**Epistemic Character Change: Psychedelic Experiences as a Case Study**

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**Abstract**

People tend to think of our intellectual characters as at least partially malleable. We can become more – or less – virtuous or vicious epistemic agents. However, people also tend to think of characterological change as typically slow and incremental. I use recent empirical work on the effects of psychedelic experiences on personality to argue that such circumscribed experiences may be epistemically transformative, for better or worse. We have good, if tentative reasons to believe that psychedelics can alter their user's character traits in ways that may lead her to become a more (or less) virtuous epistemic agent after as little as one or two trips. This, in turn, means that even if psychedelics do not drastically alter our stock of, say, true or justified beliefs, they can still drastically change our epistemic standing. Since, plausibly, the value (or disvalue) of epistemic traits is not exhausted by their capacity to assist or hinder the attainment of the ends of inquiry, psychedelic experiences are epistemically valuable (or disvaluable) in ways hitherto little explored by philosophers of psychedelics.

*Keywords:* Psychedelics, Altered States of Consciousness, Epistemic Virtues, Epistemic Vices, Character Traits

## Introduction

Epistemic or intellectual virtues are agential characteristics that make their possessor an excellent epistemic agent. They contribute to one's intellectual flourishing and render her cognitively admirable or praiseworthy. One thing that seems to be essential to at least some of the epistemic virtues is their relative malleability. We can, under the right circumstances, *develop* them by transforming our epistemic character. Presumably, there are certain processes that can turn us into, say, more inquisitive, critical, or intellectually humble cognizers. The downside of this malleability, of course, is that we can also become *less* epistemically virtuous, and might even acquire epistemic *vices*. Our epistemic characters are corruptible: we may become gullible, or closed-minded, or prejudiced. Insofar as intellectual excellence is something to aspire to and that intellectual corruption is something to be shunned, an important question for applied virtue epistemology is

which processes may predictably lead to drastic changes, for better or for worse, in our epistemic characters.

One answer, going at least as far back as Aristotle, is education and training. Virtue epistemologists often mention education as a paradigm process of epistemic edification, and recently authors have also begun to systematically examine the potential harms that a bad educational system can inflict on one's epistemic character.[1] Other theorists examine the role of involvement with certain social structures such as epistemic bubbles and echo chambers[2] in shaping people's epistemic characters. Turner,[3] for instance, considers the impact of online communities on their members' degrees of open-mindedness. As a last example, some authors cite committed engagement in contemplative practices as a way of cultivating the virtues. Fröding and Osika's work[4] suggests that a dedicated, sustained meditation practice may develop intellectual virtues in the practitioner.

In light of such examples, it is tempting to think about epistemic-characterological change as slow and incremental. Educators do not mold their students into skilled critical thinkers overnight; merely opening a Twitter account does not a conspiracy theorist make; and meditation should be *practiced* before it leads one closer to intellectual perfection. In this paper, I argue that not all epistemic characterological change is like that. Some temporally circumscribed experiences can induce potentially drastic alterations to their subjects' epistemic characters. Specifically, I argue that *psychedelic experiences* can be epistemically transformative – for better or for worse. We have good, if tentative reasons to believe that psychedelics can alter their user's character traits in ways that may lead her to become a more or less virtuous epistemic agent, and that this alteration could, in fact, be quite sudden.

If I am correct, these results are significant for a number of reasons apart from showcasing the relevance of the rapidly-growing empirical literature on psychedelics to applied virtue and vice epistemology. For instance, my argument bolsters the claim, made by Bortolotti and Murphy-Hollies[5] that epistemologists of psychedelics should adopt an "agency first" approach. Many authors who aim to understand the epistemic risks and benefits of ingesting psychedelics concentrate almost exclusively on psychedelics' potential to promote or hinder the acquisition of the paradigmatic ends of inquiry. Epistemologists debate about whether or not psychedelic experiences can allow their subject to gain epistemic goods such as new knowledge items, new forms of

understanding, access to unique modes of presentation, or a sort of privileged acquaintance with certain facts[6]. In what follows, I shall call such epistemic goods *epistemic contents*. If psychedelic experiences can, as I claim, alter their subjects' epistemic *characters*, then psychedelics can effect the epistemic status of their users in ways that go beyond changing their, say, stock of true beliefs.[7] Instead, psychedelics can make their users into better or worse epistemic agents. There is more at stake, epistemically speaking, to ingesting psychedelics than changes in one's epistemic contents.[8]

Furthermore, while I concentrate on psychedelics here, this paper can be read as a probe into a larger question in the epistemology of psychoactive drug use. Many psychoactive substances ranging from alcohol to opioids may incur changes in character that could be relevant to their users' intellectual functioning– especially after prolonged use. If we wish to gain a complete picture of the impact of psychoactive drugs on their users – for good or ill – then mapping out the specific ways in which specific substances might alter their users' epistemic characters seems to be an important piece of this highly elaborate puzzle.

This chapter, then, makes two claims: first, significant epistemic character change can be the result of relatively temporally circumscribed experiences, as demonstrated by the research into psychedelics' effects on character traits. Second, such changes can alter their subject's epistemic standing even if they do not drastically alter their stock of epistemic contents in the time period immediately following the psychedelic experience.

The first part of this paper is an introduction to epistemic virtues and vices. I concentrate on what virtue epistemologists call *responsibilist* epistemic virtues and vices. These are, roughly, an individual's states of character that are relevant to her functioning as an excellent or poor epistemic agent. In the next part of the chapter, I briefly rehearse arguments to the effect that the value of epistemic virtues and the disvalue of epistemic vices may not derive entirely – or even primarily – from epistemic goods like truth or knowledge whose acquisition they advance or hinder. Then, I move on to consider two character traits that are especially pertinent for the cultivation of epistemic virtue: openness and agreeableness. I argue that both traits have important epistemic dimensions, and that an increase in both of them may lead to better or worse epistemic functioning. I move on to consider empirical indications to the effect that psychedelic experiences do, indeed, have the capacity to alter individuals' scores on both openness and agreeableness measures, even after a relatively limited exposure. If these claims are

true, this means that focusing solely on psychedelics' role in attaining the characteristic ends of inquiry is ill-advised. Psychedelics may change our epistemic character, whose proper cultivation is valuable in a way that might not rely entirely on its capacity to lead to the acquisition of epistemic contents. Hence, psychedelic drug use carries potential epistemic risks and benefits that are not exhausted by more or less knowledge, understanding and their likes. What's more, these risks and benefits can be encountered after relatively very short experiences.

## Epistemic virtues and vices: a primer

I start by characterizing the epistemic virtues, and then use this characterization to explain epistemic vices as well. Importantly, I do not wish to give an exhaustive definition of intellectual virtues and vices here. As one might expect, this is a matter of ongoing debate within virtue epistemology. Instead, I only want to make some, hopefully (relatively) uncontroversial remarks that could help us gain a sufficiently robust conception of the relevant character traits.

