Improving Scale Equivalence by Increasing Access to Scale-Specific Information

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Supplementary Materials

Note: This supplement, an entire self-contained article, is a full-length exemplar of a scale-specific translation guide that happens to concern the Primals Inventory. For translators of the Primals Inventory and any others citing this supplement, please cite the parent article entitled "Improving Scale Equivalence by Increasing Access to Scale-Specific Information."

A Scale-Specific Guide to Translating the Primals Inventory

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Abstract

Primal world beliefs (also called 'primals') concern the basic character of the world as a whole (e.g., the world is dangerous) and are theorized to influence many personality and well-being variables. A recent empirical effort identified 26 primals and developed an American English Primals Inventory to measure them, which researchers are now translating. These early translation efforts have revealed several critical scale-specific translation challenges that justify the creation of quality scale-specific guidance, the goal of the present article. Following Clifton and colleagues' (in press) template for scale-specific translation guides, we discuss eight construct-level issues: (a) referencing *the world* in a variety of ways; (b) maintaining *the world* as the object of belief in cases of unusual syntax; (c) consulting atypical experts; (d) prioritizing item piloting; (e) maintaining item difficulty; (f) translating one or two additional items per subscale due to unusually short subscales; (g) including reverse-scored items and (h) calibrating the overall translation/adaption goal given that primals are currently so underexplored. We then detail item-level issues in a lengthy item-by-item table and, after providing lessons learned from the first two translation efforts into German and Italian, give final remarks prioritizing the most critical pieces of advice. We hope this guidance aids cross-cultural scale equivalence.
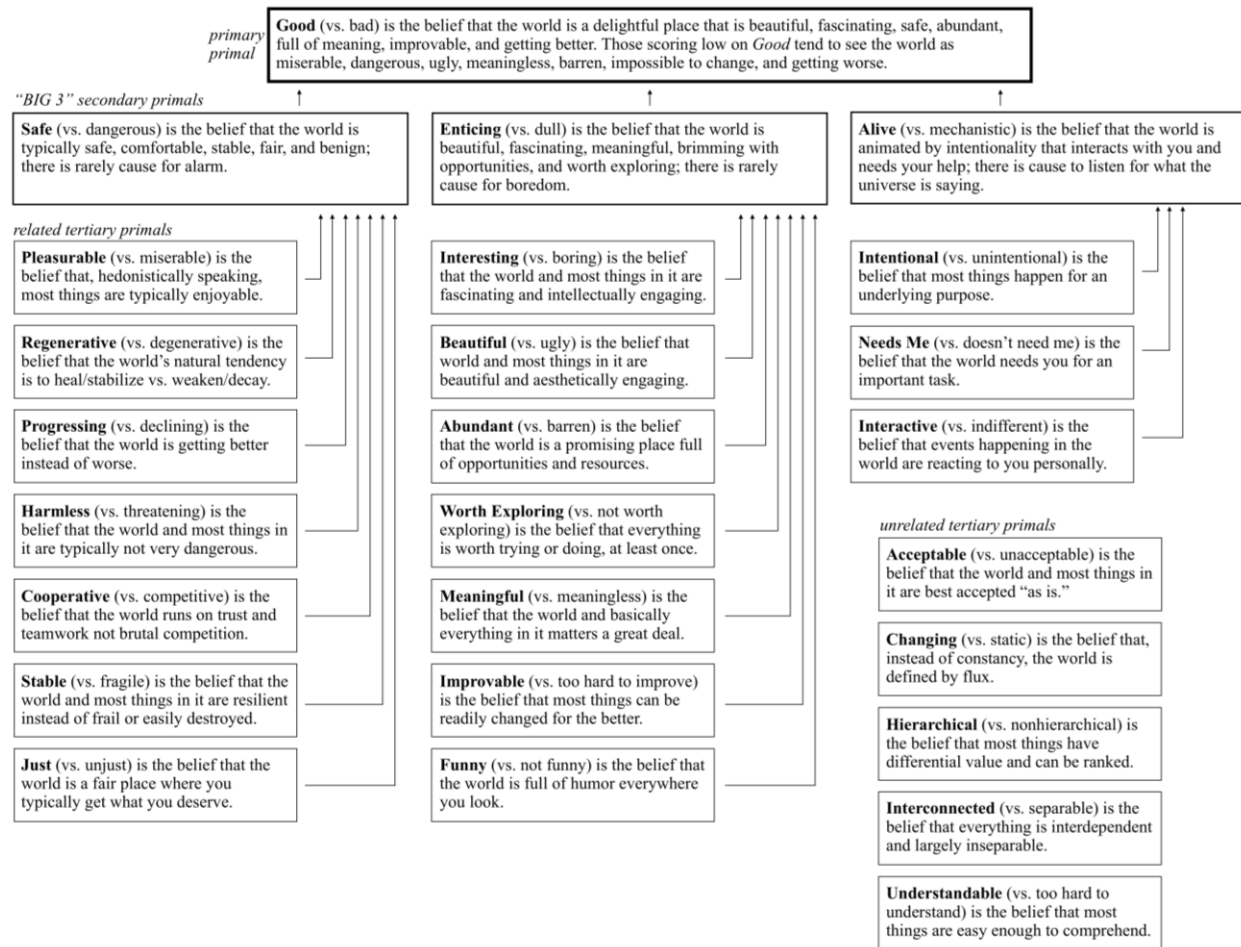
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A Scale-Specific Guide to Translating the Primals Inventory

Scale Background

Beck (e.g., Beck et al., 1979) suggested that beliefs about the self, the self's future, and the self's environment affect depression. Decades of clinical practice and research now confirm that self beliefs influence not only depression but numerous outcomes related to wellbeing (e.g., Hofmann et al., 2012). Yet beliefs about the environment remain understudied. To help fill this gap, Clifton and colleagues (2019) attempted a comprehensive effort to identify the major beliefs that specifically concern the overall character of the world. Twenty-six stable beliefs were identified. These *primal world beliefs* ("primals") concern whether, for example, the world is beautiful (vs. ugly), safe (vs. dangerous), and meaningful (vs. meaningless). Factor analysis indicated the semi-tiered structure in Figure 1, with one superordinate primal (*Good*), three secondary primals (*Safe*, *Enticing*, *Alive*), and 22 tertiary primals, all but five of which cluster under the secondary primals. Theoretically, primals and similar beliefs influence numerous psychological variables to which they are highly correlated, including optimism, gratitude, neuroticism, conscientiousness, depression, life satisfaction, and so forth (Koltko-Rivera 2004; Dweck, 2008; Clifton et al., 2019; Stahlmann et al., 2020). However, empirical work establishing influence, not just covariance, is needed. Clifton and colleagues (2019) developed a 99-item Primals Inventory in American English (PI-99-AE)[1] to measure all 26 primals. The PI-99-AE has been translated into several languages, including German, Italian, Indonesian, and Swedish, with over a dozen additional translation efforts underway and more expected.

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[1] In other publications, the original Primals Inventory is referred to as the PI-99. For the purposes of this paper—where the American English scale is compared to translations—we refer to the PI-99-AE.

Figure 1

Definitions and Structure of Primal World Beliefs in the PI-99-AE

primary primal

Good (vs. bad) is the belief that the world is a delightful place that is beautiful, fascinating, safe, abundant, full of meaning, improvable, and getting better. Those scoring low on *Good* tend to see the world as miserable, dangerous, ugly, meaningless, barren, impossible to change, and getting worse.

"BIG 3" secondary primals

Safe (vs. dangerous) is the belief that the world is typically safe, comfortable, stable, fair, and benign; there is rarely cause for alarm.

Enticing (vs. dull) is the belief that the world is beautiful, fascinating, meaningful, brimming with opportunities, and worth exploring; there is rarely cause for boredom.

Alive (vs. mechanistic) is the belief that the world is animated by intentionality that interacts with you and needs your help; there is cause to listen for what the universe is saying.

related tertiary primals

Pleasurable (vs. miserable) is the belief that, hedonistically speaking, most things are typically enjoyable.

Regenerative (vs. degenerative) is the belief that the world's natural tendency is to heal/stabilize vs. weaken/decay.

Progressing (vs. declining) is the belief that the world is getting better instead of worse.

Harmless (vs. threatening) is the belief that the world and most things in it are typically not very dangerous.

Cooperative (vs. competitive) is the belief that the world runs on trust and teamwork not brutal competition.

Stable (vs. fragile) is the belief that the world and most things in it are resilient instead of frail or easily destroyed.

Just (vs. unjust) is the belief that the world is a fair place where you typically get what you deserve.

Interesting (vs. boring) is the belief that the world and most things in it are fascinating and intellectually engaging.

Beautiful (vs. ugly) is the belief that world and most things in it are beautiful and aesthetically engaging.

Abundant (vs. barren) is the belief that the world is a promising place full of opportunities and resources.

Worth Exploring (vs. not worth exploring) is the belief that everything is worth trying or doing, at least once.

Meaningful (vs. meaningless) is the belief that the world and basically everything in it matters a great deal.

Improvable (vs. too hard to improve) is the belief that most things can be readily changed for the better.

Funny (vs. not funny) is the belief that the world is full of humor everywhere you look.

Intentional (vs. unintentional) is the belief that most things happen for an underlying purpose.

Needs Me (vs. doesn't need me) is the belief that the world needs you for an important task.

Interactive (vs. indifferent) is the belief that events happening in the world are reacting to you personally.

unrelated tertiary primals

Acceptable (vs. unacceptable) is the belief that the world and most things in it are best accepted "as is."

Changing (vs. static) is the belief that, instead of constancy, the world is defined by flux.

Hierarchical (vs. nonhierarchical) is the belief that most things have differential value and can be ranked.

Interconnected (vs. separable) is the belief that everything is interdependent and largely inseparable.

Understandable (vs. too hard to understand) is the belief that most things are easy enough to comprehend.

Note. 26 primals (22 tertiary, 3 secondary, and 1 primary) identified by Clifton and colleagues (2019; figure from Clifton & Kim, 2020).

The PI-99-AE ticks all eight boxes outlined by Clifton and colleagues (in press) indicating scale-specific translation[2] guidance is appropriate. In addition to the likelihood of many future translation efforts (condition 2), the construct is psychologically significant and perhaps universal, requiring cross-cultural research (1); the construct involves atypical conceptual elements (3); items include culture-specific phrases (4); the scale involves many

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[2] Following the precedent of Clifton and colleagues (in press), this article uses *translation* and *adaptation* interchangeably to refer to what scale translation experts call *adaptation*, despite important nuances between to the two terms (e.g., van de Vijver & Hambleton, 1996).

dimensions (5); many opposite scored items are included and many subscales involve only four

items allowing little room for translation error (6); the scale involves considerable item-difficulty

calibration that varies depending on the subscale (7); and translation efforts may especially

benefit from a few less routine scale-translation practices (8).

Please note this guide conforms to the format outlined by Clifton and colleagues (in

press) for the creation of scale-specific translation guidance. It is intended to serve as a

supplement for those interested in translating the Primals Inventory specifically, not to replace

scale-generic guides to translation. The authors of this guide are not translation experts but item-

writing experts for this particular construct. For excellent scale-generic guidance, see van de

Vijver and Hambleton (1996), Beaton and colleagues (2000), Borsa and colleagues (2012), or

Hambleton and Lee (2013). Though the focus here is the PI-99-AE, most suggestions are

relevant to the shorter form versions of the Primals Inventory (see Appendix A and B for

comments specific to the PI-6 and PI-18; Clifton & Yaden, 2021) and any tertiary subscales

translated in isolation. Another resource that Primals Inventory translators might consult is an in-

press chapter describing the history of world belief measurement and special challenges involved

(Clifton, in press). Suggestions in this guide are not strong recommendations. Lessons learned

from the first PI-99-AE translation efforts into German and Italian (discussed below) underscore

how every language and culture will present unique interpretation issues, and each translation

effort must be approached individually. However, understanding the challenges the research

teams encountered, the strategies employed to overcome them, and the insights gleaned from

these processes may be useful. Finally, in this guide, the authors decided that detailing the

different extents to which our claims and examples about word meaning are supported by

empirical evidence—often by piloting or replicable item response characteristics, but often not—

or even our confidence in our own subjective reasoning, was out of scope.

