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Studying Close Entity Encounters of the Psychedelic Kind: Insights from the Cognitive Evolutionary Science of Religion

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ABSTRACT

This article calls for a more robust mutual engagement between the science of psychedelic experiences (SPE) and the cognitive evolutionary science of religion (CESR). Greater collaboration between researchers in these disciplines could open up opportunities for producing new knowledge not only about the human brain and the therapeutic effects of psychedelics, but also about the evolution of our species and our prospects for creatively enjoying our minds and peacefully living in pluralistic groups in a rapidly changing global environment. However, there are at least three major challenges facing the recently renewed field of SPE: 1) articulating adequate theoretical grounding for its research in a way that can be communicated to neighbor disciplines, 2) developing experimental designs that provide adequate warrant for its cross-cultural and more historically oriented claims, and 3) avoiding psychological, political, and philosophical minefields that could lead to an (over)reaction to the use of psychedelics in research of the sort that almost destroyed the field in the 1970s. While expressing a hope for reciprocal interaction, this article focuses primarily on some lessons learned by scholars in CESR – in relation to material theoretical developments, methodological testing strategies, and minefield navigation experiences – that might provide inspiration for scholars in SPE as they work to keep the renaissance in their field from going "off the rails."

Introduction

The recent renaissance of research on psychedelic experiences has already produced significant new scientific knowledge about the human brain's susceptibility to and capacity for altered states of consciousness (Carhart-Harris et al., 2014; Carhart-Harris & Friston, 2019; Brouwer & Carhart-Harris, 2021; Yaden et al., 2021; M. W. Johnson et al., 2019; Lebedev et al., 2015) as well as the therapeutic potential of such experiences (Carhart-Harris & Goodwin, 2017; Doblin et al., 2019; Emerson et al., 2014; Johnson, 2018; Lewis-Healey et al., 2021; Wheeler & Dyer, 2020; Yaden & Griffiths, 2020). These successes emerging out of the scientific revival of interest in psychedelics in the 21st century are extremely promising but, given the cultural and political history of the emergence (and near extinction) of the science of psychedelic experiences (SPE) in the 20th century (Pollan, 2019), it is easy to understand why some scholars are urging caution in order to keep the renaissance from "going off the rails" (Yaden et al., 2020).

There are at least three ways this relatively new (or recently renewed) discipline could go "off the rails:" 1) failing to find and articulate adequate theoretical grounding for its research in a way that can be communicated to and promote collaboration with other neighbor disciplines, 2) failing to design and execute experiments that provide adequate warrant for its cross-cultural and more historically oriented claims about the role of psychedelics in human evolution, and 3) failing to identify and avoid

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the psychological, political, and philosophical minefields that could lead to an (over)reaction to the use of psychedelics in research of the sort that almost destroyed the field in the 1970s. This article extends a helping hand (and expresses a hope for collaboration) from a neighboring discipline, the cognitive evolutionary science of religion (CESR). It is intended to provide insights and inspiration to scholars in SPE by sharing some of the hard lessons learned within CESR over the last few decades, lessons related to its own 1) material theoretical developments, 2) methodological testing strategies, and 3) minefield navigation experiences.

There is no doubt that a more robust mutual engagement between these fields will also provide scholars in CESR, and the psychology of religion in general, with insights and inspiration from SPE, not least in relation to the topic that serves as a leitmotif in this article: the imaginative encounter with "entities" that often occurs in psychedelic and mystical experiences. People who have such experiences sometimes report meeting with "seemingly autonomous entities which appear to possess intelligence and agency" (Lutkajtis, 2020, p. 171). The entities encountered may be described in a variety of ways, such as gods, spirits, aliens, angels, fairies, gnomes, etc. (Davis et al., 2020), or sometimes simply as "God" (Griffiths et al., 2019). Michael Winkelman, whose work we will engage in some detail below, has even proposed a new field of scientific inquiry – "entitology" – to provide a cross-cultural and interdisciplinary assessment of phenomenological reports of psychedelic entity experiences (2018).

The experimental designs, theoretical developments, and empirical findings emerging out of SPE on psychedelic and "mystical-type" experiences (Griffiths et al., 2011; Yaden et al., 2017; F. S. Barrett & Griffiths, 2018) can certainly inform the work of researchers in CESR, who have long been interested in the mechanisms that can generate a sense of the presence of gods or other supernatural agents in "religious" or "mystical" experiences (Boyer, 1994; Guthrie, 1993; Luhrmann et al., 2021; Tremlin, 2010). Engaging emergent theories and experimental designs within SPE that use psychedelic substances to produce experiences of encounters with such entities could open up a completely new research program for CESR scholars bold enough to pursue them (and lucky enough to live in countries that permit their pursuit).

