and then thinking

and then looking at the data that helped me understand what grit was. But then also [to] apply that understanding of what grit was to then analyzing the data in the way that I did. It's hard to kind of pull apart but my guess is that this is just generally true. I think it is rare to [say] "well, I thought about [it] for five years and then I had it perfectly clear in my mind, and then I went and did all these studies, and then I went and thought about it again." I think it's much more like, "today I thought about it a lot and then the next day I read a bunch of data which made me think about it a little differently, and then I went back and thought about it more, then I went back to the data."

While Duckworth is specifically referring to the back-and-forth between thinking about her core idea (grit) and developing scales through item writing and factor analysis, it is interesting to note that this type of toggling is usually assumed to reside more in the province of qualitative methods, as is the inductive process of creating and naming categories based on clusters of observations (in this case, survey items that performed similarly). In describing her process of concurrently developing a construct and the tools to measure it, she reminds us once again that the lines between methodological approaches are blurrier than we think.

△ Forming and Advancing the Argument

In simple terms, the argument that Duckworth presents in the article is this: there is such a thing as grit, it is different from other things, and it is important. Building the grit scale was a necessary precursor to advancing this case. But to actually validate it, Duckworth needed a way of differentiating grit from other constructs thought to be related to achievement, such as ability or personality traits. She also needed a way of showing that grit actually predicted achievement.

Her methods of achieving this were surprisingly simple. Having built a tool to measure grit, she and her colleagues conducted a series of studies examining the relationship among grit, talent, personality traits, and achievement. While they took care to conduct these studies in different contexts and with different populations, the analytic tools they employed were fairly consistent: regression models that measured the extent to which grit predicted achievement (by measuring grit at Time 1 and achievement at Time 2), the strength of the correlation relative to other predictors, and the extent to which grit and other predictors covaried. In the article, Duckworth summarized the studies' findings as follows:

Across six studies, individual differences in grit accounted for significant incremental variance in success outcomes over and beyond that explained by IQ, to which it was not positively related... Grit accounted for more variance in outcomes than commonly observed for Big Five Conscientiousness. In Studies 1 and 2, we found that grittier individuals had attained higher levels of education than less gritty individuals of the same age. Older individuals tended to be higher in grit than younger individuals, suggesting that the quality of grit, although a stable individual difference, may nevertheless increase over the life span. As we expected, grittier individuals made fewer career changes than less gritty peers of the same age. In Study 3, undergraduates at an elite university who scored higher in grit also earned higher GPAs than their peers, despite having lower SAT scores. In Studies 4 and 5, grit was a better predictor of first summer retention at West Point than was either self-control or a summary measure of cadet quality used by the West Point admissions committee. However, among the cadets who persisted to the fall semester, self-control was a better predictor of academic performance. In our final study, grittier competitors in the Scripps National Spelling Bee outranked less gritty competitors of the same age, at least in part because of more accumulated practice. (p. 1098)

Empirically, findings from the six studies confirmed many of Duckworth's original intuitions about what makes people successful—hunches that were born in her classroom as a teacher, refined through reading the work of William James and his contemporaries, enriched through her conversations with Seligman and interviews with other experts, and sharpened through creation and validation of the grit scale. She learned that grit was distinct from IQ or ability and personality traits (as measured by the Big Five), and that it predicted success in the contexts she observed over and above those variables. But in addition to affirming many of her hypotheses going into the work, the early studies also offered surprises, enriching her understanding of what grit was, why it mattered, and how it fit into the larger puzzle of understanding achievement. Describing what she learned from these six studies, Duckworth explained:

The obvious other explanation for success is talent; some people are just better at things and they learn faster and they are going to be the winners. There's an expression "talent will win out," you know, the cream rises to the top kind of thing. And I just wanted

to test that directly. So I think in almost all of these studies, certainly the ones that have the kind of prospective longitudinal grit predicting something else, there are some measures of talent... your Whole Candidate Score in West Point or IQ in the spelling bee... One of the things I expected was that grit would predict over and beyond these measures or over and above, like controlling for talent you still get a prediction. But, one thing I didn't expect to see so clearly in the data, which truly just jumped out, is that you never find that grit is just positively correlated with talent. You often find it negatively correlated or zero correlation.

Having validated many of her original suppositions, the final step in forging the conceptual framework in this article—and one that has carried forth in her subsequent research on the topic—was rhetorical: finding a way to tell a story from the data that was clear and compelling.

The early stages of this story, described above, focus on the rationale for grit as a new construct. It was an argument that something was missing from our understanding of what leads people to be successful. The later stages, which report and discuss findings of the six studies included in the article, make the case for why and how grit matters.