Construct-Specific Issues

There are eight key translation issues that, due to the particular nature of the PI-99-AE or

latent phenomenon, are relevant to many if not most PI-99-AE items and subscales. These

concern a scale-specific need for (a) referencing *the world*; (b) maintaining *the world* as the

object of belief in cases of unusual syntax; (c) consulting atypical experts; (d) prioritizing item

piloting over other best practices; (e) maintaining item difficulty despite needs that vary across

PI-99-AE subscales; (f) translating one or two additional items per subscale due to unusually

short subscales; (g) including reverse-scored items; and (h) calibrating the overall adaptation

goal given that primals are currently underexplored.

Referring to "The World"

For many scales that measure beliefs, the object of belief is clear enough that a single,

precise, familiar term can be repeatedly used across items. For example, a scale measuring a

belief about the self often can use "I" across items, and a scale measuring beliefs about the

efficacy of a particular medical procedure can repeatedly reference the name of that particular

treatment (e.g., chemotherapy). A major scale-specific challenge when translating the PI-99-AE

is determining how to refer to its unusual subject. Clifton and colleagues (2019, p. 83) say,

somewhat cheekily, that primals are "only beliefs about everything." Primals Inventory items,

therefore, must not reliably evoke thoughts specific to the self, society, nature, one's town, one's

country, and so forth, but what all of the above are generally like. A more complete definition of

the object of belief follows:

Primals concern the [general trait-like character of the] world as a whole, and thus what is typical of most things and situations. Precise physical boundaries, such as this jungle or that solar system, are misleading. Instead, primals concern an individual's broadest psychologically meaningful habitat. (2019, p. 83)

This is an unusual object of belief. Among those who study beliefs and worldview, the focus is nearly always on narrow subjects or categories within the world rather than the world generally (Koltko-Rivera, 2004). Though the experience of primals researchers (e.g., the Italian translation effort discussed below) suggests that many Primals Inventory respondents and pilot participants possess a 'natural category' (i.e., schema) for this object of belief, some may not. Thus, it is important that items always evoke a sense of the world generally, rather than particular objects or categories within it, including the respondent's life or local environment. This can be difficult when even vaguely worded items (e.g., *the world is unstable*) can evoke highly specific ideas (e.g., climate change).

The items in the PI-99-AE refer to the world in roughly 35 different ways (Table 1). The most commonly used term is *the world*, with some variant employed in 41 items. The terms *everything* and *most things* appear in 15 items each, and the term *life* is found in 13 items. Many items combine terms, such as in the phrases *nearly everything in the world*, *most things in life*, and *life in this world*. Many of the terms, such as *the universe*, appear a handful of times while some, such as *humans, animals, plants, and pretty much everything else*, appear only once.

Table 1

Terms Used in the PI-99-AE to Refer to the World

Term	Other Variants	Example Item
"the world"	"on the whole, the world" "the world you live in"	The world is hilarious; if we aren't laughing, we aren't paying attention. (*Funny*)
"the universe"	*none*	The universe needs me for something important. (*Needs Me*)
"life"	"life in this world"	Life overflows with opportunity and abundance. (*Abundant*)
"humans, animals, plants, and pretty much everything else"	"for all life—from the smallest organisms, to plants, animals, and for people too—everything" "most plants and animals, and even people"	Humans, animals, plants, and pretty much everything else can be organized by how important or good they are. (*Hierarchical*)
"everything"	"nearly everything in the world" "every single thing" "most everything" "basically anything encountered in life"	Everything deserves to be explored. (*Worth Exploring*)
"all"	"all the time"	Though things can appear separate and independent, they really aren't. Instead, all is one. (*Interconnected*)
"nothing"	*none*	Nothing really matters all that much. (*Meaningful*)
"most things"	"most things in the world" "lots of things in the world" "most things in life" "things" "unfamiliar things and places"	Most things have a habit of getting worse. (*Regenerative*)
"most situations"	"most situations in life" "most things and situations"	Most situations are delicate. Though they may be fine now, things could easily unravel. (*Stable*)
"what happens in the world"	"whatever is happening around me" "much of what happens around me" "events happening around me" "things happening around me"	What happens in the world is meant to happen. (*Intentional*)
"everywhere"*	"everywhere, no matter where we look"* "no matter where we are or what the topic might be, the world"	Real danger is everywhere; even if we don't notice it. (*Harmless*)

*Though technically an adverb and not the subject of the sentence in the PI-99-AE, *everywhere* is used in place of *the world* when the typical syntax (e.g., *The world is beautiful*) is reversed (e.g., *Beauty is everywhere*).

This language diversity was employed for two main reasons. First, no single word is perfect. English (and likely other languages) lacks a term for the general character of the world as a whole that (a) is defined from the individual's perspective, (b) forms one heterogenous yet nonetheless meaningfully characterizable place, and (c) constitutes a base-rate or for most things and situations one might encounter. Thus, reliance on any one word would have increased systematic error associated with that word.

Second, some terms we used to refer to the world worked better for some primals (i.e., some subscales) and worse for others. Indeed, the term *world* has 16 dictionary definitions in English (Google Dictionary) and, depending on the subscale, it is easy to evoke the same irrelevant meaning in the same way, resulting in subscale-specific systematic error. For example, the term *world* was adequate in items measuring the belief that most things in the world are *Harmless* (e.g., *On the whole, the world is dangerous*; reverse-scored) and inadequate when trying to measure the belief that most things in the world are *Intentional* (hypothetically, *On the whole, the world is intentional*). In American English, *the world* can also sometimes refer specifically to human society. Thus, pairing *the world* with the idea of intentionality draws out this unwanted meaning, leading to misinterpretations in this particular subscale about conspiracy theories, government control, and so forth. *The world* can also evoke particular meanings in large, American Christian subpopulations because of how the term is used in the Bible (i.e., referring to secular, hedonistic society). Thus, the *Intentional* subscale relies instead on the word *universe* (e.g., *The universe doesn't care if events happen one way or another*). Of course, *universe* also has pitfalls. In English, it tends to conjure up outer space to the exclusion of matters closer to home. This may be acceptable for *Intentional* (cosmic purposes beyond the mundane and mechanical) but is, in turn, why the term was not used to measure *Harmless*, for

example. A hypothetical item like *On the whole, the universe is dangerous* might cause

respondents to overweight the dangers of outer space, which is technically a very dangerous

place for humans but may be largely irrelevant to a psychologically salient environment.

Similarly, translators will notice that some items directly reference the overall character

of the world as one giant place (e.g., *On the whole, the world is a safe place*) while other items

involve a statement about proportion (e.g., *Most things and situations are harmless and totally

safe*). Some subscales involve items that reference the object of belief in both ways, but some are

quite intentionally one-sided, such as *Beautiful*. For example, the item *Nearly everything in the

world is beautiful* was considered superior to a hypothetical item like *The world is a beautiful

place*, which might be confused for the idea of a grand moral plan, a literal globe that is

aesthetically pleasing, or a poetic reference to human kindness, all of which are irrelevant to the

idea that the place involves more or less beauty.

For these and other reasons, we make two suggestions. First, translators should develop a

bank of possible ways to reference the world in the target language, similar to Table 1. For each

item, when translating a reference to the world, consider what other terms might serve better,

thus avoiding reliance on strict translation. Thought may be given to why the PI-99-AE used the

terms it did, but this should inform, not dictate, decisions in a new linguistic and/or cultural

landscape. Second, whenever possible (and whenever in doubt), try to refer to the world in a

diversity of ways both between and within subscales to reduce systematic error.

Maintaining the World as the Subject

As noted, primals are not beliefs about the self. However, since these are beliefs that the

self holds about the world, this distinction can get tricky for some primals, including *Improvable*,

Understandable, *Needs Me*, and *Interactive*. The PI-99-AE often navigates this complexity by

employing certain unusual American English grammatical constructions like expletives, which

are not in this case profanities but the practice of using *it* or *there* as the subject of the sentence

(e.g., *It feels like the world is going downhill*), as well as the passive voice (e.g., *The world needs

to be continually improved rather than accepted*). In some target languages, such syntax may not

be available or interpreted in the same way. If so, the critical element to be preserved is that the

PI-99-AE is a scale about what one believes is actually true of the world— regardless of

whichever phrase from Table 1 is used. For example, if a strict translation is not feasible for the

expletive construction in *It feels like the world is going downhill*, the translator may need to

change the item to *The world feels like it is going downhill* or *I feel like the world is going

downhill*.

Both of these alternatives, however, may create new issues. *I feel* is a validated way of

measuring primal world beliefs in American English (e.g., Lipkus, 1991), where a speaker often

describes perceived facts with language like "I feel" to soften the claim, signaling that the

speaker is aware that others might see things differently. However, translators should avoid

relying on this construction too heavily lest the self or the self's emotions become the

respondent's loci of belief. It would not do to replace all *It feels* items with *I feel* for this reason.

Similarly, in using *The world feels*, translated items should not attribute emotions to the world.

Consulting Unusual Experts

Any good scale translation process will involve a review committee comprised of experts

in psychology, assessment, translation, and similar topics. In the case of primals, consultation

with experts in two other topic areas is worth considering. First, as is commonly suggested (e.g.,

Beaton et al., 2000) though not always deemed critical, Primals Inventory translators are advised

to consult an expert on the construct itself, such as the original authors of the PI-99-AE.

Involving construct experts is particularly helpful for this scale because primal world beliefs are a largely overlooked phenomenon; pertain to an unusual construct; can easily be confused with related constructs; and entail a rather complex, hierarchical measurement model involving three tiers and 26 subscales. With so many primals, it is easy for item-writing decisions to unwittingly imply the meanings of other primals (e.g., *Meaningful* world belief and *Intentional* world belief), clouding factor structures.

A second suggestion, and perhaps more unusual, is that researchers consult a mass communications expert in the target language. This can be someone with applied expertise in modern communications or marketing to a contemporary, general audience of native target-language speakers. During the development of the PI-99-AE, the research team found that, whereas academics tended to emphasize face-validity of an item—which may be ideal for other scales—our marketing expert highlighted the impression an item would land in the mind of a fast-reading subject without any prior exposure to the ideas. The former approach is concerned with whether each item correctly captures the concept and its nuances given a careful reading; it is philosophical. The latter approach tolerates imperfections of meaning to prioritize an item's ability to quickly tap into relevant preconceptions in the contemporary mental landscape and point respondent thinking in the right direction, which is crucial for an unusual and amorphous object of belief like *the world*. This resulted in a tendency to prefer brevity, informality, and simplicity with attention to relevant cultural and linguistic idiosyncrasies, even at the cost of some terminological precision or, unfortunately, ease of translation. In guiding a primals translation effort, a mass communications expert may be better poised to replace the many American English colloquialisms used in the PI-99-AE (e.g., tons and tons) with appropriate target-language equivalents.