In this context, however, I will focus primarily on the way insights from CESR (and closely related disciplines such as evolutionary psychology of religion, anthropology of religion, and sociology of religion) might inspire researchers in SPE in relation to the three challenges (and opportunities) identified above. I will attempt to clarify some of the areas of overlap within – as well as the distinctiveness of – the subject matter of these disciplines, with a special emphasis on their shared interest in "entities" encountered during (more or less) altered states of consciousness. However, my main goal in what follows is to outline three ways in which an even more rigorous dialogue with developments within CESR can provide material and methodological inspiration for SPE as its various research programs move forward.

Material theoretical developments

In this section I point to some of the ways in which empirical findings and theoretical developments over the last few decades of research in CESR (and related fields) might inform research within SPE. The launching of the cognitive science of religion is sometimes attributed to a seminal article by Stewart Guthrie (1980), but the field really began to find its footing in the early 1990s with the appearance of several books that more rigorously linked the cognitive mechanisms identified by Guthrie and others to evolutionary factors related to ritual, social cohesion, and cultural transmission (Boyer, 1994; Guthrie, 1993; Lawson & McCauley, 1993). One of the main questions that guided this early work, and the massive literature that emerged over the decades that followed, was how to explain the widespread human belief in (and imaginative ritual engagement with) a diversity of "supernatural agents" across cultures in space and time.

This article is not the place to survey this vast literature and so here I will rely on an integrative heuristic framework developed elsewhere (Shults, 2014b, 2015, 2018; Shults et al., 2018a, 2018b, 2019, 2020), which weaves much of this research into a model that highlights some of the cognitive *and*

coalitional mechanisms that help explain where beliefs in supernatural entities come from – and why and how behaviors such as religious rituals have played a role in their maintenance, transmission, and evolution. It is relatively common in CESR to use the term "gods" as a general term to refer to any sort of supernatural agent or ambiguously embodied intentional force that is (or was) imaginatively engaged in the collective rituals of a religious in-group (e.g., animal-spirits, ancestor-ghosts, or entities more commonly referred to as gods such as Xiuhtecuhtli, Yahweh, or Zeus). The basic consensus in CESR is that gods are born(e) in the mental and social life of human beings as a result of naturally evolved, hyper-sensitive biases that activate *inferences* about hidden human-like forms and *preferences* for distinctive in-group norms.

In other words, conceptions of supernatural entities are *born* in human minds through cognitive mechanisms that engender beliefs in hidden human-like agents, especially under confusing and anxiety producing conditions. However, it takes a village to raise a god. In order to play a role in social cohesion, such entities must also be *borne* in a human culture through coalitional mechanisms that encourage a tendency to participate in norm-reinforcing shared ingroup rituals. Moreover, biases toward relying on supernatural conceptions and complying with supernatural authorities are *reciprocally reinforcing*, especially when people are confronted with ambiguous or frightening phenomena. Following the terminology of the heuristic framework described above I refer to these two broad sorts of god-bearing (theogonic) mechanisms as "anthropomorphic promiscuity" and "sociographic prudery" respectively. Of course, these should not be thought of as "natural kinds," but as the result of more or less stable aggregations of traits that are differentially distributed within populations.

Individuals who are high in anthropomorphic promiscuity will tend to scan for (and *detect*) supernatural entities when trying to explain causally ambiguous or anxiogenic events. The fact that most contemporary humans are relatively promiscuous in their anthropomorphism would make sense if cognitive biases related to traits or mechanisms such as hypersensitive agency detection, error management, teleological reasoning, mentalizing, ontological confusion, and schizotypy (Barrett, 2002; Boyer, 2021; Johnson et al., 2013; Lindeman et al., 2015; Norenzayan et al., 2012; Wlodarski & Pearce, 2016) provided a survival advantage to Homo sapiens in early ancestral environments.

Individuals who are high in sociographic prudery are likely to stick with (and *protect*) supernaturally authorized parochial norms and engage in the idiosyncratic ritual behaviors of the religious coalition to which they are affiliated. The fact that most humans today are also relatively prudish in their sociography (inscription of the social field) would make sense if the survival and success of early ancestral societies were reinforced by coalitional biases that fostered behaviors such as making (and accepting) costly credibility-enhancing displays, engaging in affiliative risk aversion strategies, and participating in war-making against religious out-groups, especially in socially stressful contexts (Alcorta & Sosis, 2013; Avalos, 2013; Bulbulia, 2012; Garcia, 2015; Lanman & Buhrmester, 2015).

