Research Article

Spirit-beliefs Debunked?

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Abstract | In this paper, I critically evaluate the claim that modern scientific theories debunk belief in spirits. I reconstruct the argument as an argument for the conclusion that belief in spirits is unreliably formed. In order to assess the argument I look closer at three well-known explanations of how people form belief in spirits. They are: the Hyperactive Agency Detection Device, an explanation that points to the effect of infrasound, and an explanations that points to the effect of magnetic variance. I argue that the argument is not convincing because all three explanations are not sufficiently backed up by empirical data and do not have a sufficiently broad scope.

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Introduction

All over the world people believe in spirits. Spirits are generally considered to be humanlike invisible beings. Some believe they are deceased people who continue to roam the earth. Others believe that they are divine or semi-divine beings that try to contact humans. Some scientists proposed explanations for how belief in spirits is formed. This paper investigates whether the psychological or neurological processes that give rise to belief in spirits are reliable and therefore debunk belief in spirits.

Belief in spirits can be formed in multiple ways. Spirit-beliefs are often transmitted orally in cultures where spirit-beliefs are widespread. Sometimes spirit-beliefs are formed to explain some phenomenon. [1] The argument in this paper does not apply to beliefs that are formed in this way. Instead, I investigate whether spirit-beliefs that are formed after putative experiences of spirits are reliable.

Some authors argued that spirit-beliefs formed after putative experiences of spirits are unreliably formed. They point to one or more scientific explanations for why people had experiences of spirits and argue that the explanations cast doubt on the rationality or justification of spirit-beliefs. Often the arguments are short and underdeveloped. Jonathan Jong, Christopher Kavanagh and Aku Visala argue that some scientific explanations could present a threat to other religious beliefs than classical theism (Jong, Kavanagh, and Visala 2015). Robert Nola argues that spirit-beliefs are produced by a mechanism that is off track (Nola 2013). Some defenders of explanations of spirit-beliefs make brief suggestion along similar lines. For example, Richard Wiseman et al. write: "[Our] findings strongly suggest that (…) alleged hauntings do not represent evidence for 'ghostly' activity, but are instead the result of people responding (…) to 'normal' factors in their surroundings." (Wiseman et al. 2003: p.209)

Arguments that point to scientific explanations

to argue against the rationality or justification of some belief are often called 'debunking arguments'. Debunking arguments usually attempt to show that a belief is formed by a process that does not reliably produce true beliefs. Being formed by an unreliable process is regarded as a defeater for a belief. Often a distinction between rebutting and undercutting defeaters is made. [2] A rebutting defeater is roughly a reason for accepting the negation of a proposition and an undercutting defeater a reason that casts doubt over a proposition. Showing that a belief is produced by an unreliable process amounts to an undercutting defeater.

In this paper, I spell out a debunking argument for the conclusion that spirit-beliefs are not justified. The argument relies on scientific explanations to claim that spirit-beliefs formed after putative spirit-experiences are unreliable. Since this constitutes an undercutting defeater for these spirit-beliefs, it renders them not justified, even if spirits do in fact exist. After laying out the argument, I argue that it is unconvincing because the explanations to which it refers have a too narrow scope.

This paper is structured as follows: I make some preliminary remarks in section 2. In section 3, I present the argument and in section 4 I criticize it. I end with some concluding remarks in section 5.

Preliminaries

Before discussing the argument, I define some key terms. They are 'cognitive mistake', 'spirit-experience', and 'unreliability'.

