EDITORIAL

Editorial: Integrating Culturo-Behavior Science and Contextual Behavior Science (CBS²)

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Systemic violations of global rights (social, political, economic, ecological, and climatic) are producing escalating collective suffering and deaths and increasing risks of wars among all permanently occupied continents (Brooks, 2020)—all of these realities are grounded in human behavior at the cultural level. Such realities carry heavy ethical and moral responsibilities for those with capacity to contribute to global justice (cf. Cihon, Walker et al., 2020). As the capacities of behavior science grow, we carry increasingly broad and deep analytic research and focused, prioritized action emerging from that research. "Systematically increasing systemic acts" (Rakos, 2023),[1] as advocated by MacAskill (2022), emerges as a critical way to improve the future and thereby obligates behavior science to pursue ecologically grounded cultural systems analyses (Mattaini & Roose, 2021). Recognizing the value of systemic cultural analysis in behavior science has been with us in one form or another from the beginning of the discipline. As early as 1953 in *Science and Human Behavior,* Skinner used the term "systems" 131 times, later describing the dynamics of cultural selection as "the special contingencies maintained by an evolved social environment" (Skinner, 1981, p. 502). Contemporary systems science (Mobus, 2022) not only supports that description, but offers guidance for enhancing systemic capacities for designing and implementing adaptive and evolvable organizations and efforts as required by environmental conditions. *Cultural systems*

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[1] This article has been orally presented but is not published yet; it will be discussed later in this editorial—interested readers are invited to request a copy of the PowerPoint slides by emailing r.rakos@csuohio.edu.

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analyses (CSA) provide behavioral tools for analyzing, designing, and implementing systems supporting social change (Mattaini, 2020).

Although behavior scientists have long been interested in social and justice issues (e.g., Chance, 2007; Grant, 2011; Krispin, 2021; Malagodi & Jackson, 1989; Moore, 2003; Skinner, 1953), in recent years there has been a surge of interest in the application of behavioral principles to topics of sociocultural relevance. As discussed below, essential contributions supporting meaningful and sustainable cultural changes are emerging from both culturo-behavior science (e.g., Cihon, 2023; Malott, 2021) and contextual behavior science (e.g., Biglan, 2004, 2016). Observing behavior and the evident conditions and actions surrounding that behavior (often at some distance) are of course essential in this work. Understanding the responses to those conditions, however, depends in part (and often seriously) on relational responding, grounded in personal history. In the material that follows, we provide introductions to both culturo-behavior science and contextual behavior science, which together we denote as CBS[2], and suggest examples of the potential bridges the combined approach offers to support human rights from local to global levels. There is much more to be done, and potentially important contributions from each perspective are discussed below. In research and practice at cultural levels, it has become clear that as those operating primarily from one perspective become familiar with the other and welcome opportunities to combine efforts; the broader and deeper analyses that result can be key contributors to the development of effective, complex, adaptive, evolvable—and just—systems (Mobus, 2022).

Introduction to Culturo-Behavior Science

Culturo-behavior science, once simply a niche within behavior science, is now a designated (yet still emerging) concentration in behavior science. Several strategic efforts have been employed to increase access to information related to culturo-behavior science. These include a conference dedicated exclusively to the topic, a process by which university-based behavior analysis training programs can offer a course sequence and practicum experience leading to a certificate in culturo-behavior science, and the publication of a textbook (Cihon & Mattaini, 2020).

Research in culturo-behavior science parallels the domains of research explored in behavior science more generally (cf. Cihon, 2023), with its origins in philosophical, theoretical, and conceptual considerations and basic research. Much of the basic research extends from Skinner's (1981) extrapolation of the role selection plays in the phylogeny and ontogeny of behavior to that of the evolution of culture (i.e., cultural selection, selection of cultures; Couto & Sandaker, 2016). Following the publication of Vichi et al. (2009), basic research flourished (though not without discourse; see Fleming et al., 2021; Zilio, 2019; Zilio et al., 2022). These studies often employ Glenn's (2004; Glenn et al., 2016) two-term metacontingency, with studies typically conducted in human operant laboratories, focused on the role of cultural consequences as selecting environmental events for experimenter defined culturants

(see Cihon, Borba et al., 2020; Zilio, 2019, for reviews).[2] Few studies incorporate measures of verbal behavior or include a focus on the role of communication in transmitting, initiating, or sustaining cultural practices. Although some researchers have recorded participants' verbal interactions (e.g., Gomes & Tourinho, 2016; Ortu et al., 2012), "these interactions are rarely reported or analyzed" (Cihon, Borba et al., 2020, p 141). The few studies that have considered communication tend to explore how allowing or disallowing participants to communicate affects the formation of target culturants (e.g., Costa et al., 2012).