There is also a general consensus within CESR that these god-bearing tendencies are *reciprocally reinforcing*. It is commonly hypothesized that shared ritual engagement with supernatural entities has been prevalent across human cultures throughout history in part because of the mutual intensification of (what I am calling) anthropomorphic promiscuity and sociographic prudery, which stabilizes or increases the reproductive capacity and societal endurance of complex adaptive religious systems. If these hypotheses about the evolutionary background of these aggregations of traits (and their mutual entanglement) were true, we would expect the available evidence to demonstrate the phylogenetically ancient emergence of these god-bearing mechanisms, their relatively early ontogenetic emergence across cultures, individual and contextual variance in their distribution across human populations, and correlational and experimental priming effects of each of these types of mechanism on the other. This is precisely what we do find (see, Shults, 2014a, 2014b, 2015, 2018, Shults et al., 2018a, 2018b, 2019, 2020, for expositions and analyses of the evidence).

There are at least three ways in which the material theoretical developments in this literature might inspire researchers in SPE, especially those interested in studying the close encounters with "entities" that so many people report during psychedelic experiences. First, and perhaps most obviously, the CESR research on the mechanisms that activate and amplify *promiscuous anthropomorphism* can

inform SPE approaches to understanding and explaining mystical-type and other entity experiences under the influence of psychoactive substances. As noted in the Introduction, interest in the latter has grown rapidly in recent years among SPE scholars, not least because of the apparent and potential therapeutic effects of psychedelic mystical experiences involving "entity encounters" (Lutkajtis, 2020).

One survey of individuals reporting drug and non-drug occasioned "God encounter" experiences limited its respondents to four descriptive options: God (the God of your understanding), Ultimate Reality, Higher Power, or an aspect or emissary of God (e.g., an angel). This study identified similarities and differences between psychedelic and "naturally" occurring experiences in relation to variables such as meaningfulness, significance, and persistence of change attributed to the entity encounter (Griffiths et al., 2019). Another more recent survey of entity encounters identified the relative prevalence of participants' reporting experiences of a wide variety of beings described as (for example) spirits, guides, angels, elves, fairies, gnomes, or devils. This study also found that these psychedelic-induced experiences were interpreted in ways that had many similarities to reports of non-drug entity encounters related to (for example) religious prophecy or alien abduction (Davis et al., 2020). We will return to these studies below.

Although entity encounters of the psychedelic kind are described in ways that clearly sound like religious or supernatural agents (in the sense described above), most scholars in SPE have not significantly engaged the literature in CESR that theorizes about and experiments on the anthropomorphically promiscuous mechanisms that engender human beliefs in such entities across cultures. An important exception here is Michael J. Winkelman, who has rather rigorously engaged this literature. As noted above, Winkelman has proposed his own tentative ontology of psychedelic entity experiences drawing on insights from evolutionary psychology and neurophenomenology (Winkelman, 2018). In this and a series of other articles, he argues that the similarity between the entities encountered in psychedelic experiences and those encountered across cultures in "religious" experiences suggests that we are dealing here with evolved innate cognitive operators of the sort studied in evolutionary psychology, and the cognitive science of religion more broadly, such as hypersensitive agency detection and theory of mind (e.g., Winkelman, 2002a; Michael J. Winkelman, 2017; Winkelman, 2019b). As he puts it in a more recent article, "our evolved psychology for modeling the cognitive and emotional world of others also produces the imagined entities of the spirit world, extending social adaptations" (2021, p. 5).

This reference to *social* adaptations brings us to a second way in which SPE might borrow from material theoretical developments in CESR, namely, by analyzing the relationship between psychedelic experiences and prudish sociography. In fact, the renaissance in SPE research has already produced compelling evidence that drug-induced entity encounters or related mystical-type experiences can activate prosocial attitudes and behaviors and even produce enduring positive changes in such traits (Griffiths et al., 2018). As noted above, entity encounters of the psychedelic kind appear to foster a wide range of other therapeutic effects as well. As defined above, sociographic prudery is an aggregate of traits that promotes the preference for the religiously authorized norms of one's ingroup, or what is commonly called *parochial* prosociality. Insofar as SPE scholars are finding correlations between psychedelic experiences and non-authoritarian political views (Nour et al., 2017), feelings of awe and connectedness (Van Mulukom et al., 2020), and even nature-relatedness (Kettner et al., 2019), it would seem that the former promote a more *universal* prosociality rather than sociographic prudery of the sort more commonly associated with "religion."

Most SPE researchers are not social scientists and so we ought not to be surprised that scholarship in this burgeoning field has not yet intensively pursued empirical answers to questions about the potential societal effects of psychedelic experiences. Given how things went (south) in the 1960s and 1970s, however, it might make good sense to put even more effort into interdisciplinary research projects that bring together social scientists and SPE scholars to explore the conditions under which – and the mechanisms by which – psychedelic experiences can increment (or decrement) prosociality and other variables influencing social cohesion (or conflict) at the *population level*. More on this in the next two sections.

