

MYSTICAL EXPERIENCES AND THE MCI HYPOTHESIS: COGNITIVE SCIENCE OF RELIGION'S LIMITATIONS IN EXPLAINING MYSTICAL BELIEFS*

EXPERIÊNCIAS MÍSTICAS E A HIPÓTESE MCI: LIMITAÇÕES DA CIÊNCIA COGNITIVA DA RELIGIÃO AO EXPLICAR CRENÇAS MÍSTICAS.

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ABSTRACT

In this paper an argument is presented against one of the mainstream theories in the cognitive science of religion, the Minimal Counterintuitiveness Hypothesis (MCI). The MCI hypothesis explains the adherence of religious beliefs as a function of the degree of counterintuitiveness of the concepts figuring in the belief's content. According to MCI, religious beliefs are adherent because they deploy concepts that are moderately counterintuitive, i.e., concepts that break a small number of our natural expectations about the world. We purport that this explanation is hypercognitivist: it neglects the role of non-cognitive states in the explanation of adherence. Though MCI might effectively explain the adherence of some religious beliefs, there are religious beliefs out there whose adherence seems to be much better accounted for by reference to emotions and feelings, which the MCI hypothesis is silent about. One such example, we submit, is that of beliefs prompted by mystical experiences, whose adherence don't seem to be satisfactorily explained without reference to affective states present in the experience.

KEYWORDS: MCI hypothesis; mystical experiences; spiritual oneness; cognitive science of religion; emotions.

RESUMO

Neste artigo é apresentado um argumento contra uma das principais teorias na ciência cognitiva da religião, a Hipótese da Contraintuitividade Mínima (MCI). A hipótese MCI explica a aderência de crenças religiosas em função do grau de contraintuitividade dos conceitos que figuram em seu conteúdo. De acordo com a hipótese MCI, as crenças religiosas são aderentes porque utilizam conceitos que são moderadamente contraintuitivos, ou seja, conceitos que quebram um pequeno número das nossas expectativas naturais sobre o mundo. Afirmamos que esta explicação é hipercognitivista: ela negligencia o papel dos estados não cognitivos na explicação da adesão. Embora a hipótese MCI possa explicar eficazmente a aderência de algumas crenças religiosas, há crenças religiosas cuja aderência parece ser mais bem explicada por referência a emoções e sentimentos, sobre os quais a hipótese MCI é omissa. Um exemplo, sustentamos, é o das crenças motivadas por experiências místicas, cuja aderência não parece ser explicada satisfatoriamente sem referência aos estados afetivos presentes na experiência.

PALAVRAS-CHAVE: hipótese MCI; experiências místicas; unidade espiritual; ciência cognitiva da religião; emoções.

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1 PRELIMINARY REMARKS

The discussion brought about here concerns the cognitive science of religion (CSR). CSR is a relatively new approach in the studies of religion, born in the final years of the 20th Century through the work of scholars such as Thomas and Robert McCauley (1990), Pascal Boyer (1994a, 1994b), Barret and Keil (1996), amongst others. It was, from the very beginning, a multidisciplinary approach, insofar as it incorporated into the study of religion concepts and methods imported from mainstream cognitive science, as well as from contemporary philosophy of mind, epistemology and philosophy of science.

CSR's biggest interest revolves around questions pertaining to religious belief – how this type of belief is formed, what makes it different from other varieties of intentional state, why it is so prevalent across cultures, and so forth. Because CSR is a predominantly western field of studies, the notion of “religious belief” within this discipline is normally equated with belief in God or in other supernatural entities, a trait that is very prototypical of western religious traditions. Most of the times, thus, what CSR scholars are trying to do is to account for how belief in god or other god-like entities (such as spirits and angels) is formed, maintained and transmitted.

Now, some varieties of religious belief both in the west and in the east appear to resist being accounted for by CSR's gold standard hypothesis, the Minimal Counterintuitiveness Hypothesis (MCI). Roughly, MCI is an hypothesis aimed at explaining why religious beliefs are so adherent, that is, so memorable, prevalent across cultures (as well as across time), difficult to abandon, for those who have them; and capable of eliciting long-lasting changes in attitude and behaviour, for those who have been converted, or acquired them at some later point in their lives. In other words, MCI aims to explain why religious beliefs “stick”. The reason why religious beliefs “stick”, according to MCI, is that they involve concepts that are *counterintuitive*, in a very specific sense: not too little, but also not too much.