Intuitively, epistemic virtues are agential characteristics that promote the intellectual flourishing of their possessor, or that render her an excellent cognitive agent. Most authors distinguish between two kinds of intellectual virtues: *reliabilist* and *responsibilist*. Whereas the former are reliable faculties or powers such as perception, memory, introspection, intuition, and their likes,[9] the latter are traits such as intellectual courage, humility, open-mindedness, and conscientiousness. They are "deep qualit[ies] of a person, closely identified with her selfhood,"[10] and they are both "praiseworthy in their possessor and beneficial to others."[11] Here, I concentrate exclusively on psychedelics' effects on *responsibilist* virtues and vices.

What else can we say about responsibilist epistemic virtues (throughout the chapter, I will drop the "responsibilist" qualifier, and simply refer to them as virtues)? First – at least for the most part – virtues are *cultivated*. They are "an acquired base of excellent functioning in some generically human sphere of activity that is challenging and important."[12] They are dispositions to act, feel, and be moved in certain admirable ways, and towards certain admirable goals. Hence, attaining the virtues is typically an achievement that we have some control over – and therefore also partial responsibility for.[13]

Second, many theorists think that the virtues have an inherent motivational component. As I said, they involve tendencies to be moved by certain things, and to direct their possessor towards the attainment of certain ends. In the case of the intellectual virtues, these seem to involve (at least often) a motivation towards the acquisition of epistemic goods like truth, knowledge, certainty, understanding, or "cognitive contact with reality."[14] As Roberts and Wood say:

> The epistemically virtuous person values, cherishes, seeks, and appreciates intellectual goods. She wants to know important truths and to understand how things work; among the things she wants to understand is how the "whole" of reality works, so she is internally driven towards "wisdom", and thus considerations in the neighborhood of theology. She craves insight, or what we have called "acquaintance", in these matters; she wants to "see for herself" in some kind of striking, relatively unmediated way.[15]

Indeed, some authors[16] argue that the intellectual virtues can be distinguished from other virtues by the intentional object (or objects) of their motivational component. That is, the intellectual virtues constitutively aim at certain epistemic goods like truth, knowledge, or understanding. While I am not committed to this claim,[17] I do agree that the intellectual virtues usually involve a motivation that is admirable in itself. Whether this motivation aims at intellectual ends, moral ends, or otherwise[18] is a question I wish to remain agnostic about.

Third, intellectual virtues are necessary for the promotion of a certain type of characteristically human activity, namely *effective and responsible inquiry*. That is, the attempt to "to find things out, to extend our knowledge by carrying out investigations directed at answering questions, and to refine our knowledge by considering questions about things we currently hold true."[19] Intellectual virtues can be thought of as praiseworthy "habits or styles of thought or inquiry," as "distinctive ways of seeking out and evaluating evidence, and assessing the plausibility of explanatory hypotheses."[20] It is important for our purposes to note that effective and responsible inquiry is not merely an inquiry that terminates in arriving at true beliefs. For example, an epistemic agent who arrives at the truth through a series of lucky guesses is not a responsible inquirer. As Cassam remarks,

> [a] responsible inquiry is one that is guided by the evidence and recognizes the obligations that come with being an inquirer. These include the obligation not to be negligent and to exercise due care and attention in the investigation of the matter at hand. A responsible inquirer has a certain attitude towards the business of inquiry, knows what he is doing and has the necessary skills.[21]

Notice that this does not commit us to thinking that the motivations that partly constitute epistemic virtues always aim at intellectual ends. We can accept that virtues like intellectual courage, humility, and open-mindedness are crucial for the advancement of our cognitive strivings and intellectual projects, while at the same time maintain that part of what makes them valuable is a praiseworthy motivation, whereas this motivation can be directed towards goals that are not strictly speaking intellectual.[22]

We can use this rudimentary characterization of epistemic virtues to spell out what it is to be an epistemic or intellectual *vice*, by way of comparison. Epistemic vices are traits of character that have a negative bearing on our standing as cognitive agents. Like epistemic virtues, they can be developed and acquired over time. In fact, it seems reasonable to think that, as is the case with epistemic virtues, people typically have at least some responsibility over their intellectual vices, and are hence blameworthy for having such character traits. They often (although, perhaps not always) involve bad motives on the part of their possessor. Intellectual laziness, for instance, might involve the blameworthy motivation to avoid cognitive effort. Alternatively, some epistemic vices might not involve a contemptible motive, but rather a contemptible *lack* of motivations or concerns.[23] For example, if we take Frankfurt's analysis to be correct, a chronic bullshitter might not be blameworthy for her motivation to influence her interlocuters in certain ways.[24] Instead, chronic bullshitters are plausibly blameworthy for exhibiting a lasting disregard for something that they ought to care about, namely the truth of their statements. They are blameworthy for *not* being motivated in appropriate ways. Finally, epistemic vices impede effective and responsible inquiry. They are "cognitive styles" that prevent their possessor from somehow fulfilling her epistemic obligations as an inquirer. They are bad habits of cognitive conduct.

**The value (and disvalue) of epistemic virtues (and vices)**

As I have said, the epistemic virtues and vices are valuable or disvaluable in a way that is not related exclusively to their capacity to reliably assist in or interfere with the attainment of the ends of inquiry. First, these virtues often involve a praiseworthy motivational component, which could be directed at epistemic ends, but might also aim at other admirable goals. It is likely that having such motivations is valuable in a way that does not depend entirely on whether we succeed in attaining their objects. Indeed, this putative value could help us explain why we think that the epistemic virtues contribute to the personal worth or excellence of their possessor. Notably, people can be equally

intellectually admirable while still differing greatly with respect to the truth or knowledge that they managed to obtain.[25] As Kerry McKenzie succinctly put it to me (personal correspondence) the inductive nature of the scientific method entails that some people who use it will arrive at truth while others will not, even though their methods were impeccable. In that sense, what seems right to call 'epistemic luck' is just baked into the practice of science. But since the attainment of truth, knowledge, or understanding is sensitive to luck, the fact that some people *are* intellectually admirable must be at least partially due to other factors. One natural candidate for such a factor is precisely the motivational set of these agents. Among other things, it is their love of and commitment to truth, knowledge or understanding, and their ensuing willingness to engage in responsible, rigorous, and honest inquiry that we find immensely valuable.[26]

Conversely, it is plausible that the motivational dimension of vices contributes to their *dis*value. Again, it is natural to think that we are at least somewhat blameworthy for our intellectual vices, and that, since we cannot be blamed for not getting at epistemic contents due to luck, intellectual vices do not merely – or not always – consist in our inability to achieve these goods. Here too, the motivational set of the vicious person seems to be a natural candidate for what makes her epistemically blameworthy, at least partially. Zagzebski, for one, even argues that "the main reason we criticize [a person who] guess[es] is that his guessing reflects poorly on his motivation . . . His belief-forming procedure shows a lack of motivation for knowledge."[27]

Furthermore, it is possible that the intellectual virtues and vices could be *constitutively* valuable or disvaluable (respectively), in the sense that exercising them is a part of the good life. After all, there is a venerable tradition in philosophy that stresses that the good life consists in part in the performance of intellectual activities in certain ways.[28] There is something about the committed undertaking of certain intellectual projects that is intrinsically valuable, regardless of whether they achieve their formal aims. And a part of this committed undertaking involves cognitively conducting oneself in accordance with virtue. Assume, for example, that inquiry partly consists in considering alternatives to one's favorite theory. What distinguishes between virtuous and vicious inquirers, at least on this aspect of inquiry, is *how* they consider such explanations: their style of assessing competing alternatives. The virtuous epistemic agent is openminded, fair, charitable, rigorous, and so on when she comes to assess rival explanations, while the vicious agent is closeminded, partial, dogmatic, or sloppy. As a result, the former's intellectual activities are one step closer to being the kind of activities that are

constitutive of the intellectually good life, while the latter's seem to be an important constituent of the paradigmatically bad – indeed, the unexamined – life. This seems to hold true even if both inquirers end up with the same beliefs or items of knowledge at the end of their inquiry.

