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Mental and Spiritual Health Needs of Cognitively Enhanced People: A Therapeutic and Spiritual Care Model for Responding

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Abstract: Cognitively enhanced people will have mental and possibly spiritual health needs that merit therapeutic and spiritual care response. This article addresses people who, although significantly enhanced, overlap with ordinary or "normal" (i.e., non-enhanced) people such that their status as humans is not questioned. Effective therapeutic and spiritual care approaches for these cognitively enhanced individuals will have a strong cognitive component. Cognitive therapy, originated by Aaron Beck, is an example of a therapeutic model that could prove useful with people cognitively enhanced. Four relevant elements of the cognitive therapy modality are explored: a developed cognitive structure, little consideration to unconscious factors, minimum attention to family of origin, and collaboration. Two psychological challenges with religious dimensions and import, which could be faced by individuals as a consequence of their cognitive enhancements, are concerns about physicality and fitting into community with ordinary humans and other enhanced humans.

Keywords: Aaron Beck; artificial intelligence; cognitive therapy; enhancement; mental health; pastoral care; psychotherapy; spiritual care; spiritual caregivers; spiritual distress; spiritual health

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1. Introduction

Humans, significantly enhanced cognitively and perhaps in other ways, could emerge as a result of a vast array of human enhancement technologies and therapies being advanced with significant and increasing funding from corporate and government sources. As we use the term, ordinary or "normal" human refers to people who have not been significantly enhanced. The focus of this article is on people who are enhanced, but not in ways or to a degree that their status as human being is questioned.

Several research programs are underway that could lead to enhanced humans, although skepticism abounds regarding the technical feasibility of various avenues of research. While any particular technical approach may be appropriately dubious, that a number of paths are being explored perhaps increases the chance of significantly enhanced humans. "The sheer range of enhancement methods suggests that it would be very unlikely that all current methods are ineffective or that future advances will fail to produce an increasingly potent toolbox for enhancing cognition." (Bostrom and Sandberg 2009, p. 313).

Cognitive enhancement can be defined as "amplification or extension of core capacities of the mind through improvement or augmentation of internal or external information processing systems." (Bostrom and Sandberg 2009, p. 313). Cognition is a compilation of capabilities with regard to information, including acquiring (perception), selecting (attention), representing (understanding), processing, retaining (memory), and being creative with the information. (Dressler et al. 2019; Kostikov 2021; Bostrom and Sandberg 2009). Cognitively enhanced humans will have, compared to ordinary humans, advanced capabilities in some or all of these core faculties.

Cognitively enhanced humans will likely benefit from artificial means to optimize learning and memory (Bostrom and Sandberg 2009). Research underway includes brain stimulation techniques, e.g., functional magnetic resonance imaging or fMRI neurofeedback

(e.g., Dressler et al. 2019) and transcranial magnetic stimulation or TMS (e.g., Hummel and Cohen 2005). Other research includes augmenting thinking through brain-computer interfaces (Kaku 2014; Pederson and Iliadis 2020; Warwick 2014).

The advent of CRISP-Cas9 gene editing technology is likely to greatly impact human enhancement possibilities, including cognitive enhancement.

> Not too many years ago, the possibility of cognitive enhancement through genetic engineering interventions seemed to be not only very distant, but also a dead end. In few years the situation has changed: today we have available a new generation of genetic editing techniques—in particular CRISPR-Cas9—which allows to cut and paste with precision into the coding sequence of bases of a single gene, yielding results that were previously unthinkable in terms of simplicity and applicative accuracy (science fiction excluded). On the other hand, recent studies have identified some genes that can play a very important role in controlling specific cognitive functions. (Lavazza 2018)

Significantly enhanced humans may require adjustments in our legal, political, educational, economic, and other systems. The ethical discussion is underway (e.g., Lavazza 2018; Al-Rodhan 2019; Bostrom and Sandberg 2009). No religion will be immune to such developments, which, if the faith traditions are to be relevant, will necessitate theological, ethical, institutional, and other responses (e.g., Donaldson and Cole-Turner 2018). We stand at the beginning of consideration about responses to cognitively enhanced people. My limited focus is on their mental and possibly spiritual health challenges requiring some kind of therapeutic and possibly spiritual care intervention.