In this paper, we are going to discuss one case of religious belief whose adherence doesn't seem to be satisfactorily explained by MCI. Here is the outline for the paper. In section 2, we present in greater detail and in a more technical fashion the scope of the MCI hypothesis. In section 3, we present the challenge posed to MCI by Spiritual Oneness, a belief commonly held by subjects upon undergoing the so-called mystical experiences. In section 4 we discuss elements that, we submit, any explanation of why Spiritual Oneness “sticks”

should make reference to: the affective elements of mystical experiences. We conclude, in section 5, by briefly reviewing the steps taken and pointing to some of the ways CSR could make up for the absence of affective elements within MCI.

2 THE MCI HYPOTHESIS

The MCI hypothesis has been advanced by authors such as Keil (1989), Barrett (2000, 2004) and Boyer (1994a, 2001), and is one of the gold standard theories within CSR. Roughly, this hypothesis submits that religious beliefs are beliefs whose content involve concepts that are *minimally counterintuitive*. As Alles (2006, p. 329) remarks, a concept is said to be counterintuitive insofar as it fails to conform to some of the natural expectations we have about perceived reality, that is, to our folk physics, folk biology, and folk psychology.

Counterintuitiveness comes in degrees. A concept is said to be *highly* counterintuitive whenever it breaks a great number of our natural expectations, though it might conform to a small number of them. By contrast, a concept is said to be *minimally* counterintuitive whenever it conforms to a great number of or natural expectations, and breaks only a small number of them.

Now, typically, religious ideas are very adherent, insofar as believers “stick” to them and are not very likely to abandon them, even in the face of counter evidence. In addition to being “sticky”, those ideas are very memorable and evocative, which makes them prone to be handed down to the next generations. Other ideas, not so much. They don’t tend to “stick” in this way. What renders an idea “sticky”, in this sense? According to MCI, it is precisely the minimal counterintuitiveness of the concepts it deploys.

Religious beliefs, as understood by CSR, are beliefs about agents. For a religious belief *b* to be adherent, thus, according to MCI, the concept *C* representing the entity that *b* is about has to be minimally counterintuitive. We can make sense of this by means of a quick comparison between some concepts. Consider the following three concepts, borrowed from Barrett (2008, p. 151-152):

BUFFALO_(A), an invisible buffalo

BUFFALO_(B), an invisible buffalo that is immortal, made of steel, experiences time backwards, fails to exist on Saturdays, gains nourishment from ideas, and gives birth to kittens

BUFFALO_(C), an ordinary buffalo

According to MCI, $\text{BUFFALO}_{(A)}$ ¹ is less counter-intuitive than $\text{BUFFALO}_{(B)}$, but more counter-intuitive than $\text{BUFFALO}_{(C)}$. Therefore, $\text{BUFFALO}_{(A)}$ is more adherent than both $\text{BUFFALO}_{(B)}$ and $\text{BUFFALO}_{(C)}$. That's because $\text{BUFFALO}_{(A)}$ breaks just one folk biology expectation, the expectation that animals are visible. $\text{BUFFALO}_{(B)}$, in turn, breaks several folk biology expectations about animals. For instance, that animals are mortal, that animals are liable to give birth to (and have themselves been birth from) animals of the same species; that animals are made of flesh and bone and require calories in order to stay alive; that animals (just as any other particular physical entity) don't cease to exist during a certain period of time and then go back to existing, and so forth. Whilst $\text{BUFFALO}_{(B)}$ breaks too many of our natural expectations, $\text{BUFFALO}_{(C)}$ breaks none.

That is to say, whilst $\text{BUFFALO}_{(B)}$ is highly counterintuitive, $\text{BUFFALO}_{(C)}$ is not a counterintuitive concept at all. Only $\text{BUFFALO}_{(A)}$ is what MCI terms a *minimally counterintuitive* concept, with respect to what we expect of buffaloes. It breaks out natural expectations not too much, nor not at all, but to the "optimal" degree – the degree that optimizes adherence, or the "stickyness", of the concept. As a result, $\text{BUFFALO}_{(A)}$ is more likely to figure in the content of a religious belief than both $\text{BUFFALO}_{(B)}$ and $\text{BUFFALO}_{(C)}$.

In fact, the adherence of many mainstream religious beliefs appears to be successfully accounted for in those terms. Take, for instance, the belief in angels. The concept ANGEL is counterintuitive precisely in the sense outlined by MCI. An angel is a being with wings and certain special powers, but it is otherwise similar to a human being, in terms of the form of its body, the possession of intelligence and a will, and so forth. Therefore, ANGEL breaks our intuitive expectations about what exists in the natural world (we don't naturally expect to see creatures with human-like form, but with wings, every time we go out, for instance). But it doesn't break those expectations to a great extent, that is, it is not a completely alien concept. It breaks some of our natural expectations, but it also conforms to a great many of them. So much so that if at some point we see an angel, we are still capable of grasping it to a reasonable extent: it is a creature with human-like form, but with wings. Contrast that to $\text{BUFFALO}_{(B)}$. If we ever find ourselves before a creature that matches that description, chances are we are not even going to be able to grasp it, i.e., to understand that it is an exemplar of the concept $\text{BUFFALO}_{(B)}$. The concept is so intricate and complex that we might as well just have forgotten about it, by then.