Moreover, as Baril suggests, the epistemic virtues may be constitutive not only of the *intellectually* good life, but of the prudentially or morally good life. It is highly likely, for example, that one's wellbeing, happiness, or eudaimonia partly consists in aesthetic engagement, which in turn partly consists in the exercise of intellectual virtues. That is, an important part of what it is to successfully engage with an object in an aesthetic way just is to exercise "charity in interpreting it, honesty in assessing it, intellectual autonomy in making up one's own mind about it, and so on."[29] Similarly, open-mindedness, intellectual humility, epistemic justice, and so on seem to be highly important components of moral goodness. Conversely, again, it seems that what it is to be morally vicious consists in being *epistemically* vicious: in being closed-minded, intellectually arrogant, epistemically unjust, and so on.

If any of these claims are true, then cultivating an excellent or praiseworthy epistemic character is important even if it might not lead us to attain more valuable epistemic *contents* after the experience. This means that, to the extent that psychedelic states harbor the potential to alter our epistemic character, ingesting psychedelic drugs could be more epistemically consequential than what the philosophical literature on the topic seems to have suggested so far. In the next sections, I consider two character traits that are plausibly relevant for the cultivation of intellectual virtues and vices: agreeableness and openness, and I present evidence in support of the idea that psychedelics could, indeed, rapidly change epistemic character by altering our agreeableness and openness levels.

## The epistemic aspects of openness and agreeableness

The contemporary empirical literature on psychedelics is mostly concerned with their therapeutic potential. As such, it deals with their capacity to influence our intellectual character only indirectly. Nevertheless, there is a growing body of evidence to the effect that psychedelics can reliably lead to changes in the expression of character traits *generally speaking* after as little as one or two psychedelic experiences. In turn, it is very likely that some components of these character traits are themselves traits or facets that can be considered as epistemic or intellectual. As a case in point, there are good reasons to

believe that psychedelics increase subjects' scores on the character traits of openness and agreeableness, which in turn have clearly epistemic and intellectual aspects and ramifications.

Before reviewing the evidence for the claim that psychedelics influence our epistemic character, I want to say a few words about the most prominent model in personality psychology, the five factor (or "Big Five") model of personality. This is important because most studies that document the effects of psychedelics on character traits use measures that are specifically designed to evaluate participants according to the personality dimensions that are listed in the model. In a nutshell, the Big Five approach construes character traits as exhibiting a tendency to covary along five basic dimensions of personality. These dimensions are typically (although not always) termed extraversion, neuroticism, openness to experience, agreeableness, and conscientiousness, each of which is comprised of different subordinate *facets*. These "Big Five" dimensions of personality are shared by all people, but different individuals may score high or low on each dimension.[30] Roughly, the idea is that individual patterns of behavior, thought, action, emotion, and motivation tend to display loose, systematic regularities and that these regularities can be described according to individual variations in the "Big Five."[31] Indeed, years of research indicate that the five factors approach has tremendous predictive power, with studies showing character traits to be correlated with a vast array of human phenomena from voting behavior to inflammatory profiles.

I wish to pay close attention to two of the five personality dimensions here: openness and agreeability. As we shall see, high agreeableness and high openness may have both positive and maladaptive epistemic aspects. As such, individuals with high openness and agreeableness can be more or less epistemically virtuous than their counterparts. After discussing the epistemic aspects of trait-openness and trait-agreeableness I review evidence to the effect that psychedelics increase people's scores on these traits.

Before getting into these details, however, I wish to briefly reply to a potential objection that may arise from Miller's[32] concerns about using the Big Five approach in attempts to vindicate virtue epistemology. According to Miller, the Big Five traits are merely "summary labels" for people's general epistemic tendencies and they should not be considered as having an underlying psychological reality or causal powers. They most certainly should not be expected to reliably *predict* how a person will act on a moment-to-

moment basis, or offer a causal explanation for her actions. But this, we might plausibly think, is precisely what the virtues are supposed to do. The fact that a person is, say, epistemically courageous is supposed to *explain* her epistemic conduct. At least according to traditional virtue epistemology. The same goes, *mutatis mutandis*, for intellectual *vices*.

It is important to stress that, in this chapter, I am not committed to a certain view regarding the metaphysical status of character traits. We can think that different scores on the Big Five are merely descriptive labels that are useful for characterizing certain – perhaps highly diverse – patterns of conduct, thought, motivation, and feeling. We can also think that psychedelic experiences might drastically alter these patterns in their users during a very short period of time. Furthermore, it may be argued that exhibiting some of these patterns is epistemically good, while exhibiting others is epistemically bad. Lastly, we can think that exhibiting some of these patterns is valuable or disvaluable for an agent not merely because they suggest that she is more likely to attain epistemic contents. For instance, these patterns may characterize an aspect of the good life, be it moral, prudential, aesthetic, or something else. In short, then, we can remain agnostic about Miller's substantive criticism (although I suggest consulting Westra's forceful critique of Miller's position[33]), and still think that psychedelics can change our epistemic conduct – for better or for worse – in fast, drastic, and highly important ways.

## The epistemic aspects of trait openness

Trait openness can be thought of as a cluster of cognitive, affective, and motivational dispositions that have to do with novelty seeking, creativity, imaginativeness, and emotional variability. Open people like "to try new things and go to new places", and they have a large array of hobbies and interests. They tend to "easily make remote and creative connections between ideas," and they are "inherently curious and have a real need for variety and novelty and actively seek out such experiences."[34] Importantly, open individuals exhibit a high need for cognition, which is roughly the extent to which a person actively seeks to perform and takes pleasure in cognitively demanding tasks.[35]

It is easy to understand how openness can be a highly important dimension of an agent's epistemic character. Keen attention to novel possibilities, willingness to consider new pieces of evidence, a desire to exert cognitive effort, and taking pleasure in doing so are often cited as marks of epistemic excellence. We can also see how these things are valuable regardless of whether they lead to the attainment of epistemic contents. If we

think (with Zagzebski, Montmarquet, Battaly and others) that a motivation to engage in inquiry, or to discover new things, or to think long and hard about certain issues is intrinsically valuable, then having a high level of openness seems to be intrinsically valuable.