Prioritizing Piloting

Many scale-generic item-writing guides (e.g., DeVellis, 2016) note that using broad and vague terms in items can lead to problems, including dramatic misunderstanding of item content. PI-99-AE items are necessarily filled with broad and vague terms to an unusual degree. Thus, we recommend qualitative item pretesting/piloting, which is often recommended yet often deprioritized, to catch items that obviously miss the mark. In the creation of the PI-99-AE, piloting suggested that as high as 15% of meticulously edited items were consistently and entirely misunderstood by pilot participants. The German and Italian PI-99-AE translation processes discussed below found similarly high item failure rates, with the German process encountering the issue only later in the process (because items were not piloted), forcing difficult item-retention decisions. These high failure rates suggest to the authors that general and abstract language in primals items can create vacuums of meaning which, if overlooked, may be filled by the culture-specific nuances of words and phrases, thus introducing systematic error related to particular and irrelevant environments. It was during piloting, for example, that the authors found that *The world is unstable* made people think specifically—and consistently—about climate change, leading to the re-write *Most situations are fragile and easily ruined*.

In line with scale-generic guidelines, Primals Inventory piloting can be done with a minimum of 12 subjects (Sheatsley, 1983) though *N*=30-40 is desirable (Beaton et al., 2000). PI-99-AE scale creators had in-person pilot participants (a) read one item at a time; (b) give their answer (using the six response options of the PI-99-AE); and then (c) explain in their own words what they thought the item was about. The one-on-one interview format allowed cognitive interviewing or *think-aloud* techniques to clarify and probe for understanding of particular words or phrases (Collins 2003; Drennan 2003; Willis 2005). PI-99-AE scale creators found that online

and text survey formats offered less rich but still useful feedback, especially if each respondent gave notes on all items. In our experience, only about 30 items could be covered during a one-hour in-person interview.

Translating Additional Items

The PI-99-AE is unusually unforgiving of translation error because it involves many subscales (22) involving very few items (4-5), at least one item in each is opposite-scored, and all 99 items are usually presented in a different random order for each respondent. While the consistency of these scales in exploratory and confirmatory factor analyses despite such constraints is a testament to the robustness of the latent phenomena, the scale's brevity and administration approach also mean that, if even one translated item performs poorly, entire subscales can easily fail reliability benchmarks. This may leave the PI-99-AE translator unsure if low reliability indicates a measurement failure or the discovery of a genuine cross-cultural difference in the latent phenomena.

Therefore, when translating the PI-99-AE, we recommend that one or two additional items for every tertiary subscale be translated and administered, depending on the length of the original subscale (most are four items but some are five), for a total of six items per subscale. If piloting is not done, including additional items becomes even more critical, as the German translation experience below amply demonstrates (nearly all subsequent translation efforts that ignored this advice encountered the same problem). Note that later analysis can (and should) cull unnecessary items as needed, optimizing reliability as well as item-language diversity. For translators' convenience, the authors have selected and recommend in Table 2 additional items from the original pool of 234 American English items based on various psychometric considerations (especially factor loadings in the original sample of 930 respondents), language

heterogeneity, response heterogeneity, and content validity (see Clifton et al., 2019, online supplement; further items can be found in the PROMAX tables starting on p. 230).

Calibrating Item Difficulty

Cross-cultural scale equivalence requires items to pinpoint both the same construct and the same level of intensity. If, for example, "On the whole, the world is a *very* dangerous place" is translated into "On the whole, the world is a dangerous place" the translated item may tap the same latent variable, but responses cannot be compared cross-culturally. Calibrating item-difficulty (i.e., how hard it is for items to be agreed with) is critical for translation of the PI-99-AE because there are many reverse-scored items (which psychometricians know must match each other in item-difficulty for them to load on the same factor) and because item-difficulty issues vary across subscales.

Translators will notice that items in certain subscales, particularly the seven tertiary primals related to *Enticing*, are pitched with more extremely worded forward-scored items and less extreme reverse-scored items. This item-writing decision was made so the forward-scored items would be much more difficult to agree with and the reverse-scored items much easier to agree with. An example of a forward-scored, strongly worded item is *It feels like interesting and exciting things surround us all the time*, and a qualified reverse-scored item is *Most things in life are kind of boring*. Notice the downtoner *kind of* and intensifiers *surround* and *all the time*. These insertions are carefully calibrated because very few would disagree with a generic item like *On the whole, the world is an interesting place* or agree with *On the whole, the world is a boring place*, creating skew, ceiling effects, and factor structures where forward and reverse-scored items separate into different factors for artifactual reasons. Whereas in America, PI-99-AE mean scores on primals like *Harmless* hover near 2.5 on a 0 to 5 scale—with no intensifiers

and downtoners—*Interesting* can be as high as 3.5—even with our extensive use of intensifiers

and downtowners (p. 282-289 of Clifton and colleagues' 2019 supplement contains PI-99-AE

descriptive statistics). Thus, in translating the Primals Inventory, it is necessary to mimic these

subscale-specific calibrations of item-difficulty, as appropriate for the target culture. For

example, words or phrases like "way more" or "tons and tons" may seem inessential, but are

critical for maintaining item difficulty and should be preserved with an appropriately matched

word or colloquial phrase in the target language.

Including Both Forward- and Reverse-scored Items

The validity of any belief measure requires the identification of at least one reasonably

high-loading forward-scored item and one reasonably high-loading reverse-scored item (Clifton,

2020). This allows for what Tay and Jebb (2018) call *continuum specification*, which they define

as the process of theoretically defining a continuum and then properly operationalizing it within

a measure. Just because a pair of ideas are conceptually opposite does not mean they are

empirically opposite. Indeed, in the case of the PI-99-AE, Clifton and colleagues (2019) found

empirically that some primals are best understood as unipolar while some are clearly bipolar. For

example, there are many possible conceptual opposites for *Beautiful*, including dullness,

ugliness, meaninglessness, and so forth, not to mention mere absence of beauty (i.e., unipolarity).

But factor analysis results were clear: the opposite of *Beautiful* was in fact the presence of

ugliness. In contrast, the empirical opposite of *Funny* world belief was the mere absence of the

humorous rather than, say, the presence of seriousness; items about seriousness did not load on

that factor.

If Primals Inventory translators wish to be confident that continuums are specified, as

they are for the American context, we recommend the standard of requiring adequately loading

opposite-scored items on every scale, especially in the analysis stage. To achieve this, it is

helpful to include at least two forward-scored items and at least two reverse-scored items in the

initial, six-item pool for each subscale. Doing so will help ensure that at least one of each

performs adequately and the continuum is specified.

Clarifying the Translation Goal

When translating measures of well-studied latent phenomena with dimensionality known

to be universal (e.g., BIG 5 personality traits), the typical goal is confirmatory: to replicate the

measure as is, including dimensionality, in the new culture. Primals, however, are understudied.

The PI-99-AE was created via a distinctly exploratory process that has been called *discovery-*

minded scale-building (Clifton, 2020) which uses methods suitable for empirically mapping

overlooked spaces and emphasizes validity over reliability. For example, the effort began with

10 extensive exploratory projects (e.g., analysis of >80,000 tweets and >800 of the most

frequently used English adjectives) so that many if not all possible candidate primals could be

represented in large exploratory factor analysis studies (Clifton et al., 2019). These efforts

included focus groups among Chinese mainlanders as well as American Hindus, Buddhists, and

Muslims; analysis of various non-Western sacred and secular texts; and other investigations in

non-WEIRD (white, educated, industrialized, rich, democratic) cultures (Henrich et al. 2010).

Still, the main thrust was WEIRD, and all three initial factor analysis studies used American

samples. Because other cultures may well vary on different dimensions of primals (see German

experience below), translators may choose to take a more exploratory or confirmatory approach

as they wish. Given the recent and extensive exploratory efforts, their costliness, and the

perceived urgency of primals research, many translators may choose a more confirmatory

approach but with an eye for clues arising during dimensionality analysis that suggest the value

of more extensive exploration down the road. Such exploration could provide further insight into whether primals are universal and, if so, which ones.

Item-Specific Issues

Due to the length of the PI-99-AE, our comments on individual item wording take the form of an extensive table (Table 2). It includes the following elements:

- definitions for each primal

- original items from the PI-99-AE

- 1-2 recommended additional items per subscale selected from the initial pool of 234 items based on various criteria (especially factor loadings), which will allow at least 2 opposite-scored items to be administered

- item-specific annotations highlighting intensifiers (language intended to make the item more difficult to agree with); downtoners (language intended to make the item easier to agree with); and colloquialisms requiring adaptation

- notes highlighting specific challenges each subscale posed in American English

Perhaps the most important part of this table is the definitions; it is important to write each item so that it pinpoints one particular primal and no others. Thus, translators will want to have a thorough understanding of all 26 primals from the outset. The authors tried to limit subscale-specific notes to only those most pertinent for translation purposes. Individuals interested in more detailed discussion of how and why items were written as they were should refer to the example description of the development of the *Abundant* subscale on page 137-144 of Clifton and colleagues' (2019) supplement. Another resource to consult is www.myprimals.com, where the meaning of each primal is discussed at greater length along with representative quotes from history, literature, Twitter, and so forth. Please note that downtoners and intensifiers are highly

context-specific, and the same word may serve as either or neither depending on the item,

particularly whether it is forward or reverse-scored. Throughout the table, reverse-scored items

are marked with an asterisk. For those interested in translating the 6-item Primals Inventory or

the 18-item Primals Inventory, see Appendix A and B.

Table 2

Annotated Table of PI-99-AE Items for Translation Purposes

Scale Instructions	Translation Notes
Below are very general statements about the world—not the world we wish we lived in, but the actual world as it is now. Please share your sense of agreement or disagreement. When in doubt, go with what initially **feels true of the real world**. There are no wrong answers. There's no need to overthink.	Careful translation of PI-99-AE instructions is important, since the entire measure can be compromised if instructions are misleading. Please include instructions in all back-translation efforts. • Sometimes translators fail to translate the "very" in the first sentence, but the acknowledgement that statements are extremely general helps preempt potential surprise at the sweeping quality of items. • The phrase "as it is now" contrasts with the idea of a hypothetical, idealized, wished-for, or bygone world, but should *not* overemphasize the present moment. (For example, incorrect translations include "the actual world, just as it is *right* now" and "just as it is in the *modern* world" which may lead to overweighting the news of the day.) • The corresponding language for "feels true of the real world" should be rendered in **bold** font in the translation. An alternative translation is "strikes you as true of the actual world" or "rings true of the real world." • Some translators have translated the last line as "No need to try hard" which may lead to careless responses. In English, "overthinking" does not describe thinking hard but thinking *too* hard. We want participants to thoughtfully consider each item but efficiently, without belaboring or over-analyzing.

Abundant (4 items; 2 additional items)				
Definition: *Abundant* (vs. barren) is the belief that the world is a promising place full of opportunities and resources.				
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (underlined)	**Translation Notes**
The world is an abundant place.	.	.	.	**Definition:** Items about abundance should *not* connote merely riches or material wealth: just the presence of many opportunities and resources (from fruit trees to jobs to friends).
The world *feels like* a barren place with few opportunities.*	.	*X*	.	
Life **overflows** with opportunity and abundance.	**X**	.	.	**Language:** In American English, "overflow" and "tons and tons" provide a sense of abundance beyond their literal meaning; "few and far between" is a colloquial phrase. We recommend translators select words and colloquial phrases that capture abundance / scarcity in the target language (e.g., not strictly translate "tons and tons"). The phrase "even if we don't see them, that doesn't mean they aren't there" is used to probe what the respondent considers objectively true.
The world is an abundant place with **tons and tons** to offer.	**X**	.	X	
Recommended Additional Items				
Good opportunities are everywhere; even if we don't see them, that doesn't mean they aren't there.	.	.	.	
Great opportunities are few and far between.*	.	.	X	**Item Difficulty:** While the first and fourth item seem redundant, the addition of "with tons and tons to offer" makes the fourth item considerably more difficult to agree with and was found in the PI-99-AE to capture reasonably different variance.
				Factor Structure: In analysis of the PI-99-AE, forward scored items related more to *Enticing* while reverse-scored items related more to *Safe*. No other tertiary primal splits across secondary primals in this way.

