

Exploring Grit: “Grit Linguistics” and Research on Domain-General Grit and L2 Grit

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ABSTRACT

Grit is described as a unitary construct comprised of two elements, perseverance of effort (PE, or ongoing hard work) and consistency of interest (CI, referred to as “passion”). PE and CI together equate to success or achievement, according to the creator of the construct, Angela Duckworth (2016). Grit, which has supporters and detractors, says success is more dependent on PE and CI than on natural talent (Duckworth, 2016). This article presents “grit linguistics,” including the linguistic background of overall grit, PE, and CI and the appropriation of words from other fields into the grit vocabulary. This is followed by research on domain-general grit (grit across domains or areas) and domain-specific grit (L2 grit, i.e., grit for learning a second or foreign language). In addition, the article offers suggestions for future conceptions and assessment of grit.

Keywords: grit, language learning, conscientiousness, self-control, self-regulation, culture

INTRODUCTION

The social-psychological construct of grit, created by University of Pennsylvania professor Angela L. Duckworth and her colleagues, sparked a veritable “grit revolution” among scholars, including supporters and critics. Grit is a unitary, trait-like, noncognitive construct with two aspects, perseverance of effort (PE) and consistency of interest (CI, also called “passion”) for an individual’s long-term goals despite failure, adversity, or plateaus in progress (Duckworth, 2016; Duckworth & Gross, 2014; Duckworth & Quinn, 2009). Non-gritty individuals might change goals due to disappointment or boredom (Duckworth et al., 2007), but gritty people keep on moving toward their goal. Grit most often is measured by the Grit Scale, usually in one of these two versions: Grit-Original, or Grit-O, with 12 items (Duckworth et al., 2007), and Grit-S, the short form, with 8 items (Duckworth & Quinn, 2009).¹

The overall purpose of this article is to present a balanced view of grit, showing the value of the construct and ways this construct could be enhanced. We present the following main topics: “grit linguistics”; a summary of and commentary on domain-general grit (grit across areas); a summary of and commentary on domain-specific grit, in this case grit for learning a second or foreign language (L2); and an evaluation of the grit construct from multiple perspectives.

“GRIT LINGUISTICS”

This section offers grit’s etymology (the historical development of the word), legitimate “appropriation” of grit-related words, and semantics (study of meanings) regarding perseverance of effort (PE), consistency of interest (CI), and passion.

Etymology of “Grit”

The etymology of the word “grit” can be traced to the ancient days of the Proto-Indo-European (PIE) language, spoken 4,500-2,500 BCE. In those days, the root of current-day “grit” was the verb **ghreu*², “to rub, grind” (Harper, 2021a). The PIE root led to Proto-Germanic **greutan*, “tiny particles of crushed rock,” which then morphed into Old English *greot*, “sandust, earth, gravel.” Old Saxon *griot*, Old Norse *grjot*, “rock, stone,” and German *Grieß*, “grit,

sand” (Harper, 2021a). The continuing, physical meaning of the word “grit” is sand, gravel, a sharp granule, or an abrasive material, and relatedly, a stone’s structure that adapts it to grinding.^{3,4} The history of the word *gritty* began in the late 16th century, when it meant “resembling or containing sand or grit” (Harper, 2021b; Merriam-Webster, 2021a). The physical, sand-and-gravel meaning of *grit* is still used today when relevant, but the term was also appropriated to refer to human characteristics.

Appropriation of Words

Mikhail Bakhtin (1981), literary critic and philosopher of language, stated that all word-based communication consists of normal, legitimate acts of *appropriation*. “The word in language is half someone else’s” (p. 293). A word becomes “one’s own” through being populated with one’s “semantic and expressive intention” (p. 293).

Appropriations of Grit to Focus on Humans

In the 18th century, *grit* was appropriated for a new intention, to identify a human action, in the idiom “*grit* one’s teeth”. This idiom means to press or rub together the bottom and top teeth in pain, anger, or impatience, while nevertheless persisting in doing something (Merriam-Webster 2021b; Idiom Origins, n.d.). This idiom is still in use.

Possibly because this idiom was so popular in the 18th century, an American witticism in the early 19th century used *grit* as a noun meaning pluck, determination, courage, and mental strength to endure pain or hardship (Merriam-Webster, 2021c). That appropriation spread widely and, in the 20th century, it received its greatest attention to date in the popular film, *True Grit* (Wayne, 1969). A little less than four decades later, in 2007, *grit* retained the human focus but took on a scientific coloration.

Scientific Appropriation of Grit

The scientific appropriation of *grit* began in in 2007 with Duckworth, trained as a social psychologist but deeply interested in education, and her colleagues. *Grit* research dramatically grew in the psychology and education fields.

The following two sections of this study provide examples. In addition, medical and healthcare fields (Lee & Duckworth, 2018; Shih & Maroongroge, 2017), and business, finance, entrepreneurship, and manufacturing (e.g., *Business News Daily* Editor, 2020; Fiebert, 2021; Reiser, 2018) joined in discussions and promotion of grit as a feature of individuals and groups.

Scientific usage of *grit* was accompanied by terms like “studies,” “research,” “investigation,” “laboratory,” “measurement,” “individual differences,” “construct validity,” “results,” and “findings”. In a 2016 interview with the *New York Times* (Scelfo), Duckworth exchanged her scientific tone for excited effusiveness in describing how grit “beat the pants off IQ, SAT scores, physical fitness, and a bazillion other measures...” Scientific composure returned in the same sentence as she explained the purpose of grit measures, i.e., to reveal “...which individuals will be successful in some situations.”

Appropriation of Identity for Grit Research

Duckworth appropriated the term *identity*, legitimately giving it her own slant, which differed from the ways many identity researchers used the term: Big Five personality traits, human development stages, additional personal and social variables, and identity typologies.⁵ In her 2016 book, Duckworth described identity *as the kind of person one believes oneself to be*. In her view, identity influences gritty decisions about perseverance and passion.

Identity is in turn influenced by *experience*, *genetics*, and *culture*, according to Duckworth. As individuals gain *experience*, they learn life lessons and develop ways of thinking and behaving, which become habitual. She mentioned that grit is *polygenetic*, meaning determined by more than one gene. In studies of twins, the heritability of perseverance was 37% and passion, 20%, which similar to heritability rates of other traits (Duckworth, 2016). Duckworth seemed to significantly narrow the meaning of *culture* to an organizational or team culture. She gave the example of a team of swimmers with a gritty coach, who promotes grit in team members and provides experiences that demand grit.

Appropriating Ultimate Concern for Grit

Another appropriation for grit theory was the religious term *ultimate concern*. This term had been created by German-American theologian Paul Tillich and had become famous due to his book, *Ultimate Concern: Dialogues with Students* (1965), his other works, and his sermons. According to Tillich, everyone has an ultimate concern, but religious faith in God is the only *true* ultimate concern. He averred that people often substitute lesser things, such as success, the good life, or nationalism, as their ultimate concern. Members of theological and philosophical circles, churchgoers, and many others in the general public knew Tillich’s meaning for the term *ultimate concern*. However, we do not know whether Duckworth was aware of the term’s provenance or original meaning.

Duckworth (2016) appropriated the term *ultimate concern* and, as with any appropriation, populated it with her own semantic and expressive intentions. In her explanation, grit involves recognizing the ultimate concern (one’s own highest goal); holding tenaciously to it; and working hard to fulfill it, even if this takes years or decades. Opposite to Tillich, Duckworth encouraged people to see their ultimate concern as success, achievement, or performance in one major area, with grit as the way to maintain the goal for a very long period and attain it. She described the ultimate concern as so significant that it organizes and gives meaning to all other lesser goals, i.e., to virtually everything else that the person does. Figure 1 shows our adaptation of Duckworth’s (2016) concept of the highest goal (ultimate concern), mid-level goals, and low-level goals.

Semantics of PE, CI, and Passion

We now leave our discussion of appropriation of words and explore the semantics (meaning) of perseverance of effort (PE), consistency of interest (CI), and passion. Grit researchers and writers have often equated CI and passion, and it seems important to us, as applied linguists, researchers, and university professors to offer our linguistic understanding of that equation.⁶

Semantics of Perseverance of Effort: Repetition

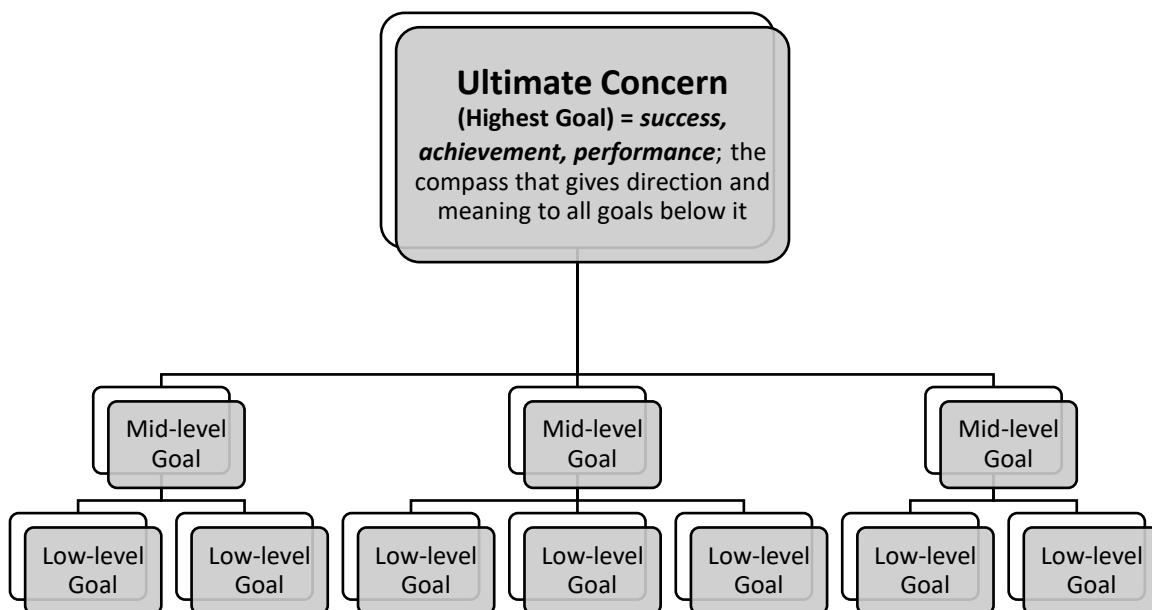
The term *perseverance of effort* (PE) literally means “continued effort *of effort*” (sic). The reason for the implicit repetition of “of effort” is that the definition of *perseverance* already includes *effort*: “continued *effort* to do or achieve something despite difficulties, failure, or opposition” (Merriam-Webster, 2021d) or “continued *effort* and determination” (Cambridge University Press, 2021a). If this causes any linguistic distress for readers, fear not. Many grit researchers decided to use the term *perseverance* by itself, except in the abbreviation PE.