Alternatively, high openness could be constitutively valuable for similar reasons to the ones Baril mentions. For instance, many virtue theorists construe activity in accordance with virtue as, in part, an activity that the agent takes pleasure in.[36] This goes for both intellectual and moral actions. So, taking pleasure in intellectual activities appears to be a constituent of actions that are performed in accordance with intellectual virtue. In turn, it is highly likely that such activities are important constituents of the good life. Hence, having the disposition to reliably take pleasure in intellectual activities is likely a component of the intellectually good life. But high openness is characterized precisely as (in part) such a tendency. So high openness seems to be constitutive of the good life – again, all things being equal – and hence also constitutively valuable.

That being said, as we are well aware, all things are not always equal. Standard personality instruments like the NEO-PI-R questionnaire typically express the adaptive aspects of high openness. They include items like "I have a very active imagination" or "I often enjoy playing with theories or abstract ideas," which connote positive cognitive styles (and for good reasons). However, excessive openness could have maladaptive consequences. It may be associated with "dwelling on fantasies" as well as with "oddity, peculiarity, eccentricity, and/or cognitive-perceptual aberrations."[37]

While research on the maladaptive aspects of trait openness is not nearly as developed as research on its positive aspects, there are some indications that excessive openness can negatively influence one's specifically *epistemic* character. Highly open individuals are prone to accept ideas or beliefs that have "little basis within reality,"[38] and high openness appears to be a reliable predictor for beliefs in ESP and other paranormal phenomena.[39] It seems reasonable to think that this proneness has something to do with the motivational profile characteristic of trait openness. An exaggerated tendency for novelty seeking might be precisely what underlies highly open people's willingness to entertain and accept ungrounded possibilities.

Epistemically virtuous individuals should be willing, even eager, to explore new alternatives, but supposedly, they should also care about responsibly vetting their sources of information, uphold a healthy level of intellectual caution, and exert good judgement

when deciding which sources to consider in the first place. A motivation that is admirable all things equal, like the motivation to entertain novel possibilities, can be inappropriate when all things are not equal. As Cassam puts it, "[i]t's true that intellectual curiosity and a proclivity for new ideas would normally be regarded as intellectual virtues, but they become vices when unconstrained by good judgement and a healthy dose of scepticism."[40]

Consider a person – Call him Otis – who, out of sheer open-mindedness, decides to seriously entertain the possibility that the 2020 US presidential election was stolen by means of voter fraud; or that members of the American Democratic Party are involved in a pedophilia ring; or that the diversification of the European population is the result of an intentional policy advanced by globalist elites. "I just want to make up my own mind about this," Otis might say, refusing to follow the mainstream media's ridicule of these allegations. If you are anything like me, you'd probably think that there's something epistemically wrong about open Otis's decision to take these ideas seriously. Responsible epistemic agents should recognize which questions merit serious scrutiny and which do not. The fact that Otis pursues such a line of inquiry in the first place can be assessed epistemically. Simply put, Otis should not let his openness run rampant.[41] I suggest, therefore, that heightened trait openness can make an agent more or less epistemically virtuous, precisely because it can change her motivational set for better or for worse.[42]

**The epistemic aspects of trait agreeableness**

Generally speaking, trait agreeableness consists of a cluster of dispositions that revolve around a person's concerns to cultivate and maintain positive social relations. People who score low on agreeableness are typically "critical, skeptical, try to push limits, express hostility directly, and show condescending behavior to others," whereas highly agreeable people are "sympathetic, considerate, warm, compassionate, generous, and arouse liking from others."[43] Highly agreeable individuals are empathetic[44] and are disposed to form cooperative social relationships with others.[45] High agreeableness is also correlated with social occupational interests,[46] and with a "dependable pattern of effective contributions to teamwork and common goals."[47]

As with openness, increases in trait agreeableness can harbor both epistemic risks and benefits. On the negative side, agreeableness is closely tied to conformity and compliance. "People with agreeable dispositions avoid violating norms or upsetting others, and they easily comply with social expectations."[48] Agreeable people tend to be

motivated by conformity and tradition values,[49] and Widiger and collaborators suggest that agreeable individuals are at risk of being gullible[50] and excessively conformist.[51] In turn, highly conformist individuals tend to be guided by "what is socially desirable, rather than on their own capacity for exploration and reconceptualization, in order to adapt to novel situations."[52] Agreeable individuals were found to be highly susceptible to argumentation by authority figures, to agree with people they like, and to comply with a message if other people have complied with it too. In fact, as Alkış and Temizel conclude: "[a]greeableness is the most susceptible personality trait compared to the other traits."[53]

As with openness, agreeableness can detract from a cognitive agent's epistemic excellence, and this detraction might reasonably be due, in part, to a bad motive. A person who is more motivated by social pressures to conform to her peer's or superior's judgements than by her love of truth or knowledge has gotten her epistemic priorities wrong.[54] This prioritization, I argue, can count as a strike against her epistemic excellence, regardless of whether it shifts her balance of epistemic contents in the long run.

Consider Axel, a highly agreeable individual, and a close friend of highly open-minded Otis. Perhaps unbeknownst to Otis, he constantly exerts pressures on Axel to adopt his pet conspiracy theories. He keeps referring to people who brush off those conspiracies as "sheeple" and he expresses contempt towards anyone who is puzzled by his deep dives into obscure Reddit threads. Axel, having realized that he should try to seriously consider Otis's pet theories to maintain good relations with his friend (and perhaps unbeknownst to Axel *himself*) decides to entertain the possibility that Otis might actually be right. We may suspect that Axel's credence in those wild ideas is very low, but Axel still decides to give Otis's theories a chance. Axel might even try to rationalize his decision by telling himself that the fact that a view is accepted by the majority never guarantees that it is correct, that Otis has a sharp and keen intellect, and that even the wildest of lies may contain a grain of truth. However, *we* know that these are post-hoc rationalizations rather than Axel's *motivating* reasons. They play no role in guiding Axel's decision to undertake his investigation. Whether they "confer a likelihood of truth" on Otis's theories[55] is beside the point here. And as with Otis, Axel's *decision* to pursue these lines of inquiry seems amenable to critical epistemic assessment. Even if he ends up rejecting those theories, Axel's willingness – motivated by his delightfully agreeable nature – to give them serious consideration is a bad epistemic decision and sheds

unfavorable light on him as a cognitive agent. At least from an epistemic perspective, agreeable Axel should have stood his ground and not let his desire for Otis's approval overshadow his concerns for truth.