Cognitive mistake

Cognitive mistakes are mistakes by cognitive processes. Cognitive processes are those processes that contribute to the formation of beliefs. Theories about these processes constitute the domain of the cognitive sciences.[3] Two well-known processes are the Theory of Mind and Sentence Processing. The Theory of Mind (ToM) is the mechanism that produces beliefs about other people's mental states. According to a dominant paradigm, [4] the ToM takes outward behavior (e.g. a frown or a smile) as input and postulates mental states to explain this behavior (e.g. the person is thinking or the person is happy). Another example is the mechanism [5] responsible for sentence processing. The mechanism operates incrementally, meaning that sentences are structured in the way they are perceived and not as a mere list of words. A sentence like 'Not all the targets were hit by the arrows' is therefore easier to process than a list of words like 'arrows by were of not of targets all the some hit'. [6]

Many (if not most) cognitive mechanisms often make mistakes. The ToM often mistakenly ascribes mental states to people. For example, face expressions of someone who is thinking are often mistaken for expressions of anger. People are also prone to interpret behavior as directed towards them. The mechanism responsible for sentence processing also makes mistakes. Paul Gorrell notes that because we structure sentences in the way they are perceived, we sometimes have difficulties in processing ambiguous sentences. For example, the sentence 'Ian knew the schedule was wrong' will often be interpreted wrongfully when the locator leaves a pause after 'schedule'. [7]

Cognitive mistakes need not always lead to false beliefs. Often mistakes by cognitive processes can be rectified by other cognitive processes. In our ToM-example, mistaken interpretations of facial expressions can be rectified by reasoning, prior knowledge or communication. When I see someone with a seemingly angry face, I will sometimes form the belief that she is in fact not angry because I know her well. I could also form a correct belief by asking her how she's feeling. Similarly, mistakes made in sentence processing can be rectified by reading the sentence slowly or repeatedly.

Spirit-experiences

Spirit-experiences are events where one or more subjects putatively see, hear or feel a spirit. What spirits are (or are believed to be) is hard to define. Some people report seeing vague person-like figures or have the feeling that someone is around without seeing anything. This suggests that spirits are usually considered invisible persons or persons that are hard to see. In some traditional cultures, spirits are believed to be deceased ancestors. In others, they are the personification of natural forces. Many people report having contact with spirits. I give some examples.

In her study of West-African Voodoo, Nadia Lovell writes about a man named Koffi. Koffi suffered from madness. When treatment did not work, Koffi had an experience of a spirit who told him to install an altar on behalf of the spirit and was assured that he would

be protected as long as he continued to care for the altar (Lovell 2002: p. 52).

Michael Mason describes his own experience with spirits worshipped in Cuban Santeria as follows: "I close my eyes, only to be assailed by images of the deities, especially Ochun. Sometimes she is smiling, sometimes dancing, sometimes sitting by a river. Sometimes she wears the face of a friend, and I feel the undeniable weight of love." (Mason 2002: p. 4) He also writes how initiation rituals in Santeria are aimed at creating lasting relationships with spirits and that many people attend rituals to alleviate discomfort (Mason 2002: p. 6).

Tamar Gordon discusses an experience of spirit possession in Tonga, Polynesia where a spirit possession was said to be due to the spirit loving a girl too much. She notes that the spirit was believed to long for companionship it has lost and entered the body of a living friend. The results are not always beneficial to the living. In the case described, the possessed woman acted so violently and excited that it took several people to hold her down (Gordon 1996: p. 56-57).

Unreliability

I take a process to be unreliable if it produces many false beliefs. This definition is in line with how 'reliability' is usually defined in contemporary epistemology. [8] I will not define more precisely how good the track record of a process must be. [9] Producing a small number of false beliefs certainly does not suffice. Most (if not all) cognitive processes occasionally produce false beliefs. Because they mostly produce true beliefs, they can properly be called reliable.

Clear examples of unreliable cognitive processes are cognitive biases. An example is the self-serving bias. Keith Campbell and Constantine Sedikides define the self-serving bias as: "[A tendency for] taking credit for personal success but blaming external factors for personal failure" (Campbell and Sedikides 1999) The bias thus makes people prone to believe that they deserve all praise for personal successes and do not deserve blame for personal failures. The self-serving bias thus clearly produces mostly false beliefs.

Assessing how many mistakes a cognitive process makes leads to problems of scope. Both examples of cognitive mechanisms I discussed above can on separate occasions be called both reliable and unreliable. While the ToM is rather reliable in normal interaction with people, it is unreliable when the domain is limited to interactions with subjects from exotic cultures. Sentence processing will also be unreliable when applied to avant garde literature while it is rather reliable for understanding textbooks. This problem resembles what is known in contemporary epistemology as the generality problem (Conee and Feldman 1998). [10] The generality problem is generally recognized as a very difficult problem for reliabilist epistemology and some doubt whether it can be solved. I will briefly return to this problem when discussing the argument below.