¹ In this paper we are using small capitals to write concepts down.

As Boyer (1994b, p. 121-122) remarks, having a small number of counterintuitive properties helps the spread of a concept, by helping it stand out against a background of ordinary concepts (the ones that, like BUFFALO_(C), don't break our expectations at all) while, at the same time, making it more attention-grabbing, more memorable and more likely to be transmitted within culture than the highly counterintuitive ones (the ones that, like BUFFALO_(B), break our expectations in a dramatic fashion). Belief in angels, to stay with the same religious example, is extremely adherent. It is no wonder these iconic supernatural entities appear widely across Christian and Jewish literature and so many people actually believe in them. In 2023, 69% of the population in the United States were found to believe in them².

Now, a further point worth highlighting is that there is a reason why minimal counterintuitiveness is linked to adherence, and that has to do with evolution. The roots of the MCI hypothesis run deep into evolutionary theory, as CSR scholars by and large hold that religious beliefs as shaped by evolutionary pressures (Barrett, 2000; Boyer, 1994a).

Several research efforts in the field have corroborated the idea that human beings are equipped from birth with cognitive devices for detecting things that are important to us, such as human faces and intentional agency (Baron-Cohen, 1998, p. 50-55). Because our chances of survival increase if we are able to identify potential allies as well as potential enemies, detecting human faces, for instance, is of the essence, that being why we are wired to have our attention drawn to certain patterns and shapes that are typical of human faces. Likewise, detecting agency is paramount, for advantage is gained when one knows who did what, or who could do what, and in what circumstances.

The thing with those cognitive devices, however, is that they are hyperactive. Our face detection device, for instance, is activated in the presence of human faces *as well as* in the presence of other physical stimuli that resemble the characteristic patterns and shapes of faces, such as clouds and mountains (Barrett, 2004; Guthrie, 1993), even though the idea that a mountain with a face is counterintuitive. Likewise, we tend to over-attribute agency. Our detection device is mostly triggered in the presence of events that are in fact intentional, but also, sometimes, in the presence of events that are not. If you're walking in the midst of a jungle at night and you hear a noise, you're most likely than not going to think there is a wild

² The poll is authored by AP-NORC Center for Public Affairs Research, an independent global news organization dedicated to factual reporting and tied to the University of Chicago. Their article can be read at <https://apnews.com/article/religion-poll-belief-angels-devil-bee64258d6a47067a046ba7f3c50933a>.

beast and you should watch out (even when in fact it was just a branch falling off a tree). The device operates under the “better safe than sorry” policy: it detects agency there because if there is an agent (a panther, for instance) and you are not mindful, your odds of survival are substantially diminished, so it is better to assume that there is a panther when there is none, than the other way around.

According to CSR, religious belief (understood as belief in special entities, as mentioned before) is by and large a by-product, or a secondary effect, of the same cognitive-social skills that, in the form of those devices, play the role of enhancing safety and survival, when they happen to be hyper-triggered. That’s how people end up thinking that an earthquake, for instance, came *to* punish them (and was therefore produced *by* a punishing agent, like a dissatisfied God); rather than thinking that the earthquake simply happened. People tend to think a dissatisfied God is behind the event as opposed to nothing, in spite of that conclusion being counterintuitive. The bottom line here is that beliefs with counterintuitive contents are produced by mechanisms that are evolutionary advantageous, so that also helps to explain why they are adherent.

Notwithstanding, there are certain religious beliefs out there that are adherent but that don’t deploy concepts that are minimally counterintuitive in the sense outlined by MCI. One of such beliefs is Spiritual Oneness.

3 SPIRITUAL ONENESS

One example of a religious belief that is very adherent but not counterintuitive in the terms specified by MCI is Spiritual Oneness, the belief in the absolute unity of the cosmos. Roughly, it is the belief that there is “[a] spiritual interconnectedness and essential oneness of all phenomena, both living and non-living” (Garfield *et al.*, 2014, p. 357); and that everything else is an illusion, or a mistake. It is not altogether uncommon for people that have this belief to express it by means of the sentence “all is one” (Pahnke, 1969). Belief in Spiritual Oneness is held in the west especially by subjects that have undergone a *mystical experience* of some description, even though it is also found within (and the concepts used to describe them possibly originated from) some of the biggest eastern religious traditions³.