On the other hand, agreeableness has clear epistemic merits as well. Agreeable individuals are highly cooperative, and this cooperativity extends to intellectual pursuits.[56] In fact, Kotsonis recently offered an account of "epistemic collaborativeness" as an intellectual virtue. According to Kotsonis, epistemic collaborativeness is "the disposition to pursue intellectual collaborative activities (when appropriate) out of a desire for epistemic goods and the ability to engage in such activities skillfully."[57] An agreeable person is much more likely to collaborate successfully on intellectual projects, and hence would be more likely to achieve epistemic contents. We may even think that collaborativeness is vital for human flourishing in general "since it plays an important role in bringing about successful joint epistemic endeavors in areas such as scientific research (e.g. scientists working together to understand and explain a natural phenomenon), law (e.g. juries rendering a verdict) and politics (e.g. officials jointly investigating a political scandal)."[58] Hence, the virtue of epistemic collaborativeness seems instrumentally valuable for at least two reasons: it is important for the attainment of epistemic contents, but it is also important given the collaborative nature of many intellectual pursuits that aim at non-epistemic goods. Furthermore, if we think that humans are social or political animals and that our good life partly consists in our engagement in collaborative activities – including intellectual activities – then epistemic collaborativeness seems to be constitutively valuable as well. Granted, epistemic collaborativeness is virtuous insofar as it is motivated by a love of truth, knowledge, or other epistemic goods. But given the right priority structure, agreeable agents are more likely to attain the virtue of epistemic collaborativeness than non-agreeable agents. All things considered, they are more likely to be able to engage in joint epistemic projects.

To conclude, there are good reasons to believe that enhanced openness and agreeableness harbor substantive potential for both improving and harming our epistemic standing. Open individuals are likely to entertain new possibilities and to be willing to exert cognitive effort in their intellectual pursuits, but they could also be led astray by their novelty seeking. And agreeable people's desire to maintain and cultivate their social relationships may overshadow their concerns for truth and knowledge. Yet they may also be much better at intellectual collaborations. Both heightened openness and heightened agreeableness are important for the attainment of epistemic contents, but

their value and disvalue may not be entirely due to this. Instead, both traits seem to have a motivational component that could be independently epistemically assessed, and they both could be constitutively valuable or disvaluable. Hence, altering a person's openness and agreeableness profile may be epistemically valuable or disvaluable not only because it will make her more or less prone to attain epistemic contents.

**Openness, agreeableness, and psychedelics**

Now, as it turns out, psychedelics seem quite effective in increasing their user's scores on trait openness and trait agreeableness measures *after as little as one trip*. In one seminal study,[59] psychedelically-naïve participants who underwent psilocybin-induced[60] mystical type experiences exhibited significant increases in trait-openness and trait-agreeableness, and these increases remained significant 14 months after the psychedelic session.[61] Another experiment found significant increases in openness and agreeableness in healthy adults who were administered LSD two weeks post administration.[62] A further study showed that subjects with treatment resistant depression scored significantly higher on trait openness relative to baseline three months after two psilocybin assisted therapy sessions.[63] And in an observational study, participants in a series of ayahuasca[64] ceremonies demonstrated significant increases in both agreeableness and openness scores relative to baseline. Impressively, these results persisted after six months (in fact, participants' openness measures after six months were higher than their openness measures immediately after the retreat).[65]

A study comprised of five web-based surveys that were completed at different times before and after the ingestion of a psychedelic substance (starting from one week prior to the ingestion until four weeks after) found highly relevant results for our present purposes.[66] After one ingestion of a classical psychedelic, participants in the survey scored lower on the "critical/quarrelsome" component of agreeableness, but their scores on other aspects of agreeableness such as sympathy, compassion, perspective-taking, and empathic concern did not significantly alter.[67] High scores on the critical/quarrelsome component of agreeableness are marks of an "antagonistic and conflict-prone style of interpersonal relating that seeks to express judgment, demonstrate superiority, and gain advantage." Given the importance of both critical thinking and judgement as well as collaborativeness for one's functioning as a cognitive agent, this finding is especially pertinent for evaluating psychedelics' impact on our epistemic character.

The study of psychedelics' effects on personality is still in its initial stages and more research should be conducted before we have conclusive evidence regarding their epistemic – and not just therapeutic – impact. However, if there *is* a robust causal relationship between a small number of psychedelic experiences and heightened openness and agreeableness, as the current empirical literature suggests, then the two claims of this chapter seem to be vindicated. First, the potential risks and benefits of ingesting psychedelic substances are not exhausted by a change in their stock of epistemic contents. Psychedelics substances can include changes to a person's epistemic character too. They can make people more curious, more open to new ideas and possibilities, and more willing to invest cognitive effort in problem solving. They can also help people become better collaborators in shared intellectual pursuits. While such effects may (and are even likely to) be positive, they can also have substantial negative epistemic ramifications. Second, and perhaps more important, epistemic characterological change may not be as incremental and slow as one might think. Under the right circumstances, our epistemic characters might be even more malleable than we tend to believe.[68]

Before closing this chapter, I wish to make a few important clarifications. First, I hope it is clear that everything I have said here does not amount to a decisive accusation towards or exoneration of the epistemic profile of psychedelic experiences. I argued here for the much more modest conclusion that we cannot neglect psychedelics' potential impact on our character when we come to assess their influence on our epistemic standing. Whether ingesting psychedelics is ultimately or for the most part epistemically good or bad is not something I wish to take a stand on. If anything, what I have said suggests that the epistemic standing of psychedelic experiences is sensitive to a wide array of factors and may not admit to a uniform – or even approximately general – response.[69] Psychedelics' impact on one's status as an intellectual agent depends not merely on whether these substances will help her attain epistemic contents, but also, for instance, on whether she is the kind of agent who will benefit epistemically from being more agreeable or more open-minded. It also depends on whether she is the kind of agent who is prone to becoming more agreeable or open-minded after undergoing a psychedelic experience. Furthermore, it seems that we have tentative evidence according to which psychedelics may be disposed to change specific *components* of character traits (such as the critical/quarrelsome component of agreeableness). Hence, in order to evaluate the epistemic standing of psychedelics, we may need a more fine-grained

understanding of which facets they are likely to change (and under which conditions), as well as a more nuanced exploration of the epistemic risks and benefits of such changes. Lastly, while I have concentrated here on two traits, it is important to acknowledge that other character traits may also be changed as a result of a psychedelic experience. The literature on psychedelics and personality indicates that psychedelics may reliably decrease neuroticism and increase extraversion, for instance,[70] and these traits might also have important epistemic dimensions. In this sense, this paper is much more exploratory than definitive.