Semantics of Passion and Consistency of Interest: A Very Complex Picture

We again underscore that Duckworth’s equating of CI (*consistency of interest*) and *passion* is highly problematic. *Interest*, defined as “curiosity about and appreciative regard for something” (Harper, 2021c; Merriam-Webster, 2021e), might or might not be an emotion (Silvia, 2006), is a mild and generally positive term, and is definitively long-term only at those times when the “C” (consistency) is placed in front of it (i.e., CI).

Figure 1. *Our View of the Ultimate Concern (Highest Goal), Mid-Level Goals, and Low-Level Goals*

Source: R. Oxford, based on Duckworth (2016)



Note. Grit (perseverance and passion) is the way to achieve the highest goal (ultimate concern), according to Duckworth (2016).

Passion always refers to an emotion that is intense, seemingly boundless, and fully engaged (Cambridge University Press, 2021b; Harper, 2021d; Merriam-Webster, 2021). It usually has a positive tone, but it can be negative as well, as in the Passion of Jesus Christ (Cambridge University Press, 2021; Harper, 2021d; Merriam-Webster, 2021f; Vallerand, 2010).

For example, Vallerand’s definition of passion is as follows: “a strong inclination toward a self-defining activity that people love, find important, and in which they invest time and energy” (p. 98). Vallerand’s (2010) dualistic model of passion distinguishes two types of passion, harmonious (it is related to the autonomous, personal-choice aspects of the activity leading to positive outcomes)

and obsessive (it is an uncontrollable desire for engagement in one's favorite activity leading to less positive outcomes). Passion can be long-term or short-term, because its synonyms are *zeal* and *fervor*, which Merriam-Webster (2021f) suggested are long-term, and *ardor*, which could be short-term (Merriam-Webster). If it had the "C" for consistency placed in front of it (CP), passion would definitively be long-term, as is CI.

Semantic differences among *consistency of interest*, *passion*, and *passionate* are shown in Table 1, which is crucial for readers who want to understand semantic differences (and difficulties) in the way these terms are used in grit research. The areas of difference fall into four categories: difference in intensity, difference in substance, difference in duration, and difference in positivity / negativity.

Table 1. *Semantic Contrasts: Consistency of Interest (CI), Passion, and Passionate (or Why Grit Researchers Should Remember that CI ≠ Passion)*

Differences (below)	Consistency of Interest (CI)	Passion	Passionate
1. Difference in Intensity	Mild	Strong	Strong
2. Difference in Substance (Does it refer to an emotion or not?)	Unclear. Silvia (2006) said interest is an emotion, but he noted that scholars disagree.	Yes, <i>passion</i> is a strong emotion.	Yes, <i>passionate</i> is an adjective expressing strong emotion.
3. Difference in Duration	Long-term only because of inclusion of the word <i>consistency</i> . If that word were not included, could be any duration.	Could be long-term, like <i>passion's</i> synonyms <i>zeal</i> or <i>fervor</i> . Could be short-term, like <i>passion's</i> other synonym, <i>ardor</i> (example: a moment of passion). If it were in the phrase <i>consistency of passion (CP)</i> , it would definitely be long-term.	Could be long-term or short-term. See <i>passion</i> in prior column.
4. Difference in Positivity and Negativity	Generally positive (Negative: <i>person of interest</i> = person who might have broken the law and is being watched. This is used only in legal and policing circles.)	Typically positive: passion for art, passion for sports, passion between lovers, writing with passion, singing with passion, playing the piano with passion. Negative (painful): <i>the Passion</i> of Jesus Christ, the <i>agony</i> or <i>suffering</i> of Jesus Christ between the night of the Last Supper and his death (Merriam-Webster, 2021f). However, some Christians might view the Passion as positive because it signified Christ's great, sacrificial love.	Typically positive: passionate kisses, passionate love of spouse, passionate painting, passionate dancing. Negative: passionate anger. ⁷ Positive or negative: passionate argument, passionate difference of opinion.

Duckworth (2016) explained that interests are sparked by interactions with the real world and that *after* the initial discovery of an interest or passion is a long, protracted period of persevering and passion/consistency of interest. For Duckworth, between *interest* and *passion* there seemed to be no particular difference in substance, i.e., non-emotion versus emotion, and she did not clearly emphasize, to our knowledge, a difference in intensity. She appeared to treat *interest* and *passion* as equivalent, using *passion* as a short form of *consistency of interest*. Perhaps for reasons of euphony (beautiful sound) or compactness, *passion* was selected over *consistency of interest* to employ along with *perseverance* in the titles and content of many grit publications, such as those by Duckworth (2016); Duckworth et al. (2014); Morrell, Yang, Gladstone, Turci Faust, Ponnock, Lim, and Wigfield (2020); Robertson-Kraft and Duckworth (2014); Teimouri, Plonsky, and Tabandeh (2020); and Von Culin, Tsukayama, and Duckworth (2014). In their psychometrically rich article van Zyl, Olkers, and Roll (2020) chose the other path, employing *interest* instead of *passion*.

Summary of the Section

This section has presented the historical evolution (etymology) of the word *grit* and has tracked how *grit* itself was appropriated from its sand-and-gravel meanings to describe human actions and characteristics and how *grit* became a scientific concept. We also tracked words (and their concepts)—*identity* and *ultimate concern*—that Duckworth legitimately appropriated from additional fields and that became part of grit science.

In grit research, PE and CI together can lead to success, achievement, and excellent performance, according to the creator of the construct, Angela Duckworth (2016). It would be helpful to eliminate repetition of the sense of “of effort” in *perseverance of effort* by henceforth using the term *perseverance* by itself. We have no major argument with the use of the terms *interest* and *passion*, except that we hope grit researchers and theorists would distinguish between interest and passion and would stop equating the two. Perhaps these two terms represent different phases in the grit trajectory, with interest sometimes—but not always—deepening and growing into passion. Alternatively, perhaps an individual difference in personality allows one

person to experience the intensity of passion more often, while another person more often experiences the mildness of interest. We turn now to the second section, which involves domain-general grit.

DOMAIN-GENERAL GRIT

This section deals with multiple themes of domain-general grit. These include measurement of the construct (including absence of passion and use of negative wording on the Grit Scale), time, conscientiousness, self-control, autonomy, agency, and creativity, among other themes.

Measuring Domain-General Grit

Duckworth’s (2016) self-report Grit Scale, according to the instructions, promises participants the following: “At the end, you’ll get a score that reflects how *passionate* and *persevering* you see yourself to be”. In a 2016 *Washington Post* interview with MacGregor, Duckworth said, “Love what you do...,” which suggests passion. However, the Grit Scale itself does not reflect love or other passions.

Absence of Passion

The two versions of the Grit Scale are Grit-O, the original 12-item scale, and Grit-S, the short, 8-item scale. Items for both the Grit-O and the Grit-S are shown in Table 2. If passion is defined the normal way (as a strong, intense, seemingly boundless emotion, as in the preceding section), then no passion items exist on the Grit Scale. Continuity of interest (CI), which is not the same as passion, is also dubious on the Grit Scale because of the negative wording of all items related to interests.

Negative Wording and Double Negatives

As shown in Table 2, items that Duckworth intended to measure passion/CI are all worded negatively, both in terms of grammar and in terms of grit theory. These items refer to a dropping or changing an interest, losing focus, and becoming distracted. The passion/CI items on the Grit-O Scale are as follows: “I often set a goal but later choose to

pursue a different one,” “I have difficulty maintaining my focus . . .,” “New ideas and projects sometimes distract me from previous ones,” “ My interests change from year to year,” and “I become interested in new pursuits every few months,” and one more, discussed in the next paragraph. The items, as written, make a change of interest seem flighty and distracting.

The closest item to passion on the Grit Scale (item 5 in the Grit-O, item 3 in the Grit-S) is: “I have been obsessed [sic] with a certain idea or project for a short time but later lost interest”. Obsession is not a healthy, positive emotion; in fact, it is generally viewed as dangerous (see Vallerand, 2010 regarding obsessive passion). Ending the *obsession* might be a good thing; however, losing the *interest* entirely could seem to be a true negative. The item is written in such a way that a respondent could easily become confused and wonder what is intended.

Bright, observant respondents to the Grit Scale might notice that all the negatively worded items are about long-term interests (passions) only. Such respondents might also see that all perseverance items were worded positively. Why did that happen? By using negative wording, did Duckworth or her colleagues know that long-term interests were being treated very differently from perseverance and that this would raise all sorts of psychometric problems? Did the obvious *negativity* of the long-interest items suggest, consciously or unconsciously, that such interests might narrow or harm a person’s life goals? Alternatively, is the hidden message that holding on tightly to an interest for a long time is good, despite the consistent negativity of the interest items? For the purpose of attaining the goal, does the sheer *positivity* of the perseverance items imply that persevering is better, more positive, more significant, or easier than being interested/passionate? These are the types of quick thoughts an intelligent Grit Scale respondent might have, given the uniformly positive perseverance items and the uniformly negative interest items. In short, we contend that negative wording, when applied only to the half of the grit scale involving interest, is bound to create questions in the minds of alert respondents and hence psychometric questions in how to interpret the results.