Acceptable (4 items; 2 additional items)			
Definition: *Acceptable* (vs. unacceptable) is the belief that the world and most things in it are best accepted "as is."			
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (<u>underlined</u>)	**Translation Notes**
The world needs to be **continually** improved rather than accepted.*	**X**	.	.	**Definition:** It is important that every item in this subscale does not imply necessarily that the world is good or bad—*Acceptable* is largely orthogonal to *Good* in the PI-99-AE. **Language:** Unlike some other subscales, this one depends heavily on one word ("accept" is in every item), so translating "accept" requires careful attention. The translator may consider translating it differently across items to decrease systematic error. **Item Difficulty:** Relatively few people are likely to disagree that many things need to be improved, so some of these items contain intensifiers. Thus, striving to improve everything all the time (forward-scored items) contrasts with striving to accept most things as they are (reverse-scored items). That said, intensifiers for this primal do not need to be as strong as some others, like *Beautiful*.
Most situations in life need to be improved, not accepted.*	.	.	.
Rather than accepting things as they are, the world needs to be improved **as much as possible**.*	**X**	.	.
It's *usually* better to accept a situation than try to change it.	.	*X*	.
Recommended Additional Items			
More things in the world need to be accepted than changed.	.	.	.
Most things and situations need to be accepted as they are.	.	.	.

Beautiful (4 items; 2 additional items)				
Definition: *Beautiful* (vs. ugly) is the belief that the world and most things in it are beautiful and aesthetically engaging.				
PI-99-AE Original Items	Intensifier (**bolded**)	Downtoner (*italicized*)	Colloquial Phrase (underlined)	**Translation Notes**
*Though some things are **incredibly** beautiful*, they're <u>few and far between</u>.*	**X**	*X*	<u>X</u>	**Definition:** Beautiful/ugly should not be translated into generic good/bad language. This primal is about aesthetics primarily. **Language:** "No matter" is a colloquial phrase meaning "regardless of" or "it does not make a difference". "Way more" means "very much more." This subscale could have benefitted from more language diversity for beauty, but other similar words in English tend to be used primarily for humans (e.g. *gorgeous*). Translators should use multiple words if possible. **Item Difficulty:** While the forward scored items require intensifiers to make them more difficult, reverse-scored items require downtoners to make them easier to agree with. Without doing both, opposite scored items may not load on each other. **Additional Items:** The first recommended additional item (noted by ♮) is already included in the PI-99-AE to measure the secondary primal *Enticing*.
Nearly everything in the world is beautiful.	**X**	.	.	
In life, there's **<u>way more</u>** beauty than ugliness.	**X**	.	<u>X</u>	
There is beauty **everywhere**, **<u>no matter</u>** where we look.	**X**	.	<u>X</u>	
Recommended Additional Items				
<u>No matter</u> where we are, **incredible** beauty is **always** around us.♮	**X**	.	<u>X</u>	
Though some things are beautiful, most things are not.*	.	*X*	.	

Changing (5 items; 2 additional items)			
Definition: *Changing* (vs. static) is the belief that, instead of constancy, the world is defined by flux.			
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (underlined)	**Translation Notes**

PI-99-AE Original Items	Intensifier (bolded)	Downtoner (italicized)	Colloquial Phrase (underlined)	Translation Notes
Everything feels like it's shifting and changing.	X	.	.	**Language:** "Pretty much" means "for the greater part." "Whirl" is often a hard word in translation, but some have used things like "whirlwind" or "vortex." This word should give the feeling of constant change, though be careful about evoking weather patterns too explicitly.
I feel like **everything** changes <u>**all the time**</u>.	X	.	<u>X</u>	
Everything feels like a whirl of **constant** change.	X	.	.	**Item Difficulty:** Forward-scored items need to be intensified while reverse-scored items need to be qualified, because most people would agree with the idea that change is common. For example, "Feels like" in the first, second, and third item was intentionally used to address the issue that, while everyone acknowledges many things change, some have a felt sense that change is real and really important.
The world is a place where most things stay *pretty much* the same.*	.	*X*	<u>X</u>	
Everything feels like it's **constantly** moving, changing, and <u>up in the air</u>.	X	.	<u>X</u>	
Recommended Additional Items				
Though some things change, most things stay *basically* the same. *	.	*X*	.	**Factor Structure:** This primal involved relatively weaker psychometric signal than others (comparatively low internal consistency, factor loadings, etc.), requiring the use of five items, only one of which is reverse scored, to maintain internal reliability. Therefore, the inclusion of slightly more redundant language might be helpful.
Most things are **rapidly** changing **in ways that really matter**.	X	.	.	

Cooperative (4 items, 2 additional items)				
Definition: *Cooperative* (vs. competitive) is the belief that the world runs on trust and teamwork not brutal competition.				
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (underlined)	**Translation Notes**
Instead of being cooperative, life is a **brutal** contest where you got to do **whatever it takes** to survive.*	**X**	.	X	**Definition:** To ensure competition in this primal is interpreted as more than a sport or a friendly game (though not necessarily violent), we include "brutal" and "cut-throat" as descriptors. **Language:** "Got to" is a colloquial phrase meaning "must," and "way more" means "very much more." "Whatever it takes" means "anything necessary." **Item Difficulty:** Both forward and reverse-scored *Cooperative* items require intensifiers because otherwise they would be too easy to agree with. **Factor Structure:** Unlike other primals, most of these items were written such that reverse-scored items virtually must load on forward-scored items because items include reference to both. This forces the dimensionality to work, limiting the usefulness of factor analysis to yield latent dimensionality, but also allows the respondent to rightly understand the intended meaning of items.
For all life—from the smallest organisms, to plants, animals, and for people too— **everything** is a **cut-throat** competition.*	**X**	.	.	
Instead of being cooperative, the world is a **cut-throat** and competitive place.*	**X**	.	.	
The world runs on trust and cooperation **way more** than suspicion and competition.	**X**	.	X	
Recommended Additional Items				
In general, life succeeds and thrives through cooperation rather than competition.	.	.	.	
No matter where we look, there's trust, cooperation, and sharing. **Cut-throat** competition **only** plays a small role.	**X**	.	X	

Funny (4 items; 2 additional items)				
Definition: *Funny* (vs. not funny) is the belief that the world is full of humor everywhere you look.				
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (underlined)	**Translation Notes**
The world is **hilarious**; <u>if we aren't laughing, we aren't paying attention</u>.	X	.	<u>X</u>	**Definition:** In the PI-99-AE, the opposite of *Funny* was empirically determined to not be solemnity or seriousness but simply the absence/infrequency of funny things. Translations of "funny" should take care not to indicate strangeness or weirdness, as "funny" can sometimes suggest in English, or "fun" as in having a good time, but instead "humor." **Language:** "If you're not X, you're not paying attention" is a colloquial phrase that indicates something is true whether or not one recognizes it. "Not that funny" means "not very funny." **Item Difficulty:** Forward-scored items need to be intensified and reverse-scored need to be qualified because nobody would believe nothing is funny and everyone would agree that many things are funny. "Hilarious" is stronger than "funny" whereas "humorous" is a bit weaker than "funny".
There's humor in **everything**.	X	.	.	
While some things are humorous, most of the time the world is not *that* funny.*	.	*X*	.	
Laughing **<u>a ton</u>** makes sense because life is **hilarious** and humor is **everywhere**.	X	.	<u>X</u>	
Recommended Additional Items				
The universe is **hilarious**.	X	.	.	
Though some things are funny, most things aren't *that humorous*.*	.	*X*	.	

Harmless (5 items; 2 additional items)			
Definition: *Harmless* (vs. threatening) is the belief that the world and most things in it are typically not very dangerous.			
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (<u>underlined</u>)	**Translation Notes**
Real danger is **everywhere**; even if we don't notice it.*	X	.	.	**Definition:** Future research is needed to know for sure, but this tertiary subscale may be largely specific to physical danger, rather than other forms of threat such as instability or competition. **Language:** "Totally" is often used colloquially among American English speakers in place of "very" to indicate emphasis rather than a categorial statement (e.g. "completely safe"). "Pretty" is both a downtoner and also makes the item less formal. "On the whole" means "in general" or "on balance".
Most things and situations are harmless and **<u>totally</u>** safe.	X	.	<u>X</u>	
I tend to see the world as *pretty* safe.	.	*X*	.	
<u>On the whole</u>, the world is a dangerous place.*	.	.	<u>X</u>	
<u>On the whole</u>, the world is a safe place.♮	.	.	<u>X</u>	
Recommended Additional Items				**Additional Items:** The translator likely does not need to include the additional items for this subscale. Signal tends to be very strong (high internal consistency, factor loadings, etc.), and there are already two reverse-scored items. Five (not four) items were included in the PI-99-AE only because the fifth item (denoted by ♮) is the best indicator of the secondary primal *Safe* and is also helpful on this tertiary subscale. Additional items are still provided in case translators prefer consistency.
It feels like danger and threatening situations are **all around**.*	X	.	.	
It seems like **<u>no matter</u>** where I go, I expect things to be safe.	X	.	<u>X</u>	

Hierarchical (5 items; 2 additional items)				
Definition: *Hierarchical* (vs. nonhierarchical) is the belief that most things have differential value and can be ranked.				
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (<u>underlined</u>)	**Translation Notes**
Most things in the world could be ranked in order of importance.	.	.	.	**Definition:** The meaning of this primal may seem abstract, but that is likely because English lacks a commonly used word for this concept. It would be interesting if other languages have better terms to capture the same idea. **Language:** A strict translation of the colloquial phrase "pecking order" is likely inappropriate. Translators may prefer a culture- or language-specific way of referring to hierarchies, but should avoid anything overly specific to human relationships. "Just" means "only" in this situation. **Item Difficulty:** The downtoners qualifying "differences" are important because no one would claim that everything is exactly the same or completely different. These phrases keep both forward- and reverse-scored items from being too difficult to agree with. In other words, the conceptual range was constrained to capture a more platykurtic response distribution.
Humans, animals, plants, and <u>pretty much everything</u> else can be organized by how important or good they are.	.	.	<u>X</u>	
Most things can be organized into hierarchies, rankings, or <u>pecking orders</u> that reflect *true* differences among things.	.	*X*	<u>X</u>	
Most things aren't better or worse. It's hard to organize the world into hierarchies, rankings, or <u>pecking orders</u> that reflect *true* differences.*	.	*X*	<u>X</u>	
Things are rarely equal. Most plants and animals, and even people, are better or worse than one another.	.	.	.	
Recommended Additional Items				
Most things aren't better or worse, but *just* different.*	.	*X*	.	
Ranking things from better to worse is meaningless. Most things are *pretty* equal.*	.	*X*	.	

Improvable (5 items; 2 additional items)				
Definition: *Improvable* (vs. too hard to improve) is the belief that most things can be readily changed for the better.				
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (underlined)	**Translation Notes**
It's possible to **significantly** improve **basically anything** encountered in life.	X	.	.	**Definition:** The opposite of *Improvable* is not unchangeable, which would relate too much conceptually to *Stable* (vs. fragile) or static (vs. *Changing*). Instead, this primal captures the general difficulty level of making things better. **Language:** Avoid connotations that make the respondent think too much about big things, such as governments, poverty, climate, etc.—of course such big things are hard to change. Instead, the phrases "most things and situations," "life," and "things" (rather than "the world") indicate typical malleability, mundane or not. Additionally, items should avoid implying whether things are easy or hard to change for the respondent personally. Items should *not* measure beliefs about *one's own competence* or ability to change things but how difficult things generally are to change *for any given agent* (person, creature, or even natural force), hence the importance of phrases like "no matter who you are." This is not a general self-efficacy measure, which is a belief about the self. **Item Difficulty:** Both forward and reverse-scored *Improvable* items require intensifiers because otherwise they would be too easy to agree with.
In most situations, making things **way better** is **absolutely** possible.	X	.	.	
Most things and situations are responsive, workable, and **totally** possible to improve.	X	.	.	
Most situations seem **really** difficult **if not impossible** to improve.*	X	.	.	
No matter who you are, you can **significantly** improve the world you live in.	X	.	.	
Recommended Additional Items				
Life is **full of** stubborn problems, situations, and issues that *just* can't be solved.*	X	*X*	<u>X</u>	
Though sometimes hard, it feels **totally** possible to change things and make them **much** better.	X	.	.	