Some scholars, and particularly those who incorporate Houmanfar and colleagues' elaborated metacontingency model (Houmanfar & Rodrigues, 2006; Houmanfar et al., 2010, 2020),[3] have started to capture the more nuanced role of communication in cultural selection. This lineage of research explores how communication may hinder or facilitate individual responses related to the production of aggregate products (APs) and affect the transmission and selection of cultural practices (Ardila-Sanchez et al., 2020; Smith et al., 2011, 2012). These researchers typically measure the differential effectiveness of various forms of rules (none, implicit and explicit; Smith et al., 2011; accurate and inaccurate; Smith et al., 2012; high-, medium-, and low-explicit instructions; Ardila-Sanchez et al.) on the accuracy of target APs, the transmission of rumors (Smith et al., 2012), and "the frequency and types of secondary verbal adjustments such as persuasive statements and humor" (Ardila-Sanchez et al., 2020, p. 172) in analogues to organizational settings.

Most culturo-behavior scientists would agree that "cultural phenomena include, and are emergent from, social contingencies and communication" (Cihon, Borba et al., 2020, p. 141; also see Glenn, 1989; Skinner, 1953), and there is ample opportunity to advance research and practice that explicitly considers the role of language and cognition at the cultural level (also see Hake, 1982). In fact, outside of the work of behavioral community psychologists (cf. Rakos et al., 2022; Watson-Thompson et al., 2021) and some applications in organizational settings (cf. Houmanfar et al., 2022), the applied research and practice domains are considerably underrepresented in culturo-behavior science (Cihon, 2023; Gelino et al., 2023). Many culturo-behavior scientists have presented conceptual analyses of significant social issues (e.g., Mattaini & Rehfeldt, 2020; Mattaini & Roose, 2021; Pietras, 2022; Switzer & Rakos, 2022) or offered suggestions as to how to stimulate more cultural and community-focused applied research and practice (e.g., Alavosius et al., 2022; Cihon, 2023). These works frequently highlight the importance of communication in the transmission of cultural practices as well as in contributing to the conditions that sustain cultural practices that are harmful to communities and those that could produce more

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[2] In its simplest form, the metacontingency consists of a contingent relation between two terms: "1) recurring interlocking behavioral contingencies having an aggregate product [culturants], and 2) selecting environmental events or conditions" (Glenn et al., 2016, p. 13).

[3] The elaborated metacontingency model augments the two-term metacontingency to model with three terms in addition to the culturant and selecting environment composing the two-term metacontingency: the cultural milieu (Houmanfar & Rodrigues, 2006) or organizational-cultural milieu (Houmanfar et al., 2010; for more recent discussions of the cultural milieu see Ardila-Sanchez & Hayes, 2023; Sampaio & Haydu, 2023a, 2023b), consumer practices, and group-rule generation (Houmanfar et al., 2010).

socially desirable outcomes. We contend that further attention to and exploration of the role of language and cognition, through its focus on the indirect functions of verbal stimuli, may be key to advancing applied research and practice in culturo-behavior science and expanding empirically verified technologies that positively affect the human condition—all humans, and every human. Further collaboration between behavior scientists who orient to culturo-behavior science as well as those working in the research paradigm of contextual behavior science (see next section) presents an abundance of opportunities for advancing the utility of culturo-behavior science, and especially research and practice conducted in and with communities. Such collaborative efforts can lead to meaningful advances in applied behavioral science that truly affect our social environments and the human condition.

Introduction to Contextual Behavior Science

Contextual behavior science has pragmatism as its philosophical foundation. For the pragmatist, "truth" in science is a relative notion. James (1907) argued that there are no metaphysical truths to be known, only the "effective workability" of a theoretical system or framework. Progress in science thus depends on the utility with which problems are solved (Rehfeldt et al., 2020). As pragmatists we need not spend our time contemplating questions of a logical or metaphysical nature, a notion to which Gelino et al. (2023) recently alluded in their article criticizing the limited impact culturo-behavior science has had thus far. The overarching goal of contextual behavior science is to advance a science of intentional change (see Biglan & Embry, 2013) through the compilation of empirically demonstrated outcomes for improving the human condition. culturo-behavior science may be well poised to evolve into a pragmatic, applied science should it synthesize with contextual behavior science rather than lingering in the domains of conceptual analyses and basic research (see Gelino et al., 2023).