In the case of this article, the six studies presented happened to be undertaken in chronological order. But that was not the primary reason for presenting them in the order they were introduced. More important was the need to present findings in a way that followed logically, building toward a specific conclusion. Noting the work of colleagues she admires, Duckworth explained that well-written research reads like a story, with narrative elements building upon one another.

I really aspire to that kind of writing, where you're telling the reader a story and you give them the setting and it kind of unfolds. It both is natural but also is anticipatory. Like they are kind of engaged in a way and they are wanting to read the next paragraph.

In this article the story is told carefully in the findings and discussion sections, first establishing a strong link between grit and success in studies one through three, and then systematically presenting evidence that this link was likely not the result of other, unobserved factors in studies four through six. "I was influenced by what covariants to add because I think in longitudinal work you're always worried that X predicts Y but it's for some other reason," Duckworth explained. "There's some third variable Z, so you progressively want to eliminate possible Zs that it could be."

For this article—the first of many Duckworth would publish on grit—this is where the story ends. And it is worth noting that in academic terms, the conclusion is actually quite modest. After summarizing their findings, the authors note the limitations of their work to date, relate what they learned back to the literature, and suggest some implications for policy and practice should further research substantiate their findings. But there is no grand theory here, no attempt to make proclamations about a broad set of human behaviors or characteristics. While this was in part due to the disposition of the researcher, it also highlights the interplay between accumulating bits of empirical evidence and theory building. Formal theoretical work tends to be top-down in nature, imposed on data as a means of analyzing them. Empirical work, by contrast, is usually bottom-up: data points are collected and aggregated until some bigger picture or pattern emerges. Reflecting on a decade of researching grit and self-control, Duckworth explained that she arrived at theory over a long period of time:

I do have a theory but it's been very slowly evolving and I think in a way the individual empirical insights—girls have more self-control than boys and that's why they get better grades...one of the reasons that it is easier to delay gratification for some kids is that they have strategies that help them—these had been just like little individual insights. The theory I'm a little late to, I think many people start with theory and then that drives a lot. But for me it was much more bottom up.

There is an important lesson here, especially for those who are new to academic research: *A strong conceptual framework does not always require a strong theoretical framework.* As we will see in the chapters to follow, there are many places where theoretical frameworks can help advance your thinking and research, and in these cases you should include them. But you do not need, in some cases, to complicate your work unnecessarily by presuming theory as the only starting point. As the example of this article (and its author) shows, just as often it can be a conclusion.

Conceptualizing Frameworks: Concluding Thoughts ▲

This chapter is about where conceptual frameworks come from. “Perseverance and Passion for Long-Term Goals” is a particularly useful example to examine, since the focus of the article is, in fact, the formulation and articulation of a conceptual framework. The story of how that framework came to be is partly told in the article itself, but it is Duckworth’s

reflections on her own process, and her own learning, that truly illuminate it. That story offers three main lessons. First, in keeping with our discussion of personal interests, goals, identity, and positionality in Chapter 1, the story of grit shows that experience and intuition are important. Literature review (both topical research and theoretical frameworks) plays a critical role in shaping and refining conceptual frameworks, but it is not necessarily what gives rise to them. If you are careful and thoughtful in your process, you will have plenty of opportunity to refine and rethink your intuitions and assumptions as needed, just as Duckworth did.

Second, informal methods—thinking things through, journaling, discussing with colleagues—are in fact a critical part of the learning process. For Duckworth, watching documentaries about successful individuals or observing people informally shaped her thinking as much or more than formal research. “I do go back and forth with the data, but honestly I think [I learn] at least as much from talking and observing and dreaming and thinking as I do from ANOVA and ANOCOVA,” she reflected. Remember that research is just as much about thinking as doing. There are steps in the process that are formal and technical, and these tend to be what get reported in published articles and books. But if you become too focused on those aspects too soon, you risk shortchanging the foundational work of asking questions and problem solving that ultimately make the work meaningful.

Finally, as you will see throughout this book, just as the articulation of a conceptual framework shapes the methodological choices researchers make, so the findings from that research feed back onto the conceptual framework. As you move through the process, keep in mind that while academic work is about framing, presenting, and substantiating argument, it is also about your own learning as a researcher.

△ Reflection Questions

1. Why do you want to study what you want to study?
2. Why do the topic and context matter to you personally? Why might it matter to others?
3. Whose thinking about your question or topic has influenced your own, and why?
4. If you could engage in thought partnership conversations about your topic to further your own thinking, whose opinions and perspectives might challenge and help you to develop yours? And what questions would you ask them?

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