Keenly-thinking respondents might know to be cautious about negatively worded items, but ordinary respondents might not be so aware and might be swept along by the tide, possibly agreeing with negative items (positive response set

to negatively-worded items) without knowing why. Psychometric research indicates that negative wording, which was used in all the interest/passion items, can cause comprehension difficulties for many respondents (Chyung, Barkin, & Shams, 2018) and increase affective problems of worry and anxiety. Double-negatively worded items are even more difficult and more confusing than negatively worded items (Chyung et al., 2018). For instance, Grit-O item 4 (Grit-S item 2), says *Setbacks don’t discourage me*. The double negative is *do not discourage me*. Items with double negatives cause at least four major problems for respondents (Chyung et al). First, double negatives create an extra cognitive load (Chyung et al., 2018). We add that given an excess of cognitive load, spending extra time and mental on a double-negatively worded item draws time and energy from other items, if the survey is timed. Second, respondents often fail to carefully read items that are written with double negatives because they want to get past them as fast as possible. Third, double-negative wording tends to muddy respondents’ understanding of an item even if they do try to read it carefully. Fourth, we add that a double-negative item often stirs up negative affect, such as anxiety or worry that can heighten negative affect about the whole survey. All four problems can reduce validity and reliability.

Chyung et al. (2018) explained that an underlying reason for using negatively worded items in the midst of positively worded items is to eliminate “response set bias,” i.e., a tendency of survey respondents to respond to a given survey item untruthfully and thereby threatening the validity and reliability of survey instruments. A frequent response set is “acquiescence bias,” i.e., the tendency for respondents to agree with survey statements regardless of the content. While the use of negatively worded items is sometimes employed to control acquiescence bias, the benefits may be outweighed by the deleterious effect on response accuracy and instrument validity (Chyung et al., 2018).

Chyung et al. (2018) cited several studies in which the effect of negatively worded items was tested. Researchers found that scores on the positively and negatively worded items were not consistent. That is, strongly disagreeing to a positively worded statement is different from strongly agreeing to a negatively worded statement. Detailed analysis led Chyung et al. (2018) to conclude all positively worded survey items yielded significantly greater accuracy when compared with all negatively or mixed worded items.

Table 2. *Grit Domain-General (Original) and Grit Domain-General (Short) Items: Positive/Negative Wording and Comment on Timing*

Item # on Grit-O	Item # on Grit-S	PE/Perseverance or CI/Interest	Item with <i>timing words</i> highlighted	Positive wording for PE items	Negative wording for CI items (i.e., dropping of interest)	Double Negative wording	Comment on Timing
1	–	PE	<i>I have overcome</i> setbacks to conquer an important challenge.	Pos. A	–	–	Present perfect: <i>have overcome</i>
2	1	CI	New ideas and projects <i>sometimes</i> distract me from previous ones.	–	Neg. A	–	<i>Sometimes</i>
3	–	CI	My interests change <i>from year to year</i> .	–	Neg. B	–	<i>From year to year</i>
4	2	PE	Setbacks <i>don't [ever understood]</i> discourage me.	–	–	Supposed to be Pos. (Do not discourage), but double neg. items are confusing; have excessive cognitive load; make respondents not read carefully	Don't [implicit: <i>ever</i>]. Note: This means never, but that is not necessarily clear from a double negative.
5	3	CI	<i>I have been</i> obsessed with a certain idea or project <i>for a short time</i> but <i>later</i> lost interest.	–	Neg. C	–	Present perfect: <i>have been obsessed</i> . Duration: <i>for a short time</i> Past: <i>later</i> lost interest
6	–	PE	I am a hard worker.	Pos. B	–	–	Present (but suggests a pattern, a personal identity)
7	5	CI	<i>I often</i> set a goal but <i>later</i> choose to pursue a different one	–	Neg. D	–	Often, later

8	6	CI	I <i>have</i> difficulty maintaining my focus on projects that take <i>more than a few months</i> to complete.	–	Neg. E	–	Present, but suggests <i>always</i>
9	7	PE	I <i>finish</i> what I begin.	Pos. C	–	–	Present, but suggests <i>always</i>
10	–	PE	I <i>have achieved</i> a goal that took years of work.	Pos. D	–	–	Years of work Present perfect: have achieved (in the past)
11	–	CI	I <i>become</i> interested in new pursuits every few months.	–	Neg. F	–	<i>Every few months</i> Present (but suggests a time pattern)
12	8	PE	I <i>am</i> diligent.	Pos. E		–	Present (but suggests a pattern, a personal identity)

Contrary to traditional wisdom, a key lesson from Chyung et al. (2018) is to avoid mixing positively worded and negatively worded items, because doing so can create threats to validity and reliability of the survey instrument. If mixing positive and negative items, it is recommended to use strategies derived from research to improve the quality of data and the instrument validity and reliability.

More on Passion and Interest

Grit does not necessarily cohere with human development research in terms of passions or interests, excellence in which is the ultimate concern (Duckworth, 2016). In the psychology of human development, it is *normal* (not the sign of a problem) to change interests and goals. We point out that especially in school and in lower-level undergraduate university studies, where new subjects are introduced every semester or more often, it is not surprising that new interests would emerge; that in midlife, life goals are often rethought and might change; and for the retired or the elderly, life goals might again shift. We further add that prior interests or passions are sometimes outshone by new ones but do not have to vanish from memory or positive regard. Difficulties might emerge if changes of interests/passions occur every few months for adults; if prior interests/passions are disrespected as stupid or poor in a way that that harms the person's self-esteem and identity; or if prior interests/passions are unremembered and totally unintegrated into new interests.

Empirically and definitionally, Schmidt, Nagy, Flekenstein, Möller, and Retelsdorf (2018) found that CI, often called “passion” by Duckworth and her colleagues since 2007, was in fact correlated with *self-discipline* in the conscientiousness scale in the assessment of Big Five personality traits. Schmidt et al. (2018) also discovered that the results for the overall Grit Scale were more similar to the results for perseverance than to CI.

To improve grit assessment, Morrell et al. (2020) included the word “passionate” once in their LT-Grit (Long-Term Grit) Scale. No prior grit scale – Grit-O (see Duckworth et al., 2007) and Grit-S (see Duckworth and Quinn, 2009) – explicitly mentioned passion in one of the items. The LT Grit Scale includes the term *passionate*.

Domain-General Grit and Timing

Timing is an issue of interest with domain-general grit. Here, we discuss the expressions of time on the Grit Scale (adverbs and verb tenses), time metaphors, and time to highest goal (ultimate concern).

Expressions of Time on the Grit Scale (Grit-O and Grit-S)

Time is a major issue in grit, because grit propels the person toward the highest goal over a long period of time, which differs from person to person. There are two ways to express time on the Grit Scale: time words (e.g., adverbs and adverbial phrases) and verb tenses.

The Grit Scale (Grit-O and Grit-S⁸) uses specific adverbs and adverbial phrases—“time words”—to indicate frequency, sequence, and duration. Here are the time words directly from the Grit Scale:

1. Frequency: *sometimes, every few months, from year to year, often, and [Implied: ever]*
2. Sequence: [Implied: *now*], *later*
3. Duration: *for a short time, more than a few months, years of work.*

Notice how diverse these time words are. There seems to be no special order or pattern. Not all potentially important frequencies, sequences, or durations are included on the Grit Scale.

In addition to using overt temporal words or phrases as just mentioned, the Grit Scale employs verb tenses to express time. The Grit Scale uses such a wide variety of tenses that could create confusion for respondents. The items “jump” from one period to another in unexpected ways. However, perhaps all the jumping of time frames is more intentional than it seems.

1. *Present tense verbs on the Grit Scale: I am a hard worker, I am diligent, I finish what I begin, I have difficulty.* These illustrate the use of present tense but might suggest that they reflect patterns that developed or operated in the past.

One *Present* tense verb, on the Grit Scale, *become*, implies that something happens over time: *become* (interested).

2. *Simple Past tense verbs on the Grit Scale: lost interest, took years.* Simple Past refers to a definite time in the past.
3. *Present Perfect tense* refers to an action in indefinite time reference that is in certain connection with the present moment. On the Grit Scale, the Present Perfect tense is used to signify a habitual or regular past action that might also occur in the present (if a pattern were established in the past): *I have overcome..., I have been obsessed..., I have achieved...*
4. *Problem:* In one case on the Grit Scale (Grit-O item 5, Grit-S item 3), two different tenses are used in one item, creating a within-item confusion of timing:

* *I have been* obsessed [Present Perfect] with a certain idea or project *for a short time* but *later* lost interest [Simple Past].

*This reveals conflict between tenses.

To correct the confusing mix-up of tenses, the item could use the same tense throughout, with this as the preferred option: Use Simple Past throughout: *I was* obsessed with a certain idea or project *for a short time* but *later* lost interest.

Time is expressed not only by adverbs and verb tenses, but it is also expressed in time metaphors, as shown next.

Time Metaphors: Stamina and Marathon

Stamina is quite related to time, particularly in terms of the strength to stay with a goal for a very long period. In a *Washington Post* interview with McGregor (2016), Duckworth stated "...[T]he most succinct definition of grit is stamina. The heart of grit is really about sticking with things, as opposed to dropping out of them". She noted that stamina occurs in both effort and passion. "[G]ritty people love what they do and they keep loving what they do. So they're not just in love for a day or a week. People who are really gritty—they're still interested..."

