

The Future of the Human Sciences and Society

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It is virtually impossible to predict where the contextual behavioral science (CBS) movement, or for that matter, the behavioral sciences in general will take us in the next 50 years. It is possible, however, to envision what might happen if recent progress in the human sciences were to continue on its current trajectory. In that spirit, we describe some of the developments that we hope will emerge if the findings and methods of the CBS movement continue to make significant progress and influence the human sciences in general over the next half century. One might think of these speculations as making concrete some of the aspirations of the CBS movement for building a science that is “more adequate to the challenge of the human condition” (Hayes, Barnes-Holmes, & Wilson, 2012).

We organize these speculations around two foci. First, we reflect on what might occur in the human sciences if the contextual behavioral science movement has a significant impact on scientific thinking and practice. Second, we consider how research and practice of the contextual behavioral science community might influence the further evolution of society.

Contextual Behavioral Science as a Paradigm

Thomas Kuhn (1962) made a significant contribution to our understanding of how science works with his concept of a *scientific paradigm*. A paradigm is a conceptual system that organizes research on a particular set of problems as well as the methods to be used in studying them. Darwin’s (1859) theory of evolution is a good example. Prior to Darwin, the variation among species and their similarities and differences had been recognized. What Darwin brought to the enterprise was the insight that one could account for the features of species in terms of variation, selection, and reproduction. The articulation of a paradigm typically organizes a community of scientists to work on a phenomenon, asking the same questions and using the same methods. They do so because it provides more effective ways to deal with the world. For example, the discovery of the role of the weights of substances in their chemical combinations organized

The Wiley Handbook of Contextual Behavioral Science, First Edition. Edited by Robert D. Zettle, Steven C. Hayes, Dermot Barnes-Holmes, and Anthony Biglan.
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the study of chemistry around the periodic chart and led to enormous progress in this field (Scerri, 2006).

According to Kuhn, a field of study may be preparadigmatic in the sense that there are multiple ways of thinking about and studying the problem at hand, and consensus about the key questions and appropriate methods is lacking. Research conducted in the 1970s provided empirical evidence that psychology, as well as anthropology, economics, sociology, and political science, was preparadigmatic according to the judgment of scholars (Biglan, 1973). In these fields, there were multiple theories and methods, with different topics being studied according to different methods by different groups of people.

Skinner (1938; 1953; 1957) proposed a paradigm for the scientific study of human behavior that had the potential to organize such investigation within an evolutionary framework by incorporating contingencies of survival, reinforcement, and cultural evolution. The key insight was that all aspects of behavior (including emotions and cognitions) could be understood in terms of variation and selection. Moreover, the fact that behavior was selected by its consequences was itself seen as the result of the evolution of the genetic capacity to have behavior being influenced in this manner. Skinner proposed to organize all study of behavior around this selectionist agenda. This stood in contrast to much of psychology, which did and still does conceptualize the causes of behavior in terms of internal states such as traits, attitudes, intentions, and neural functioning. Even in areas of psychology that one might expect to be focused on noninternal causes, such as social psychology, the explanation of social behavior requires that internal mediating cognitive, emotional (and sometimes neural) mechanisms need to be specified (see De Houwer, Gawronski, & Barnes-Holmes, 2013).

It was certainly not the case that Skinner's view became the dominant paradigm in psychology, as documented by research in the 1970s on paradigmatic thinking in academia (Biglan, 1973). And it is unlikely that the majority of psychologists would agree that it is the dominant paradigm now. Sadly, even evolutionists did not readily recognize the link between contingencies of survival and reinforcement, and the historical alliance between behavioral science and evolution science did not occur during Skinner's lifetime. However, we would argue that developments in CBS, which have modified and extended the paradigm that Skinner originally proposed, now provide a framework for such an historical realignment. CBS research and development has shown itself to be so productive across such a broad range of problems that it is no longer odd to suppose that it has the potential to organize the productive study of virtually all aspects of human behavioral phenomena (Wilson, Hayes, Biglan, & Embry, 2014). At this point in the present volume, readers are in a good position to see if they themselves agree with that potential.