Secondly, while I claim that psychedelics may lead to rapid, robust, and consequential epistemic characterological changes, I do not claim that ingesting psychedelics can on its own lead one to magically develop epistemic virtues (or vices for that matter). Virtue theorists often point out that both moral and intellectual virtues, properly so-called, must be *trained*. Cultivating virtue is plausibly a long, effortful process of habituation of an agent's patterns of feeling and acting that should count as an agential *accomplishment*. Roberts forcefully expresses this sentiment when he writes:

> We can guess that it will never be possible to give a person a moral "identity" – a tough and abiding passion for justice or a stable and focused desire to relieve suffering – by injecting him with a drug or giving him a brain operation or fiddling with his genes. But the impossibility of giving somebody moral character in this way seems to be more than psychological. For even if we could in this way produce a being who was indistinguishable, in terms of his present dispositions, from a saint, still I think we would have no inclination whatsoever to canonize him. For the praise for his saintliness, and thus for his deeds, would not be due *him* … Such a person does not have an appropriate moral *history*.[71]

While Roberts might be very well be correct, it is perfectly reasonable to talk about psychedelics' contribution to cultivating a *more* or *less* virtuous or vicious epistemic character without assuming that they are capable of turning their users into unqualifiedly excellent (or vicious) epistemic agents. Epistemic excellence, like moral excellence, admits of degrees, and the cultivation or corruption of one's epistemic excellence is susceptible to many different factors.[72] Here, I am in agreement with Earp, who writes about psychedelics' potential uses as a biotechnology for *moral* enhancement:

> [I]f psychedelic substances are ever to feature in a prudent plan for personal moral bioenhancement, they should probably serve a *facilitating* or *adjunctive* role, rather than *determinative* one, in the overall enhancement process. In other words, they should not be taken "in a vacuum" – that is, by oneself or with unprepared others, without adequate mental or emotional groundwork, stripped of all cultural context – with the expectation that they will somehow cause moral improvement all on their own.[73]

Similarly, we should not expect psychedelics to alter our epistemic standing – at least not for the better – without appropriate groundwork and enabling background conditions. Specifying these groundwork and conditions is an exciting avenue for future research, in which philosophers can and should take an active part along scientists – especially given the growing interest in "smart drugs"-induced neuroenhancement[74] (see Cakic 2009; Partridge et al. 2011; Husain and Mehta 2011; Zohny 2015) – but it is unfortunately beyond the scope of this paper.

In conclusion, we have good evidence to the effect that psychedelics may alter our functioning as epistemic agents for better or worse in a few nontrivial and significant ways by changing our levels of openness and agreeableness. These alterations can happen during relatively very short timeframes, and they may be highly important even if they do not result in a drastic change to one's stock of epistemic contents. This conclusion holds true regardless of whether the epistemic virtues and vices are commonly attained; and whether openness and agreeableness are causally efficacious, psychologically real constructs, or merely summary labels for general patterns of feeling, thought, and conduct. It is high time for philosophers who are interested in virtue epistemology, in our epistemic character, or in emerging biotechnologies for cognitive neuroenhancement to start thinking about psychedelics.[75]

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[1] Ian James Kidd, "Epistemic Corruption and Education," *Episteme* 16, no. 2 (2019): 220–35.
[2] C. Thi Nguyen, "Eco Chambers and Epistemic Bubbles," *Episteme* 17, no. 2 (2020): 141–61.
[3] Cody Turner, "Online Echo Chambers, Online Epistemic Bubbles, and Open-Mindedness," *Episteme*, 2023, 1–26.
[4] Barbro Fröding and Walter Osika, *Neuroenhancement: How Mental Training and Meditation Can Promote Epistemic Virtue* (Cham: Springer, 2015).
[5] Lisa Bortolotti and Kathleen Murphy-Hollies, "The Agency-First Epistemology of Psychedelics," *Philosophy and the Mind Sciences* 3 (April 19, 2022).
[6] For important discussions consult Chris Letheby, "The Epistemic Innocence of Psychedelic States," *Consciousness and Cognition* 39 (2016): 28–37; Chris Letheby, *Philosophy of Psychedelics* (Oxford University Press, 2021); Benny Shanon, "The Epistemics of Ayahuasca Visions," *Phenomenology and the Cognitive Sciences* 9, no. 2 (2010): 263–80; Sascha Benjamin Fink, "Psychedelics Favour Understanding Rather Than Knowledge," *Philosophy and the Mind Sciences* 3 (2022). For helpful reviews regarding psychedelics' epistemic risks and benefits see Chris Letheby and Jaipreet Mattu, "Philosophy and Classic Psychedelics: A Review of Some Emerging Themes," *Journal of Psychedelic Studies* 5, no. 3 (2022): 166–75; as well as Haggeo Cadenas, "Can Psychedelic Experience Lead to Knowledge?" in this volume.
[7] Labeling these two kinds of epistemic determinants of one's epistemic standing as *epistemic contents* and *epistemic character* was suggested to me by Matt Fulkerson.
[8] One important exception to the concentration on psychedelics' impact on epistemic contents is Letheby's discussion of the epistemic innocence of psychedelics. In the aptly titled, "The Epistemic Innocence of Psychedelic States," Letheby argues that while therapeutically beneficial psychedelic experiences can include a non-veridical component, they are epistemically *innocent* (in the term coined by Lisa Bortolotti, see, e.g., her *The Epistemic Innocence of Irrational Beleifs*, Oxford: Oxford University Press, 2020). These substances' capacity to improve the psychological functionality of patients with severe depression or anxiety is very likely to facilitate improvements in their functioning as epistemic agents as well. Such improvements may come in the form of enhanced involvement with the world and with other people, and an increased willingness to engage in critical inquiry. However, Letheby thinks that the innocence of

psychedelics issues from the fact that they might lead to the acquisition of epistemic contents in the long run. Hence, on Letheby's proposal, changes to epistemic *characters* are significant in virtue of the changes they might cause to epistemic *contents*. An important aim of this chapter is to suggest that there might be reasons to think about epistemic character changes as significant even if they do not lead to drastic changes in our epistemic contents.

[9] For a seminal discussion of reliabilist virtues see Ernest Sosa, *Knowledge in Perspective: Selected Essays in Epistemology* (Cambridge: Cambridge University Press, 1991).

[10] Zagzebski, *Virtues of the Mind*, 104.

[11] Zagzebski, 101.

[12] Robert Campbell Roberts and W. Jay Wood, *Intellectual Virtues: An Essay in Regulative Epistemology* (Oxford : Oxford University Press, 2007), 81.

[13] Battaly, "Varieties of Epistemic Vice", 55; Montmarquet, "Do Epistemic Virtues Require a Motivation for Truth?"; Zagzebski, *Virtues of the Mind*, 102-3.

[14] Zagzebski, *Virtues of the Mind*, 167.

[15] Roberts and Wood, *Intellectual Virtues*, 72.

[16] Most notably Montmarquet, *Epistemic Virtues and Doxastic Responsibility*; and Zagzebski, *Virtues of the Mind*.

[17] See, e.g., Cassam, "Vice Epistemology," and Roberts and Wood, *Intellectual Virtues*, ch. 3. for arguments to the contrary from within the virtue epistemology framework.

[18] A lot here depends on how one is inclined to draw the distinction between moral and extra-moral, as well as epistemic and extra-epistemic motivations. For example, epistemic autonomy, which involves a desire to "see things for yourself," may turn out ultimately to aim at something like *independence*, and you might think that a motivation to be more independent is not a particularly intellectual or moral motivation. I do not take a stand on these issues. The only thing I am committed to is that an admirable motivation is typically a component of epistemic virtues.