Grit writings by Duckworth and colleagues often emphasized years and decades as the duration before achievement of the goal. Duckworth et al. (2007, pp. 1087-1088), stated that grit involves strenuous, stamina-fueled effort and interest in a *marathon* toward attaining a goal

over years, "despite failure, adversity, and plateaus in progress." Duckworth and Gross (2014) wrote that higher-level goals take *years or decades* of grit to achieve. For Duckworth (2016), developing increasing skills on the way to excellence can take *years* (thousands of hours, as in dance or musical performance). Elsewhere in the same book, she mentioned that *decades* might be essential for achieving excellence.

Time to the Highest Goal (Ultimate Concern)

An important issue to learners is how long it takes to attain a "long-term" goal, especially the longest-term, highest goal (ultimate concern). Achievement, success, or performance is crucial to grit, and reaching the highest goal (ultimate concern) is especially crucial, given that the highest goal is an organizer and meaning-bringer (Duckworth, 2016). However, only the Grit-O item 10 mentioned anything like completion of a long-term, multi-year goal, "I have achieved a goal that took years of work."

However, the goal in Grit-O item 10 might or might not be the individual's ultimate concern or highest goal. Without knowing what a person's ultimate concern or highest goal is, it is difficult to even guess the duration before that concern or goal is attained. This is one reason why grit measurement should probably include an item that asks about the person's ultimate concern or highest goal. Even if grit studies only focus on relatively short terms (a semester, six months, or a year) rather than on movement toward ultimate concerns, it could be enlightening to ask what the respondents' goals (short-term, mid-level, or ultimate) actually are. In a domain-general study, it can be difficult to imagine the individual's goal at the time, given the many possibilities. In a domain-specific (L2) grit study, the aim (short-term, mid-level, or ultimate) might be improved communication skills, heightened vocabulary/grammar knowledge, an increased score on a standardized language assessment, travel, or perhaps obtaining a better job using the language.

Duration of grit-aided movement toward the goal is sometimes dictated by researchers or educational institutions, guided by school grading periods or the completion of a major assignment. We need to ask ourselves whether this general type of achievement or performance—a grade on a major piece of schoolwork—meets the

description of a particular student's *highest goal in life* (ultimate concern). This does not seem reasonable. Would a grade on an assignment, even an important assignment, be the students' ultimate concern for a given entire year? Duckworth (2016) herself threw down the gauntlet when she encouraged readers to consider grit in relation to an ultimate concern (highest goal). Given this emphatic use of the terminology of ultimacy and therefore the importance of the issue, it seems inexplicable not to even ask about individual's ultimate goal at the time of completing a Grit Scale.

Moreover, the highest purpose (ultimate concern) might not be stable throughout the lifespan. If we asked for a teenager's highest life purpose and then asked that person the same thing again at age 60, the highest purpose might well have changed. How does grit measurement relate to or accommodate such a change? What longitudinal studies are occurring?

If we want to maintain a standardized instrument without any write-in comments, we might at least request that respondents should think back on a past goal (or think forward to an ultimate concern, if some items are revised in that direction).

Rate of Gritty Progress Can Be Slow

Rate of progress is another time-related topic. On Duckworth's 2021 website, her answer to a frequently asked question is that for a gritty person, the rate of progress toward the goal is not always rapid. ". . . [G]rit is holding steadfast" to the goal, "[e]ven when you fall down. Even when you screw up. Even when progress toward that goal is *halting or slow*"⁹ (emphasis added). In her 2016 book, she mentioned that after a time, a gritty person's learning curve might slow down, resulting in the "mundanity" (i.e., ordinariness, everyday-ness) of progress toward excellence, but the gritty person keeps working toward success.

Talent's Rapid Rate of Improvement

Duckworth (2016) argued that talent can be misleading or distracting, while grit is needed for success. *Talent* is identifiable by rate of improvement, according to Duckworth's website (2021). In her 2016 book, she noted,

based on her observations while she was a seventh-grade math teacher, that talented students are able to find answers rapidly but often fail to persevere. Gritty students, she found, were often less talented, but their hard work and determination (reflecting perseverance) leads to success. In contrast, we believe that talent and grit can work together; a person need not have just one of these characteristics.

Moving ahead, we note here some factor structures and results of other analyses and then look at studies in which grit is linked with other variables.

Brief Comments on Domain-General Grit Factor Structures and Other Analyses

These comments are very brief because there is so much domain-general grit research available on factor structures and other statistical results. It is impossible to summarize it all here. We only provide a few appetizers, a small taste.

Using the Grit-O Scale, Duckworth et al. (2007) defined grit as one's passion and perseverance toward long-term goals. This definition comes from the two factors, PE and CI, mentioned frequently. In a sample of high school and college students, Muenks et al. (2017) used multidimensional item-response theory to discern (1) the factor structure of grit and (2) grit's relationship to and overlap with similar constructs (self-control, conscientiousness, cognitive and effort self-regulation, and engagement). Results revealed that the grit factor structure differed somewhat between high school students and college students and that grit scores overlapped with students' scores for self-control, self-regulation, and engagement. Also employed were multiple regression analyses using factor scores to identify grit's ability to predict end-of-semester course grades. Students' PE, but not CI, predicted their later grades, though other measures—engagement and self-regulation—were, compared with grit, better predictors of students' later grades.

A study reviewing existing research on the many factor structures discovered for the Grit-O Scale in multiple countries is by van Zyl et al. (2020). The issue of differing factor structures across countries, even when the Grit-O Scale had been translated into the language of the country where research was conducted, gives pause. In addition to their comprehensive review, these researchers conducted

further research on the Grit-O factor structure in the Netherlands. van Zyl et al. (2020) indicated that they used the Grit-O Scale because the Grit-S scale had problematic factorial and psychometric issues.

Domain-General Grit and Conscientiousness

As one of the Big Five personality traits, conscientiousness has received a great deal of research attention in relation to grit (Credé, Tynan, & Harms, 2017; Ponnock et al., 2020). In fact, the definitions of conscientiousness and grit clearly overlap. *Conscientiousness* is defined as being “self-controlled, responsible to others, hardworking, orderly, and rule abiding” (Roberts, Lejuez, Krueger, Richards, & Hill, 2014, p. 1315), while *grit* refers, as noted before, to “perseverance and passion for long-term goals” (Duckworth et al., 2007, p. 1087). Hard work is emphasized in both conscientiousness and perseverance. As Credé et al. (2017) noted, there are similar items in both constructs (e.g., “I am a hard worker” is a grit item, and “I work hard” is a conscientiousness item).

Credé et al. (2017) stated that grit has been presented by Duckworth and colleagues as a higher-order personality trait that is highly predictive of success, achievement, and performance and distinct from other traits, such as conscientiousness. However, with 584 effect sizes from 88 independent samples representing 66,807 individuals, Credé et al. (2017) studied relationships between grit on the one hand and performance, retention, conscientiousness, cognitive ability, and demographic variables on the other hand. We mention some of the results here, beginning with domain-general grit and conscientiousness.

Empirically, grit and conscientiousness were found to have high correlations in many domain-general studies, indicating that these two constructs are very similar (e.g., Ponnok et al., 2020). For example, the meta-analysis by Credé et al. (2017) found that conscientiousness has high correlations with total grit ($r = .84$) and grit components perseverance ($r = .83$) and interest ($r = .61$). Furthermore, the higher-order structure of grit was not confirmed. The PE facet of grit had significantly stronger criterion validities than the CI facet. Grit was only modestly correlated with performance and retention. The implications those researchers drew were that interventions designed to enhance grit may only have weak effects on performance

and success, that the construct validity of grit is in question, and that the primary utility of the grit construct may lie in the perseverance facet.

Duckworth and colleagues (Duckworth et al., 2007; Duckworth & Quinn, 2009) also found strong correlations between grit and conscientiousness, but they claimed that these two constructs were conceptually different because grit explained incremental variance *above and beyond* conscientiousness for different outcomes. Nevertheless, the Duckworth et al. (2007) findings concerning the incremental variance explained by grit were not supported in other studies (e.g., Credé et al., 2017; Ivcevic & Brackett, 2014; Schmidt et al., 2018).

For instance, Credé et al.’s (2017) meta-analysis examined relationships between grit and several state and trait variables. After controlling for conscientiousness, Credé et al. (2017) discovered that the total grit score added only a negligible variance to academic performance, while CI added no additional variance at all to academic performance. In the meta-analysis, only PE added meaningful incremental variance. Additional studies also reported that grit did not explain additional variance over and above conscientiousness in different academic outcomes (e.g., Ivcevic & Brackett, 2014; Roberts et al, 2014; Schmidt, Fleckenstein, Retelsdorf, Eskreis-Winkler, L., & Möller 2019; Schmidt et al., 2018), with some arguing that grit might be part of conscientiousness.

Domain-General Grit and Self-Control

Despite the arguments of some grit researchers (e.g., Duckworth & Gross, 2014) that *self-control* is unrelated to grit, domain-general research on grit has indicated that grit is similar not only to conscientiousness (see above) but also to self-control. Self-control has been defined as “the capacity to regulate attention, emotion, and behavior *in the presence of temptation*” (Duckworth & Gross, 2014, p. 319, emphasis added).

In a conceptual study, Duckworth and Gross (2014) explained that while grit and self-control might be similar, they are not interchangeable and are different factors. This reflected the assertion by Duckworth et al. (2007) that grit is superior to variables such as self-control because grit alone embodies long-term stamina. A key difference between self-control and grit is therefore implied to be time-

related, given that stamina involves time, but this implication is insufficiently researched.

According to Duckworth and Gross (2014), another difference between grit and self-control is related to the hierarchical goal framework. (Our own version is in Figure 1 of this article.) Using such a framework, Duckworth and Gross (2014) contended that *self-control* is primarily for lower-level, short-term (temporary) goals, while grit involves *self-regulation*, i.e., management of one's own cognition, emotions, and social interactions for higher, more enduring goals that might take years or decades to fulfill (Duckworth & Gross, 2014; Eskreis-Winkler, Gross, & Duckworth, 2016).