We see three key features of this paradigm shift. The first is the applicability of the pursuit of prediction-and-influence to all aspects of the human condition – biological, behavioral, and cultural. CBS is situated in an evolutionary framework that treats human phenomena in terms of evolution from genetic and epigenetic to the behavioral, symbolic, and cultural domains (Jablonka & Lamb, 2005). It encompasses multilevel selection at units ranging from genes to multicellular organisms, to nonverbal behaviors and symbolic relations in individual organisms, and to groups of organisms, such as couples, families, corporations, communities, and even entire societies. The study of all of these phenomena is organized around the goal of prediction-and-influence, with precision, scope, and depth.

The second key feature that has emerged from this work is a thoroughgoing analysis of multiple aspects of human language in terms of a fundamental unit – arbitrarily applicable derived relational responding – that is enabling the prediction-and-influence of multiple aspects of human behavior. As Hughes and Barnes-Holmes (chapter 9 in this volume) put it:

Unlike many other theoretical enterprises in modern psychology (which tend to focus on specific features or aspects of a relevant domain), RFT operates with a relatively ambitious and extremely broad goal in mind: to develop an inductive, monistic, and functionally rooted account of language and cognition that can speak to topics as diverse as the origins of language and the emergence of self, to factors responsible for human suffering, intelligence, reasoning, and evaluation.

Furthermore, recent conceptual work on RFT has led to the development of a multidimensional, multilevel (MDML) conceptual framework that emphasizes the environmental selection of increasingly complex verbal operant units of analysis. This framework serves to clearly situate RFT within the paradigm of evolutionary science (chapter 8 in this volume).

A third key feature of the CBS framework or movement is the provision of strategies for addressing a very wide range of applied problems involving human behavior and culture. In principle, we seem to be converging on the ability to ensure that most problems involving human behavior can be understood in terms of the functional contextualist paradigm that identifies manipulable variables influencing human behavioral development and change as well as the evolution of the larger social system. This work seems to be rendering a science that can enable a growing proportion of the population to live productive lives in caring relationships with others.

The Human Sciences in the Future

We suspect that scientific research on human phenomena will increasingly focus on prediction-and-influence because of its empirical success and practical utility. It is perhaps not surprising from the standpoint of our functional contextualist framework that we would suggest that the proof of this strategy is ultimately measured by progress in the precision, scope, and depth of our ability to predict and influence contextually situated behavioral events. In a larger sense, however, an evolutionary perspective on knowledge and culture suggests that scientific methods and theories have always been adopted ultimately because they worked.

In particular, it may be that many, especially younger scientists, will embrace the goal of prediction-and-influence because they see empirical evidence that it is providing traction for the study of phenomena in which they are interested. That already seems to be happening in the study of human language and cognition (chapter 10 in this volume), clinical psychology (chapter 13 in this volume), and organizations (chapter 22 in this volume). The accumulation of examples of practical success in improving the human condition by focusing on function and context may influence other scientists to attend to the contextual processes and principles needed to create concrete positive outcomes.

Research That Better Contributes to Human Well-Being

Elsewhere (Biglan & Hayes, 1996) we have argued that embracing prediction and influence as the goal of research makes such endeavors particularly likely to yield practical strategies for influencing behavioral and cultural phenomena. In chapter 24 we have expanded this argument to suggest that a functional contextualist approach to the evolution of the practices of organizations is likely to lead to more effective ways to influence the further evolution of corporate capitalism.

We have to be careful here, however, because one cannot simply assume that an improved ability to influence phenomena will lead to their being moved in directions that enhance the well-being of the entire population. Although the stated values of the CBS movement have been to create a science that contributes to positive change in the world (Hayes, Barnes-Holmes, & Wilson, 2012), the findings of a science can be appropriated for the pursuit of other goals. For example, one of us (SCH) used the IRAP (Barnes-Holmes, Hayden, Barnes-Holmes, & Stewart, 2008) to help advertisers learn how to promote the enrollment website for the Affordable Care Act (aka “Obamacare”) in a way that was attractive to the poor and to ethnic minorities – but there would be nothing to prevent advertisers from doing the same thing to encourage, say, the purchase of tobacco products, or the consumption of alcohol. The CBS movement has the potential to shed light on what influences individuals and organizations to make use of this science for purposes that may do harm to some, but, like all scientific knowledge, there is nothing to guarantee that it will be used for prosocial purposes.