I say "possibly" spiritual health challenges, because not all humans, enhanced or not, consider themselves spiritual. I use the term "spiritual" broadly, to refer to issues presented to caregivers by enhanced persons that have to do with "belief, practice, relationship, or experience associated with whatever someone deems sacred" (Exline and Rose 2013) and that may or may not be associated with a religious tradition or institutional (e.g., church) setting. This broad understanding of spiritual can include problems presented to secular therapists as well as a range of spiritual care providers, including pastors, chaplains, lay ministers, and pastoral counselors.[1] Although considerations in this article may be relevant to other religions, the examples and illustrations are from Christianity.

Psychological issues enhanced people face may include emotional distress (e.g., anxiety, depression) about physicality and fitting into community with ordinary humans and other enhanced humans. Both topics have theological dimensions and implications, and I address them as two examples of mental and spiritual health challenges cognitively enhanced individuals may face.

The discussion is exploratory, suggesting lines of inquiry that may be useful in navigating the psychopathology of, and therapeutic and spiritual care services to, enhanced persons. The thesis is modest. I claim that a cognitive-focused response model will be most appropriate for mentally and spiritually disturbed individuals who have been enhanced cognitively. Cognitive therapy, originated by Aaron Beck, is an example of a therapeutic model that could prove useful with this population. Also, the cognitive therapist of the future will be learning things about the client that do not necessarily fit into standard paradigms of psychopathology, so any model adopted will be ripe for revision. While these reflections on future challenges and possible responses are broad in scope, enough specifics (e.g., responding to concerns about physicality and community) will be provided to illustrate the general points.[2]

2. Responding to Enhanced Humans with a Cognitive Model

A therapeutic response to those with advanced cognitive abilities would seem to benefit from a psychological model that gives primacy to cognition. That said, it is important to understand that cognition cannot be simply siloed off from other aspects of the self, whether those aspects have to do with our affective, spiritual, or other physical capabilities. Research on cognition generally sees it as intertwined with the body as well as the natural

environment in what has been termed "embodied cognition" (e.g., Raveh and Tamir 2019; Herzfeld 2017). Enhancements might occur in areas of physical, cognitive, affective, moral, and perhaps spiritual (Cole-Turner 2015) abilities.[3] My focus on cognition as a therapeutic target does not mean that other dimensions of one's life should be ignored.

Additionally, there is some evidence that therapists using a cognitive-behavioral approach have a more positive view of artificial intelligence (AI) than therapists who practice with other approaches, i.e., psychodynamic and systems-relational (Sebri et al. 2020). That finding could mean that cognitive therapists, compared to other kinds of therapists, may be more predisposed to working with clients with advanced cognitive abilities.

2.1. Aaron Beck's Cognitive Model

Cognitive therapy, originated and effectively championed by Aaron Beck and associates, is a widely used and respected model of therapy that can provide a starting point for thinking about a therapeutic response to cognitively enhanced humans (Mercer 2009, pp. 131–41 for a summary of Beck's model). In this model, core cognitions (e.g., attitudes, assumptions, and beliefs) govern how we construe events (Dozois and Beck 2008, especially chapter 6, "Cognitive Schemas, Beliefs and Assumptions"). Those interpretations of events then yield emotions and behaviors consistent with the interpretations. The cognitive therapist works with the client to alter maladaptive thinking, thereby providing cognitions leading to healthy affect and behavior.

Cognitive therapy was being developed around the same time that computer technology was being advanced. Beck, himself, drew a comparison between cognitive therapy and computer programming when he noted that some pathologies have their own "program" that regulate the "kind of data admitted" (Beck and Weishaar 1989, p. 286). At the heart of this cognitive model, then, is thinking. Some other models, such as the rational-emotive therapy (RET) of Albert Ellis, also give primacy to cognition. Four features of Beck's system (cognitive structure, the unconscious, family of origin, collaboration) make it a good example of a general framework that might be helpful for addressing the mental or spiritual needs of cognitively enhanced humans.

