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Healthy in a crummy world: Implications of primal world beliefs for health psychology

Jeremy D.W. Clifton[a,*], Eric S. Kim[b,1]

[a] University of Pennsylvania, United States
[b] Harvard University, United States

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ABSTRACT

Aaron Beck's insight—that beliefs about one's self, future, and environment shape behavior—had major implications for health psychology research and practice. Yet, beliefs about one's environment have remained relatively understudied. A recent comprehensive empirically-driven effort has led to the identification of 26 *primal world beliefs,* or *primals,* (e.g., the world is: harmless vs. threatening, stable vs. fragile, just vs. unjust, meaningful vs. meaningless, improvable vs. too hard to improve, beautiful vs. ugly). *Primals* have been theorized to influence many outcomes of interest to different psychological subdisciplines, and a psychometrically rigorous effort has developed a Primals Inventory to measure them. In this brief report, we aim to introduce primals' potential implications for health psychology research and practice. After summarizing primals' theorized general function, we illustrate their connection to health processes and outcomes via five illustrative hypotheses. These hypotheses concern how primals might influence (a) the cardiotoxic stress axis; (b) conserved transcriptional response to adversity gene expression patterns; (c) health behaviors; (d) treatment effectiveness; and (e) risk of developing chronic diseases. Further research on primals in relation to health processes and outcomes might lead to new avenues of scientific inquiry and innovative methods of improving the trajectory of our society's health and well-being.

Clifton and colleagues [1] recently introduced a set of constructs with theoretical implications for several disciplines. This paper unpacks some potential implications for health psychology. The first part will discuss the construct's general theoretical significance while the second illustrates potential relevance to health processes and outcomes via five hypotheses.

General theoretical significance of primal world beliefs

Whether a beautiful vacation spot or dangerous warzone, humans react in normative ways to their perceptions about the basic character of situations. Perceiving surroundings as "crummy," for example, likely results in decreased positive emotions such as joy and contentment and increased neurotic and disinterested behaviors. Such reactions to these perceptions are adaptive as they help organisms capitalize on opportunities and compensate for threats [2]. But what if humans differ not only in their perceptions of places *within* the world but also the world as a whole (i.e., one giant place)?

Understanding the behavior of a creature requires observations of that creature in multiple environments. Those who observe a creature in single environments, such as a dog in one dog park, are handicapped, unable to distinguish context-specific behaviors (i.e., a state-like reaction to the particular environment, or at least the creature's perception of that environment) from organism-specific behaviors (i.e., a trait-like expression of that creature's particular temperament). But what if a creature had various distinct perceptions of an environment that, for whatever reason, the organism never leaves? If so, such beliefs would theoretically drive patterns of action that would manifest as organism-specific traits while actually being driven by context-specific reactions to underlying perceptions. Furthermore, if said environment became populated by other organisms who also never left, but viewed the general character of said place differently, all organisms would be handicapped observers unable to distinguish context-specific from organism-specific behavior. Moreover, if these organisms were ignorant of their disagreement about the place they cohabit, all would misattribute behavioral differences to differences in traits, thereby committing the fundamental attribution error on a massive scale.

Clifton and colleagues [1] recently suggested that this scenario may

* Corresponding author at: Department of Psychology, University of Pennsylvania, Philadelphia, PA 19104, United States.
E-mail address: cliftonj@sas.upenn.edu (J.D.W. Clifton).
[1] Department of Social and Behavioral Sciences, Harvard T.H. Chan School of Public Health, Boston, MA, United States.