There is also a risk that a science of human behavior focused too narrowly on the immediate benefit of findings will so narrow our perspective that it stifles innovative ways of looking at problems. Nonetheless, there are several areas of biobehavioral research where embracing prediction-and-influence could enhance the chances that our research will contribute to human well-being. One of the most important may be a change in emphasis in the research funded by the National Institutes of Health (NIH) in the United States. For NIH the stated mission is “to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability” (National Institutes of Health, n.d.). Its \$30 billion annual budget makes it the single biggest funder of research on human well-being in the world.

One thing to note about the NIH mission statement is that there is an implied relationship between basic and applied research: Fundamental knowledge is obtained and then it is applied in order to enhance well-being. It contrasts with a functional contextualist perspective, which does not assume that basic research derives knowledge, which is then applied to the solution of practical problems, but rather that knowledge with high precision and scope can be a goal for research programs in both areas.

Notice also that there is nothing in the NIH mission statement to ensure that “fundamental knowledge about the nature and behavior of living systems” involves knowing how to predict and influence events. For example, complex relationships among parts of the brain can be accurately and precisely mapped, even though none of the variables that are typically isolated are ones that would allow us to predict *and influence* any of the phenomena under study. Enormous knowledge is accumulating about how brains and bodies work, but because prediction-and-influence is not the explicit goal, we are not necessarily developing practical strategies for improving human well-being at the rate we otherwise might be.

One could hope that the success of the CBS movement would influence the direction of all research on human well-being. By including influence as a goal, CBS research returns constantly to the role of history and circumstance – that is to the manipulable context that produces events and their interrelationships. Indeed this strategy could even be applied to the choices that organizations like NIH make. Research that pinpointed the primary influences on NIH funding priorities could point to ways to influence those priorities in the direction of prediction-and-influence.

If the human sciences become more explicit about pursuing the goal of change in the service of improving human well-being, it will require greater clarity about what we mean by “human well-being.” Human well-being can be operationally defined in terms of the incidence and prevalence of problems in populations, beginning with physical health, but it also encompasses psychological and behavioral well-being, if for no other reason than that they contribute to physical health (Biglan & Embry, 2013). And once we focus on these outcomes, it becomes clear that we must be concerned with the prevalence of environments that nurture versus fail to support these aspects of well-being (Biglan, Flay, Embry, & Sandler, 2012).

Advances in Our Understanding of Language

Advancing our understanding of symbolic processes and human language more generally presents numerous and, to be frank, enormous challenges for the CBS community. Cartesian dualism is the normal mode of discourse for most human beings. But even more problematically it is also well established inside scientific discourse as well. Nowhere is this more obvious than in mainstream psychological science, and, of course, particularly cognitive science. This way of speaking routinely locates the causes of action inside the mind (or brain) of the behaving actor, and thus the search for ways to change behavior involve first specifying the nature of how information is stored, represented, encoded and decoded, retrieved, and processed by the “mind-machine.” And when it comes to a scientific analysis of human language and cognition, the gravity-well of dualistic thinking is almost impossible to escape. We should be clear that there is nothing intrinsically wrong with dualistic thinking, but from a CBS perspective we have, as a community, agreed that it is not the best way to achieve our overarching goals of prediction-and-influence with precision, scope, and depth so as to produce a science that is increasingly more adequate to the challenge of the human condition.

So, how might we begin to convince the wider scientific community of the value of studying human language and cognition from a nondualistic perspective? Developing a working theory of such an account, with a reasonable body of empirical evidence, is of course a good place to start. And we have, for all intents and purposes, achieved that objective in the form of RFT. However, as becomes clear upon reading the chapters that appear in the section on RFT in the current handbook, a great deal of *empirical* work remains to be done, particularly if the theory is going to continue to reticulate successfully with key areas of application.

Perhaps more importantly, however, RFT itself needs to be seen as a work-in-progress that is undergoing constant refinement and development, in much the same way as the theory of evolution, as articulated by Charles Darwin, is still being developed and refined over 130 years after his death. Given that CBS is situated firmly

within evolutionary science itself, a critically important way in which RFT must develop conceptually is in specifying more clearly than it has thus far the units of language and cognition that are selected and modified by environmental contingencies, including the verbal contingencies provided by other speakers within a verbal community. It is here that real and steady progress is needed from the basic science wing of CBS.