2.2. A Developed Cognitive Structure

Beck's model is thoroughly cognitive in its orientation and structure, positing several levels of cognition. Thinking that is conscious and deliberate, which Beck calls "voluntary thoughts," constitutes our active thinking process. Beyond surface level voluntary thoughts and at the heart of Beck's program are cognitive schemas, also called attitudes, beliefs, assumptions, thought patterns, and underlying mechanisms. Schemas are the central and relatively stable structures of thinking that are usually formed early in life in association with significant others. Schemas often come in a contractual form, i.e., "If I do X, then Y will happen." Because they were formed early in life, their expression usually has a childish quality, as in "I'm stupid" or "I'm dumb."

These thinking patterns inform our "automatic thoughts," the involuntary, spontaneous thinking that drives much of our behavior and emotions. Automatic thoughts are prompted by circumstances in our lives, are generally not questioned by us, and occur without rational analysis. In other words, via automatic thoughts, our cognitive schemas mold, unconsciously, input from the outside world, producing behavior and affect. These deeper levels of the client's thinking are more revealing of psychopathology than surface voluntary thoughts. Cognitive therapy intervention, appropriately, addresses these deeper levels. When behavior and/or affect is pathological, the cognitive therapist works collaboratively with the client to examine and modify the dysfunctional cognitions that give rise to the concerning behavior and troubling emotional output. Shifting the client's thought process to one that is rational and reality-based is at the heart of the therapeutic mission.

A central challenge of cognitive therapists is working with clients whose capacity for logical thought is weak or who, for various reasons, are reluctant to engage in rational anal-

ysis of their cognitive schemas and automatic thoughts. People who have been cognitively enhanced are likely to have a greater capacity for logical thinking than ordinary humans.

Depression and anxiety, both widespread psychological disorders, are examples of how a cognitive-based intervention program is made to order for clients who bring strong critical thinking skills to the therapeutic process. Beck began his work with depressed clients and treating that disorder is still the showcase for this therapeutic modality. Depressed clients exhibit a cognitive triad of negative views about self, the world, and their future (Beck and Weishaar 1989, p. 304; Beck 1995, pp. 166–92). The self is inadequate, defective, and/or worthless; the world is without pleasure or gratification; and the future is hopeless. The therapist helps the client see that these interpretations are not, for the most part, based in an accurate assessment of reality. All things being equal, enhanced humans with superior intellect would be more able to accurately dismantle this negative cognitive triad.

In Beck's program, anxiety arises from a perception of danger. Pathological anxiety by definition is anxiety that is not appropriate to the real situation. The error in thinking is overestimating the probability or severity of the feared event or underestimating the coping resources (Clark 1986). As with depression, presumably anxious clients able to utilize advanced critical thinking skills will be better equipped to correct these cognitive errors.

So, a central task of the cognitive therapist is to teach the client logical thinking and assist the client to apply that thinking to the schemas and automatic thoughts that give rise to dysfunctional behavior and troubling affect. Errors in thinking include arbitrary inference (i.e., jumping to conclusions), dichotomous (i.e., all-or-nothing) thinking, over-generalization, selective abstraction, catastrophic thinking, minimization, and emotional reasoning (Mercer 2009, pp. 139–41). These deeply ingrained cognitive errors can be very hard to overcome, having taken root early in life and practiced regularly for years. A cognitively enhanced person, however, would have the intellectual arsenal to combat these errors. The therapist would not need to expend time teaching critical thinking skills.

To illustrate cognitive therapy, here is an example of a cognitive subsystem presented by Beck (Beck et al. 1979, pp. 250–51). As a therapist, I often saw versions of this pattern.