³ Reference to the ideas underpinning Spiritual Oneness is found within relevant literature pertaining some of the greatest eastern traditions, such as Hinduism, Buddhism and Taoism. For instance, Advaita Vedānta (a branch

A mystical experience is any experience that is felt as being immensely meaningful and profound, on the one hand, and very difficult to understand or describe with usual language, on the other hand. It is usually short-lived, unrepeatable, and shakes some of the subject's prior conceptions and views. Those experiences are normally intense, and intensely joyful. "Awe" and "wonder" are English words frequently used to describe them. They are ephemeral and time is perceived differently, or experienced as "stop in time". They are "unitive", i.e., there is a sense of unity or integration of the subject with himself or with others. There is often a sense of paradoxicality or acceptability of descriptions that would otherwise be seen as incompatible (for instance, being in and out of one's own body). There is often a feeling of the strong presence of a "big other", which could be a spirit, God or even the cosmos. And the experience often results in positive and long lasting changes in attitude and behaviour⁴.

The aetiology of those experiences is significantly varied and not fully understood. This is because experiences with the characteristics mentioned above arise as a result of the subject's voluntary engagement with certain religious and secular practices, such as rituals, prayer and meditation; but they can also occur spontaneously, as a result of near-death experiences (Greyson, 1983; Pennachio, 1986), exposure to certain chemicals (Griffiths *et al.*, 2006), due to interaction with wild animals (Laski, 1968), to mention some.

Now, as Jones and Gellman (2022, §3.3) remark, because mystical experiences are out of the ordinary, and the unitive quality emphasized is strange to most of us, reports of them may very well be surprising or contrary to expectation, and they might deploy exotic concepts. In fact, one of the claims commonly found in reports of experiences with those characteristics deploy a very exotic one. Subjects claim that the experience gave them insight into the true nature of ultimate reality. Nevertheless, the "ultimate reality" they are talking about is something very different from what they were used to thinking of as being "reality", previous to the experience; and also very different from what most of us think of as being the

of Hinduism), is based on the belief in oneness of being or, simply, unity. That's the belief that "Reality is one" (Milne, 1997). *Advaita* is a Sanskrit word that literally translates as "not two". This doctrine is put forward in the Chāndogya Upaniṣad (6.2.1.), where it is stated that "everything that exists is one only, without a second" (Gambhirananda, 1992). What's more, Spiritual Oneness is remarkably similar in scope with one of Buddhism's core doctrines, the doctrine of dependent origination. According to this doctrine, "nothing originates or exists independently of anything else, and thus that all things we perceive as distinct are not ultimately separated from one another" (Laumakis, 2008). And a very similar idea is also found in Taoism, a Chinese tradition that is based on the idea of "being profoundly united with all things" (Zheng, 2015, p. 1253).

⁴ Those characteristics of mystical experiences have been discussed by William James (1982) and others, such as Stace (1960), Pahnke (1967), Happold (1970), Stange and Taylor (2008) and McNamara (2009).

“reality” (ordinary people, at least – people that haven’t undergone the relevant experience). The ultimate reality, according to those subjects, is the “absolutely unified cosmos”, or simply “the One”.

To have a better grasp of how this idea is spelled out, consider the reports below. The first one is Martin Ball’s report of his mystical experience elicited by entheogens. The second is Beatrice W.’s report of her near-death experience, upon suffering an acute allergic reaction and remaining unconscious for seven minutes. The third one is the report of the astronaut Russell Schweickart’s upon observing earth from outer space for the first time.

In my own nondual awakening and transformation, I experienced the truth that I am all of reality, without any divisions or separations. This means that I am (who I truly am, not the constructed identity of my ego that associates itself with a particular human vehicle that is identified as Martin) all beings (and all inorganic reality, as well). In truth, I am all beings right now. Every being that ever lived in the past was me; who and what I truly am. Similarly, every being that will be in the future is also me (Ball, 2012, p. 18).

This was pure freedom and simply the most natural thing of the world, as if I never had been doing anything else. And I knew, THAT’s my home, my original BEING, the original EXISTENCE of all of us, the home of ALL our souls. It’s from here that I come and it’s here that I belong. We all come from here and we will all come back here. A deeply familiar sensation of HOME and BELONGING pervaded me completely. I was ONE with everything. There are no earthly words giving me the possibility to describe this deeply anchored knowledge, this memory, and this beloved feeling of home⁵.