Intentional (5 items; 2 additional items)				
Definition: *Intentional* (vs. unintentional) is the belief that most things happen for an underlying purpose.				
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (underlined)	**Translation Notes**
Events happen according to a broader purpose.	.	.	.	**Definition:** In translation, avoid the suggestion of either human purpose, divine/religious purpose, or fate/destiny. This primal concerns intentionality behind everything from the weather to soulmates and is blind to where that intentionality comes from. Likewise, items should not connote a conspiracy theory or some particular group in society pulling the strings. Items should not be written to indicate whether the underlying purpose is good or bad (the term "purpose" unfortunately has positive connotations in English). In American English, 'a purpose' is more positive than 'on purpose' which merely indicates intentionality. Finally, for the PI-99-AE, many self-identifying atheists score high on this primal. This is only possible if terms associated with religion are avoided.
What happens in the world is <u>meant to happen</u>.	.	.	X	
Events *seem to* lack any cosmic or bigger purpose.*	.	X	.	
The universe doesn't care if events happen <u>one way or another</u>.*	.	.	X	
Everything happens for a reason and on purpose.♮	X	.	.	
Recommended Additional Items				
The universe does things on purpose.	.	.	.	**Language:** This subscale is likely too dependent on the word "purpose". If the additional items are used, we recommend exchanging the term "purpose" for some alternative words.
Events *seem to* happen without a broader intention or purpose.*	.	X	.	**Additional Items:** Like *Harmless*, the *Intentional* subscale likely does not require the additional items. Signal tends to be very strong for this latent variable in the PI-99-AE, and the scale already includes two reverse-scored items. The PI-99-AE includes five items because the fifth (♮) is the best indicator of secondary primal *Alive* but also useful on this tertiary subscale.

Interactive (5 items; 2 additional items)				
Definition: *Interactive* (vs. indifferent) is the belief that events happening in the world are reacting to you personally.				
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (<u>underlined</u>)	**Translation Notes**
Whatever is happening around me *often* feels related to me or something I've done.	.	*X*	.	**Definition:** It is important not to write these items in such a way that suggests narcissism or activates social desirability biases, which is why these items were softened to describe how people feel about something vs. what people think about it (people can sometimes *know* the world is objectively not responding yet *feel* like it is). The concept in target is whether the activities of the world are reactions to you personally or to something you personally have done—via who you happen to meet on the street, whether your bus is late, etc. One who sees the world as interactive may think the universe is trying to send them a message, teach them something, punish them, reward them, or push them to do something. For example, if someone plans a picnic, and it rains, one who sees the world as interactive may think the weather is a punishment for something they did. This primal was originally labeled *About Me*.
When unsure why something is happening, I *often* suspect <u>it's got something to do</u> with me.	.	*X*	<u>X</u>	
Much of what happens around me feels like it's because of me or related to me *somehow*.	.	*X*	.	
My first instinct about events happening around me is that they're unrelated to me or anything I've done.*	.	.	.	
<u>My first instinct</u> about things happening around me is that they <u>have to do with</u> me or something I've done.	.	.	<u>X</u>	
Recommended Additional Items				
It's safe to assume, and I *usually* do, that whatever's happening is *probably* not about me or responding to something I've done.*	.	*X*	.	
Usually what's going on around me has <u>nothing to do</u> with me.*	.	*X*	<u>X</u>	

Interconnected (4 items; 2 additional items)				
Definition: *Interconnected* (vs. separable) is the belief that everything is interdependent and largely inseparable.				
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (<u>underlined</u>)	**Translation Notes**
Every single thing is connected to **everything** else.	**X**	.	.	**Definition:** Items should not imply that connection or disconnection is either good or bad. **Item Difficulty:** The forward-scored items are intensified and the reverse-scored items qualified for this primal.
The world is a place where **everything** is **completely** interconnected.	**X**	.	.	
Though things can appear separate and independent, they really aren't. Instead, <u>**all is one**</u>.	**X**	.	<u>X</u>	
Most things are *basically* unconnected and independent from each other.*	.	*X*	.	
Recommended Additional Items				
Most things are best understood as <u>*pretty*</u> independent and separate from each other.*	.	*X*	<u>X</u>	
Nothing is *truly* separate from anything else. **Everything** is connected.	**X**	*X*	.	

Interesting (4 items; 2 additional items)				
Definition: *Interesting* (vs. boring) is the belief that the world and most things in it are fascinating and intellectually engaging.				
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (underlined)	**Translation Notes**
Most things in life are <u>*kind of*</u> boring.*	.	*X*	<u>X</u>	**Language:** "Kind of" and "pretty" in these situations means "somewhat." **Item Difficulty:** In this subscale, it is especially important that forward-scored items be intensified and reverse-scored items qualified. For example, note the softening of "kind of" and "somewhat." Some reverse scored items even acknowledge that there are interesting things but just not that many of them.
While some things are interesting, most things are <u>*pretty*</u> dull.*	.	*X*	<u>X</u>	
The world is a *somewhat* dull place where plenty of things are not *that* interesting.*	.	*X*	.	
It feels like interesting and exciting things **surround us** <u>**all the time**</u>.	**X**	.	<u>X</u>	
Recommended Additional Items				
Everything is interesting, <u>no matter</u> where we are or what we're doing.	**X**	.	<u>X</u>	
The world is **always** a fascinating place.	**X**	.	.	

Just (5 items; 2 additional items)				
Definition: *Just* (vs. unjust) is the belief that the world is a fair place where you typically get what you deserve.				
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (<u>underlined</u>)	**Translation Notes**
<u>On the whole</u>, the world is a place where we get what we deserve.	.	.	<u>X</u>	**Definition:** Items should not primarily conjure up whether society treats its members fairly (i.e., faith in particular human institutions like courts of law) but that the universe is a place that tends to balance things out, especially moral equations. Presumably, this assumption would hold on alien planets with totally different institutions, law codes, etc., or in the afterlife.
The world is a place where we rarely deserve what we get.*	.	.	.	
<u>Life will find ways</u> to reward those who do good and punish those who do bad.	.	.	<u>X</u>	
The world is a place where working hard and being nice <u>pays off</u>.	.	.	<u>X</u>	**Language:** The English version may rely too much on the word "world," which often denotes society, though the third item ("Life will find ways…") still loads well; it does seem, however, to include variance associated with *Alive*, which is only a problem if multiple items include similar error patterns (i.e., systematic error).
If someone is generous and kind, the world will be kind <u>back</u>.	.	.	<u>X</u>	
Recommended Additional Items				
The world *usually* rewards and punishes unfairly.*	.	*X*	.	
Those who find misfortune *most often* bring it on themselves.	.	*X*	.	

Meaningful (4 items; 2 additional items)				
Definition: *Meaningful* (vs. meaningless) is the belief that the world and basically everything in it matters a great deal.				
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (<u>underlined</u>)	**Translation Notes**
Nothing *really* matters *all that much*.*	**X**	*X*	.	**Definition:** Note that these items should not imply intentionality or interconnection, but mattering.
Most things are pointless and meaningless.*	.	.	.	**Item Difficulty:** *Meaningful* and *Interesting* are probably the two primals most susceptible to ceiling effects on forward-scored items, so forward-scored items must be much more strongly worded than reverse-scored items. However, the forward-scored items should not introduce vocabulary that differs much from the rest of the subscale; otherwise it may not load on the same factor. More reverse-scored items were retained in the English version primarily because they seemed to suffer less from ceiling effect issues (i.e., responses were more evenly distributed).
The world is a place where things just don't matter.*	.	.	.	
The world is a place where **most everything** matters.	**X**	.	<u>X</u>	
Recommended Additional Items				
The world is **full of** meaning and meaningful moments.	**X**	.	.	
<u>In light of</u> everything wrong with the world, it might be better if nothing existed at all.*	.	.	<u>X</u>	

Needs Me (4 items; 2 additional items)				

Definition: *Needs Me* (vs. doesn't need me) is the belief that the world needs you for an important task.

PI-99-AE Original Items	Intensifier (**bolded**)	Downtoner (*italicized*)	Colloquial Phrase (<u>underlined</u>)	Translation Notes
The universe needs me for something **important**.	X	.	.	**Definition:** Translators should avoid the sense that agreeing with forward-scored items means confessing to narcissism. Likewise, agreeing with reverse-scored items should not imply participants are worthless but just that the world does not have a special need or role for them personally. Again, the emphasis in this belief should be on the world and its character, something in the nature of the world that makes it need, not on the self or something about the self that makes it needed. For example, when describing a baby, a prime attribute of the *baby* and not the mother is that the baby needs its mother. Likewise, items should primarily be about the needs of the world.
The world needs me and my efforts.	.	.	.	
Life has an **important** <u>part for me to play</u>.	X	.	X	
It feels like the world doesn't *really* need me for anything.*	.	X	.	
Recommended Additional Items				
There's nothing *important* the world needs me for.*	.	X	.	**Language:** A "part to play" is a colloquialism derived from having a role in a theater production. Translations do not need to retain the theater reference, but it should evoke that the respondent is needed for something particular. The respondent is not just a nameless member of the supporting cast; he/she has a named part in the play.
I feel like life has *hardly* any *real* or *significant* tasks for me.*	.	X	.	

Pleasurable (5 items; 2 additional items)				
Definition: *Pleasurable* (vs. miserable) is the belief that, hedonistically speaking, most things are typically enjoyable.				
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (<u>underlined</u>)	**Translation Notes**
Life offers more pain than pleasure.*	.	.	.	**Definition:** *Pleasurable* and the overall belief that the world is good are statistically indistinguishable in the English version; thus, some items merely use the modifier "good." The translator may want to include enough items of each (*Pleasurable* vs. *Good*) to test if this holds in the target language/culture. If so, more items are available in Clifton and colleagues' (2019) supplement. Note that, in this and for other tertiary primals, "life" in English is much broader than just "your own life".
Life in this world is *usually* pain and suffering.*	.	*X*	.	
<u>On the whole</u>, the world is a good place.	.	.	<u>X</u>	
Most things in the world are good.	.	.	.	
Life offers **<u>way more</u>** pleasure than pain.	**X**	.	<u>X</u>	
Recommended Additional Items				
The world is **full of** pleasures and **almost always** enjoyable.	**X**	.	.	
More things are bad than good in the world.*	.	.	.	