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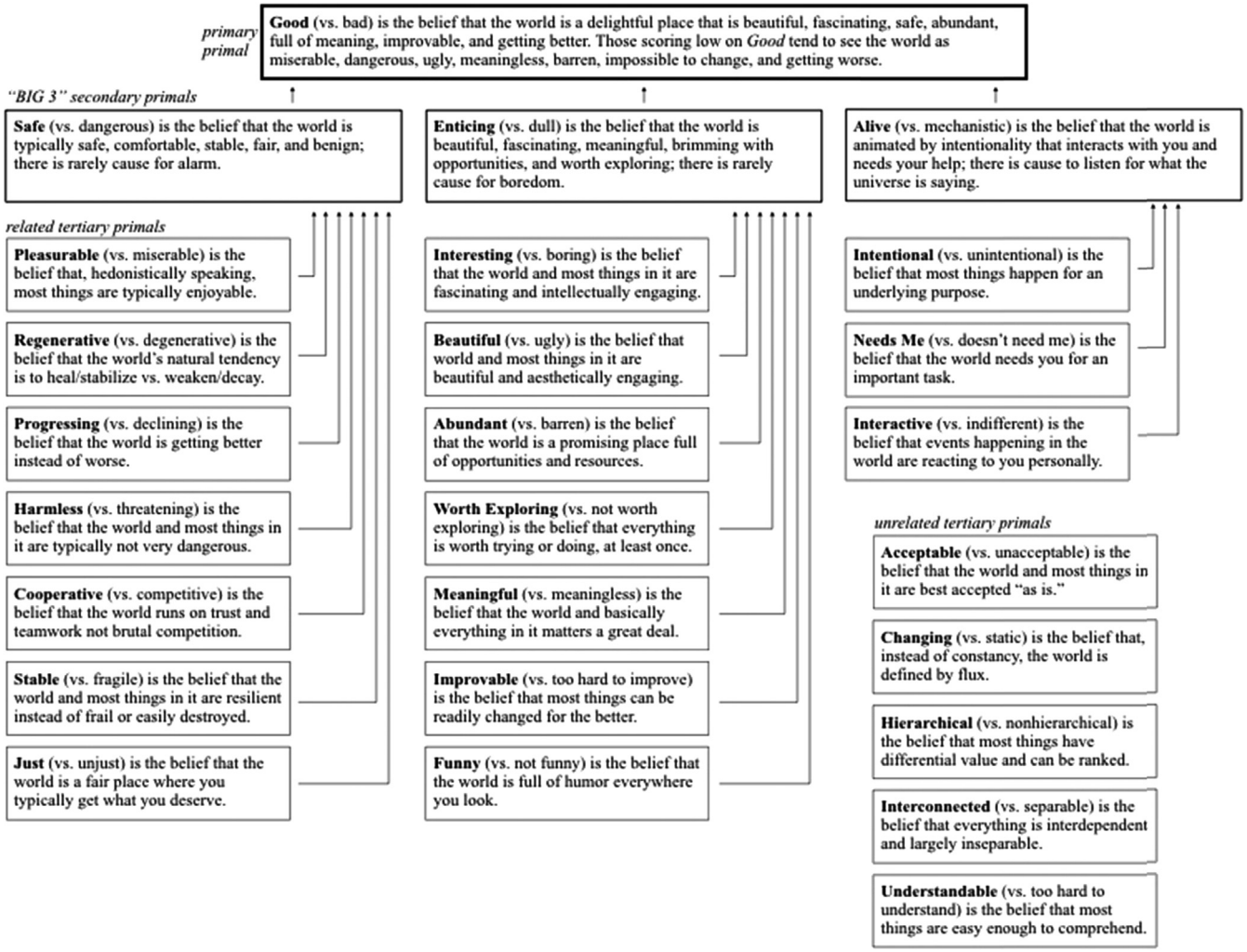

Fig. 1. Definitions and basic structure of the 26 primal world beliefs (22 tertiary, three secondary, and one primary) as identified empirically by Clifton and colleagues (1).

characterize the human condition. Disagreement about the general character of the world—a place humans never leave—would explain considerable variance in many of the most-studied personality and well-being variables (optimism, neuroticism, conscientiousness, depression, life satisfaction, etc.). Yet, while providing some proof of concept, researchers have historically identified and studied only a handful of these beliefs, most notably the belief that the world is *Just* (vs. unjust) [3,4]. Most psychologists, including most belief researchers, remain largely incognizant of the fact that humans hold beliefs about the world as a whole [5]. Further, most psychologist have not considered the and theoretically far-reaching implications of this reality.