Despite these arguments in favor of grit over self-control, Vazsonyi et al. (2019) found a high correlation (.81) between self-control and grit in their large-scale, life-course study of adults. Structural equation modeling by Vazsonyi et al. (2019) uncovered large overlaps between self-control and grit. Vazsonyi et al. (2019) proposed that grit is an indicator of a *higher-order self-control construct*, in contrast to Duckworth's assumption that self-control is only associated with short-term goals. Grit and self-control were both related to educational outcomes. More studies found strong correlations between grit and self-control (MacCann & Roberts, 2010; Muenks et al., 2017), contradicting the findings of Duckworth and Gross (2014).

Domain-General Grit and Mindset

Dweck's (2006) introduction to mindset did not discuss a link between mindset and grit, because research and theory on grit had not been published yet. Dweck identified two mindsets: growth and fixed.

- Growth mindset reflects the "incremental theory" that intelligence and learning ability are malleable and can be developed intentionally and incrementally. Growth-mindset learners are engaged, motivated, goal-oriented, confident, perseverant, resilient, strategic, and hopeful.
- In contrast, fixed-mindset learners believe intelligence and learning ability are a given, unchangeable entity ("entity theory"). Such learners often stay unengaged, unmotivated, goal-

less, unconfident, and lacking in perseverance, resilience, and hope.

Dweck, Walton, and Cohen (2014) suggested that growth mindset clearly could be an antecedent of domain-general grit. However, Duckworth stated in her 2013 TED Talk¹⁰ that although the growth mindset is a "great idea" for building grit, it is insufficient for doing so (Woytus, 2016). In other words, there must be additional precursors to grit, not just mindset. A study by Tang, Wang, Guo, and Salmelo-Aro (2019) revealed that the impact of the growth mindset as a grit antecedent shrank when prior GPA and engagement were considered and that the relationship between goal commitment and grit was more stable.

Karlen, Suter, Hirt, and Merki (2019) examined grit facets (PE and CI), learning motivation, achievement goals, and mindsets (growth or fixed) of more than 1,000 upper secondary school students on a long-term (across one school year), challenging educational achievement task: a compulsory academic certificate paper. The study revealed that a growth mindset 1) positively correlated with students' PE and CI and 2) supported adaptive motivational patterns, such as stronger learning goals and higher intrinsic motivation. However, mindset and PE were only weakly associated with academic achievement, and CI was uncorrelated with academic achievement. Associations with motivation were different for PE and CI, suggesting that these two grit facets should be treated separately in grit research. The results confirmed the significance of mindset for adaptive motivational patterns in the context of an educational achievement task.

Domain-General Grit and Culture (Individualist and Collectivist)

Psychological constructs might be substantially affected by cultural differences (Henrich, Heine, & Norenzayan, 2010; Markus & Kitayama, 1991). For instance, researchers have warned against generalizing the findings of individualistic cultures to collectivistic cultures (King & McInerney, 2014; Markus & Kitayama, 1991). Considering this, it is entirely possible that grit, which has been mostly investigated in Western cultures, has a different meaning in Eastern cultures. Not surprisingly, Disabato, Goodman, and Kashdan (2019) found that total grit was supported in individualistic but not collectivistic countries.

Earlier we noted the repeated assertion (see, e.g., Duckworth et al., 2007; Duckworth & Gross, 2014) that grit is unitary but has two aspects, PE and CI. However, Datu, Valdez, and King (2016) and Datu, Yuen, and Chen (2017) found that within total domain-general grit, the PE subscale, compared with the CI subscale, was a much stronger predictor of behavioral engagement, emotional engagement, life satisfaction, and positive affect in the collectivistic context of the Philippines. This raises concerns about whether CI is a meaningful subscale in some or many cultures and calls attention to the need to look carefully at that subscale, as well as at the PE subscale.

In many collectivistic contexts, the relationships between PE and CI have been either non-significant or else significant but very low; however, in individualistic contexts, the PE-CI correlations were stronger (Datu, Valdez, & King, 2016; Datu, Yuen, & Chen, 2017; Disabato et al., 2018). The lower saliency of CI in more collectivistic societies might be explained by individuals' pursuit of goals established by their significant others, such as older family members, rather than their own personal goals. However, in more individualistic cultures, development and growth are defined based on pursuing personal, independent goals and aspirations. For these reasons, the CI facet of grit, which emphasizes pursuit of individual goals, might act differently in collectivistic societies (see Datu & McInerney, 2017). In short, grit is culture-bound, embedded in cultural values and beliefs (Disabato et al., 2018). Researchers should consider this while examining grit in different kinds of cultural contexts.

Domain-General Grit and Socioeconomic Status

Duckworth et al. (2007) contended that domain-general grit is valuable for people from all socioeconomic classes and with different cultural values. In reality, however, socioeconomic status and grit are related in much more complex ways. Kwon's (2018) dissertation study exhibited what we view as realistic complexity. The investigation involved students in the U.S.A. and South Korea. Findings indicated that grit was valued as a key to success in both cultures, but within-culture variance (based on social class) was greater than assumed cultural differences. Both countries showed the following pattern of results: People from *less* advantaged social classes *valued grit more* than people from more advantaged classes (pp. 86-87).

Hypothetically, a different outcome might have been that people who are more socially and economically advantaged and feel greater control might value grit more than would less advantaged people, but that was not what was found. Kwon explained that less socially advantaged people believe they can gain social mobility only through perseverance of effort, given that their difficult social conditions could not help them, but people with more advantages do not have that spur toward change.

Domain-General Grit, Autonomy, and Agency

Autonomy and agency are classic psychoeducational-philosophical constructs that are rarely addressed in grit research, though the door is opening. *Autonomy* includes one's (1) will to act, (2) use of relevant strategies, and (3) hope and belief that self-engendered improvement is possible though a growth mindset (Oxford, 2017). Yoon, Kim, and Yang (2020) examined grit, autonomy support, engagement, and perceived achievement in a "flipped classroom," where learners were expected to expand their knowledge and their competencies in collaboration and problem-solving. Results indicated that the professor's support for autonomy significantly predicted students' perceived achievement and helped increase autonomy. Learning engagement mediated (1) the relationship between the professor's support for students' autonomy and perceived achievement and (2) the relationship between grit and perceived achievement. The authors discussed specific strategies to enhance grit, autonomy, and learning engagement in an effective flipped classroom.

Agency refers to one's ability, willingness, and action toward taking significant responsibility, as well as the sense of influencing outcomes (Oxford, 2017). Hope is implicit in agency, just as in autonomy. Kundu (2014) stated that "Grit, overemphasized; agency, overlooked". Woytus (2016) strongly supported Kundu's (2014) stance that students need agency in addition to grit. Perhaps the future will offer research studies involving agency and grit. Meaning underlies autonomy and agency. In day-to-day jobs, it is possible to find personal meaning in what one is doing, especially through recognizing how it helps other people. A sense of personal meaning helps propel one to do more, learn more, and care more and deepens one's autonomy and agency, while conversely, being the agent of one's own doing, learning, and caring helps to deepen one's sense of

personal meaning (Oxford, 2017). Meaning, autonomy, and agency are not limited to individuals; they can also be manifested in groups, though that topic is beyond the scope of this article.

Domain-General Grit and Creativity

Over many decades, psychological research has shown that characteristics of creativity include innovation, unique ideas, intrinsic motivation, risk-taking, unconventionality, imagination, openness to experience, self-acceptance, and self-confidence (Batey, Furnham, & Saffiullina, 2010; Oxford, 2018; Sigelman & Rider, 2012). Grohman, Ivevic, Silvia, and Kaufman (2017) found that the Grit Scale failed to predict creativity, although teachers' own personal definitions of student passion and perseverance did predict creativity in their students. Fradera (2017), building on Grohman et al. (2017), commented on the omission of creativity in grit theory and research:

...[C]reativity and breaking mental boundaries are often needed. Grit theorists and researchers should consider the need for the individual's contribution of creativity to setting goals, adjusting goals, readjusting goals, and moving along the highway of success. It takes creativity and insight to realize that success is being reached at each milestone and that success is not just an ultimate goal to be reached at the distant, hazy end of the journey.

We believe that the Grit Scale would be stronger if it included at least some items assessing creative, metacognitive strategizing, which is definitely part of grit. We say this because the term *grit*, as applied to humans in its 18th-20th century meanings (pluck, determination, courage, and mental strength) is dependent on creative, metacognitive strategies: planning, implementing, self-regulating, self-assessing, and adjusting direction and course as needed. Oxford (2017, 2018) has published numerous books about creative, metacognitive strategies in education, so we have plenty of roadmaps for including strategies such as these in any new assessment of grit.

Creativity of another sort is also lacking in the current Grit Scale. We are speaking of creativity in generating beauty in music, visual art, sculpture, clothing, jewelry,

dance, interior design, architecture, or any of the other arts. A creator in any of these areas needs to be gritty and unwilling to give up despite stress and difficulty.

Children's Domain-General Grit in an Optimistic Package

Duckworth (2016) presented a new, optimistic package for children's domain-general grit, necessitating the help of parents and others. She recommended that adults should promote children's participation in structured extracurricular activities, which foster purpose, practice (perseverance), passion (interest), and hope.