You identify with Houston and then you identify with Los Angeles and Phoenix and New Orleans. And the next thing you recognize in yourself is that you’re identifying with North Africa – you look forward to that, you anticipate it, and there it is. And that whole process of what it is that you identify with begins to shift. When you go around the Earth in an hour and a half, you begin to recognize that your identity is with that whole thing (Gallagher *et al.*, 2015, p. 33).

All three reports contain expressions of Spiritual Oneness, the belief “in the One”, or the idea “that all is one”. Let’s say the concept being deployed here is ABSOLUTELY UNIFIED COSMOS. This concept is very alien from the viewpoint of our natural expectations, since what we naturally expect is that there are many things out there, rather than just one “thing”, and that those things are different from each other, as well as different from us. Evolution equipped us with a built-in tendency to think of the outer world as being composed by

⁵ The report was given to the Near Death Experience Research Foundation. The full report is available at their website, through https://www.nderf.org/Experiences/1beatrice_w_nde.html. The words written in capitals were preserved from the original text.

individual things that are separated from one another and organizable according to their properties, in classes⁶. So, in our ordinary experience, worldly things are presented to us as separate and different, not unified. The apple sitting on top of my table right now in my office is perceived as an apple, and the table is perceived as a table, and not as being one with the apple. In the same way, the office is perceived as an office, or the space where both the table and the apple are, and not as blending into one with those objects, nor with myself⁷.

Regardless of whether or not mystical subjects are right in the metaphysical claims that they make, the point is that, intuitively, and naturally, we perceive things as separated. This is a huge survival skill, so it makes sense from an evolutionary viewpoint: if our ancestors hadn't been able to tell apples and other fruits from things that are not edible, for instance, they would have gone extinct long ago. Anything suggesting non-separation, such as ABSOLUTELY UNIFIED COSMOS is, therefore, breaking our intuitive and natural expectations.

Moreover, ABSOLUTELY UNIFIED COSMOS is breaking our expectations to a great extent, rather than just a little bit. And, contrary to other religious concepts, such as ANGEL, ABSOLUTELY UNIFIED COSMOS doesn't break some of our natural expectations *whilst* conforming to some – it breaks them much more so than it conforms, if it conforms at all, because it breaks virtually every natural expectation regarding virtually everything. It breaks the expectation that this apple is real, that this table is real, that you are real, and so and so forth. This concept is, thus, not just counterintuitive in CSR's terms, but extremely counterintuitive.

Being extremely counter-intuitive, it should not be very adherent. Nevertheless, it is extremely adherent. So much so that subjects point to their realization of Spiritual Oneness as being the source of the dramatic changes in the way they see and understand the world that unfolds from the episode. Spiritual Oneness shapes the subject's outlooks on life, and on the world. For instance, Beatrice W., in the same report, upon answering to the question of whether or not she has experienced changes in her values and beliefs as a result of her experience, said that after the experience, material things had completely lost their value for

⁶ Literature on developmental psychology suggests that, by the age of 8 months, infants have the expectation that the objects they perceive (toys, people, cups, animals, and so forth) have existence of their own, even when they are not being observed. And by the age of 12 months they organize those objects in categories and label them (Latourette; Waxman, 2020).

⁷ This is given different names according to which precise aspect is under discussion. Sometimes it is referred to as "naïve realism", or "object permanence". In short, it is the awareness (or the belief, or the expectation) that things in the outer world have independent existence, that is, that they exist independent of our knowledge of them.

her. Martin Ball, likewise, asserted that his experiences enabled “actual liberation from the ego” (Ball, 2012, p. 27), where he understood the ego as being a noxious delusion; and he described this change of perspective as leading to a whole new outlook on social and environmental problems⁸. Astronaut Russell Schweickart stressed something very similar: that his experience made him realize that most of our conflicts and wars are pointless, and how much we need to love and care for each other instead. Several studies back up the claim that belief in Spiritual Oneness has clear psychological implications⁹.

Prima facie, a belief couldn’t have as strong psychological implications as these if the concept it deployed was not adherent. In other words, if the “thing” which Spiritual Oneness is about was too complex for subjects (too difficult for them to retrieve from memory, for instance, like $\text{BUFFALO}_{(B)}$, discussed in section 2, or if it was not attention grabbing enough, like $\text{BUFFALO}_{(C)}$), it is hard to picture how subjects could iteratively point to that “thing” as being in any way related to their psychological changes, like they do. Spiritual Oneness is consistently reported as having caused that many psychological consequences because (at least in part) the concept representing the “thing” this belief is about – ABSOLUTELY UNIFIED COSMOS – is adherent to the subjects whose belief it is.