To begin addressing this gap, Clifton and colleagues [1] conducted the first systematic, bottom-up, broad-based effort to empirically derive all major fundamental beliefs about the world as a whole, which they called *primal world beliefs,* or *primals*, and validated a Primals Inventory to measure them. They found that subjects disagreed about the world across 26 normally-distributed dimensions (see Fig. 1). Depending on how one counts, only two had been previously studied, including *Just*. Most of the variability across items was explained by three primals, formally called *secondary primals* and informally dubbed the *Big Three*, consisting of the beliefs that the world is: 1) *Safe* (vs. dangerous), 2) *Enticing* (vs. dull), and 3) *Alive* (vs. mechanistic). *Just*, for example, was one of seven sub-beliefs that form the multi-dimensional construct *Safe*. The Big Three in turn contribute to an overarching belief that the world is *Good* (vs. bad)—the general factor, also called the *primary primal*. All 26 primals (22 tertiary, three secondary, and one primary) were highly stable across time, orthogonal to most demographic variables, and strongly correlated with numerous personality and well-being variables in a pattern consistent with the hypothesis that behavior is acutely shaped by normative, common-sense reactions to underlying primal world beliefs.

Five hypotheses relevant to health psychology

With their general theoretical significance described, this section discusses primals' potential relevance to health psychology via five illustrative hypotheses.

Cardiotoxic stress axis

Many people hold a constellation of negative threat-relevant primals, including the belief that the world is competitive, miserable, degenerative, declining, fragile, unjust, and generally dangerous (i.e., which corresponds to low scores on the following dimensions of the Primals Inventory: *Cooperative*, *Pleasurable*, *Regenerative*, *Progressing*, *Stable*, *Just*, and *Safe* subscales, respectively). These constructs theoretically function as schemas and are used to interpret experiences and generate percepts [3]. When confronted with potential stressors, especially ambiguous stressors such as possible predators hidden in tall grass, these individuals likely react more severely because danger is

perceived as more consequential and likely. Indeed, those who see the world as dangerous are more likely to: become afraid of others when lights are dimmed [6], live in fear of germs and personally breaking social norms [7], and mistakenly shoot unarmed persons in split-second shooting simulations [8]. These fearful patterns of interpretation could result in more frequent stimulation of the cardiotoxic stress axis (i.e., activating sympathetic-adrenal medullary system and hypothalamic-pituitary-adrenocortical axis, or dampening of parasympathetic nervous system) which heightens risk for several chronic conditions. Screening for highly negative threat-relevant primals and targeting them with interventions might be a novel way of decreasing stress reactivity.

Conserved transcriptional response to adversity

This same constellation of threat-relevant primals may impact gene expression patterns identified as a conserved transcriptional response to adversity (CTRA). Researchers have hypothesized that the CTRA gene expression pattern results from experiencing stress and the activation of hormones causing increased transcription of inflammation-related genes [9]. Inflammation in turn is associated with a range of chronic disorders, including cancer, type 2 diabetes, heart disease, and neurodegenerative diseases [10]. Thus, holding negative threat-relevant primals may up-regulate CTRA gene expression. If so, altering primals might be a novel way of down-regulating CTRA gene expression, decreasing inflammation, and reducing the risk of developing inflammation-related conditions.

Health behaviors

Though healthcare professionals find it exceedingly difficult to alter health behaviors (e.g., diet, physical activity), self-efficacy is considered a precursor for behavior change (e.g., 11). Health-behavior related self-efficacy, however, may elude those who generally expect situations to be too difficult to change and not worth the effort (i.e., low *Improvable* and *Worth Exploring* scores on the Primals Inventory). Health psychology efforts that use cognitive behavioral therapy and motivational interviewing techniques to modify health behaviors [12] already focus on persistent maladaptive cognitions about the self, such as *I can't change*. Simultaneously addressing related beliefs about the world (e.g., *the world is too hard to improve*) may increase the effect of existing cognitive- and motivation-based health behavior change interventions.