Progressing (4 items; 2 additional items)				
Definition: *Progressing* (vs. declining) is the belief that the world is getting better instead of worse.				
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (<u>underlined</u>)	**Translation Notes**
<u>On the whole</u>, the world is getting worse.*	.	.	<u>X</u>	**Definition:** It is important to understand the differences between *Progressing* and *Regenerative* when translating these items. *Progressing* concerns the direction of the world as a whole as one big place. *Regenerative* concerns whether the natural tendency of most things and situations is entropy. Thus, there are people who see the world as getting better overall (*Progressing*) despite also believing that the natural state of most things is to fall apart (low *Regenerative*). In the creation of the PI-99-AE, the scale creators thought these two ideas would collapse into each other during factor analysis, but they diverged instead. It may be, however, that the distinction is not statistically meaningful in other cultures/languages. **Additional Items:** Psychometric signal for this primal tends to be very strong in the PI-99-AE. Additional items are less likely to be necessary.
It feels like the world is <u>going downhill</u>.*	.	.	<u>X</u>	
Though the world has problems, <u>on the whole</u> things are **definitely** improving.	**X**	*X*	<u>X</u>	
It feels like the world is getting <u>better and better</u>.	.	.	<u>X</u>	
Recommended Additional Items				
<u>On the whole</u>, the world is improving.	.	.	<u>X</u>	
The world keeps <u>changing for the worse</u>.*	.	.	<u>X</u>	

Regenerative (4 items; 2 additional items)				
Definition: *Regenerative* (vs. degenerative) is the belief that the world's natural tendency is to heal/stabilize vs. weaken/decay.				
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (<u>underlined</u>)	**Translation Notes**
Over time, most situations naturally tend to get worse, not better.*	.	.	.	**Definition:** See the note on *Progressing* for the difference between *Progressing* and *Regenerative*. Note that the items concern the tendency of things and situations rather than the world as a whole on a global level. This interest in situations should be preserved in the translated items lest they load on *Progressing* rather than *Regenerative*. Indeed, across tertiary subscales, strategic choices should be made regarding when to refer to the world as one big place (e.g., "On the whole, the world is…") and when to refer to the preponderance of individual objects within the world (e.g., "most things are…").
The usual tendency of most things and situations is to get better, not worse.	.	.	.	
Though sometimes situations get worse, usually they get better.	.	*X*	.	
Most things <u>have a habit</u> of getting worse.*	.	.	<u>X</u>	
Recommended Additional Items				
Over time, most situations tend to improve, rather than decline.	.	.	.	
Though sometimes situations get better, usually they get worse.*	.	*X*	.	

Stable (4 items; 2 additional items)				
Definition: *Stable* (vs. fragile) is the belief that the world and most things in it are resilient instead of frail or easily destroyed.				
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (<u>underlined</u>)	**Translation Notes**
The world is a place where things are fragile and **easily** ruined.*	X	.	.	**Definition:** Whereas *Improvable* concerns the degree to which things can readily be changed for the better, *Stable* concerns whether or not things can readily be changed for the worse. *Stable* is also related to, though empirically distinguishable from, *Regenerative* at least in American English.
Most things and situations are delicate and **easily** destroyed.*	X	.	.	
Most situations are delicate. Though they may be fine now, things could **easily** unravel.*	X	.	.	
It **takes a lot** for things to <u>fall apart</u>.	X	.	<u>X</u>	**Language:** "It takes a lot for things to fall apart" was retained in the PI-99-AE less for being the best item based on reliability and factor loadings, but for offering excellent language diversity and face validity.
Recommended Additional Items				
It **doesn't take much** for most things and situations to <u>fall apart</u>.*	X	.	<u>X</u>	**Item Difficulty:** The intensifiers like "easily" are important here because the mid-range is too easy to agree with, such as "many things fall apart."
The world is a place where things are stable and **hard** to ruin.	X	.	.	

Understandable (4 items; 2 additional items)				
Definition: *Understandable* (vs. too hard to understand) is the belief that most things are easy enough to comprehend.				
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (underlined)	**Translation Notes**
Most everything is *easy enough* to understand.	.	*X*	X	**Definition:** Items should not concern whether things are mysterious or beyond comprehension in some profound (e.g. mystical or spiritual) way. Rather, like *Improvable*, this subscale concerns something more mundane, namely the extent to which people have a base-rate expectation that comprehending a thing is difficult. Also, again like *Improvable*, items should be written in such a way to avoid making participants sound like they are stupid, particularly incompetent at understanding things, or often have feelings of confusion. Insofar as possible, items should be written such that they do not tap variance associated with any self-beliefs (e.g., *I am smart)* but rather a belief about the character of the external world that all of us presumably share. Inserting a phrase like "no matter who you are" might help translators ensure this point, as is done for an *Improvable* item. **Item Difficulty:** Note that "easy enough" is a useful phrase here because, rather than the idea that most things are easy to understand (few would likely agree with that), this phrase implies that understanding is typically within reach for any given person, given the appropriate investment of time and effort. "Too" is the corollary on the other end of the spectrum.
The world is *easy enough* to understand.	.	*X*	X	
Lots of things in the world are **too** confusing and difficult to understand.*	**X**	.	.	
The world is a confusing place where many skills and subjects are **too** hard to figure out.*	**X**	.	X	
Recommended Additional Items				
The world is full of confusing things and topics that are *likely* **too** difficult to learn or understand.*	**X**	*X*	.	
I expect tons of situations and topics to be **too** difficult to learn or figure out.*	**X**	.	X	

Worth Exploring (4 items; 2 additional items)				
Definition: *Worth Exploring* (vs. not worth exploring) is the belief that everything is worth trying or doing, at least once.				
PI-99-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (<u>underlined</u>)	**Translation Notes**
Unfamiliar things and places are *usually* worth trying or <u>checking out</u>.	.	*X*	<u>X</u>	**Definition:** As in other subscales, items should not imply *why* things are in this case worth exploring (e.g., morality, utility) but *that* things are worth exploring. Types of rewards for exploring (e.g., fun, meaning,) must remain unspecified. **Language:** In American English, the colloquial "check out" has a different meaning from "check." The former conveys casual, curiosity-driven exploration (e.g. "she likes to check out new restaurants") and the latter usually means determining whether something is wrong or dangerous (e.g. "check whether the milk is spoiled before you use it"). The former is desirable for this primal. "To be honest" is a colloquial phrase indicating disclosure of perhaps unpopular opinions. It encourages agreement with something respondents normally might not feel comfortable agreeing to. The second item might be deemed triple-barreled, but this was done intentionally to illicit the general idea. **Item Difficulty:** Forward-scored items suffered from ceiling effects. We suggest making them harder to agree with and reverse-scored items relatively easier to agree with, as done here or more so.
I feel **everything** is worth trying, learning about, or exploring further.	**X**	.	.	
Everything deserves to be explored.	**X**	.	.	
<u>To be honest</u>, *though some things are worth trying and exploring*, most things aren't.*	.	*X*	<u>X</u>	
Recommended Additional Items				
Trying new things is *sometimes* worthwhile but *usually* disappointing.*	.	*X*	.	
Everything is worth trying *at least once*.	**X**	*X*	.	

Additional Primary and Secondary PI-99-AE Items				
On the whole, the world is an uncomfortable and unpleasant place.*	.	.	<u>X</u>	For the overall *Good* world belief scale.
No matter where we are or what the topic might be, the world is fascinating.	**X**	.	<u>X</u>	For *Enticing* world belief. An alternative translation that is equivalent in meaning though not as readable in English is as follows: "Regardless of location or issue, the world is extremely interesting."
No matter where we are, **incredible** beauty is **always** around us.	**X**	.	<u>X</u>	For *Enticing* world belief. Maintain intensifiers.

Initial Translation Efforts

Many of the most critical insights in this article were unearthed by the first two Primals Inventory translation efforts. Both efforts were in WEIRD populations (Henrich et al., 2010) and largely aimed to confirm the dimensional structure of the PI-99-AE rather than explore the possibility that radically different primals or structure may be a more natural fit.

German Translation Process

The German translation team adapted the PI-99-AE following the standardized translation/back-translation procedures outlined by Beaton and colleagues (2000) and van de Vijver and Hambleton (1996). Since the full process is detailed by Stahlmann and colleagues (2020), here we will focus on challenges and insights applicable to other translators. An original author of the PI-99-AE participated in the expert committee, provided feedback on the back-translated items' content equivalence and difficulty, and rated all items using a five-point scale (*perfect, good, fine, maybe not ok, not ok*). The translators reviewed all items that were not rated *perfect, good,* or *fine* and revised most of them vis-à-vis the expert's comments. An overview on the translation process including the expert's feedback and ratings can be found in the original supplementary material (Stahlmann et al., 2020, Table S1). We believe this feedback greatly contributed to consolidating the content validity of the final German Primals Inventory. Still, translation and back-translation inevitably fails to remove all item-level error and, if researchers have not worked with primals before, it can be especially hard to capture the intended content and item difficulty, which is fairly idiosyncratic to measuring primals. In addition to including translation methodologists and language professionals, we stress the importance of including a primals expert in the committee.

The research team also consulted native speakers from the three largest German-speaking countries (Germany, Austria, and Switzerland). We did this to ensure that the items would be understood correctly in all three countries, in which regional dialects play a considerable role. While standard German (German; as spoken in some parts of Germany) is the official written language in all three countries (or, in the case of Switzerland, one of four national languages), Swiss German is a family of German dialects, which not only varies in vocabulary, but also in semantics, syntax, and phonology (this is also true for dialects spoken in Austria and Germany; e.g., Christen, 1998; Gibbon, 1998). These dialects may influence the way standard German sentences and terms are understood and, in the worst case, the dialect background may hinder the understanding of standard German words as they are either not used or simply nonexistent in a particular dialect. If regional dialects play a role in the target language, we likewise suggest involving native speakers with different dialect backgrounds throughout the translation process (Vogt et al., 2004). Different dialects can be addressed in Stage IV (expert committee review) of Beaton and colleagues' (2000) process, but our experience shows that considering them in Stage I (Translation) and Stage II (Synthesis) will greatly facilitate the whole translation process.

After translating the PI-99-AE into German including no additional items (the strategy of identifying an additional 1-2 items per primal had yet to be formulated), the team investigated the items' interrelationships and explored their factor structure in a German-speaking sample of participants from Germany, Switzerland, and Austria. In general, items performed as expected, which is remarkable given the PI-99-AE's complex measurement model. However, correlation and exploratory factor analysis showed that some tertiary primals' items yielded surprisingly weak relationships with their designated scales but sustained strong relationships with other tertiary primals (e.g., *Interesting* item *It feels like interesting and exciting things surround us all*

the time was connected more strongly with *Abundant* and *Beautiful* than *Interesting*). We think

these emerging issues may reflect subtle but nevertheless important differences in the structure of

primal world beliefs between American English and German-speaking subjects—perhaps worthy

of more extensive explorations down the road. Concerning the above *Interesting* item, German-

speaking participants seem to be responding less to the idea of *interesting and exciting things* and

more to the phrase *surround us all the time*, which could be considered a marker of the world's

abundance. Indeed, given that both *Abundant* and *Interesting* are strongly related to the secondary

primal *Enticing*, we assume that such differences pertain to items that are saturated by their

respective secondary primal.

Eventually, we decided to omit such items from the German Primals Inventory in order to

parallel the 22 tertiary primals' factor structure with the PI-99-AE; we excluded 33 items to arrive

at the final version of the inventory, the PI-66-G. This led to the exclusion of many opposite-

scored items and resulted in some scales being either entirely forward-scored (e.g.,

Interconnected) or reverse-scored (e.g., *Acceptable*). Fortunately, excluded items were often

those marked by high endorsement and thus had previously contributed to ceiling effects, which

may have been partly why they did not load on expected tertiary factors (the supplemental table

providing item-level advice on intensifiers and downtoners was not yet created). The ensuing

factor analysis showed that remaining items yielded strong connections with their designated

scales and that the higher-order structure was similar to the structure reported by Clifton and

colleagues (2019). Interestingly, in addition to finding the primary primal *Good* and secondary

primals *Safe*, *Enticing*, and *Alive* in our data, the research team found three new secondary

primals labeled *Fluid*, *Communal*, and *Empowering*. We are interested if other translation efforts

find these or other new secondary primals. It may be that *Good*, *Safe*, *Enticing*, and *Alive* are

universal but can be accompanied by other more culturally-specific secondary primals.