The example of the self-serving bias suffices to show that the operations of cognitive mechanisms can lead to false beliefs. Cognitive mistakes need not always result in false beliefs. Often the mistakes of one cognitive mechanism can be rectified or calibrated by other cognitive mechanisms. In the example of the self-serving bias, the subject can learn about the (erroneous) operations of the bias and overcome its deficiencies by reflecting on what actions she deserves blame or praise for. In this case, her belief is less likely to be false and hence not unreliably formed.

The Argument: Are Spirit Beliefs Unreliably Formed?

The argument I will discuss argues that spirit-beliefs are unreliably formed because they result from cognitive mistakes. Spirit-beliefs can be formed unreliably for other reasons as well but this falls outside the scope of this paper. [11] The argument for the unreliability of spirit-experiences goes as follows.

1. Some people have putative experiences of spirits.
2. Putative experiences of spirits involve cognitive processes that make cognitive mistakes.
3. There is no process that corrects the cognitive mistakes during spirit-experiences.
4. Beliefs formed after experiences that involve cognitive mistakes that are not corrected are unreliably formed.
5. Therefore, spirit-beliefs formed after spirit-experiences are unreliably formed.
6. Beliefs that are unreliably formed are not justified
7. Therefore, spirit-beliefs formed after spirit-

experiences are not justified.

The argument could come over as needlessly complicated. In the remainder of this section, I will unpack the premises in more detail. This I hope will show that a simpler argument would not have been sufficient.

The first premise is an empirical claim. The occurrence of spirit-experiences, where one or more subjects subjectively see, hear or feel a spirit, is widely attested by ethnographers. [12] Spirit-experiences are probably also not rare in western societies. A recent poll conducted among 515 Americans showed that one third of them believed in ghosts (Carlson 2000). It is likely that some of their beliefs are the result of a spirit-experience. [13] For my purposes it does not matter how widespread spirit-experiences are. The ethnographic data suggests that they are very widespread. If they are, my argument, if sound, potentially has more ramifications.

What are the cognitive processes involved in spirit-experiences? I will discuss 3 and how they are argued to make cognitive mistakes. The first cognitive process that is argued to give rise to spirit-experiences is the Hyperactive Agency Detection Device (HADD). The theory of the hyperactive agency detection device (HADD) has its roots in work by Stewart Guthrie (Guthrie 1993), but received its most elaborate defense from Justin Barrett (Barrett 2004). Barrett argues that the cognitive mechanism responsible for detection of agents is hyperactive. The mechanism is very easily triggered to form beliefs that some agent is around. Simple noises, like rustling of leaves, or ambiguous patterns, like shapes in the clouds, suffice to form beliefs that agents are around. According to Barrett, hyperactivity in agency detection was evolutionary beneficial. For our human ancestors who lived in a dangerous world with numerable predators and enemies out to kill them, it was much safer to be on guard. Detecting too many agents only leads to a small waste of energy while detecting one agent too few (for example a predator) could result in instant death. Therefore having a hyperactive agency detection device in the mind increases chances of survival.

According to Barrett, the operations of the HADD could easily lead to belief in invisible agents. Often the outputs of the HADD are checked, for example by scanning the environment. However, Multiple triggerings of the HADD without a visible agent around could lead to the belief that some invisible agent is causing the noises or patterns. According to Barrett, this could partially explain why people believe in spirits or even gods. Though Barrett is more reluctant, Stewart Guthrie unambiguously calls detection of invisible agents 'false positives'. [14] He thereby asserts that subjects are making mistakes when concluding that some invisible agent is around.