The concept of the relational frame (as a relational operant) was of course pivotal in establishing a core unit of analysis, and a great deal has been achieved with that central concept over the past 25 years. However, there is a strong and increasingly demanding need to create a far more sophisticated framework for studying the selection of the units of human language and cognition as they occur “in flight” in the natural environment. When we have the conceptual and empirical basis for such a framework we will be in a better position to apply the evolutionary or selectionist approach to human symbolic processes in a genuinely convincing manner. This will be an enormous challenge, but it is one that we cannot avoid. The faint outline of what this framework might look like has been presented in the current handbook, but it is very much only the beginning of a long and difficult scientific journey that we hope CBS will take.

New Directions in the Treatment and Prevention of Psychological, Behavioral, and Health Problems

We envision accelerating progress in our ability to reduce the incidence and prevalence of psychological and behavioral problems in populations. One development that is already discernible is an increased focus on prevention research. To a great extent, prevention science is simply a shift in focus from providing effective services to people with psychological and behavioral problems to providing them soon enough to minimize the occurrence of such difficulties. It also represents a recognition that the ultimate achievement of human well-being requires affecting entire populations.

Work is also underway to develop more efficient methods of reaching populations through interventions relying on books, phones, and the Internet. There are already over 20 such studies in the CBS literature with generally good outcomes (e.g., Bricker, Wyszynski, Comstock, & Heffner, 2013; Jeffcoat & Hayes, 2012; Trompetter, Bohlmeijer, Veehof, & Schreurs, 2015) that in some investigations have produced effects even greater than in face-to-face interventions (Lappalainen et al., 2014).

Some humility is needed here in tempering our enthusiasm for CBS. CBS is one facet of a more general trend in the behavioral sciences to create environments that nurture well-being. In particular there is a strong and growing movement to improve the environments of young children (Heckman & Mosso, 2014; Shonkoff & Fisher, 2013). Moreover, CBS cannot claim sole credit for the advances that have been made in evidence-based approaches to virtually every psychological and behavioral problem and increasing use of behavioral methods to affect unhealthful behavior.

Research on the Environment

Nowhere is the need for a science of prediction-and-influence more needed than in the area of climate change (see chapter 25 in this volume). Considerable research has been done by psychologists on this problem, but most recent work focuses on the prediction of environmentally relevant behaviors from psychological variables, such as attitudes;

manipulable environmental variables that might influence such behavior are seldom identified. Given the threat that climate change poses to human well-being, it is imperative that research be undertaken that identifies ways not simply to influence the behavior of individuals, but to change the contingencies for corporations. That, in turn will require the empirical evaluation of strategies for influencing policy adoption.

The Evolution of Society

In chapter 4 of this volume, we (Biglan and Hayes) suggested that embracing prediction-and-influence as a goal entails the valuing of values per se, and that research thus far suggests that psychological flexibility is, on empirical grounds, essential for living our values. If this is accurate, it suggests that both the scientific pursuit of prediction-and-influence and the applied work that is emerging could contribute to the evolution of societies where the behaviors of both individuals and organizations are more flexible and where the dominant values involve compassion and caring.

The Influence of Behavioral Science on People

We might first consider how other scientific advances have influenced cultural evolution and contrast these with how progress in the behavioral sciences might influence our societies over the next 50 years. We would argue that there is a major difference between behavioral science (as well as some key aspects of the biological sciences) and every other area of scientific progress. In every aspect of the physical sciences, scientific advances have been translated into changes in our world through experts. Only a tiny proportion of the people who make use of any of the scientific advances that have so improved our world understand the details of the science that underpins those advances. Most people who make daily use of the technologies that have so changed the world in the past century, need not understand the science that led to and underpins the efficacy of their computers, cell phones, televisions, automobiles, air conditioners, and so on. Even airline pilots who have extraordinary skills in operating aircraft, need not understand the details of the technologies that they employ in flying planes. Physicians who treat an infectious disease have critical knowledge for doing so, but may not understand the details of the biochemistry that underpins the efficacy of the antibiotics that they prescribe. Most scientific advances benefit society through the intercession of experts.

The situation is a little different when it comes to the behavioral sciences and the facets of the biological sciences that relate to health. In these areas, reaping the benefits of what we have learned very often depends on people understanding, at least in rough outline, the scientific principles that have been developed. Clients, for instance, who are helped by acceptance and commitment therapists must incorporate into their behavior the skills that research shows are involved in psychological flexibility. A mother who is helped by a program like the Nurse Family Partnership (Olds, 2010) to become more nurturing to her infant child, does not need to know about the biochemistry that underlies the importance of patient, noncoercive parenting, but she does need to know how to soothe her infant. The empirical relationship between a mother's soothing behavior and the development of an infant's self-regulation has to be translated into actions of the mother.