Contextual behavior science by definition "seeks the development of basic and applied scientific concepts and methods that are useful in predicting-and-influencing the contextually embedded actions of whole organisms, individually and in groups, with precision, scope, and depth" (Hayes et al., 2012, p. 2). Included in this system is relational frame theory (RFT), a contemporary framework for understanding human language and cognition that has been supported by volumes of research (cf. Törneke, 2010). RFT suggests that how an individual relates stimuli is determined by the sociocultural contingencies engineered in one's respective verbal community (Critchfield & Rehfeldt, 2020). When a relational network is established, stimuli acquire the functions of the stimuli to which they become related, such that humans interact indirectly with the functions of other stimuli as a part of our regular interactions in our sociocultural contexts. Scholars of RFT have underscored the evolutionary significance of relational responding, as the development of relational repertoires meant that verbal instructions could be used to establish cultural practices, and numerous innovations and inventions expanded civilizations because people responded referentially to verbal stimuli. Relational repertoires presumably

facilitated the emergence of cooperation among groups in our ancestors as well (see Barnes-Holmes & Harte, 2022).

The sociocultural contingencies of a particular verbal community may not necessarily support relational networks pertinent to the well-being of all in a society. Mattaini and Rehfeldt (2020), for example, explored how stimulus relations in accordance with frames of sameness and opposition may underlie prejudiced beliefs or stereotypes. A challenge for a science of intentional change is the notion that responding in accordance with one's relational history may be automatically reinforcing (cf. Roche et al., 2002); in other words, people prefer to behave coherently with their own relational history such that language is, in effect, self-sustaining (Roche et al., 2002). In addition, people tend to follow rules that are consistent with their relational framing history, and doing so is maintained by reinforcement mediated by the community. Finally, relational networks have been shown to be difficult to modify, except in very young children (Pilgrim & Galizio, 1995). If a technology based on RFT for pragmatic action is to be effective, these are challenges that future research will need to address.

Propaganda Rhetoric: An Example of How Culturo-Behavior Science and Contextual Behavior Science Can Enrich the Analysis of Sociocultural Phenomena

Propaganda, as an example of rhetoric, offers us a fruitful way to glimpse the potential richness of a CBS^2 perspective. A classic definition of propaganda is "any organized or concerted group, effort, or movement to spread particular doctrines or information" (*Webster's New Collegiate Dictionary*, 1961, p. 676). From the political rhetoric point of view, propaganda is characterized by five more nuanced but key elements (Perloff, 2023): one group dominates information transmission and restricts dissent, the information is false and deceptive, the information is disseminated by mass and social media, the source of the information is not transparent and often hidden, and finally, the purpose of the informational control is perceived to be negative. These factors encompass a range of antecedent stimuli and lend themselves well to a behavior science analysis that incorporates both culturo-behavior science and contextual behavior science. Although even today only a handful of studies have examined propaganda from a behavior science perspective, the evolution of the research exemplifies the potential advances that CBS^2 may offer for the analysis of societal phenomena.

In the first study to provide a content-functional analysis, Rakos (1993) offered a fairly straight-forward Skinnerian analysis of U.S. propaganda leading up to the onset of the first Iraq war in January 1991. He examined the *New York Times*' reporting from the Iraqi invasion of Kuwait in August 1990 to the start of U.S. military action on January 15, 1991. Rakos identified four kinds of antecedent stimulus functions that the Bush administration employed to marshal public support for an invasion of Iraq: stimulus equivalence operations, motivating operations (MOs), rules, and discriminative stimuli (S^Ds). He showed how new equivalence relations (e.g., Hussein equals Hitler) were used to develop formidable MOs (e.g., U.S. exceptionalism—the

United States is uniquely virtuous and thereby the righteous protector of others); these MOs empowered contingency-specifying rules (e.g., Iraq's actions are bad/ wrong and must be stopped/punished) that incorporated highly aversive S^Ds (e.g., reserve troop call-ups, start date for military action), which the Bush propaganda machine presented to the public with gradually increasing intensity (e.g., higher and higher troop call-up ceilings). This resulted in counterconditioning the aversive S^Ds and reducing the frequency and intensity of citizens' countercontrolling responses to the invasion.

> In the seven months beginning with the invasion of Kuwait in August 1990 . . . the Gulf War offered a spectacular opportunity for information and opinion management. In retrospect and on balance, the remarkable control of American consciousness during and after the war must be regarded as a signal achievement of mind management. (Schiller, 1992, p. 22)

Indeed, Bush smugly declared on ABC's *Nightline* on October 28, 1992: "we [the Administration] shaped public opinion." This analysis remained the only behavior analytic contribution to the propaganda-related literature for 25 years.

The drought ended in 2018 when Belise et al. (2018) utilized an RFT analysis of the first inaugural addresses by Bill Clinton, George Bush, Barack Obama, and Donald Trump that identified the relational frames they advanced in their speeches. They found that the new presidents relied on different frames to present their ideas: Obama employed coordination frames most frequently, Trump and Bush proposed distinction frames most often, and Clinton used more hierarchical and deictic frames.