A second theory connects spirit experiences to the influence of low frequency sounds on perception, especially sound at a frequency of 19hz. I will call this the '19 hz theory'. The influence of low frequency sounds on seeing spirits was first discussed by Vic Tandy and Tony Lawrence following personal experiences of Vic Tandy himself. Vic Tandy worked in a lab that was believed to be haunted. People working there complained about feeling depressed, feeling uncomfortable or suffering from cold shivers. Some even claimed that they had seen strange beings. By coincidence, Vic Tandy discovered that a fan in the extraction system was emitting a low frequency noise of 19 Hz. This noise is unhearable by humans. After further investigation, Tandy found out that 19 Hz noise can make the human eye vibrate. The vibration can result in distorted perception and lead to seeing person-like figures (Tandy and Lawrence 1998). Tandy and Lawrence's theory, if true, shows that the human cognitive apparatus is making mistakes when concluding to strange beings too.

A third theory also explains spirit-experiences as resulting from cognitive mistakes in perception. The cognitive mistakes are argued to be caused by changes in magnetic fields. Michael Persinger speculates that changes in magnetic fields could have an effect on the temporal lobe, which could result in a subjective experience that something is present. Magnetic stimulation would cause transient, electrical micro seizures within the deep structures of the temporal lobes. The temporal lobes are linked with the subjective sense of the self. Persinger notes that deep brain structures, like those in the temporal lobe, are known to respond to stimulation by not representing the concurrent sensory input. In this case, the temporal lobes would not represent the input of the actual self but produce a distorted sense of the self, i.e. a sense of an external invisible self. The temporal lobes could be more receptible for micro seizures after life crises, drug use or energy deprivation Persinger argues.

Persinger suggests that changes in magnetic fields might be caused by tectonic stresses within the earth's crust. For his theory, Persinger claims that extraordinary similarities between some forms of epilepsy (which is associated with the temporal lobe) and spirit-experiences is evidence for his claim (Persinger 1985). Persinger conducted experiments where subjects' temporal lobes were stimulated by magnetic forces. In line with Persinger's prediction, the subjects reported experiences of a sensed presence (Booth and Persinger 2009). Though a replication of the experiment failed, Persinger and his team stand by their initial results. [15]

Others also conducted experiments that support Persinger's theory. Richard Wiseman and his team tested the role of magnetic fields in two experiments. They asked a number of people to walk around an area where some locations were famous for being haunted. Some walked in the allegedly haunted areas and some walked in other nearby areas as a control group. Participants who walked in the allegedly haunted areas indeed reported more unusual experiences (like feeling dizzy, headaches, sickness, shortness of breath, some form of 'force', a foul odor, a sense of presence or an intense emotional feeling) than participants who walked in other areas. Wiseman and his colleagues noted a significantly higher variance in magnetic field in the allegedly haunted areas.

All three theories state that at least one cognitive process that operates during spirit-experiences is making cognitive mistakes. [16] These cognitive processes that feature in all three theories are not error-prone in general. Agency detection is generally rather reliable since we usually have little problem identifying living creatures in our environment. Our perceptual abilities (which are allegedly tainted by both low frequency sounds and changes in magnetic fields) are usually quite reliable as well. Both could, however, be claimed to be prone to make mistakes in the circumstances where spirit-experiences occur. All three theories point to cognitive mistakes to explain why people have spirit-experiences. On the first theory, people could experience spirits because their agency detection device is hyperactive. On the second, people could see spirit-like figures because their eyes are vibrating as a result of low-frequency sounds. On the third, spirit-like figures could be seen because of some malfunction of the temporal lobe. On all three theories, the experiences were not triggered by an actual spirit.

Premise 3 is needed to rule out that the cognitive mistakes during spirit-experiences do not result in false beliefs. All three theories strongly suggest that cognitive processes make cognitive mistakes during spirit-experiences. We noted in section 2 that cognitive mistakes can be overcome by the operations of other cognitive processes or by other means. While in some cases the cognitive mistakes during spirit-experiences are probably overcome, for example by rationalizing the experience or not paying much attention to it, they likely will not in all cases. All three theories suggest that at least in some cases the cognitive mistakes during spirit-experiences will directly lead to spirit-beliefs.