Treatment effectiveness

Numerous studies have documented how treatment expectations influence treatment outcomes, such as improving sensorimotor performance and reducing post-surgery swelling [13,14]. It is possible that expectations of particular treatments are guided by more general expectations that the world is typically a *Good*, *Just*, *Abundant*, *Intentional*, *Beautiful*, and/or *Improvable* place. Some research has already connected these dots. In Allahabad, India, 70 male Hindus of similar education and income were treated in the same hospital after their first myocardial infarction. Agrawal and Dala [15] observed that among patients who believed the world is more *Just* (vs. unjust) had more positive expectations of future recovery ($\beta = .48$, $p < .01$) and stronger physician-adjudicated recovery ($\beta = .26$, $p < .05$). Altering certain primals may allow individuals to systematically enjoy the health benefits of positive treatment expectations.

Longevity and age-related disease

Growing evidence suggests optimism and a sense of purpose/meaning in life are independently associated with reduced risk of several age-related chronic conditions, including cardiovascular disease, Alzheimer's disease, stroke, and reduced risk of several causes of death including death from respiratory disease, infection, and cancer [16–19]. Optimists also appear to live 11–15% longer than their more pessimistic counterparts [20]. A next step might be to evaluate the health impact of optimism and purpose/meaning in life interventions. However, while some interventions have been developed (e.g., 21), interventions with larger effect sizes and more enduring effects are needed [22]. Primals, however, are hypothesized to underlie both optimism and purpose/meaning in life. In a sample of 534 Americans age 18–75 ($M = 37$) who were approximately 50% women and 50% college graduates, Clifton and colleagues [1] found that optimism positively correlated with the beliefs that the world is *Beautiful* ($r = .50$), *Regenerative* ($r = .55$), and generally *Good* ($r = .67$); and meaning in life positively correlated with the belief that the world is *Meaningful* ($r = .60$), *Improvable* ($r = .40$), and *Needs You* ($r = .63$). Interventions targeting these primals may enhance optimism and purpose/meaning, thereby reducing the risk of age-related disease and extending longevity. Previous research has already tied the belief that the world is *Just* to a variety of health outcomes and processes, including decreased depression symptoms, lowered mortality risk, and increased subjective wellbeing among sufferers of chronic conditions such as HIV/AIDS [23]. However, because *Just*'s relative position as a sub-belief of *Safe* and *Good*—to which it typically correlates at .66 and .65 respectively [1]—was unknown, it remains unclear if *Just* offers unique predictive variance or is merely a proxy for other previously overlooked primals that may be causally more relevant.

Closing remarks

The goal of this brief report was twofold: to introduce a new idea that researchers in the health psychology community might find useful, and to begin identifying hypotheses that could be tested. In short, if it is difficult to pursue healthy behaviors in a world perceived as "crummy," we must find ways to counter that perception. Yet some caution is warranted. Previous literature on the belief that the world is *Just* connects *Just* to positive outcomes—such as kindness and working harder—as well as negative outcomes—such as victim-blaming [23]. Though strategies to alleviate only negative outcomes have been suggested (see self-other distinction; 23) and initial correlational research using the Primals Inventory indicates that some primals, such as *Beautiful,* have more uniformly desirable (or uniformly undesirable) correlates [1], the *Just* literature clearly warns that altering primals may produce unintended consequences. Skeptical researchers noticing primals' stability over time may also balk at any attempt to develop primals-focused interventions, saying "Can such deep-set beliefs really be modified in endurable ways?" However, based on decades of cognitive behavioral therapy research showing that core beliefs about the self can change, we suspect that core beliefs about the wider world can change too. If so, important new ways of improving health outcomes may emerge. Some we mention above. Many more remain unidentified.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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