Another reason to pay more attention to the potential negative effects of psychedelics on contemporary social structures is related to the third theoretical material development in CESR: the *mutual intensification* of the aggregates of god-bearing traits outlined above. Psychedelic experiences quite often include supernatural entity encounters, activating anthropomorphic promiscuity, which, according to the empirical findings of CESR, can all too easily trigger prudish normative inscriptions of the social field that exclude or antagonize outgroup members. Conversely, participation in causally opaque, emotionally arousing rituals that reinforce supernaturally authorized ingroup norms all too easily triggers superstitious beliefs in disembodied agents whose alleged revelations challenge scientific evidence for human evolution or downplay policy concerns about climate change (for example).

Even Winkelman, who has perhaps done more than any other scholar to link the literature on psychedelics to the literature on the role of shamanic rituals in human evolution (e.g., Winkelman, 2002a, 2002b, 2021) has not (to my knowledge) explicitly highlighted the reciprocal reinforcement of (what I am calling) anthropomorphic promiscuity and sociographic prudery. He does suggest that shamanic ideology and rituals were expanded by "reciprocal introjection of innate representation systems for the natural world and those of the social domains, especially through exaptation of representations of animal species for self and societal differentiation" (Winkelman, 2015, p. 276). And in his textbook *Supernatural as Natural*, he acknowledges that religion has a "tendency to become maladaptive" when one group conceptualizes members of another group as inherently threatening or even evil. Such supernaturally authorized divisions evoke "our in-group versus outgroup dynamic, contributing to its ability to create enduring emotional commitments to a group and rejecting outsiders" (Winkelman & Baker, 2015, p. 323).

However, the empirical evidence from CESR (for a summary, see, Shults, 2018) that the activation of superstitious beliefs somewhat automatically amplifies segregative behaviors (and vice versa) has not been adequately thematized in the SPE literature. Engaging the material theoretical developments in CESR briefly outlined here could lead SPE scholars to explore new research questions such as: Are entity encounters of the psychedelic kind less likely to amplify sociographic prudery even though they activate anthropomorphic promiscuity? If so, under what social conditions and through which psychological mechanisms? The evolved god-bearing tendencies described above helped our ancestors survive in earlier socioecological environments that are quite different from the large-scale, pluralistic, capitalistic cultures in which most of us live today. Research in SPE has demonstrated the salubrious effects that psychedelics can have on the human brain, but might it also shed light on issues that concern CESR scholars, such as the role that cultural context plays in evoking the evolved psychological mechanisms that can motivate humans to cooperate with conspecifics beyond their own familial, ethnic, or religious coalitions?

Methodological testing strategies

Facing the challenge of answering such research questions brings us to a second way in which the newly revitalized field of SPE might be inspired by some of the lessons learned by CESR scholars as the latter have expanded their methodological toolkits over the last few decades. As noted above, SPE has excelled in the development and deployment of strategies for empirically testing the therapeutic effects of psychedelic experiences. The SPE literature is also filled with excellent studies that have utilized advanced methodologies for teasing out individual differences in responses to entity encounters of the psychedelic kind. Both survey and experimental studies have revealed correlations between these experiences and individual level differences in traits and variables such as the personality domain of openness (MacLean et al., 2011), absorption (Russ et al., 2019), creative problem-solving ability (Sweat et al., 2016), other personality related factors (Aday et al., 2021; Griffiths et al., 2008, 2006), and reported well-being (Révész et al., 2021).

At this stage in the renaissance of SPE research, however, there has been relatively little new cross-cultural research comparing and contrasting the use and impact of psychedelics across contemporary cultures and relatively little new research on the possible role of psychedelics in the deep history of

human evolution. Here too Winkelman is an important exception. His curated database of shamans and other "magico-religious" healers across cultures (in space and time) has been utilized to explore evidence for hypotheses related to the possible function of psychedelic use in the origin, nature, and transformation of shamanist ideologies and healing practices in human evolution (Winkelman, 2013, 2019b) as well as other hypotheses related to CESR more broadly (Boyer, 2020). In a recent article, Winkelman summarized this evidence as supporting the conclusion that "it is likely that repeated exposures to psilocybin mushrooms in ancestral human populations constituted an important influence on the origins and development of ancient religiosity, which comprised animism, belief in an afterlife, and shamanic concepts" (Rodríguez Arce & Winkelman, 2021).