Premise 4 states that beliefs formed after experiences that involve cognitive mistakes (that are left uncorrected) are unreliably formed. Cognitive mistakes make people prone to putatively experience beings or things that are not really there. The beliefs that are formed subsequently therefore do not reflect reality. If the theories I discussed above are true, cognitive mistakes make people believe some spirit was around while in fact there was nothing whatsoever. The cognitive processes thus lead to false beliefs

The intermediate conclusion 5 runs into a problem that resembles the generality problem (see section 1). Authors who raised the generality problem noted that it is difficult to know whether a belief is produced by a given process. Any belief might be realized in a number of ways. Therefore knowing that a process that produces the belief is unreliable does not exclude that the belief can be produced by another process. Below I will make a similar objection to this argument.

Proponents of the generality problem also note another problem. They note that assessing the reliability of a process can lead to radically different conclusions depending if the process is fine-grained or coarse-grained. We noted above that perception is usually reliable, but (allegedly) is not when vision is distorted by low frequency sound. This problem might not run as deep for this argument because we have a clear idea of the class of beliefs (i.e. spirit-beliefs) and the mechanisms that produce the beliefs (HADD, distorted vision due to 19 hz, or magnetic activation of the temporal lobe). All three mechanisms allegedly appear to be producing false beliefs when they produce

spirit-beliefs.

Premise 6 states that beliefs produced by unreliably processes cannot be justified. The premise states the main thesis of reliabilist accounts of justification. Though the account is not uncontroversial, [17] it is widely influential. I cannot do justice to the debate over reliabilist epistemology and its account of justification here. I will therefore accept premise 6 for the sake of the argument.

The conclusion follows from the five premises. If the premises are true, spirit-beliefs cannot be justified. Being justified is usually regarded as a necessary condition for a belief to constitute knowledge. Therefore, if the premises are true, spirit-beliefs cannot amount to knowledge.

Criticizing the Argument

Although the argument appears to be sound, I will argue in this section that the argument fails. The argument faces two problems. First, the theories have not been sufficiently corroborated by empirical data and second, the theories are not of broad enough scope.

Insufficient empirical data

The theory of the hyperactive agency detection device was proposed as a theory explaining religious belief. Religious belief is often read as 'belief in God'. Cognitive scientists therefore looked whether hyperactive agency detection indeed predicted belief in God. Some of their findings are also relevant for the question whether the theory predicts belief in spirits. Marc Andersen concludes in a recent review article that "Taken as a whole (…) experimental findings can hardly be said to support current theoretical models of the HADD." (Andersen 2017) Pascal Boyer and others argue that the cognitive mistakes generated by HADD are easily overridden and seldom lead to stable beliefs (Boyer 2002). In collaboration with John Lanman, Justin Barrett responded that HADD might not be immediately responsible for supernatural beliefs, but could still strengthen or encourage supernatural beliefs (Barrett and Lanman 2008). Applied to our discussion, HADD might not be responsible for how people come to have spirit-beliefs (by means of experiences) but explains why people who already belief in spirits have more spirit-experiences. This revised claim is, however, also not supported by empirical data. [18]

Richard Wiseman criticized the 19hz theory. He argues that low frequency sounds are too rare to account for most spirit-experiences (see also below) (Wiseman 2011: p. 170). Jason Braithwaite and Maurice Townsend criticize Tandy's account of the proximate cause of spirit-experiences. They argue that we would expect visual distortion across the entire visual field rather than just in peripheral vision. Furthermore, such vibration cannot account for complex and sustained hallucinatory experiences. They also note that a recent overview of studies on the effects of low frequency sound did not report visual distortions (Braithwaite and Townsend 2006). [19]

Persinger's theory has been criticized as well. Marc Andersen notes that Persinger's view of the temporal lobe as the seat of subjective experiences of the self is not widely accepted in neuroscience (Andersen 2017). Christopher French and his team attempted to build a haunted house by manipulating, among other things, the variance in magnetic fields. While subjects did report unusual experiences, there was no correlation with the variance in magnetic fields. They suggest that the unusual experiences might result from suggestion rather than variance in magnetic fields (French et al. 2009).