It is clear, thus, that a concept such as ABSOLUTELY UNIFIED COSMOS’ adherence is not to be explained by its minimal counterintuitiveness. It is not a minimally counter-intuitive concept, after all; so minimal counterintuitiveness should not even be part of the explanation of its adherence. Something is, thus, missing from a good explanation of why this concept “sticks”.

⁸ “It’s not an overstatement to claim that the vast majority of the world’s problems are created by illusions and projections created by the ego. We live in a time where we collectively have the means and resources to clothe, house, feed, educate, and care for and support every human being on the planet. Yet the divisions, attachments, and projections of the ego have created a violent and divided world where a very few have nearly everything and the vast majority are left to struggle for what’s left over and compete amongst themselves along egogenerated lines of identity. If there’s one thing the world could genuinely use now, it’s individual’s getting over the petty concerns and attachments of their egos. As environmental and climate conditions worsen and economic divides become even more grossly distorted, the need for clarity and living in reality will only increase. We can either collectively live in the truth that All, indeed, is One, or we can suffer the results of our individual and collective delusions” (Ball, 2012, p. 29).

⁹ Diebels and Leary (2019) found that Spiritual Oneness amounts to a meaningful existential belief that has numerous consequences for people’s self-views, experiences, values, relationships, and behaviour. For instance, they found that it is associated with having an identity that includes distal people and the natural world, feeling connected to humanity and nature, and having values that focus on other people’s welfare. Gallagher *et al.* (2015, p. 101) discussed how the experience of oneness is related to self-transformation and perspectival (moral) shift, that is, how it motivates abandonment of one previously held world-views and embracing a whole new outlook. In a similar fashion, Garfield *et al.* (2014) found strong correlation between Spiritual Oneness and pro-environmental behaviour.

4 EMOTION AND FEELING

What is missing from an explanation of ABSOLUTELY UNIFIED COSMOS' adherence, we submit, is reference to affective components of the experiences in which the belief in whose content this concept figures is elicited. More often than not, as we have argued, belief in Spiritual Oneness arises as a result of the subject's undergoing a mystical experience of some description. It is after the experience that a concept such as ABSOLUTELY UNIFIED COSMOS starts to be evoked in the subjects' talk about the ultimate nature of reality. So there must be something in the experience's very makeup that makes this concept stand out, be recruited, and "stick". This something, we suggest, is emotion – a topic the MCI hypothesis is silent about.

First and foremost, there is a distinction to be drawn. As Diebels and Leary (2019, p. 463) remark, holding the belief that everything is one is distinct from directly experiencing a sense of oneness, and people may believe that everything is one at a cognitive level without having had an unitive, mystical experience. Ball (2012, p. 9) too emphasizes that belief in Spiritual Oneness brought about as a result of a mystical experience and acceptance of the core thesis underpinning Spiritual Oneness obtained at a purely intellectual level are two fundamentally different things. He says:

For example, intellectually, I could accept the fact that the computer and I are both made of atoms, which are themselves made of more fundamental sub-atomic particles, which are packets of vibrating energy. When contemplated at that level, the computer and I are both made out of the same "stuff," and intellectually, I could accept the proposition that we are "one" in that sense. Furthermore, I could also add in the knowledge that both the computer and I received our necessary molecules and atomic structures from the remains of exploding stars, so again, we are similar in that the identity of our constituent parts share a similar origin. [...] However, none of these intellectual propositions will necessarily change my experience of seeming to be an individual sitting at a computer that is, by all ordinary appearances, not myself. Intellectual knowledge itself, even if meditated upon for years, will not necessarily alter my fundamental perspective of who or what I believe myself to be. It's perfectly possible to "know" or "believe" that All is One, but that doesn't make it an experiential reality. It is merely an intellectual proposition and still locked into dualistic dynamics of thought (Ball, 2012, p. 9-10).

What concerns us here, for the purposes of the present paper, is mystical belief in Spiritual Oneness, that is, belief in Spiritual Oneness that comes as a result of directly experiencing a sense of oneness, as a part of a mystical experience, as the examples from section 3 made clear. The reason for that is that we are interested in understanding religious,

or spiritual, beliefs. What we are interested in explaining is why subjects that have undergone a mystical experience “stick” to the very idea of an absolutely unified cosmos and start to refer to this idea as being the reason behind their change in outlook before life. When a subject simply accept a proposition that everything is one on purely intellectual grounds, without a meaningful experience to back it up, his doxastic attitude doesn’t concern us here, on account that belief, in this case (if it is belief, at all), is not distinctively religious, nor spiritual.