[19] Christopher Hookway, "Cognitive Virtues and Epistemic Evaluations," *International Journal of Philosophical Studies* 2 (1994): 211–27, 211; see also Cassam, "Vice Epistemology," 167.

[20] Cassam, "Vice Epistemology," 164.

[21] Cassam, 166.

[22] For instance, Roberts and Wood argue that the distinctive motivation in the case of intellectual charity does not aim at an intellectual good. Rather, it is the charitable agent's "concern to treat [her interlocutor] as [she] would like to be treated." *Intellectual Virtues*, 74. Intellectual charity may plausibly aim at *fairness* rather than knowledge or truth, and this seems much more like an ethical rather than an epistemic consideration.

[23] See Battaly, "Varieties of Epistemic Vice," for an exploration of this idea.

[24] Harry Frankfurt, "On Bullshit," in *The Important of What We Care About* (Cambridge: Cambridge University Press, 1998), 117–33.

[25] This still allows for the intellectual virtues to involve a success component. Perhaps being epistemically virtuous means that one is also (at least somewhat reliably) successful at attaining whatever one is motivated to attain.

[26] See Jason Baehr, "The Four Dimensions of an Intellectual Virtue," in *Moral and Intellectual Virtues in Western and Chinese Philosophy*, ed. Chienkuo Mi, Michael Slote, and Ernest Sosa (Routledge, 2015), 86–98; Battaly, "Varieties of Epistemic Vice"; Montmarquet, *Epistemic Virtues and Doxastic Responsibility*; Montmarquet, "Do Epistemic Virtues Require a Motivation for Truth?"; Zagzebski, *Virtues of the Mind*.

[27] Zagzebski, *Virtues of the Mind*, 207.

[28] We might think about certain perfectionist theories of value as developing this line of thinking. According to some versions of perfectionism, the good life consists in the realization of human nature, where this realization is enabled by developing and engaging our rational or intellectual capacities. See, for example, Thomas Hurka, *Perfectionism* (Oxford: Oxford University Press, 1996).

[29] Anne Baril, "What Makes the Epistemic Virtues Valuable?," in *The Routledge Handbook of Virtue Epistemology*, ed. Heather Battaly (New York and London: Routledge, 2019), 69–80., 78.

[30] Robert R. McCrae and Paul T. Jr. Costa, *Personality in Adulthood: A Five Factor Theory Perspective* (New York and London: Guilford Press, 2003); Robert R. McCrae and Paul T. Jr. Costa, "Personality Trait Structure as a Human Universal," *American Psychologist* 52, no. 5 (1997): 509–16.

[31] While I concentrate here on the Big Five model, other models for personality measurement such as the HEXACO model essentially share the same ground assumptions.

[32] Christian Miller, "Moral Virtues, Epistemic Virtues, and the Big Five," in *Naturalizing Epistemic Virtue*, ed. Abrol Fairweather and Owen Flanagan (Cambridge University Press, 2014), 92–117.

[33] Evan Westra, "Getting to Know You: Accuracy and Error in Judgments of Character," *Mind & Language* 35, no. 5 (2020): 583–600; Evan Westra, "In Defense of Ordinary Moral Character Judgment," *Erkenntnis* 87, no. 4 (2022): 1461–79.

[34] Angelina R. Sutin, "Openness," in *The Oxford Handbook of the Five Factor Model*, ed. Thomas A. Widiger (New York: Oxford University Press, 2017), 83–104, 84.
[35] Sutin, 86.
[36] See e.g., Baehr, "The Four Dimensions of an Intellectual Virtue"; Thomas Hurka, *Virtue, Vice, and Value* (Oxford: Oxford University Press, 2001); Roberts and Wood, *Intellectual Virtues*.
[37] Whitney L. Gore and Thomas A. Widiger, "The DSM-5 Dimensional Trait Model and Five-Factor Models of General Personality," *Journal of Abnormal Psychology* 122, no. 3 (2013): 816–21, 817.
[38] Edward D. Haigler and Thomas A. Widiger, "Experimental Manipulation of NEO-PI-R Items," *Journal of Personality Assessment* 77, no. 2 (2001): 339–58, 343; see also Auke Tellegen and Niels G. Waller, "Exploring Personality through Test Construction: Development of the Multidimensional Personality Questionnaire," in *The SAGE Handbook of Personality Theory and Assessment*, ed. Gregory J. Boyle, Gerald Matthews, and Donald H. Saklofske, vol. 2 (SAGE Publications, 2008), 261–92.
[39] Douglas A Macdonald, "Spirituality: Description, Measurement, and Relation to the Five Factor Model of Personality," *Journal of Personality* 68, no. 1 (2000): 153–97.
[40] Cassam, "Vice Epistemology," 172.
[41] Indeed, Swami and colleagues suggest that there is a link between conspiracist thinking and "intellectual curiosity, and active imagination and a proclivity for new ideas." Viren Swami, Tomas Chamorro-Premuzic, and Adrian Furnham, "Unanswered Questions: A Preliminary Investigation of Personality and Individual Difference Predictors of 9/11 Conspiracist Beliefs," *Applied Cognitive Psychology* 24, no. 6 (2010): 749–61, 759.
[42] Maybe Otis is guilty of putting himself in a situation that is unnecessarily epistemically risky (see Duncan Pritchard, "Epistemic Risk," *The Journal of Philosophy* 113, no. 11 (2016): 550–71)? Perhaps. But note that even on this, content-centered epistemological response, Otis seems epistemically blameworthy even if he ends up rejecting the conspiracy theory under consideration. Compare: if you drink and drive, you are worthy of blame even if you do not run over anybody.
[43] William G. Graziano and Renée M. Tobin, "Agreeableness and the Five Factor Model," in *The Oxford Handbook of the Five Factor Model*, ed. Thomas A. Widiger (New York: Oxford University Press, 2017), 105–32, 105.
[44] Daniel Nettle and Bethany Liddle, "Agreeableness Is Related to Social-Cognitive, but Not Social-Perceptual, Theory of Mind," *European Journal of Personality* 22, no. 4 (2008): 323–35.
[45] Lawrence F. Van Egeren, "A Cybernetic Model of Global Personality Traits," *Personality and Social Psychology Review* 13, no. 2 (2009): 92–108.
[46] Murray R. Barrick, Michael K. Mount, and Rashmi Gupta, "Meta-Analysis of the Relationship between the Five-Factor Model of Personality and Holland's Occupational Types," *Personnel Psychology* 56, no. 1 (2003): 45–74; Lisa M. Larson, Patrick J. Rottinghaus, and Fred H. Borgen, "Meta-Analyses of Big Six Interests and Big Five Personality Factors," *Journal of Vocational Behavior* 61, no. 2 (2002): 217–39.
[47] Michael P. Wilmot and Deniz S. Ones, "Agreeableness and Its Consequences: A Quantitative Review of Meta-Analytic Findings," *Personality and Social Psychology Review* 26, no. 3 (2022): 242–80.
[48] Laurent Bègue et al., "Personality Predicts Obedience in a Milgram Paradigm," *Journal of Personality* 83, no. 3 (2015): 299–306.
[49] Sonia Roccas et al., "The Big Five Personality Factors and Personal Values," *Personality and Social Psychology Bulletin* 28, no. 6 (2002): 789–801.
[50] Thomas A. Widiger et al., "A Description of the DSM-IV Personality Disorders with the Five Factor Model of Personality," in *Personality Disorders and the Five Factor Model of Personality, 2nd Edition*, ed. Paul T. Jr. Costa and Thomas A. Widiger (Wahington: American Psychological Association, 2002), 89–99, 95.
[51] Widiger et al., 96; see also Colin G DeYoung, Jordan B Peterson, and Daniel M Higgins, "Higher-Order Factors of the Big Five Predict Conformity: Are There Neuroses of Health?," *Personality and Individual Differences* 33, no. 4 (2002): 533–52; Wilmot and Ones, "Agreeableness and Its Consequences."
[52] DeYoung, Peterson, and Higgins, "Higher-Order Factors of the Big Five Predict Conformity," 548.
[53] Nurcan Alkış and Tuğba T. Temizel, "The Impact of Individual Differences on Influence Strategies," *Personality and Individual Differences* 87 (2015): 147–52, 105; cf. Helen J. Wall et al., "Personality Profiles and Persuasion: An Exploratory Study Investigating the Role of the Big-5, Type D Personality and the Dark Triad on Susceptibility to Persuasion," *Personality and Individual Differences* 139 (2019): 69–76.
[54] Zagzebski, *Virtues of the Mind*, 152; Roberts and Wood, *Intellectual Virtues*, 258; Abrol Fairweather, "Epistemic Motivation," in *Virtue Epistemology: Essays on Epistemic Virtue and Responsibility*, ed. Abrol Fairweather and Linda Zagzebski (New York: Oxford University Press, 2001), 63–81, 74-5.
[55] Fairweather, "Epistemic Motivation," 74.
[56] Brooke A. Stipelman et al., "The Role of Team Personality in Team Effectiveness and Performance," in *Strategies for Team Science Success: Handbook of Evidence-Based Principles for Cross-Disciplinary Science and Practical Lessons Learned from Health Researchers* (Cham: Springer, 2020), 189–96.
[57] Alkis Kotsonis, "Epistemic Collaborativeness as an Intellectual Virtue," *Erkenntnis* 88, no. 3 (2023): 869–84, 874.