Scope

Insufficient empirical data to back the theories up can in principle be overcome. Only when the data speaks against the theory, the theory is in trouble. A bigger problem that cannot be solved by more empirical data is if the theories are of insufficient scope. With the scope of a theory, I mean how many phenomena a theory can explain.[20] In our case, the scope of all three theories is how many reported spirit-experiences they can explain. If a theory can explain too few spirit-experiences people report, it leaves many putative spirit-experiences unexplained. The theory therefore doesn't show that cognitive mistakes occur during unexplained experiences. In this section I assess the scope of all three theories.

The theory of the HADD attributes spirit-experiences to cognitive mistakes of the agency detection mechanism. The cognitive mistakes result from unidentified noises or observed patterns. It thus explains spirit-experiences that occur in situations with a lot of noise or patterns. Many spirit-experiences

indeed fit this pattern but not all. For example, some people report experiencing spirits during meditation practices. [21] During meditation a subject is unlikely to perceive vague patterns or noises. HADD-theory also has a hard time accounting for experiences of spirit possession. People experiencing spirit possession feel as if their mind is taken over by a spirit. This phenomenon occurs in many cultures. Experiences like these go well beyond what HADD-theory explains.

The 19 Hz theory attributes spirit-experiences to cognitive mistakes in perception. It therefore explains spirit-experiences that occur in situations with low frequency noises and predicts that they will resemble visual experiences that are rather vague. Whether spirit-experiences are always accompanied by low-frequency noises is hard to know. Some spirit-experiences fit the phenomenal description while others do not. Experiences of spirit possession are again not explained by the theory. Experiences where people report hearing voices of spirits are also not explained.

Finally, the magnetic field variation theory attributes spirit-experiences to cognitive mistakes in vision caused by the temporal lobe. This theory explains similar spirit-experiences as the 19 Hz theory. It therefore also doesn't explain that people have experiences of spirit possession or that some report hearing spirit voices.

None of the three theories I discussed has a sufficiently wide scope to be able to explain spirit-experiences. They all leave well-documented experiences people report, like possession and hearing spirit-voices unexplained. They therefore do not show that these unexplained experiences involve cognitive mistakes. As a result, no general conclusion about the reliability of spirit-belief formed during or after spirit-experiences can be drawn. Because of their focus on one cognitive mechanism (agency detection or visual perception), it is unlikely that the theories will ever be able to account for auditory spirit-experiences or experiences of spirit possession.

Concluding Remarks

I argued that an unreliability argument based on the three theories I discussed fails. David Johnson suggested that spirit-experiences could be explained by suggestion or mental illnesses. An explanation in terms of mental illness (like schizophrenia or psychosis) seems at first glance compatible with spirit-beliefs. In a study among Malay patients, 53% of the respondents claimed that their mental illness was caused by supernatural forces (like spirits). For them, an explanation of their spirit experiences in terms of mental illness would probably not undermine their spirit-beliefs. They could justifiably claim that their mental illness is the result of spirit activity. In order to conclude to unreliability more data is needed about how mental illnesses can give rise to putative spirit-experiences; for example by showing how mental illness affects perception. Assessing this lies beyond the scope of this paper.

Assessing whether an explanation in terms of suggestion holds and can debunk spirit-beliefs also lies beyond the scope of this paper. Michiel van Elk and Andre Aleman suggest that hallucinations and visions can be explained by suggestion to some extent. They are, however careful in their conclusions and claim that more research is needed (Van Elk and Aleman 2017).