In sum, major takeaways from the German translation process include the value of (a)

engaging a primals expert during the translation, back-translation, and adaptation process, to

provide feedback and help ensure the preservation of the items' intended meanings; (b) involving

native speakers of each target dialect throughout the process; (c) paying close attention to

downtoners and intensifers; (d) including additional items in the initial translation pool as this

guide suggests to ensure that there are sufficient well-performing items for reliable subscales; and

(e) analyzing the overall structure with an eye for potential culturally-specific secondary primals.

The German effort demonstrates that even the most rigorous translation and adaptation process

can result in items that account for unexpected effects and relationships. Though, in this case,

subscales remained internally reliable after the exclusion of items, this cannot be guaranteed in

further translation efforts given the minimal length of PI-99-AE subscales. The importance of

translating 1-2 additional items per subscale cannot be overstated.

Italian Translation Process

The Italian translation team completed the PI-99-AE adaptation process following the

guidelines provided by Borsa and colleagues (2012) and with the supervision of two original

primals authors. First, two bilingual translators (two native Italian speakers with one an expert in

cognitive psychology) translated all PI-99-AE items, including additional items, into Italian. Each

item translation was then tested in a pilot study involving 14 Italian participants (age 18 to 46

years old; education from high school to master's degree). All participants were required to report

the appropriateness, accuracy, and understandability of each item following guidelines from

Borsa and colleagues (2012) on a dichotomous response scale (i.e., present vs. absent). Pilot

subjects also suggested ways to improve items. Participants were prompted to flag items that were formulated with unusual or uncommon phrasing even if the item was understood.

The research team found approximately 40% of translated items were being consistently interpreted in problematic ways, reinforcing the above recommendation that piloting is critical. The team therefore pursued face-to-face interviews with our pilot participants to examine face-validity and rephrased these items according to their suggestions. It is notable that, despite some error at the item level, all participants interviewed were able to understand the instrument's aim. This suggested to us that the primals construct—especially the idea that the basic character of the world as a whole is a psychologically meaningful object of belief—is understood intuitively by many as a natural schema category. Finally, the team prepared a back-translation of all items, which was reviewed by two of the original authors of the PI-99-AE. They provided item-specific feedback on difficulty and meaning as well as ratings on a 5-point scale (*excellent*, *good*, *acceptable*, *questionable*, *unacceptable*).

Italian, like most languages, is multifaceted and can convey slight shades of nuance. As a result, a key challenge for each item was to find the right syntax to preserve the item's intended meaning. We chose largely to follow a strict translation of the PI-99-AE items, which we thought would be helpful to avoid item overlap and to ensure we did not alter the original meanings (the strategy of cultural adaptation and interpretation had not yet been recommended by this guide). Even colloquial American English expressions, though pleonastic in Italian, such as "To be honest" (trans. *Per essere onesto*), were maintained. Yet this approach presented some unexpected interpretation issues among pilot participants. For instance, the *Interconnected* item *Though things can appear separate and independent, they really aren't. Instead, all is one.* (trans. *Anche se le cose possono sembrare separate e indipendenti, in realtà non lo sono. Al contrario,*

sono un tutt'uno.) was perceived by most pilot participants to be a religious statement rather than a general, areligious observation. It is possible that this interpretation is due to pervasive religious education in Italy. To counter this in the Italian context, in the future we may include supplemental scale instructions.

In sum, major takeaways from the Italian translation process to date include the value of (a) item adaptation rather than strict translation; (b) including a primals expert during the translation, back-translation, and adaptation process, to provide feedback and help ensure the preservation of the items' intended meanings; (c) item piloting; and (d) identifying especially unwanted subscale-specific cultural connotations.

Priority Concerns

Productive psychological research—not to mention peaceful human cooperation—requires perspective-taking. Thus, establishing an accurate, descriptive understanding of how others see the world is fundamentally important, especially among peoples who may talk differently, worship differently, and live far away. Primals research can help bridge this gap but only if measures can be created that are valid for these different cultural contexts—the task of the Primals Inventory translator. This guide has discussed various particular difficulties that may arise when translating the Primals Inventory, beyond issues discussed in generic scale guidance. In closing, it may be useful for prioritization purposes to highlight among our many suggestions the top three that deserve special attention. These concern (a) carefully translating *the world* in ways tailored to each primal and item; (b) calibrating item difficulty differently for different subscales; and (c) initially administering one or two additional items per tertiary subscale. Instead of being onerous, we hope that translators find these suggestions clarifying and that they impart

greater confidence that translation efforts will succeed in their goal of yielding valid and

equivalent measures of primal world beliefs.

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Appendix A

Appendix A is intended to aid translation of the PI-6-AE specifically (i.e., the American English 6-item Primals Inventory created by Clifton & Yaden, 2021, that measures overall *Good* world belief only). Our foremost advice is to digest the full translation guide, including the eight issues discussed in the "Construct-Specific Issues" section, in light of these PI-6-AE comments:

1. The "Referring to 'the World'" discussion is critical for PI-6-AE translation. In just six items, the PI-6-AE refers to the world in five ways: "most things in the world," "life," "most things," "things in the world," and "the world" twice.
2. The "Maintaining the World as the Subject" discussion is helpful, but less critical for PI-6-AE translation.
3. "Consulting Unusual Experts" is also helpful, but less critical.
4. "Prioritizing Piloting" should be easy given the PI-6-AE's brevity, and we recommend it. It should be prioritized over consulting with unusual experts or translating additional items.
5. The suggestion of "Translating Additional Items" is likely unnecessary due to the PI-6-AE's unidimensionality. However, if additional items are desired, several below have been selected from the original pool of 234 items (p. 194 in Clifton et al., 2019 supplement). Ideally, these items should only be retained if a similarly worded item in the original performs poorly. The goal is not solely to maximize reliability and dimensionality by increasing item redundancy but also to optimize validity, requiring breadth. These alternatives were selected using the same criteria as additional items suggested in Table 2.
   - Item 1 & 6 alternates: "I see the world as a good place." "The world is so good, it's a wonderful thing to live in it."
   - Item 2 alternate: "In life, there's more ugliness than beauty."
   - Item 3 alternate: "The general tendency of things is to get worse."
   - Item 4 alternate: "The world is full of pleasures and almost always enjoyable."
   - Item 5 alternate: "Good things in the world outnumber the bad things."
6. Carefully "Calibrating Item Difficulty" is extremely important for all PI-6-AE translations. It is the problem we most often see in back-translations and absolutely critical for scale equivalence.
7. The "Including Both Forward- and Reverse-scored Items" discussion is helpful to read. The final version of the translation should include both forward and reverse-scored items.
8. The "Clarifying the Translation Goal" discussion is helpful but less relevant; if the goal is to discover the culturally-specific meaning of overall Good world belief, a broader effort to translate the PI-99-AE is likely in order.

Though discussions #1 and #6 are most critical for PI-6-AE translation, all are worth reading, including Table 2 (the PI-99-AE, especially *Pleasurable*). Note Clifton and Yaden (2021) did not simply pick the six-top loading items on the 1-factor solution of the original 234 items, but intentionally kept a diversity of ideas. That diversity should be maintained.

Table 3

Annotated Table of PI-6-AE Items for Translation Purposes

Scale Instructions	Translation Notes
Below are very general statements about the world—not the world we wish we lived in, but the actual world as it is now. Please share your sense of agreement or disagreement. When in doubt, go with what initially **feels true of the real world**. There are no wrong answers. There's no need to overthink.	(Scale instructions are consistent across the PI-6-AE, PI-18-AE and PI-99-AE. Notes below are copied from Table 2.) Careful translation of PI-6-AE instructions is important, since the entire measure can be compromised if instructions are misleading. Please include instructions in all back-translation efforts. - Sometimes translators fail to translate the "very" in the first sentence, but the acknowledgement that statements are extremely general helps preempt potential surprise at the sweeping quality of items. - The phrase "as it is now" contrasts with the idea of a hypothetical, idealized, wished-for, or bygone world, but should *not* overemphasize the present moment. (For example, incorrect translations include "the actual world, just as it is *right* now" and "just as it is in the *modern* world" which may lead to overweighting the news of the day.) - The corresponding language for "feels true of the real world" should be rendered in **bold** font in the translation. An alternative translation is "strikes you as true of the actual world" or "rings true of the real world." - Some translators have translated the last line as "No need to try hard" which may lead to careless responses. In English, "overthinking" does not describe thinking hard but thinking *too* hard. We want participants to thoughtfully consider each item but efficiently, without belaboring or over-analyzing.

Good (6 items)				

Definition: *Good* (vs. bad) is the belief that the world is a delightful place where most things are beautiful, fascinating, safe, abundant, full of meaning, improvable, and getting better. Those scoring low on *Good* tend to see the world as miserable, dangerous, ugly, meaningless, barren, impossible to change, and getting worse.

PI-6-AE Original Items	Intensifier (**bolded**)	Downtoner (*italicized*)	Colloquial Phrase (<u>underlined</u>)	Translation Notes
1) Most things in the world are good.	.	.	.	**Definition**: In American samples, *Good* is composed of the three beliefs *Safe*, *Enticing*, and *Alive*, with *Alive* playing a much less central role. Hence, while no item in the PI-6-AE is related to *Alive*, item 2 is relevant to *Enticing* and balanced by item 3, which is relevant to *Safe*. Both (or an equivalent) must be kept even if reliability is moderately negatively impacted; this is especially for item 2 because items 1 and 4-6 are also more related to *Safe* (e.g., from the *Pleasurable* subscale, which is more related to *Safe*). Indeed, *Good* and *Pleasurable* are nearly statistically indistinguishable. In most PI-99-AE samples, the top-loading item on the general factor is item 4.
2) In life, there's **<u>way more</u>** beauty than ugliness.	**X**	.	<u>X</u>	
3) Most things <u>have a habit</u> of getting worse.*	.	.	<u>X</u>	
4) <u>On the whole</u>, the world is an uncomfortable and unpleasant place.*	.	.	<u>X</u>	**Language**: Please note that the words for "good" or "bad" should not have strong moral connotations (e.g., "bad" is not "evil"); items 1, 5, and 6 could well be re-written with the generic words "positive" and "negative". "Beauty" and "ugliness" should not be translated into generic good/bad language; they are about aesthetics (i.e., *Beautiful* world belief). "In life" in English refers to something much broader than just "your own life" and could be alternatively translated "In reality" or "In this existence". Item 3 should retain "things" or "situations" as the subject (rather than "the world has a habit of getting worse") so it is closer to *Regenerative* than *Progressing*; "have a habit" could also be written "have a proclivity". "On the whole" means "in general" or "on balance". "Way more" means "very many more."
5) Good things in the world outweigh the bad things.	.	.	.	
6) <u>On the whole</u>, the world is a bad place.*	.	.	<u>X</u>	**Other**: Items 5 and 6 are not in the PI-99-AE or PI-18-AE because they are ideal items for *Good* world belief only and not secondary or tertiary primals.