Affect: depression or anger

Automatic thought: I caused my husband to behave badly

Schema: If I'm nice, bad things won't happen to me.

In this case, early in life the client generated the schema, "If I'm nice, bad things won't happen to me." This schema, as with all maladaptive ones, includes cognitive errors, in this case arbitrary inference and all-or-nothing thinking. The schema is not reasonable, but a young child, perhaps fearful, might very well draw this conclusion in an anxiety-producing situation from her family of origin. The schema gets embedded deep in the psyche and provides a ready explanatory model when something bad happens in adult life. In essence, the adult is operating with an interpretative outlook generated as a child.

As a further explanation of this process, the notion of "hot cognition," used in but not peculiar to cognitive therapy, is relevant here (Roiser 2013). A hot cognition is an affect-laden, affect-led thinking process, as distinguished from cold cognition, which is more likely to be driven by and characterized by logic. Again and again, in my clinical practice, an adult client's dysfunctional schema could be traced to an origin in childhood during some emotionally stressful situation. While understanding the schema's origin could be helpful, the critical factor in treatment progress was the client's ability to think critically and exhibit motivation to do that.

2.3. Unconscious Factors and Family of Origin Minimized

Cognitive therapy is in contrast to those psychotherapeutic approaches that give considerable attention to unconscious motives and impulses and to family of origin issues. For example, psychoanalysis, stemming from Sigmund Freud, sees the person as driven by an array of buried unconscious impulses emanating in large part from one's early family experiences. It is true that cognitive therapy pays attention to family of origin to some

degree, in helping the client understand the origin of their schemas, likely in terms of a "hot cognition," explained in the last section of this article. But extensive interrogation of complicated childhood issues is not needed; the cognitive therapist concentrates on helping the client adjust dysfunctional thinking in their present life circumstances.

Enhanced humans would have a childhood and family of origin. However, clients who are cognitively enhanced are probably less likely to be influenced by those early years than ordinary people for the following three reasons.

First, cognitive enhancements will not occur independent of other enhancements, such as those that extend the number of years of life. In other words, by the time robust cognitive enhancements are achieved, advancements that significantly extend healthy human life may very well have also arrived. Enhanced individuals living 130 years, just to pick a superlongevity number, will have had, for much of their lives, so many more years of life experience that the distant family of origin is likely to be less of a factor than with someone living the traditional fourscore and ten.

Second, by the time cognitive enhancements come, advanced affective enhancements may very well help address any family of origin issues in ways that minimize dysfunctional behavior and distressful emotions stemming from early childhood. Psychedelic-assisted therapy is one relatively new approach that looks promising (Marks and Cohen 2021).

Finally, the advanced cognitive abilities of enhanced people will give them the intellectual tools to cut through illogical schemas derived from hot cognitions in childhood. Cognitive therapy attends to present thinking patterns and their impact on affect and behavior and would be, therefore, an appropriate and effective intervention that would not require involved exploration of the early years.

2.4. The Key Role of Collaboration

The cognitive therapist is an active participant with the client in the psychotherapeutic process. There is no doctor treating patient, but, rather, a therapist engaged with the client in dialogue designed to challenge errors in thinking that lead to dysfunction. The client is presumed to have or be capable of learning the tools necessary to accomplish this.

A collaborative model seems appropriate for therapists working with cognitively advanced clients, who may not respect the therapist and his or her methods and who may be reluctant to cooperate with a therapist who thinks of themselves as doctor fixing the patient. A superiority complex is a psychological mechanism that serves as a defense against feelings of inferiority, to pick one possible cause. If the client is advanced due to some technological intervention, then the client may very well actually be superior in various ways to a therapist who is ordinary i.e., not enhanced. This disparity in abilities between therapist and client is likely to be one of the issues—perhaps a big one—to be addressed in therapy of the future. In any case, assuming a good therapeutic relationship can be achieved, a cognitively advanced client experiencing psychological difficulty may find it helpful to collaborate with a cognitive therapist with wisdom and experience derived from years of practice. The client's intellect may be superior to that of the therapist and should be respected and utilized by the therapist in the therapeutic partnership to accomplish treatment goals.