- *Purpose*: According to Duckworth, the ultimate concern or highest goal must be based on a purpose. She explained that a purpose must entail actions that ultimately matter to both others and to the self. She suggested the purposeful combination of eudaemonic happiness and hedonic happiness, as positive psychology says (Seligman, 2011). This suggestion is useful, but one would not use such rarefied prose with children.
- *Practice/Perseverance*: Duckworth described what she learned as a seventh-grade math teacher: that for excellence to develop, practice (perseverance) is far more important than talent. Practice involves making skills habitual and developing them into increasingly greater skills in the process toward excellence. This is completely clear.
- *Passion*: Passion is consistency of interest, according to Duckworth, despite dictionaries' clear distinctions between the two. Duckworth correctly noted that finding one's passion takes time and experience. It is still interesting to consider why, if passion is a key, passion-related items were not found on the Grit Scale, and the interest items were negatively stated.
- *Hope*: The child must also develop *hope*. In the grit context, hope is the expectation that things will get better and the commitment to help this to happen, according to Duckworth.

These are good elements for children's grit, but they still have the same old drawbacks: confusion between passion

and interests and lack of real measurement of passion. In addition, this children's grit perspective gives a head-nod to hope but does not discuss the massive socioeconomic, racial, and health issues that often stand in the way of hope. As a purpose for children's grit, one's highest goal must matter not just to oneself but to others. That important aspect should be stressed more in all grit writings.

Credé's Critical Points about Research on Domain-General Grit

Credé (2018, p. 606) made the following critical points:

...[M]any of the core claims about grit have either been unexamined or are directly contradicted by the accumulated empirical evidence. Specifically, there appears to be no reason to accept the combination of perseverance and passion for long-term goals into a single grit construct, nor is there any support for the claim that grit is a particularly good predictor of success and performance in an educational setting or that grit is likely to be responsive to interventions.

He noted mistakes in grit researchers' domain-general grit methodology and statistics, and later Duckworth herself admitted making the mistakes. Credé (2018) also made the following suggestions to enhance the quality of grit research. First, examine possible relationships between passion and perseverance (He recommended ways to do this). Second, investigate whether grit or its facets could be considered necessary but not sufficient conditions for performance. Third, examine interactions between ability and grit in predicting performance. Fourth, improve grit assessment. Fifth, consider better predictors than grit – predictors that are more strongly related to performance and more responsive to interventions.¹¹ Finally, Credé (2018) made a common-sense criticism about passion and performance: One does not need to be passionate about something to be good at it, and one's passions are dynamic and changeable.

Summary of the Section on Domain-General Grit

This section has included a complex array of topics concerning domain-general grit. These topics include

measurement issues, time issues, factor analysis and other analytic modes, conscientiousness, self-control, mindset, individualist and collectivist cultures, socioeconomic status, autonomy and agency, creativity, a special way of fostering children's grit, and important advice from Credé. The next section concerns domain-specific grit.

RESEARCH ON DOMAIN-SPECIFIC (L2) GRIT

It is important to determine whether domain-general grit findings are aligned with the domain-specific contexts of L2 learning (also known as second-language acquisition or SLA). To this end, we will first summarize how L2 grit has been measured in the SLA context and then we will review studies involving L2 grit and SLA variables.

Measurement of L2 Grit

Several studies have examined development and measurement of L2 grit. One of the pioneering studies is the Teimouri et al. (2020) investigation, in which a nine-item L2 grit scale was developed. In this study, total L2 grit and L2 perseverance of effort (L2 PE) had high reliability values (.80 and .86, respectively), but L2 consistency of interest (L2 CI) had lower reliability (.66). Teimouri et al. (2020) employed exploratory factor analysis (EFA) to examine the factor structure of the new scale, resulting in two factors: L2 CI (four items) and L2 PE (five items).

In EFL and ESL settings, Sudina et al. (2020) re-examined the factor structure of the Teimouri et al. (2020) L2 grit scale and likewise found two factors. Sudina et al. (2020) also tested a higher-order factor of L2 grit similar to Duckworth and Quinn (2007) using confirmatory factor analysis (CFA), which fitted the data adequately. However, according to Credé et al. (2017), a higher-order factor model with only two first-order factors is not mathematically identified and is similar to a two-factor first-order model. It should be noted that this issue was addressed by Duckworth, Quinn, and Tsukayama (2021) who explained that while they acknowledged the error in their interpretation, they also stated that some theoretical issues cannot be answered by statistical procedures.

Alamer (2021) developed an L2 grit scale including 12 items, which were adapted from the grit scales of Duckworth et al. (2007) and Clark and Malecki (2019).

Alamer (2021) used both EFA and CFA to examine his L2 grit scale's validity. EFA revealed a two-factor solution consistent with CI and PE factors. CFA showed that a bifactor model of L2 grit represents a better indication of the construct. A bifactor L2 grit model implies that L2 grit is represented by a general L2 grit construct as well as two specific factors (i.e., L2 PE and L2 CI).¹²

Finally, while the L2 grit measures mentioned above were for use with L2 students, Sudina et al. (2021) developed a nine-item grit scale for L2 teachers. Results of EFA for L2 Teacher Grit showed a two-factor model consistent with the usual grit structure, i.e., PE (five items) and CI (four items).

As indicated, most studies using an L2 grit scale supported two factors, PE and CI. This was consistent with the original conceptualization of grit by Duckworth et al. (2007). Next, we present research linking L2 grit with several SLA variables.

L2 Grit in Relation to Personality, Emotion, Motivation, and Other Variables

Here we summarize empirical relationships between (1) L2 student grit and (2) a range of SLA variables, including personality traits, emotion, motivation, personal goals, language mindset, vocabulary learning, achievement, and proficiency. Two technical terms should be defined here. *Achievement* refers to language performance that is directly tied to a given curriculum or program of study. *Proficiency* ordinarily refers to language performance that is not tied to a given curriculum or program of study. Proficiency is supposed to reflect language as it is used for authentic communication.

L2 Grit, Personality Traits, Emotion, and Motivation

Teimouri et al. (2020) investigated the degree to which Big Five personality traits significantly predicted total L2 grit but PE and CI were not included as dependent variables. Results indicated that only emotional stability and extraversion were significant predictors, and even they had small predictive value.

Teimouri et al. (2020) did not report correlations between L2 grit and conscientiousness separately for the L2

grit subscales, PE and CI, so there could be no direct comparison with the Credé et al. (2017) meta-analysis of domain-general grit studies, which found a higher correlation between conscientiousness and PE than between conscientiousness and CI.

For Teimouri et al. (2020), correlations among L2 grit, emotion, and motivation were stronger than correlations among domain-general grit, emotion, and motivation. Teimouri et al. (2020) found moderate positive correlations between L2 grit and several L2 achievement measures (In domain-general grit studies, correlations between grit and achievement were significant but low or nonsignificant). Finally, in the Teimouri et al. (2020) study, correlations among L2 PE, emotion, motivation, and L2 achievement were stronger than those among L2 CI, emotion, motivation, and L2 achievement.

L2 Grit, Intrinsic Motivation, Anxiety, and Proficiency

Sudina et al. (2020) examined how L2 grit subscales, as well as intrinsic motivation, personal goals and anxiety, predicted L2 proficiency in EFL and ESL settings. In the EFL context, the researchers found two predictors of L2 proficiency: PE (positive predictor) and anxiety (negative predictor). In the ESL context, negative predictors of L2 proficiency were CI, personal goals, and anxiety, while intrinsic motivation was the lone positive predictor. Sudina et al. (2020) did not explain why personal goals negatively predicted L2 proficiency. Overall, this study suggested that L2 grit and its components can predict L2 proficiency significantly in both EFL and ESL settings.

Other Studies of L2 Grit

Alamer (2021) found that L2 CI and L2 PE were positively correlated with two aspects of L2 motivation: the ideal L2 self¹³ and motivational intensity. However, CI had a negative correlation with controlled motivation, i.e., motivation that relies on external factors, such as rewards. Alamer (2021) also examined whether L2 grit could predict vocabulary learning over a long period, since L2 grit, like domain-general grit, is defined as a long-term attribute rather than a short-term one. Alamer's (2021) path analytic results showed that total L2 grit and its components (PE and CI) at Time 1 did not directly predict later vocabulary

learning at Time 2. However, total L2 grit indirectly predicted later vocabulary learning at Time 2. Total L2 grit and PE, as compared with CI, had stronger relationships with vocabulary learning.

Sudina and Plonsky (2021) studied the two subscales of L2 grit (PE and CI) in relation to both L2/L3 achievement and proficiency. They reported stronger positive relationships between the PE subscale of L2 grit with both L2/L3 achievement and L2/L3 proficiency, in comparison with the CI subscale of L2 grit. Feng and Papi (2020) found that of the two subscales of L2 grit, PE had significant correlations with L2 motivation (i.e., ideal L2 self/own, ought-to L2 self/own, and motivational intensity), but the L2 CI subscale of L2 grit had no significant correlations with any aspect of L2 motivation.

Khajavy, MacIntyre, and Hariri (2021) examined relationships among grit, language mindset, and L2 achievement. Using confirmatory factor analysis (CFA), Khajavy et al. (2021) found that the two-factor structure for both grit and language mindset fit the data better than the single-factor structure. Structural equation modeling revealed that growth language mindset positively predicted, albeit weakly, PE but did not predict CI. Fixed language mindset failed to predict PE but negatively predicted CI. In terms of L2 achievement, only growth language mindset was a positive, though weak, predictor of L2 achievement. Both grit subscales, PE and CI, had significant correlations with fixed and growth language mindsets. In contrast with other SLA studies (e.g., Alamer, 2021; Sudina et al., 2020; Sudina & Plonsky, 2021; Teimouri et al., 2020), Khajavy et al. (2021) found no significant relations between grit subscales and either L2 achievement or L2 proficiency. One reason for this contrast might lie in the domain-specificity of the L2 grit scale used in other studies.