However, such arguments for the role of psychedelics in the evolution of human societies have come under fire as overly speculative by some critics. In an extensive dialogical interview with Winkelman, Martin Fortier (2019) pushed back against the former's "adaptationist" evolutionary explanations of the universality of shamanism and psychedelic use in early human cultures and pointed to empirical evidence (such as ethnographic studies challenging the idea of universality) and alternative theoretical hypotheses (such as the view that explains religion as a "by-product" of other adaptations, which has traditionally been more popular among CESR scholars). Winkelman responded by summarizing his own position and noting that he had not found any other hypotheses to be equally compelling. In this context, our goal is not to weigh in on the debate over whether religiosity is an "adaptation" or a "by-product" of other adaptations but to point out the need for methodological creativity given the limitations of the archeological and historical evidence for deciding between competing hypotheses of this sort.

The relative success of CESR and related fields in constructing innovative strategies for empirically testing theories about the evolution of religion and cross-cultural differences in supernatural entity encounters could inspire SPE researchers to adopt or adapt such approaches in their own work. The debate between the "by-product" and "adaptationist" camps in CESR, which are often populated by proponents of "evolutionary psychology" and "cultural evolution" respectively (Atran, 2002; Boyer, 2002; Kundt, 2015; Norenzayan, 2013; Singh, 2018; Turner et al., 2017), is ongoing. Both sides generally agree that some of the traits and mechanisms that engender (what I am calling) anthropomorphic promiscuity and sociographic prudery were naturally selected and socially entrained in early ancestral environments because they provided a survival advantage, and that these biases are now part of our phylogenetic and cultural heritage. However, strong disagreements on precisely how to parse out the causal relationships among cognitive and coalitional mechanisms throughout human evolution have generated a wide array of innovative methodological testing strategies.

For example, it is hotly contested among CESR scholars whether belief in (and ritual interaction with) moralizing, knowledgeable, and "big" gods played a role in promoting broader prosociality and the emergence of relatively large-scale cooperative human societies – or vice versa. Creative research designs have been developed to test and compare the relative plausibility of these hypotheses, sometimes in ways that integrate cross-cultural, ethnographic, survey, and/or experimental data from cooperative games (Lang et al., 2019; Purzycki et al., 2018; Xygalatas et al., 2017). Some of these research methodologies require large data sets, such as the use of Bayesian phylogenetic methods aimed at determining role of broad supernatural punishment in the evolution of political complexity (Watts et al., 2015). Relatively massive databases, such as SESHAT, have provided CESR scholars with common evidence bases for the debate over the function of beliefs in supernatural entities in human evolution. One controversial analysis of the SESHAT database concluded that complex societies preceded widespread belief in moralizing gods (Whitehouse et al., 2019). However, re-analysis by another team of scholars found that missing data skewed the original analysis and cast serious doubt on the original conclusions (Beheim et al., 2021), which led to a retraction in *Nature* (Whitehouse et al., 2021).

The main point here is that contentious debates of this sort, when grounded in and occurring around cross-cultural datasets and motivating methodological innovation, can be indications of a progressive research field. What are the implications for SPE? Developing cross-cultural research

and experimental designs involving the administration of doses of psychedelics faces a host of political, financial, and ethical challenges. However, as conditions change and adequate progress is made in terms of cultural openness and securing funding, the construction of new datasets will no doubt open up novel possibilities for research on the role of psychedelics across cultures in space and time. This could lead to new insights into the relationship between psychedelic use and mechanisms related to anthropomorphic promiscuity and sociographic prudery, both in terms of their emergence as adaptations (or by-products) in human evolution and their (mal)adaptiveness in some contemporary cultural contexts.

We could point to other examples of innovative methodologies for testing cross-cultural and evolutionary hypotheses related to "religion" in CESR (for a review of material developments utilizing other experimental designs, see, Shults, 2018) but, given limitations of space, in the remainder of this section I will focus on a relatively new methodological approach that is rapidly growing in popularity in CESR: computer modeling and social simulation (CMS). The increased interest in the use of CMS to test hypotheses related to (non)religion is reflected in the recent decision of journals related to this field to devote special issues to the computational science of (non)religion (Lane & Shults, 2018; Shults, 2021). These novel techniques might provide a particularly useful point of contact with SPE scholars, because several of the latter are already familiar with "computational modeling" concepts (e.g., Carhart-Harris & Friston, 2019; Leptourgos et al., 2020) and have begun to apply machine learning techniques in research on the effects of psychedelics (Carrillo et al., 2018; Sanz et al., 2021).

However, the CMS approaches increasingly utilized in CESR move beyond models of individual cognition and machine learning and produce not only artificial minds but also "artificial societies." Such tools could provide SPE scholars with a way of testing evolutionary and cross-cultural hypotheses about the effects of psychedelic experiences in ways that are currently not possible (or ethically frowned upon). In particular, the development and deployment of "multi-agent artificial intelligence" (MAAI) models enable researchers to "grow" the macro-level societal phenomenon of interest from micro-level behaviors and meso-level interactions. Once the cognitive architectures and social networks of the simulated agents are appropriately calibrated, and the outputs of simulation experiments validated in light of real-world data or subject matter expertise, such models provide "digital twins" of groups or societies, which can serve as *in silico* laboratories for psychological and social experimentation.