Now, a key point about mystical experiences is that they are strongly aesthetic, as their reports make explicit. They are particularly pervaded by the emotion of awe, a topic in which cognitive psychology has been increasingly interested.

Scientific understanding of the particular features of mystical experiences is by and large informed by the traits identified and agreed upon by William James (1982) and Walter Stace (1960). Their descriptions were refined, validated and culminated in quantitative tools for empirical research. One of those tools is the Pahnke-Richards Mystical Experience Questionnaire (Pahnke, 1969)¹⁰. This questionnaire is designed to assess experiences as mystical or not (or mystical to what degree), by providing scores for each of the traits of mystical experiences. One of such traits is “sense of sacredness”, which is precisely defined in terms of awe. This is how Pahnke defines sense of sacredness: “Sense of Sacredness is a nonrational, intuitive, hushed, palpitant response of awe and wonder in the presence of an inspiring Reality. The main elements are awe, humility, and reverence” (Pahnke, 1969, p. 7)¹¹.

What exactly is awe? It is the emotion one experiments in the face of something awesome, that is, something amazing, sublime or incredible. Awe has two elements (Keltner;

¹⁰Another tool that has been developed is the Mystical Scale (Hood *et al.*, 2001; Spilka *et al.*, 2005). It is a 32-item questionnaire that assesses mystical experiences by grouping the traits into blocks, where the interpretation that the subject gives to his experience is taken into account separately from the perceptual elements. The scale demonstrates cross-cultural generalization and enjoys prestige in the field of psychology of religion.

¹¹The other traits of mystical experiences, as organized by Pahnke, are unity (a sense of cosmic unity, in which the ego disappears and the subject becomes aware that he is part of something greater and vaster than himself); transcendence of time and space (the subject feels beyond past, present, and future); deeply felt positive mood (joy, blessedness, peace, and love, felt to an overwhelming degree of intensity, often accompanied by tears); intuitive knowledge (feeling of illumination, gain of insight into the ultimate nature of reality); paradoxicality (sense of “identity of opposites” which, although it defies rational interpretation, it is understood by the subject as making sense); alleged ineffability (the experience is felt to be beyond words, non-verbal, and impossible to be fully described); transiency (the experience doesn’t last long, but leaves an after-glow); and persisting positive changes in attitudes and behaviour (from the experience on wards, subjects feel and act differently, more positively, are toward themselves, others, life etc.).

Haidt, 2003): a perception of vastness followed by a demand for accommodation, which may or may not be met. It typically occurs in the context of experiences marked by a phenomenological richness, that is, when that which is being perceived is endowed with detail, beauty and grandeur, of the sorts that cannot be fully accommodated by the subjects' present conceptual scheme, nor described by him with his present vocabulary.

In other words, awe is an emotion that comes about when the content of one's experience is more detailed, vast or wonderful than his sense-making resources. That happens when the subject's perceptual faculty, that is, the abilities that enable him to capture the detail, beauty and grandeur (of whatever it is that happens to be before him) are broader than his abilities to conceptualize the thing. This leads to the idea that awe is the emotion that comes about specifically when our usual conceptual repertoire does not entirely exhaust all the content delivered to us in perception (Evans, 1982, p. 139-156). As a result, the subject feels pressure to accommodate the content of the experience by means of atypical conceptual articulations, possibly by resorting to paradoxical concepts or by proclaiming the object's ineffability, that is, the impossibility of fully describing it by means of the available vocabulary. Keltner and Haidt (2003) argue that this failure to fit into a schema causes the emotion of awe. This emotion facilitates the subject's attempt to accommodate, for example by updating his schemata, but this accommodation may not occur.

Awe, in the terms described above, has been shown to be a component of a myriad of experiences, not just the mystical ones. For instance, it has been reported by subjects upon attending lectures in Mathematics (Rood, 2003), upon watching stunning images of natural landscapes (Valdesolo; Graham, 2014) as well as in response to a charismatic leader (Keltner; Haidt, 2003). That is to say, experiences of awe are varied and they seem to constitute a broad category of aesthetic experiences.

Here, then, is our hypothesis: experiences of awe are a broader category of which unitive mystical experience of the sort we have been investigating is a sub-set. If awe can explain why people's behaviour and outlook on life change from the aesthetic experience (the experience of awe) onwards, it can also explain why people's behaviour and outlook on life change when they have an unitive mystical experience, from the experience onwards; and why they resort to a concept as exotic as ABSOLUTELY UNIFIED COSMOS in their attempts to conceptualize, or to make sense of, what they've experienced. That is to say, awe plays a crucial role in explaining the concept's adherence. It is adherent because it is the concept that

subjects keep coming back to in their attempts to meet the demand for accommodation, which is an inherent demand of the experience of awe. Subjects resort to this concept because it the best one available to meet this demand.