In addition, some L2 grit studies have begun exploring the mediated effects of grit. For instance, Lan et al. (2021) found that L2 grit mediated the relation between ideal L2 self and L2 willingness to communicate, implying that the more ideal L2 self was related to higher L2 grit, which in turn was related to higher L2 willingness to communicate. In addition, Lan et al. (2021) reported that shyness moderated the relationship between the ideal L2 self and L2 grit, as well as the relationship between the mediated role of L2 grit in willingness to communicate. In Lan et al. (2021), although EFA results indicated a two-factor solution

corresponding to PE and CI, the authors relied on the total L2 grit score for all their analyses. In another study, Lee (2020) found support for the role of only PE (and not CI) in predicting willingness to communicate among middle school, high school, and university students in Korea.

As noted earlier in the discussion of development of L2 grit measures, Sudina et al. (2021) developed a nine-item grit scale for L2 teachers. The scale encompassed PE (five items) and CI (four items). They found that L2 teacher grit, but not domain-general grit, significantly predicted L2 teacher retention-related factors and years of teaching. This supported the domain-specificity of grit for L2 teachers.

Summary of the Section

What can be concluded from the review of the literature on L2 grit? Much L2 grit research is oriented to developing and using L2 grit measures for learners and L2 grit measures for teachers. Also, researchers have made great headway in relating student L2 grit to many SLA variables, such as personality, emotion, motivation, personal goals, language mindset, achievement, and proficiency. However, additional points should be considered.

First, CI as a subscale of L2 grit had mostly non-significant or only weak relationships with a range of L2 variables. This domain-specific finding echoes the limited utility of CI in domain-general grit studies. Therefore, researchers should take a much more critical look at CI (cf. Credé et al., 2017; Ponnock et al., 2020). We are worried about the use of all negatively-worded items for CI, given that negative wording has many ill effects in survey research. (See Section 2 of this article and Chyung et al., 2018).

Second, as indicated by an anonymous reviewer, “Interest-oriented variables, such as integrative orientation (associated with interest in L2 culture/speakers), are more difficult to interpret than pragmatically-oriented counterpart instrumental orientation”. We agree with this. We assume L2 grit will keep expanding as an area of research and theory. This means that we need to give more thought to identifying interest-oriented variables, measuring them properly, and interpreting them effectively.

RECOMMENDATIONS FOR FUTURE GRIT RESEARCH

Below we present ten recommendations that could help guide future grit research. They range from the technical yet very crucial (wording of items) to the philosophical (about ultimate concerns) to the semantic (interest versus passion).

Avoid the Jangle Fallacy

The similarities between grit and other constructs, such as conscientiousness and self-control, support what is called the “jangle fallacy.” The jangle fallacy means that similar constructs seem different simply because they have different names (Kelly, 1927; Ponnock, Muenks, Morell, Yang, Gladstone, & Wigfield, 2020). Many people enjoy and seek novelty, and perhaps novelty-seeking makes us trick ourselves into incorrectly believing that new bottles necessarily contain new wine and that new names signify new constructs.

Address Time Issues

The whole issue of time needs to be carefully discussed. At this point, there are many elements of time on the Grit Scale (time terms such as adverbs and adverbial phrases of different aspects of time; and multiple verb tenses indicating different times or time periods). These elements appear not to have been systematically organized. The development of the Grit Scale did not include sharp attention to issues of time (Duckworth et al., 2007; Duckworth & Quinn, 2009). In the SLA context, L2 grit researchers should look carefully at the domain-general LT (Long-Term) Grit Scale (see Morell et al., 2020), which has already corrected the time problems that we pointed out in the Grit-O and the Grit-S versions of the domain-general Grit Scale. See the preceding section for an important review of time in the Grit Scale, and let’s start the discussion in earnest.

Take a Social, Critical Research Stance

Social justice means fair treatment of all people in a society. It includes respect for the rights of racial, ethnic, linguistic, religious, and other minority groups. We add that minorities are often targets of *indirect violence*, largely referring to

social barriers to fair opportunities in education, training, housing, jobs, and other areas of life, and *direct violence*, which can be physical, psychological, and/or verbal (Galtung, 1996; Oxford, 2013).

Look at the Context

Mehta (2015) noted that the most prominent critique of grit is that it ignores these larger issues of social injustice for minorities. Moreover, grit implies that most disadvantaged children could be successful if they were just “grittier,” said Mehta (2015). He stated that educational environments should be organized to foster “purpose and meaning” and that grit, while useful, is not, by itself, sufficient for success. In her website, Duckworth (2021, below) echoed Mehta’s comment about the importance of adults helping students by providing challenges and support. In Duckworth’s words,

Grit may not be sufficient for success, but it sure is necessary. If we want our children to have a shot at a productive and satisfying life, we adults should make it our concern to provide them with the two things all children deserve: challenges to exceed what they were able to do yesterday and the support that makes that growth possible.

However, the above statement about supportive adults needing to help children to get challenges does not suggest a throughgoing commitment to facing social inequities. Duckworth (2021) stated further that both grit and social barriers are important and linked but did not explain what is to be done: “The question is not whether we should concern ourselves with grit or structural barriers to achievement. In the most profound sense, both are important, and more than that, they are intertwined.”

Go Beyond Sociocultural Simplicity

In her 2013 TED Talk, Duckworth suggested that by becoming gritty (essentially having a goal, working hard to meet it, and never giving up despite any and all difficulties), one could overcome structural barriers. She did not assert that social factors – we list race, social status, nationality, language background, physical or mental (dis)ability, socioeconomic factors, cultural capital, stigma, and

discrimination – were unimportant, but she did state that gritty people could be resilient in the face of such factors. Duckworth added that adults must push students to develop a growth mindset so that they will be motivated to pursue challenges. Importantly, the main message, perhaps oversimply stated, was that any person who has passion and perseverance can make goals become reality.

However, problems exist with the concept that grit can overcome sociocultural conditions; that concept ignores what we know about structural inequality (indirect violence) in society (Galtung, 1996). People in abject poverty and who lack the needed opportunities cannot simply overcome these structural problems. They cannot usually become gritty and ultimately successful on their own; they need mentors and opportunities that are sometimes difficult to find in their sociocultural conditions. Duckworth was correct in saying that adults need to push students to have a growth mindset, but there must be adults who care enough to offer such support and guidance on a consistent basis.

We are not saying that a non-gritty person has a built-in sociocultural excuse for not becoming gritty and successful. It does mean, however, that social context is extraordinarily complex and that multiple issues are involved. Especially important on *all* sides are insight, responsibility, caring, hope, and striving (passion and perseverance).

Dial It Down? (Grit's Relationship with Performance)

Fradera (2017) asked, “Where does this leave grit?” He reminded us that in the meta-analysis of grit studies by Credé et al. (2017), “grit has only modest associations with performance, and is strongly associated with the incumbent personality predictor of success, trait [c]onscientiousness (also true in this study, with correlations between .54 and .65)”. Therefore, said Fradera (2017), “it seems appropriate to dial down the grit hype and treat this construct like any other psychological measure – of potential interest, but unlikely to be the breakthrough that changes society.”

We are not so sure that grit is such a pedestrian concept. Grit measurement has significant, obvious flaws, as we have shown, but there seems to be a potentially useful core idea, in our own words: that grit could be a propelling and compelling mode for attaining one's ultimate concern (highest goal) or lesser goals. Researchers and practitioners

could dial down the gratuitous claims but could center on the valuable aspects of grit.

Ramp It Up? (About Ultimate Concern)

Figure 1 shows just one ultimate concern (highest goal), as per both Duckworth (2016) and Tillich (1965). Duckworth spoke of only one ultimate concern toward which the gritty person travels: success, achievement, or excellent performance, although the Grit Scale does not seem to measure grit in relation to an ultimate concern. We add our simple, metaphorical definition of grit: *Grit is comprised of perseverance and passion, which serve as a vehicle, a means of propulsion, or a way of movement toward one or more ultimate goal(s) or lesser goals.* For Tillich (1965), the only authentic, true ultimate concern is faith in God, as explained earlier.

It is useful to consider whether a person can have more than one ultimate concern in life. We use the example of Andrea, a name for a woman or a man, depending on the culture. Andrea's highest *professional* goal (ultimate concern), held since childhood, has been to bring greater beauty into the world through music and to conduct a major symphony orchestra. Andrea has achieved this goal and is still dedicated to it. Andrea's ultimate *personal* goal, held since age 20, has been to marry and be happy lifelong with beloved L., now this great conductor's spouse. Andrea has a *spiritual or religious* ultimate concern: to be a devoted, spiritual person, awake to the needs of all God's children, and worthy in the eyes of God. Andrea's identity is shaped by these three ultimate concerns, which are united by love: Love of God and others, love of music, and spousal love are Andrea's ultimate concerns. Without any one of these highest goals, Andrea would not feel whole.

Therefore, we ask Duckworth and the shade of Tillich, why can't a person have more than one highest goal, given that there is no conflict between them and that they support each other? Why can't a person have human-defined “success” as one of these ultimate goals, along with other ultimate goals that go beyond such success? We believe Paul Tillich might go along with this, although he might want Andrea to list faith in God as the first among equals (*primus inter pares*). We hope Duckworth would assent, recognizing that a person's identity crucially includes success, performance, and achievement but could also

include other aspects of the person, such as concern for family and spirituality. As for us, we could envision love as the all-encompassing circle representing Andrea's ultimate concern, and the greatest loves – Andrea's ultimate concerns – could populate the circle, not as mid-level goals but as equivalently highest goals. These three highest aspirations of love could cluster together as facets of the prism of ultimacy, of greatest being and becoming. Where could other people's ultimate concerns be? These goals, too, could be prisms in the same plane of becoming and being, of hope and harmony, of light and enlightenment. We fully realize the idealistic nature of this picture, much as we accepted the concept of the highly motivating "ideal L2 self" (Dörnyei & Chan, 2013). Research shows that hope – unlike optimism, which is more fanciful – is based on the possibility of a reality (see Oxford, 2016).