MAAI models have been used by CESR researchers to test scientific hypotheses about religious variables (including the god-bearing mechanisms described above) or policy proposals involving societal challenges such as terror management, intergroup conflict, sustainability, shamanism, and secularization (Diallo et al., 2019; Gore et al., 2018; Shults, Gore et al., 2018; Shults, Lane et al., 2018a; Shults & Wildman, 2020; Wood et al., 2018). Another use of CMS that is particularly valuable for testing such hypotheses *in silico* is system-dynamics modeling. In this case, one can experiment on the relations among variables and dynamics that compose a complex adaptive social system, testing the impact of linear and non-linear changes under different parametric settings. In CESR, such models have shed light on the role of religious (and other) variables on the major civilizational transformations during the Neolithic revolution (Shults & Wildman, 2018), the Axial Age (Shults, Wildman et al., 2018), and the emergence of post-supernatural cultures in modernity (Wildman et al., 2020).

The use of these and other CMS tools could enable SPE scholars to construct "artificial societies" in which to test hypotheses about the effects of psychedelic experiences not only on individuals but on whole societies, whether contemporary or in early ancestral environments. Such models could include both agent-level variables such as openness, schizotypy, absorption, creative problem-solving ability, or prosocial orientation, as well as network- and environment-level parameters such as group size, cultural norms, population distribution, governmental control, or existential security. These (or other) variables and parameters could then be altered at initialization (or at specific times steps) in order to explore the possibility space of the computational model. CMS also has the added benefit of encouraging scholars to surface their assumptions and the purposes of their modeling endeavors, thereby facilitating ethical dialogue among a wider scope of stakeholders (Shults & Wildman, 2019).

Minefield navigation experiences

Acknowledging the importance of such participatory dialogue provides us with a natural segue to our discussion of a third way in which the psychedelic renaissance might go "off the rails." Unlike most other disciplines within the secular academy, SPE and CESR study phenomena that many (if not most) non-scientists (and some scientists) consider in some sense "supernatural," "religious," "spiritual," "mystical," and/or "transcendent." Like scholars in other scientific disciplines in the secular academy, however, CESR and SPE researchers are usually committed to providing "naturalistic" explanations of the phenomena they study. Just as religious individuals typically believe that the gods ritually engaged by their in-group are real and causally effective in the world, so also many individuals who take psychedelics believe that the entities they encounter in such experiences (spirits, aliens, angels, etc.) are real and are communicating with them. Moreover, such beliefs (and the ritual behaviors and norms associated with them) are often existentially significant, identity-forming, and culture-defining.

The academic fields in which we labor are filled with potentially explosive psychological, political, and philosophical landmines. Navigating these minefields can be difficult for scientists who want to maintain their naturalistic approaches to the phenomena while simultaneously remaining sensitive to the concerns and well-being of experimental study participants or therapeutic patients. Here too an interdisciplinary engagement with CESR scholars can help: the latter have had lots of experience stepping around (or stepping on!) mines in these controversial fields of discourse. To frame the discussion in this section, I rely on the operationalization of the two key phrases in the "Methodological Naturalism – Methodological Secularism" (MNMS) scale (Shults et al., 2020; Wildman & Shults, n.d.):

- *Methodological Naturalism* (MN): Preference for academic arguments that optimize the use of theories, hypotheses, methods, evidence, and interpretations that do not appeal to supernatural agents.
- *Methodological Secularism* (MS): Preference for academic practices that optimize the use of scholarly strategies that are not tied to the idiosyncratic interests of a supernatural coalition.

Scholars in CESR and other fields in the scientific study of religion tend to be characterized by relatively high levels of MN and MS compared to scholars in disciplines such as theology, religious studies, and philosophy of religion. This tension plays out within and across professional academic associations of scholars of religion, with some arguing for a "big tent" that can include appeals to supernatural agents and authorities while others argue that such inclusiveness is actually a form of "protectionism" that privileges religion in a way that compromises the scientific quality of research (Franek, 2020).

Although the MNMS scale has not yet been used to measure the scholarly values of SPE researchers, a review of the literature suggests that most academics in the field are relatively high in MN and MS. These preferences rather obviously challenge the evolved god-bearing tendencies discussed above in the first section. In fact, scientific education in pluralist democracies (of the sort experienced by most SPE scholars) tends to promote what we might call god-dissolving tendencies: an anthropomorphic prudery that resists *reliance* on supernatural explanations of ambiguous phenomena (MN) and a sociographic promiscuity that resists *compliance* with supernatural authorities of a particular ingroup (MS). These too are reciprocally reinforcing (Shults, 2014b). Often these scholarly values are simply taken for granted within SPE research.