In the collaborative model fostered by Beck's program, cognitive therapists have always been keen to learn about and work with the client. As noted earlier, cognitive therapists, working with an enhanced population, will be learning things about their clients that are not found in the standard psychopathology textbooks. The usual paradigms may help, but the therapist will need to be nimble and creative in this unfolding frontier. The cognitive therapy collaborative model is made to order for this situation, where the therapist and client with advanced cognitive abilities work together to educate each other and forge a productive path forward. I can envision a situation where the roles of client and therapist are reversed during the therapeutic process, due to the advanced capabilities of the client, generating a therapeutic situation that would need to be addressed.

One of the goals in this article is to generate a discussion about addressing the mental and spiritual health needs of enhanced humans. If (perhaps when) significantly enhanced people begin to populate our communities, including faith communities, they will come with a variety of profiles depending in part on the kind and degree of enhancement. Over time a body of clinical and pastoral literature will grow that addresses the needs of these different categories of enhanced clients and enhanced persons of faith. The cognitive collaborate model is well positioned to help understand and develop the expertise needed.

2.5. Spiritual Care and the Cognitive Model

As noted earlier, pastors, chaplains, lay ministers, and pastoral counselors respond to people of faith seeking help for their spiritual distress and challenges. Spiritual caregivers get training from a range of sources, depending, e.g., on the particular religious tradition.

Secular psychotherapeutic approaches can influence spiritual care providers (Frederick 2009). The Association of Clinical Pastoral Education (ACPE 2020) is one notable organization devoted to providing that training in theological schools, hospitals, and other settings. Caregiving promoted by the ACPE recognizes that pastoral approaches draw from the behavioral sciences, working to integrate those psychological models with theological and pastoral insights (e.g., https://acpe.edu/programs/cpe-educator-certification; https://acpe.edu/education/cpe-students/faqs, accessed on 10 April 2022). Cognitively oriented psychotherapy, adjusted to fit spiritual care needs, has been explored for its usefulness with clients identified in the literature as "religious/spiritual" (e.g., Bingaman 2015; Carlson and Gonzalez-Prendes 2016).

While secular models, such as cognitive therapy, can influence spiritual caregiving approaches, many and perhaps most spiritual care providers (e.g., pastors, lay ministers) will not have had specialized training in any therapeutic model. However, the four elements of the cognitive model highlighted above (i.e., cognition, collaboration, and minimal attention to unconscious factors and family of origin) could be valuable features of the care provided by any spiritual caregiver for the same reasons those features would be relevant for psychotherapists working with cognitively enhanced clients.

In seeking care from spiritual providers, cognitively enhanced humans who are also persons of faith will bring advanced intellectual abilities. How theological schools, denominations, and other religious institutions train spiritual caregivers to respond is beyond the scope of this article. However, the cognitively enhanced congregants, patients, and clients will probably seek out, indeed insist on, spiritual care providers who provide that care in cognitively oriented, collaborative, and other ways that best meet their particular needs.

3. Psychological and Spiritual Challenges of Cognitively Enhanced Humans

Cognitively enhanced humans are human and so will present with a range of psychopathology. Two issues being discussed by scholars working on human enhancement include physicality and inclusion into community. Concerns about either of these can lead to emotional distress, e.g., anxiety and depression.

3.1. Physicality

In this new world of enhancement, the significance and role of the body has been a topic of much debate among religion scholars (e.g., Thweatt-Bates 2012, pp. 67–84, 149–68; DeBaets 2015; Mercer and Trothen 2021, pp. 149–53, 165–70) and may very well constitute an important category of needed psychological and spiritual attention. Significant adjustments to the human body that evolution has to date bequeathed us may be on the way. Enhancements to the body could involve tissue engineering, cell therapies, biomanufacturing, 3D printing, and other biomedical technologies. So, people who are cognitively enhanced may also be enhanced in other ways, such as greater strength, better eyesight, and superior hearing. Changes like these and others to their body may entail emotional distress.