Chan et al. (2021) also employed RFT to examine speeches made by Obama and Trump regarding whether the United States should enter or exit the Paris Climate Agreement. This analysis focused on the use of augmentals—rules that alter the reinforcing or punishing effects of specified consequences due to a relational network linked to such consequences. The authors examined the impact of reinforcer-establishing augmentals (REAs) and punisher-establishing augmentals (PEAs) on behavior change in the citizenry. The results showed that Obama and Trump exhibited different patterns in the use of augmentals: Trump employed PEAs and REAs about equally to garner support to exit the agreement whereas Obama overwhelmingly utilized REAs to build support to enter the agreement. Further, about 78% of Obama's augmentals were embedded in causal, comparison, or temporal frames while Trump utilized coordination and causal frames about 57% of the time, with comparison, distinction, and deictic frames comprising the bulk of the remaining augmentals.

However, neither of these recent studies addressed propaganda speech directly. This deficit was addressed by Rakos in 2023 in his analysis of the propaganda Russia produced in the days before and after its invasion of Ukraine, which was enriched by the utilization of both culturo-behavior science and contextual behavior science. For example, culturo-behavior science allows us to employ a metacontingency analysis of Russia's widespread antecedent stimulus control. The elaborated metacontingency clarified that the cultural and institutional milieu—the government ownership and control of State TV and radio—selected interlocking behavioral contingencies

of persons in a group that resulted in compliant interlocking behaviors by almost all journalists and media producers; these interlocking behaviors produced an AP that consumers use—in this case, propaganda that citizens accept and promote. An important component of the propaganda was the legislative introduction of a novel S^D: the Ukraine invasion is a "special military operation" and the use of "war" and "invasion" are illegal. The selection of compliant behaviors also illuminates the nature of the selection that eliminates emitters of resistance behaviors: arrests of protesters, politicians, journalists, academics labeled unpatriotic; resignations of journalists who object to spreading the propaganda; removal of independent radio and TV stations from the air; and blocking access to Facebook, Twitter, TikTok, Instagram, etc.

A second example of the potential value of CBS^2 is seen with the finer distinctions that the contextual behavior science-derived RFT can reveal. Rakos (1993) showed how transitive stimulus equivalence equated Hussein with Hitler, and the 2023 study identified Ukrainians as equivalent to Nazis through the same equivalence relationship. But an RFT analysis differentiated the two relationships because the U.S. equation was a new propaganda brainstorm of the Bush administration, whereas the Russian propaganda was fully within the context of Russian history: the Ukraine invasion was promoted as a continuation of the fight against Nazis, a peaceful operation to rescue Russian speaking persons in Nazi-controlled territory. In RFT terms, the U.S. propaganda was a formative (instituting) punisher-establishing augmental within a coordination frame while the Russian propaganda was a motivative (enhancing) punisher-establishing augmental also within a coordination frame.

Moving Forward with CBS²

The example of propaganda rhetoric analysis suggests that important advances can be made when employing a systemic, cultural, and contextual approach to the examination. However, it also reminds us that the complexity of societal phenomena is best approached with a good dose of humility (Kirby et al., 2022): When building the translational and applied research in CBS^2, especially when moving to the analysis of significant social issues, it is essential that our work recognizes the depth of challenges we (behavior scientists) and we (humans) actually face, and the systemic obstacles that have limited our impacts. For example, although we have developed extremely effective approaches to improve education, the reality is that education outcomes in the United States have seriously declined due to larger systemic processes that broadly obstruct expansion of our research and further improvements (National Assessment of Educational Progress, 2022). This within relatively well funded locations; the situation in settings like Afghanistan is much graver.

Systemic obstacles vary wildly at global levels, but require analyses and interventions that recognize such patterns as neoclassical, neoliberal economic patterns; limited and in some cases harmful educational models; the impacts of most governmental subsystems; and inadequate patterns of preparation for personal decision-making consistent with collective well-being (Mobus, 2022). Adequate improvements, and perhaps the survival of humans and other threatened forms of

ecosystemic life, depend on cultural systems analyses focusing and integrating deep (individual, where we are relatively skilled), and broad (at multiple systems levels: families, communities), and more expansive levels up to global. Moreover, the role of communication in the establishment, transmission and selection of cultural practices cannot be understated (also see Houmanfar et al., 2024). Here we focused only a small sample of what collaborative efforts CBS^2 might achieve with fairly simple relational frames; yet scaled up at the cultural level they illustrate the potential power of CBS^2. Stay tuned for future editorials that will expand on this theme!

Data Availability Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

Declarations

Conflicts of Interest The authors declare that they do not have any conflicts of interest. Traci Cihon serves as the current editor-in-chief for *Behavior and Social Issues* and Rich Rakos serves as the consulting editor for *Behavior and Social Issues*; therefore, Sarah Richling served as the consulting editor for this editorial.

Ethical Approval No studies involving human participants were conducted to prepare this manuscript.

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