Sometimes, however, they are explicitly promoted. For example, Johnson warns against the inappropriate introduction of the religious, supernatural, or spiritual beliefs of psychedelic researchers or clinicians into their research setting or therapeutic interventions, arguing that such "sloppiness" undermines the "secular framework" of the scientific endeavor and "will ultimately interfere with the mainstream adoption of [psychedelic] treatments to help the greatest number of appropriate individuals if they are approved as treatments, e.g., coverage by insurance and government medical

programs." He also argues against a "psychedelic exceptionalism" (which is reminiscent of the "religious exceptionalism" in some academic circles), in which psychedelic experiences are taken to be "so sacred or important that the normal rules [of sound philosophy of science] do not apply" (Johnson, 2020, p. 580). Similarly, Sanders and Zijlmans have recently urged SPE researchers to avoid the risky blend of "mysticism" and science and to utilize concepts that are "rooted in empirical data and an unambiguously secular framework" (2021, p. 1254).

In a response to the latter, however, Breeksema and van Elk have defended the use of concepts such as "mystical experience" in SPE, noting that such usage in scientific research "remains agnostic regarding the metaphysical claims about the truth or falsehood of these experiences" (2021, p. 1471). They interpret reactions such as those in the previous paragraph as too reliant on "the positivistic attitude that struggles to make sense of these experiences using materialist and reductionist approaches," and suggest instead that we bracket questions about ontological truth claims during the scientific research process (p. 1473). Other authors have proposed that instead of focusing primarily on the metaphysical cause (or "roots") of psychedelic (and non-psychedelic) mystical experiences, it is better to focus on judging them by their "fruits," i.e., their effects on those who experienced them (Yaden et al., 2017). It is important to emphasize here that despite their differences all of these scholars *qua scholars* still seem clearly committed to *methodological* naturalism and secularism; that is, they are not introducing disembodied supernatural entities as causes in their theoretical explanations nor appealing to the authorized revelations of any particular in-group that engages such entities to defend their arguments.

The desire to maintain MN and MS, on the one hand, and to avoid the temptation toward "psychedelic exceptionalism," on the other, are also evident in the recent surveys of close entity encounters of the psychedelic kind to which we alluded above. For example, in their discussion of whether drug-induced "God encounter experiences" can be considered "genuine," Griffiths et al. acknowledge that "contentious issues arise from attempting to draw ontological conclusions" about the "existence of God," and argue that such debates cannot be definitively addressed, at least through empirical methods (2019, p. 22). The survey implemented by Davis et al., which used a modified questionnaire based on the study just mentioned, found that the percentage of participants who "identified as being atheist or agnostic before the encounter (55%) dropped significantly (to 26%) after the encounter" (2020, 1017).

Unfortunately, some popular media reports on these studies of entity encounters of the psychedelic kind have led to public misconceptions about the relationship between psychedelics, atheism, mental health, and monotheism; e.g., that such experiences promote belief in "God" or can "cure" atheism. These misconceptions seem to be based in part on a failure to understand the limitations of the survey and its sampling techniques (which were indeed noted by the original authors). As Glausser notes in his review of these studies and their reception in popular media, such misinterpretations of the effects of psychedelic use "could warp debate and undermine regulatory renovation" (Glausser, 2021). This is one of the critical junctions between scientific MNMS and sociopolitical (anti)religious attitudes where the revival of SPE research could go "off the rails."

A study by Timmermann et al. (2021) exploring whether "psychedelics alter metaphysical beliefs" found a shift in their post-use sample away from "physicalist" worldviews and a shift toward "panpsychism" (moderated by impressionability and meditated by perceived emotional synchrony). They also note that non-physicalist beliefs are correlated with reported psychological well-being in their study. However, the authors warn against a "hasty" positive evaluation of the link between supernatural beliefs and healthy individual outcomes because, although the former may be psychologically protective, they can also be associated with maladaptive coping strategies. They call for more systematic research that would assess how "different metaphysical positions interface with individual mental health, as well as other indices of individual plus group or societal health, e.g., population-level well-being, as well as behaviors linked to ecological health" (2021, p. 8). This is precisely the kind of complex research question that could be addressed by multi-agent artificial intelligence modeling approaches of the sort described briefly above.