Psychologically, the body can play a role in pathology beyond overt body-related disorders, such as anorexia nervosa, bulimia nervosa, and body dysmorphic disorder. Patients who now must adapt to prostheses foreshadow enhanced humans who must grow accustomed to significant changes in their body. For cognitively enhanced people experiencing emotional distress, engaging their concerns from a reality based rational framework is likely to be more helpful than being served by therapeutic approaches that focus on early childhood and unconscious factors, for reasons already discussed in the section on the Beck model of therapy. Enhanced people, identifying as spiritual, may experience emotional distress at understanding and relating to their enhanced body and how their body fits into their theological framework and/or spiritual journey. Spiritual care providers, who follow a cognitive model, likewise will be better equipped to address their cognitively enhanced clients or parishioners.

3.2. Inclusion in Community

A second challenge people with advanced intellectual abilities will almost certainly face is how they fit into the larger community of persons, to pick one example which may have psychological fallout needing therapeutic attention. Scholarly discussions are already underway about the challenge of a new ism that could aggravate social inequality (Bostrom and Sandberg 2009; Mercer and Trothen 2021, pp. 57–59, 84–87). Along with racism, sexism, classism, and others, we will likely face differences and divisions between the "enhanced" and ordinary people or "normals," those who choose not to partake of the technologies or do not have access for any number of reasons. James Hughes' (2004) book title, *Citizen Cyborg: Why Democratic Societies Must Respond to the Redesigned Human of the Future*, makes the point that these differences will have societal and political implications.

Community here can be neighborhood, civic club, country, and others. Several factors could come into play with regard to enhanced individuals feeling integrated into community, with each type of community presenting its own challenges. One factor is the percentage of enhanced humans who constitute a particular community. Social pressure, feelings of alienation, communication challenges, and attitudes of superiority might show up differently, depending on the size of the enhanced population of the community. A competent therapist, in addressing the particular distress with which the client presents, will consider all these and other factors. Family issues that arise from one or more members of a family being enhanced constitute another whole domain of mental health need and possible intervention.

In addition to fitting into communities of ordinary humans, enhanced individuals may also struggle to relate well with other people with enhancements similar to or maybe quite different from those of the client. As with other isms that challenge society, people with advanced abilities may tend to isolate from ordinary humans, aggravating problems about how enhanced people relate to each other. My modest goal is not to detail the many possible therapeutic situations that might arise with an enhanced client working on relationship concerns with other enhanced people. Rather, I contend that a cognitive model would be an effective therapeutic approach for a cognitively enhanced client in a problematic relationship with other enhanced people.

To give an example of one religion, Christianity has a particular focus on community as the church, the body of Christ. Societal divisions are reflected in the church (Lipka 2014), and the emergence of enhanced congregants alongside "normals" would present their own set of challenges. Those challenges could include, but not be limited to, controversies about a variety of topics, such as inclusion into the congregation, taking leadership positions in the church, administering sacraments, and ordination. Pastoral care that gives emphasis to reason and critical thinking, even when thinking through theological issues of community, could be a useful way to work with cognitively enhanced Christians on these and other matters.

4. Further Considerations

4.1. Psychometric and Spiritual Distress Assessment

The focus in this article is on psychotherapeutic intervention for people who have been enhanced cognitively and perhaps in other ways as well and who exhibit mental and spiritual health distress or dysfunction. An important related topic is the diagnostic question.

Mental health professionals trained in psychometric testing have an array of instruments to measure intelligence, personality, aptitude, attitude, behavior, and a host of other things. Such instruments could include tests measuring different kinds of intelligence (e.g., the Wechsler Adult Intelligence Scale or WAIS series), the Minnesota Multiphasic Personality Inventory (MMPI), the Beck Depression Inventory, and projective tests such as the Rorschach inkblot, Thematic Apperception Test (TAT) that uses enigmatic pictures, and projective drawings.[4] Brain scanning and genome sequencing will undoubtedly play increasingly important roles in clinical work. Although they vary in reliability and validity, a battery of tests can yield valuable information for the therapist in formulating a diagnosis and treatment plan. While not as developed, other instruments assess spiritual development and distress (Hill 2013; King et al. 2017; Lucchetti et al. 2013).