The implication is that to a much greater extent than has been true for translating scientific advances in the physical sciences into the dramatic changes in our societies over the past 150 years, translating the advances in scientific understanding of human development into comparable improvements in human well-being requires that we get most people in society to understand – at least in rough outline – what humans need to thrive. This may be particularly the case when we consider the implications of research on psychological flexibility.

The Spread of Psychological Flexibility

David Sloan Wilson (2002) has described how the early Christian religion grew because of the survival advantages it gave to adherents. When epidemics that frequently spread through Roman cities occurred, Christians had a greater likelihood of surviving because members of the group risked their lives nursing the sick. In short it was the advantages of Christianity that originally contributed to its spread. Perhaps a similar thing will happen with the CBS efforts to promote psychological flexibility.

Imagine a world in which the basic principles of psychological flexibility came to permeate societies. There is a genuine sense in which the philosophical framework of contextual behavioral science is instantiated in the clinical research that is described in Part III of this handbook. Psychological flexibility essentially involves living one's life according to the pursuit of one's values. As just mentioned, embracing the goal of prediction-and-influence implies that we have more generally embraced valuing.

One facet of the spread of psychological flexibility would be a greater emphasis on values in society. It is possible that the empirical progress that the CBS movement has been making could lead to an increase in the degree that people embrace an approach to living that is organized much more explicitly around the pursuit of values and goals. A greater emphasis on values in our daily lives could by itself promote psychological flexibility, because, as suggested above, people would increasingly ask themselves and others how well what they were doing was working to achieve or support their values. In essence, there may be a reciprocal relationship between the pursuit of values and the development of psychological flexibility. Thus we may also see the spread of a mindful, defused orientation in which people hold their beliefs lightly, are more compassionate, and more oriented toward nonmaterialist values. These developments could happen if the basic means of increasing psychological flexibility and reducing human suffering utilized within acceptance and commitment therapy (Hayes, Strosahl, & Wilson, 2012) seep into the culture via the spread of these ideas in self-help books (e.g., Hayes & Smith, 2005) expansion of the clinical community with this orientation, and ultimately by being depicted in entertainment media.

There are numerous cultural developments that could ensue from the spread of a values orientation and psychological flexibility. It could facilitate a coming together of secular and religious movements. Currently our society seems to be split between a segment that is religious and views secularism as alien and threatening. At the same time, there is a secular movement in which prominent atheists seem to feel that the improvement of society depends on getting religious people to admit the errors in their thinking (Harris, 2006). Moreover, the leaders of each side ostensibly benefit from keeping their followers hostile to those in the other camp. Yet ultimately both sides have values about the well-being of people in society that may not be as disparate

as they think. Perhaps greater focus on the ultimate values that these groups have would lead to their finding common ground.

The same possibility should be explored with respect to the relationship among the major religions, as well as the relationship between science and religion. Perhaps rather than arguing about what is really true, in an ontological sense, human groups will benefit from focusing on the basic conditions that they want for all people and what it will take to achieve them.

The spread of psychological flexibility could also affect government. Currently policy-making is dominated by ideological positions that make sparse use of empirical evidence and seldom articulate the values that underlie policy making. If we could make progress in getting policy-makers to come together around the definition of human well-being articulated above, we would then have leverage to ask that policies be evaluated in terms of their contribution to these valued outcomes.

Conclusion

CBS is not a narrowly defined research program – it is a knowledge development strategy seeking a more unified and useful behavioral science. We cannot predict if CBS as an organized area will exist 50 years from now, but we can confidently predict that any approach that leads to the identification and dissemination of behavioral change principles that make a broad difference in improving the human condition will prosper. The history of humanity suggests that scientific knowledge, over time, has a net positive effect on human well-being. The behavioral sciences have lagged in their contributions as compared to, say, medical science or engineering, but part of that may be that it is just too easy to confuse mental correlates with causal processes when behavior is the subject matter of interest. CBS will not as readily make that error, but it remains to be seen whether new and demonstrably useful principles and models will consistently emerge from CBS thinking as a result. Looking at this volume, however, we can say, “so far, so good.”

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