As we have already noted, some findings in the SPE literature suggest that psychedelic use promotes more universally oriented altruism and ecologically responsible attitudes (which are generally correlated with liberal ideologies). However, we have just seen examples of other findings that indicate psychedelic use can (at least temporarily) promote religious or broadly supernaturalistic beliefs (which are generally correlated with conservative ideologies). Moreover, other scholars have shown that psychedelics can precipitate political shifts toward – or reinforcement of – authoritarian/conservative (e.g., neo-Nazi) views as well as egalitarian/liberal views (Pace & Devenot, 2021). This pluripotent plasticity of psychedelics suggests that the latter can strengthen as well as relax a variety of types of belief under various conditions of set and setting (Safron, 2020). The complexity of ethical concerns around psychedelic use has led to calls for discussions about "moral pharmacology" within SPE that include engagement with humanities scholars and social scientists expert in interpreting cultural contexts (Langlitz et al., 2021). However, such discussions cannot wholly sidestep metaphysical questions; ethics and ontology have been intertwined throughout the history of philosophy.

In line with their *methodological* naturalism/secularism (MN/MS) values, most researchers in this field seem content to leave such ontological debates to philosophers or theologians. Others press forward and embrace *metaphysical* naturalism, the explicit denial of the existence of supernatural entities independent of the human mind, and what we might call *metaphysical* secularism, the explicit denial of supernatural authorities as resources for organizing the social field in pluralistic contexts. For example, in his proposal for an "entitology" of psychedelic encounters with supernatural beings Winkelman aims for a "materialist explanation" of such experiences, conceptualizing the entities encountered therein as reflections of "the modular structures of the brain" and the result of the "projective capacities of the human mind" (Winkelman, 2018, 7, 21). In his book on shamanism, Winkelman had developed a similar interpretation of "spirits" as "neurocognitive structures" (2010, p. 11). Another example is David Lewis-Williams, who argues that people who have ingested psychotropic substances experience a reversal of the relationship between the retina and the visual cortex; patterns in the latter are perceived as visual percepts. "In other words, people in this condition are seeing the structure of their own brains" (2002, p. 127).

In their discussion of the "pivotal mental states" that can be activated by serotonergic psychedelics, Brouwer and Carhart-Harris "anticipate some pushback" to their "secular, naturalistic/scientific approach to phenomena others might consider 'supernatural'" (2021, p. 18). And in their original presentation of the REBUS (relaxed beliefs under psychedelics) anarchic brain theory, Carhart-Harris and Friston hesitate at the edge of the "philosophical rabbit hole" before suggesting a "pragmatic position" in which "magical, religious, and delusional beliefs or interpretations" are considered to be "psychologically real" as inferences in the human mind. However, they also note that the "free-energy principle," which guides their understanding of the "entropic brain" as working to "approximate reality through invoking testing, revising, and optimizing models," itself speaks to "the merits of the scientific method for determining 'what is best to believe.'" One glimpses what could be interpreted as a preference for metaphysical naturalism and secularism (as defined above) when Carhart-Harris and Friston conclude that "although supernatural belief systems may have once been helpful for humans – they are arguably less so today. Moreover, beliefs held as a matter of faith are less amenable to the mechanics of self-correction that underlie empirical approaches" (Carhart-Harris & Friston, 2019, p. 335).

It is highly unlikely that SPE or CESR research (or empirical findings and theoretical developments in other sciences that study religion or spirituality) will resolve such philosophical issues, much less solve the psychological and political concerns in which they are embedded. Nevertheless, might there be good reasons for (at least some) SPE scholars to wade into the metaphysical waters where angels (and many natural entities, even most CESR scholars) fear to tread? Surviving the unprecedented challenges of the Anthropocene, which include extreme climate change, excessive capitalist consumption, and escalating cultural conflict, calls for unprecedented cooperation that will require members of our species to contest the *parochial* prosocial tendencies that are part of our phylogenetic heritage (Shults, 2015; Shults et al., 2021). The empirical findings of CESR might contribute by providing more insight into the "god-bearing" biases discussed above, which can hinder broader cooperation by

promoting superstitious beliefs and amplifying segregative behaviors, thereby fostering a resistance to policy-relevant scientific evidence and to peace-building compromises. The empirical findings of SPE might contribute by demonstrating the conditions under which – and the mechanisms by which – psychedelic experiences can foster more globally and ecologically-oriented *universal* prosocial attitudes and behaviors.

My main goal in this article has been to outline some of the material theoretical developments, methodological testing strategies, and minefield navigation experiences within CESR that might provide insights and inspiration for SPE scholars as they attempt to keep their rapidly accelerating research programs from going off the rails. The latter field holds such great promise for producing new knowledge not only about the human brain and the therapeutic effects of psychedelics, but also (perhaps in collaboration with scholars in CESR and other psychological and social sciences) about the evolution of our species and our prospects for creatively enjoying our minds and peacefully living in groups in our current rapidly changing global environment.

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