Appendix B

Appendix B is intended to aid translation of the PI-18-AE specifically (i.e., the American English 18-item Primals Inventory created by Clifton & Yaden, 2021, that measures *Safe*, *Enticing*, and *Alive*, as well as overall *Good*). Our foremost advice is to digest the full translation guide, including the eight issues discussed in the "Construct-Specific Issues" section, in light of these PI-18-AE comments:

1. The "Referring to 'the World'" discussion is critical for PI-18-AE translation. In 18 items, the PI-18-AE refers to the world in 9 ways, such as "the world" (five times), "most things" (four times), and "life," "everything," and "the universe" once.
2. The "Maintaining the World as the Subject" discussion is helpful for translating a handful of PI-18-AE items.
3. "Consulting Unusual Experts" is ideal for PI-18-AE translators.
4. "Prioritizing Piloting" should be relatively easy given the PI-18-AE's brevity, and we recommend it. It should probably be prioritized over consulting unusual experts or translating additional items.
5. While the PI-6-AE does not require it, and the PI-99-AE definitely does, there was debate among co-authors whether "Translating Additional Items" is necessary for the PI-18-AE. Few PI-18-AE translation efforts have progressed far enough to see whether reliability issues consistently arise to the same extent as for the PI-99-AE. Thus, we make no strong recommendations on this issue. If additional items are desired, several below have been selected from the original pool of 234 items (p. 211 in Clifton et al., 2019 supplement). Ideally, these items should only be retained if a similarly worded item in the original performs poorly. The goal is not solely to maximize reliability and dimensionality by increasing item redundancy but also to optimize validity, requiring breadth. These alternatives were selected using the same criteria as additional items suggested in Table 2.
   - *Safe*:
     - Item 1 & 2 alternates: "On the whole, the world is a safe place." "I feel that most things are safe."
     - Item 3 alternate: "No matter where we look, there's trust, cooperation, and sharing. Cut-throat
     - competition only plays a small role."
     - Item 4 alternate: "It feels like the world is getting worse and worse."
     - Item 5 alternate: "On the whole, the world is a good place."
     - Item 6 alternate: "It feels like danger and threatening situations are all around."
   - *Enticing*:
     - Item 7 alternate: "To be honest, though some things are worth trying and exploring, most
     - things aren't."
     - Item 8 & 11 alternate: "While some things are interesting, most things are pretty dull."
     - Item 9 alternate: "The world is a barren place with little to offer."
     - Item 10 alternate: "The world is extremely fascinating, if we don't see it that way, we just aren't paying attention."
     - Item 12 & 13 alternate: "Beauty is everywhere; if we don't notice, we just aren't paying attention."

- *Alive*:
  - Item 14 alternate: "The universe doesn't care if events happen one way or another."
  - Item 15 alternate: "Life has an important part for me to play."
  - Item 16 alternate: "I often get the feeling that what happens in life is somehow for my
  - benefit."
  - Item 17 & 18 alternates: "Events happen according to a broader purpose.." "The universe does things on purpose." "Events in life seem to have a hidden purpose."

6. Carefully "Calibrating Item Difficulty" is extremely important for all PI-18-AE translations. It is the most common difficulty we see in back-translation and critical for comparison of scores cross-culturally.
7. The "Including Both Forward- and Reverse-scored Items" discussion is helpful to read. The final version of the translation should include both forward and reverse-scored items for all subscales.
8. The "Clarifying the Translation Goal" discussion is less relevant; if the goal is to discover the culturally-specific meaning of these constructs, a broader effort to translate the PI-99-AE is likely in order.

Though discussions #1 and #6 are most critical for PI-18-AE translation, all are worth reading, including Table 2. Clifton and Yaden (2021) did not simply pick the top loading items on the 3 secondary primals from the original 234 items but intentionally kept a diversity of ideas. That diversity should be maintained. Reading Table 2 (i.e., having a thorough understanding of tertiary primals) is very useful to PI-18-AE translators, since several items in the PI-18-AE are connected to specific tertiary subscales. Table 4 identifies the relevant tertiary primals.

The reason why some items in the PI-18-AE do not appear in the PI-99-AE is because the main goal of the PI-99-AE is to measure tertiary primals, whereas the goal of the PI-18-AE is to target broader secondary primals *Safe*, *Enticing*, and *Alive*. This means, in some instances, selecting items that, for example, cross-load or poorly load on particular tertiary primals but are excellent indicators of secondary primals.

In Table 4 "(G)" indicates the item is included in calculating overall *Good* world belief.

Table 4

Annotated Table of PI-18-AE Items for Translation Purposes

Scale Instructions	Translation Notes
Below are very general statements about the world—not the world we wish we lived in, but the actual world as it is now. Please share your sense of agreement or disagreement. When in doubt, go with what initially **feels true of the real world**. There are no wrong answers. There's no need to overthink.	(Scale instructions are consistent across the PI-6-AE, PI-18-AE and PI-99-AE. Notes below are copied from Table 2.) Careful translation of PI-18-AE instructions is important, since the entire measure can be compromised if instructions are misleading. Please include instructions in all back-translation efforts. • Sometimes translators fail to translate the "very" in the first sentence, but the acknowledgement that statements are extremely general helps preempt potential surprise at the sweeping quality of items. • The phrase "as it is now" contrasts with the idea of a hypothetical, idealized, wished-for, or bygone world, but should *not* overemphasize the present moment. (For example, incorrect translations include "the actual world, just as it is *right* now" and "just as it is in the *modern* world" which may lead to overweighting the news of the day.) • The corresponding language for "feels true of the real world" should be rendered in **bold** font in the translation. An alternative translation is "strikes you as true of the actual world" or "rings true of the real world." • Some translators have translated the last line as "No need to try hard" which may lead to careless responses. In English, "overthinking" does not describe thinking hard but thinking *too* hard. We want participants to thoughtfully consider each item but efficiently, without belaboring or over-analyzing.

Safe (6 items)			
Definition: *Safe* (vs. dangerous) is the belief that the world and most things in it are typically safe, comfortable, stable, fair, and benign; there is rarely cause for alarm.			

PI-18-AE Original Items	Intensifier (**bolded**)	Downtoner (*italicized*)	Colloquial Phrase (underlined)	Translation Notes
1) I tend to see the world as *pretty* safe. (G)	.	*X*	.	**Definition**: In the PI-99-AE, *Safe* is composed of items from *Pleasurable*, *Regenerative*, *Progressing*, *Harmless*, *Cooperative*, *Stable*, and (to a lesser extent), *Just*. For insight into items 1, 2, and 6, see *Harmless*. For insight into items 3 and 4, see *Cooperative* and *Regenerative*, respectively. **Language**: "Pretty" is both a downtoner (such as "somewhat") and also makes the item less formal. "Totally" is often used colloquially in American English in place of "very" to indicate emphasis rather than a categorial statement (e.g. "completely safe"). Note "cut-throat" is used to describe competition to ensure it is interpreted as more than a sport or a friendly game (though not necessarily violent). Though the literal meaning of "cut-throat" in English sounds violent, it can refer to meanness broadly (e.g., "The high school cheerleading squad was cut-throat"). Item 4 should retain "things" or "situations" as the subject (rather than "the world has a habit of getting worse") so it is closer to *Regenerative* than *Progressing*. "Have a habit" could also be written "have a proclivity". "On the whole" means "in general" or "on balance".
2) Most things and situations are harmless and **totally** safe. (G)	**X**	.	X	
3) Instead of being cooperative, the world is a **cut-throat** and competitive place.* (G)	**X**	.	.	
4) Most things have a habit of getting worse.* (G)	.	.	*X*	
5) Most things in the world are good. (G)	.	.	.	
6) On the whole, the world is a dangerous place.* (G)	.	.	X	

Enticing (7 items)				
Definition: *Enticing* (vs. dull) is the belief that the world and most things in it are cognitively engaging, including fascinating, beautiful, meaningful, brimming with opportunities, and worth exploring; there is rarely cause for boredom.				
PI-18-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (underlined)	**Translation Notes**
7) *While some things are worth* <u>*checking out*</u> *or exploring further*, most things *probably* aren't worth the effort.* (G)	.	*X*	X	**Definition**: In the PI-99-AE, *Enticing* includes items from *Interesting*, *Beautiful*, *Abundant*, *Worth Exploring*, *Meaningful*, *Improvable*, and *Funny*. *Interesting* and *Beautiful* are most central. For insight into item 7, see *Worth Exploring*. For items 8, 10, and 11, see *Interesting*. For item 9, see *Abundant*. For 12 and 13, see *Beautiful*. Note *Pleasurable* is more related to *Safe* than *Enticing*. This is because *Enticing* is more about the expectation of engagement rather than the absence of pain.
8) Most things in life are <u>*kind of*</u> boring.* (G)	.	*X*	X	**Language**: In English, "check out" has a different meaning from "check." The former conveys positive curiosity-driven exploration (e.g. "she likes to check out new restaurants") and the latter usually means determining whether something is wrong or dangerous (e.g. "check whether the milk is spoiled"). "Kind of" means "somewhat" and is also colloquial. The translation of "tons and tons" should be colloquial, providing a sense of abundance beyond literal meaning. "Topic" should not denote school subjects but should be a general term for areas of interest. "No matter" is a phrase meaning "regardless of" or "it makes no difference." "Beauty" and "ugliness" should not be translated into generic good/bad language; they are primarily about aesthetics. "Way more" means "very much more."
9) The world is an abundant place with **tons and tons** to offer. (G)	**X**	.	X	
10) **No matter** where we are or what the topic might be, the world is fascinating. (G)	**X**	.	X	
11) The world is a *somewhat* dull place where plenty of things are not *that* interesting.* (G)	.	*X*	.	
12) **No matter** where we are, incredible beauty is **always** around us. (G)	**X**	.	X	**Item Difficulty:** To achieve scale equivalence, reverse-scored items must be made quite easy to agree with (using downtoners) and forward-scored items hard to agree with (using intensifiers).
13) In life, there's **way more** beauty than ugliness. (G)	**X**	.	X	

Alive (5 items)				
Definition: *Alive* (vs. mechanistic) is the belief the world is animated by intentionality that interacts with you and needs your help; there is cause to listen to what the universe is saying.				
PI-18-AE Original Items	**Intensifier** (**bolded**)	**Downtoner** (*italicized*)	**Colloquial Phrase** (<u>underlined</u>)	**Translation Notes**
14) Events *seem to* lack any cosmic or bigger purpose.*	.	*X*	.	**Definition**: In the PI-99-AE, *Alive* includes items from *Intentional* (chiefly), as well as *Needs Me* and to a lesser extent *Interactive*. For insight into items 14, 17, and 18, see *Intentional*. For insight into 15, see *Needs Me*. For insight into 16, see *Interactive*. Unlike *Safe* and *Enticing*, both of which have a close-knit internal structure of tertiary primals, the tertiary primals of *Alive* are more loosely related. Thus, we suspect that, of the three PI-18-AE subscales, *Alive* is most likely to require additional items to achieve adequate internal reliability and may lack a parallel in some cultural contexts. **Language**: *Alive* has many potential pitfalls: avoid (a) all suggestion of human purpose (this is not a conspiracy theory scale); (b) divine/religious purpose (nothing should indicate a specific religion or metaphysical commitment like theism); (c) fate or destiny (the world's intentions should not seem inevitable or impossible to avoid); (d) meaningfulness (*Intentional* items should not indicate whether the purpose is good or bad); (e) and narcissism or social desirability (item 15 is in fact largely orthogonal to narcissism). Note that *Meaningful* world belief is more related to *Enticing* than *Alive*; *Alive* can be related to mere luck or frivolous intention. In referencing the world, we had to avoid the term "world" for the most part, which in the context of intentionality can often imply "society" in English and is too human-specific. Likewise, saying "the world needs you" sounds like a question about whether one has a job that is valued by society. A term that implies reality like "the universe" or simply "events" may be better. **Other**: Only 2 *Alive* items are included in *Good* world belief scoring.
15) The universe needs me for something **important**. (G)	**X**	.	.	
16) It often feels like events are happening in order to help me <u>in some way</u>. (G)	.	.	<u>X</u>	
17) **Everything** happens for a reason and on purpose.	**X**	.	.	
18) What happens in the world is <u>meant to</u> happen.	.	.	<u>X</u>	