[58] Kotsonis, 881.
[59] Roland R. Griffiths et al., "Psilocybin Can Occasion Mystical-Type Experiences Having Substantial and Sustained Personal Meaning and Spiritual Significance," *Psychopharmacology* 187, no. 3 (2006): 268–83; Roland R. Griffiths et al., "Mystical-Type Experiences Occasioned by Psilocybin Mediate the Attribution of Personal Meaning and Spiritual Significance 14 Months Later," *Journal of Psychopharmacology* 22, no. 6 (2008): 621–32.
[60] Psilocybin is a "classical," serotonin 2A agonist psychedelic substance. It is one of the major psychoactive components in the Psilocybe genus of fungi, whose members are more commonly known as magic mushrooms.
[61] See also Katherine A MacLean, Matthew W Johnson, and Roland R Griffiths, "Mystical Experiences Occasioned by the Hallucinogen Psilocybin Lead to Increases in the Personality Domain of Openness," *Journal of Psychopharmacology* 25, no. 11 (2011): 1453–61.
[62] Robin L. Carhart-Harris et al., "The Paradoxical Psychological Effects of Lysergic Acid Diethylamide (LSD)," *Psychological Medicine* 46, no. 7 (2016): 1379–90.
[63] D. Erritzoe et al., "Effects of Psilocybin Therapy on Personality Structure," *Acta Psychiatrica Scandinavica* 138, no. 5 (2018): 368–78.
[64] Ayahuasca is a psychedelic brew that is traditionally used by indigenous groups in the Amazon and Orinoco basins. It often includes the leaves of the Psychotria viridis shrub and the stems of the Banisteriopsis caapi vine. The former contain the psychedelic substance N,N-Dimethyltryptamine (N,N-DMT), while the latter contain chemicals that may act as monoamine oxidase inhibitors (MAOi), which essentially allow DMT to become orally active.
[65] Nigel Netzband et al., "Modulatory Effects of Ayahuasca on Personality Structure in a Traditional Framework," *Psychopharmacology* 237, no. 10 (2020): 3161–71.
[66] Brandon Weiss et al., "Examining Psychedelic-Induced Changes in Social Functioning and Connectedness in a Naturalistic Online Sample Using the Five-Factor Model of Personality," *Frontiers in Psychology* 12 (2021).
[67] The authors in this study suggest that one explanation for these results is that participants in the study may already were above-average with respect to these measures, but not with respect to the critical/quarrelsome component. Weiss et al., 14.
[68] It might be useful to stress, at this point, that I do not claim that psychedelic experiences are the *only experiences* that can lead to drastic and rapid changes in our epistemic characters. Many experiences, from trauma to ecstasy, can result in significant changes in character – epistemic or otherwise. However, psychedelics are at least somewhat unique in that they can constitute a valuable methodological paradigm for research into the mechanisms of real-life, rapid characterological change.
[69] See Cadenas, "Can Psychedelic Experience Lead to Knowledge?" for similar conclusions.
[70] For a review, see José Carlos Bouso et al., "Serotonergic Psychedelics and Personality: A Systematic Review of Contemporary Research," *Neuroscience & Biobehavioral Reviews* 87 (2018): 118–32.
[71] Robert C. Roberts, "Will Power and the Virtues," *The Philosophical Review* 93, no. 2 (1984): 227–47; cf. Zagzebski, *Virtues of the Mind*, ch. 2.
[72] This also means that my suggestion is immune to a certain line of situationist critiques of virtue epistemology, according to which we have good empirical reasons to doubt that most people possess epistemic virtues. For, as I have stressed, nothing of what I have said so far commits us to thinking that the virtues are easily acquired with or without the use of psychedelic substances.
[73] Brian D. Earp, "Psychedelic Moral Enhancement," *Royal Institute of Philosophy Supplement* 83 (2018): 415–39, 425-6.
[74] See Vince Cakic, "Smart Drugs for Cognitive Enhancement: Ethical and Pragmatic Considerations in the Era of Cosmetic Neurology," *Journal of Medical Ethics* 35, no. 10 (2009): 611–15; Masud Husain and Mitul A. Mehta, "Cognitive Enhancement by Drugs in Health and Disease," *Trends in Cognitive Sciences* 15, no. 1 (2011): 28–36; Hazem Zohny, "The Myth of Cognitive Enhancement Drugs," *Neuroethics* 8, no. 3 (2015): 257–69.
[75] I am grateful to Haggeo Cadenas, Arnon Cahen, Matt Fulkerson, Kerry McKenzie, Rob Lovering, and Dana Nelkin for reading earlier drafts of this chapter, and for providing extremely helpful and generous comments.