In this picture, grit is a sustained, passionate effort toward one more ultimate concern(s) of the individual. If such a perspective were adopted, researchers might want to craft a clear write-in item asking about the respondent's highest goal(s) for the next five years, for the next decade, or for a lifetime.

Consider Making at Least Some Grit Research More Personalized

Individuals from many parts of the world have participated in grit research by completing a domain-general Grit Scale (8 or 12 items, or perhaps the 10-item Grit Scale on Duckworth's 2021 website) or the new LT-Grit Scale. Grit has been used in numerous types of analyses, as indicated in earlier sections. Most of them have not asked for any personalized, respondent-added information.

Researchers seeking information on grit's effect on individuals' movement toward ultimate concerns, or even proximate (short-term) and intermediate (mid-level) concerns, would ideally use mixed methods. This would include a revised Grit Scale, based on issues raised here and in more deeply psychometric articles about grit measurement, as well as qualitative measures about the person. Questions could be asked about the person's experiences, interests, passions, ultimate goals, as well as mid-level goals.

Ideally, biographical, autoethnographic, storytelling-based, diary- or journal-based, or phenomenological

assessment would be useful to obtain a real view of the person, not just a set of impersonal marks on a survey. The data could be amplified creatively with a respondent's visual art, video-making, spoken word poetry, music, or anything else that allows the respondent to communicate the ultimate concern or highest goal, mid-level goals and other lesser goals (interests, perhaps). Data could also include steps taken toward any of these goals, instances of failure or success on these goals, emotions involved at various stages, people who helped and what they offered, hindrances (naysaying people, negative situations, or social barriers) that had to be overcome or gone around; changes to goals over time, and whether those changes were useful. It is obvious why these data would necessitate at least some amount of qualitative assessment.

Even if grit studies only focus on relatively short terms (a semester, six months, or a year) rather than on movement toward ultimate concerns, it would be very helpful to ask what respondents' goals actually are. In a domain-specific (L2) grit study, the aim (goal, highest goal, ultimate concern) might be improved communication skills, heightened vocabulary/grammar knowledge, or an increased score on a standardized language assessment, or perhaps later getting a better job using the language. (It would be good to know goals). In a domain-general study, it can be much more difficult to know what the individual values as goal, whether proximal (e.g., doing well on a task assignment), intermediate or mid-level (e.g., two or three years from now), or ultimate (e.g., decades later or the rest of one's life).

We do not advise halting the usual data gathering using quick grit surveys. However, we do advise also conducting studies that offer richer, more detailed, more personalized data on grit and other variables. Such research would surely involve gathering data about the content of an individual's highest goal(s) / ultimate concern(s). At the very least, researchers could consider adding one item about goals, as mentioned in an earlier recommendation.

However, if researchers want to maintain a standardized grit instrument without any write-in comments, they might at least ask respondents to think back on a past goal (or think forward to an ultimate concern, if some items are revised in that direction). It is advisable to provide a mental framework for respondents to answer the items.

Concentrate on Clear Wording and High-Quality Grit Items

In our view, researchers of domain-specific L2 grit should pay close attention to Table 2, other comments in this article about survey item wording, and the bulleted recommendations below. (The same information would help investigators of domain-general L2 grit as well.)

- Given the problems with negatively worded items, use positively worded items in a consistent way and *stop* using negatively worded items. Avoid double-negatives.
- Avoid applying all-negative wording to an entire subscale and all-positive wording to another subscale. The all-negative wording of the CI subscale of domain-general Grit Scale, if transferred to L2 grit measures, could suppress the L2 grit CI subscale and make the overall instrument validity dubious.
- Correct the confusing phrasing about time throughout the scale. Find a meaningful solution to the time problem.
- Discuss each of these bulleted recommendations with other researchers of domain-specific L2 grit. It would be excellent to come to a consensus with as many other researchers as possible as measurement of domain-specific L2 grit is being improved.

Clarify Differences Between Passion and Interest

We have clearly established major differences between interest and passion, not just in dictionary definitions but in practice. Given that passion can be either positive or negative in valence (see comments by Vallerand, 2010, about harmonious and obsessive passion) but is always intense, whereas interest is generally positive but typically mild, researchers need to find ways to include both, unless the parameters of grit are changed.

Perhaps researchers, keeping in mind the actual differences between passion and interest and maintaining positive valence, can include both passion items and interest items, in a “Passion and Interest” subscale within the Grit Scale. Alternatively, researchers could include separate subscales of “Passion” and “Interest,” with both viewed as having a positive valence; yet doing so might be confusing,

because it would ignore the passion’s negative valence, obsessiveness.

Advance with Caution, Schools and School Districts

Schools and school districts should advance with caution in the use of grit for assessment and instruction. McGregor (2016) noted that Duckworth’s view of grit is widely popular in schools and school districts, which view grit as the optimal predictor of long-term success in education, although it became controversial among those knowledgeable about research methodology. Many teachers, parents, and educational administrators have been captivated by the idea of that grit could make quick, positive changes in students, regardless of social conditions, such as economic disadvantage or racial discrimination. Enamored of the sometimes-outsized claims made about grit, schools and school districts established workshops to help instructors teach grit to students, and grit-promoting posters and signs sprang up (Barshay, 2019). Some schools tested for grit and graded individual students on grit, which contradicted the proclaimed long-term nature of grit (Duckworth, 2016). Moreover, certain districts even graded schools on grit, a practice opposed by Duckworth (McGregor, 2016).

Nevertheless, Morrell et al. (2021) stated that over the prior decade, grit has received extensive attention from education policymakers and the popular press, although there is no consensus about what grit actually means or how strongly it relates to school achievement. Research conducted by Morrell et al. (2021, p. 1038) suggested that “calls to intervene to improve students’ overall grit as a way to enhance their achievement are at best premature and at worst a mistake given our findings and those of others”. Credé (2018) similarly cautioned schools and other institutions not to spend time and money on grit, and he suggested that schools could use non-grit predictors of achievement.

Summary of the Section

We respectfully share these recommendations with grit researchers and all others interested in grit. Our guidance includes avoiding the jangle fallacy; addressing time issues in grit research; taking a more critical research stance;

dialing down research claims about grit and performance linkages; ramping up questions about goals / ultimate concern(s); considering personalization of some future grit studies; concentrating on clear wording and high-quality grit items; clarifying the contrasts between passion and interest; and moving cautiously in teaching grit and grading grittiness in schools. These recommendations, if employed, would positively influence grit research and helpfully affect the use of grit in education.

FINAL COMMENTS

We believe the four sections in this article provide a balanced view of grit as a scientific concept and grit research. We hope that we have offered useful guidance. The next items of business must include further discussion

about individual's goals (ultimate concerns and/or goals that are more proximal), commitment to mixed methods for at least some grit research, and improved grit assessment, without denigrating what researchers have accomplished in the past. We greatly honor what Duckworth, her colleagues, and other scholars have already done in the psychology of grit and the assessment of grit. We strongly encourage further creative work by grit scholars around the world and indeed the inclusion of creativity as part of grit. Finally, we believe that L2 grit researchers should continue pursuing their intensive investigations of grit. The analyses that have been conducted are worthy of examination and furtherance with other samples. L2 grit researchers have contributed significantly to extending grit studies to a particularly important and sizable population.

¹ An additional form with 10 items is found at Duckworth's (2021) website, <https://angeladuckworth.com/grit-scale/>. Duckworth and Yeager (2015) address measurement issues in depth.

² Regarding etymology, the * signifies that this is a root from a prehistoric, reconstructed language.

³ "Grits" is the plural of grit, "coarsely ground grain." "Grits" came originally from PIE root **ghreu-*, "rub, grind" (Harper, 2021a, see above for "grit"), but instead of leading to Proto-Germanic **greutan* (tiny particles of crushed rock, as above), it went to Proto-Germanic **grutja-* and to Old English "grytt" (plural "grytta"), "coarse meal, groats, grits."

⁴ The PIE verb **ghreu*, "to rub, grind" not only led to the nouns in the paragraph but also to the verb "to make a grating sound" (Harper, 2021a).

⁵ Identity researchers have traditionally investigated topics such as these: (1) *personality* and identity (see Widiger, 2017 for the "Big Five" model; Weber et al., 2011 for genetics, personality, and group identity); (2) *human developmental stages* of identity (e.g., Erikson, 1980; Sigelman & Rider, 2012); (3) additional identity-related *personal and social factors*, e.g., *age, gender, race, culture, socioeconomic, language background, literacy, cognition, and educational opportunities* (Chase, 2019; Kroger, 2017; Kurzwelly, 2019; Markus & Kitayama, 2004; Newman, 2021; Norton, 2008, 2013; Pilarska, 2017; Roscoe & Al-Mahrooqi, 2012); and (4) *typologies* of identity (James, 2015).

⁶ Both of us have worked for years in the psychology of language learning and teaching, and one of us holds a master's and a doctorate in psychology.

⁷ The Catholic Church (2021) specifically warned its members against "passionate anger."

⁸ The LT Grit Scale reduces the plethora of time terms found in the Grit Scale (Grit-O and Grit-S) by frequently referring to a period of "six months or more" (Morrell et al., 2020).

⁹ <https://angeladuckworth.com/qa/#faq-62>.

¹⁰ https://www.ted.com/talks/angela_lee_duckworth_grit_the_power_of_passion_and_perseverance?language=en.

¹¹ Credé (2018) also encouraged researchers to explore possible polynomial relationships between grit or its facets and performance.

¹² Similarly, van Zyl et al. (2020) found that a bifactor model of domain-general grit was the best of all the possible factor structures they attempted.

¹³ Ideal L2 self" is one's vision of a future self as a proficient L2 speaker.

Authors' contributions

RO participated in the design of the study and wrote sections 1 and 4, most parts of section 2, and revising and writing section 3. GHK participated in writing most parts of section 3, parts of section 2, and revising the whole manuscript. Both authors read and approved the final manuscript.

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