4.2. Enhanced Therapists and Spiritual Care Providers; AI Therapists and Spiritual Care Providers

Thus far in this article it is presumed that the therapist and spiritual care provider are "normals," i.e., not cognitively enhanced. It is possible, perhaps likely, that a cognitive approach will be used also by therapists and spiritual caregivers who are cognitively enhanced, maybe leveling the caregiver-client relationship in helpful ways.

Another possibility is that the therapist will be an AI agent or robot. Artificial intelligence is already widely used in the healthcare field to both support human decisions about diagnosis and treatment and generate such decisions (Jordan and Mitchell 2015). ELIZA was a 1960s natural language processing program that attempted to mimic Rogerian client-centered psychotherapy, mainly by feeding back what the client says (Shun et al. 2018). Particularly relevant for this article about cognitively enhanced clients, Woebot, developed at Stanford, is a talk therapy chatbox that operates with cognitive behavioral protocols, assisting users to adjust their negative thoughts (Fitzpatrick et al. 2017; Young 2019).

Woebot is not alone. Today, AI virtual and robotic agents are at work in the mental health field (Fiske et al. 2019). They execute lower-level comfort and social interaction as well as higher level interventions that include, e.g., providing empathetic-type responses to clients (Inkster et al. 2018); sensing, analyzing, and expressing emotions (Robinson 2019); and addressing mood and anxiety disorders (Rabbitt et al. 2015).

We are now in the early stages of attempts to include a spiritual component into AI agents, some of which are being utilized in palliative care. Spirituality is a core dimension of palliative care, although often overlooked by medical professionals. So, researchers at Northeastern University and Boston Medical Center designed a touchscreen tablet-based "virtual conversational palliative care coach" that could test the receptance of and effectiveness of different degrees of spiritual engagement and from several faith traditions. The controlled study found that older adults were comfortable talking with the agent about end-of-life issues and in a conversation that included a spiritual dimension tailored to the patient's background (Utami et al. 2017; Young 2019).

5. Concluding Reflections

It is certainly possible, some would say likely, that we will see significantly enhanced humans resulting from the vast array of powerful technologies and therapies under development. Given the many research programs addressing it, cognitive enhancement could be a sizable part of human enhancement. Cognitively enhanced people will surely come with mental health and, for persons of faith, spiritual health needs and concerns. Two psychological challenges with religious dimensions and import, which could be faced by individuals as a consequence of their cognitive enhancements, are concerns about physicality and fitting into community with ordinary humans and other enhanced humans. I have

proposed Aaron Beck's cognitive therapy as a model appropriate for serving the mental and spiritual health needs of cognitively enhanced humans.

In my Himalayan trek, I thought about the first explorers who confronted the wild, unpredictable landscape. Their exciting journey forward was fraught with danger and uncertainty, but also opportunity. The enhanced human psychological terrain is also a frontier vast, unpredictable, and maybe dangerous, but also exciting and filled with possibility. Unlike standing before a Himalayan mountain, when these cognitively enhanced populations arrive, we will not have the luxury of avoiding the frontier. The sooner we begin readying ourselves for that trek, the better.

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Notes

[1] A pastoral counselor is a licensed mental health professional who integrates psychological and religious/theological training. The profession is distinct from a pastor who provides counseling to parishioners.

[2] I was trained in clinical psychology, practiced part-time for a decade doing psychometric assessment and psychotherapy, and draw upon that background for the psychological material in this article.

[3] These are the five categories of radical human enhancement distinguished and discussed in some detail in Mercer and Trothen (2021).

[4] These are some of the instruments I used in my practice. There are many others.

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