The question, then, comes down to: can awe truly explain why people's behaviour and outlook on life change from the aesthetic experience onwards? Empirical studies strongly suggest yes. A strong correlation has been found between experiences, mystical or not, that are strongly marked by awe, on the one hand, and transformations in people's lives due to reorientation of their goals and values, on the other hand (Keltner; Haidt, 2003). In fact, Keltner and Haidt(2003) made the case that events that generate the emotion of awe can be one of the fastest and most powerful vectors of change and personal growth.

Three types of changes have been found to be correlated with the emotion of awe. The first one is social effect. Awe generates a sense of belonging towards other people (Van Cappellen; Saroglou, 2012); an openness to identification with broad groups, such as "humanity" or "inhabitants of the earth", in addition to strongly pro-social behaviours (Piff *et al.*, 2015; Shiota *et al.*, 2007).

The second variety of change generated by awe is a lowered focus on oneself, or on one's own concerns. Awe tends to deflate self-centredness in the face of the world and others. The "small self" hypothesis of Piff *et al.* (2015) postulates that the vastness and greatness present in experiences of awe leads to a feeling of smallness in relation to stimuli. In this way, awe provides a shift of attention to larger entities and, consequently, a lack of interest regarding merely individual demands and needs (Piff *et al.*, 2015, p. 884). Piff *et al.* (2015) have also shown that experiences of awe can profoundly alter the agent's conception of himself, in such a way as to consent to phrases such as "I feel small or insignificant", "I feel the presence of something greater than I".

The third variety of change generated is this. Awe has been found to cause religious and spiritual feelings (Sundarajan, 2002; Valdesolo; Graham, 2014). Valdesolo and Graham (2014) showed participants videos of nature, such as grandiose and sweeping views of plains, mountains and canyons. The control group watched nature videos without the grandiose scenes. Participants who watched the stunning nature scenes later reported greater faith in divine providence than subjects in the control group. Using a similar method, Saroglou *et al.* (2008) found that people who saw natural beauty reported higher levels of spirituality.

If awe is this powerful an emotion, it seems reasonable, then, that the awe present in an unitive mystical experience is one of the elements responsible for the long-lasting changes in peoples outlooks on life reported. As we've briefly argued in the final paragraphs of previous section, the fact that an experience is transformative, and specially the fact that it is pointed to as being the cause of transformations, is indicative of the adherence of the concepts deployed. A concept such as ABSOLUTELY UNIFIED COSMOS is adherent, since it keeps being evoked by subjects as part of the explanation they give for the changes in their lives that unfolded from the mystical episode. If we are right, then awe also explains *why* such concept keeps being evoked: it keeps being evoked because it is the concept that best satisfies the demand for accommodation, that is inherent to the very experience.

5 FINAL REMARKS

In its current state of art, CSR doesn't seem to be fully capable of accounting for the adherence of concepts deployed in beliefs prompted by mystical experiences, such as Spiritual Oneness, the belief in the absolute unified cosmos. CSR has a theory aimed at explaining the adherence of concepts, the so-called MCI hypothesis. According to MCI, the adherence of a concept is a function of its minimal counterintuitiveness.

A concept such as ABSOLUTELY UNIFIED COSMOS, however, presents a challenge to such hypothesis, insofar as it is not minimally counterintuitive, in spite of being very adherent. Moreover, the adherence of such a concept seems to depend a lot on what the MCI hypothesis does not take into account, namely: the emotional aspect of the experience in which the belief in whose content the concept participates (Spiritual Oneness) is generated.

There is one specific emotion that seems to play a major role, the emotion of awe. Awe manifests itself in the form of a sensation, or feeling, of an absence of conceptual resources that would enable one to assimilate the content of an experience, when what is being experienced is too vast, or too awesome. Faced with the absence of such conceptual resources, the experience presses for the accommodation of what is being perceived by means of new concepts, that might be exotic, or unusual, such as ABSOLUTELY UNIFIED COSMOS. This concept keeps being evoked and pointed to because it is the one the better represents the entity, or the "thing", the experience is about. In other words, this concept is very adherent

because it keeps being evoked, and it keeps being evoked because it fulfils a demand that is inherent to every experience of awe.

We conclude, therefore, by submitting that the MCI hypothesis should be revised on account that the explanation it offers for why concepts are adherent is hypercognitivist: it neglects the role of affective states in the explanation of adherence. Though MCI effectively explains the adherence of some religious beliefs, there are religious beliefs out there whose adherence seems to be much better accounted for by reference to emotions and feelings.

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