Even if these unreliability arguments also fail, it does not mean that the justification of spirit-beliefs cannot be overridden in other ways. Some have proposed rebutting defeaters for spirit-beliefs. Johnson argues that the concept of 'spirit' is by its very nature too complex and elusive to feature in any explanation of a phenomenon. Therefore, naturalistic explanations will always be preferable because they are more fruitful, have a wider scope, are more parsimonious, and are more in line with things that we already have good reason to believe are true (Johnson 2017). If Johnson is right, the complex and elusive nature of spirit-beliefs is a reason to not accept that spirits exists and therefore a rebutting defeater for spirit-beliefs. Then the question whether spirit-beliefs are unreliably formed is a non-starter for they must be unreliably produced. Other possible rebutting defeaters are decisive arguments for naturalism (i.e. the thesis that only the natural world exists) or strict monotheism (i.e. the thesis that there exists only one supernatural being). If these arguments are forceful they could override the justification subjects have for spirit-beliefs. Belief in spirits can also be rendered unjustified by arguments that interaction between immaterial beings and material beings is not possible. If these arguments are sound, they could also constitute a rebutting defeater for spirit-beliefs. These

questions also lie beyond the scope of this paper.

I argued that three well-known scientific explanations for spirit-experiences do not support an argument for the conclusion that spirit-beliefs are unreliably formed. Apart from problems of insufficient empirical data, the main problem is that all three theories are of too limited scope to explain spirit-experiences.

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Endnotes

[1] For example, spirit-beliefs can be formed to explain a sudden movement by a material object. David Johnson discusses spirit-beliefs that are formed by means of testimony or as an explanation for some phenomenon at length and argues that they can never justify spirit-beliefs (Johnson 2017).

[2] The distinction was first introduced by John Pollock (Pollock 1986).

[3] They are often called 'cognitive mechanisms'.

[4] A famous defender of this paradigm is Alison Gopnik (Gopnik and Wellman 1994)

[5] Some claim that sentence processing is governed my multiple mechanisms.

[6] I drew this example from (Gorrell 1999).

[7] See (Gorrell 1999)

[8] For an overview see: (Goldman and Beddor 2015).

[9] Alvin Goldman and Bob Beddor also leave this question open. They write: "Just how high a truth-ratio a process must have to confer justification is left vague, just as the justification concept itself is vague. The truth-ratio need not be 1.0, but the threshold must surely be greater (presumably quite a bit greater) than .50." (Goldman and Beddor 2015)

[10] The problem was raised against reliabilist epis-

temologies. It (or a variant of it) also holds against assessing reliability of cognitive processes.

[11] For example, David Kyle Johnson refers to cases where alleged encounters with spirits were fabricated in order to obtain money or get esteem (Johnson 2017). Spirit-beliefs that result from (testimony of) fabricated encounters with spirits are obviously unjustified. Johnson also argues that spirit-beliefs result from mental illnesses like psychosis or schizophrenia (Johnson 2017). Assessing this claim falls outside the scope of this paper.

[12] See for example (Endres and Lauser 2011)

[13] They could also believe in ghosts on the basis of testimony or upbringing.

[14] See for example: "In scanning for such agents, we encounter false positives: we think we see agents where none exist."(Guthrie 2002: p. 1)

[15] A Swedish team led by Pehr Granqvist tried to replicate the experiment but concluded that the higher prevalence in reports of a sensed presence were due to suggestion (Granqvist et al. 2005). Persinger and his team responded that the methodology in the replication was significantly different than in the original setup (Persinger and Koren 2005).

[16] I assume Stewart Guthrie's version of HADD in this regard as Justin Barrett does not claim this. Some argue that Guthrie's version relies on naturalist presuppositions that exclude the existence of spirits. On a supernaturalist version, the HADD could be triggered by actual invisible agents. HADD would still be prone to make cognitive mistakes in some cases, but not *all* spirit-beliefs would result from cognitive mistakes. Though this is potentially a valid response, I will not pursue it any further in this paper.

[17] See (Goldman and Beddor 2015) for an overview of some of the main criticisms against reliabilist epistemologies.

[18] Andersen cites three studies on Barrett and Lanman's revised theory. One found that paranormal and religious believers experiences more false agency detections than skeptics in face-recognition task in artifacts and scenery (Riekki et al. 2013). Michiel van Elk found the opposite in a face-housing recognition task (Van Elk 2015). Other studies conducted by Van Elk were ambiguous. In one study paranormal believers were more likely than skeptics to detect agency in a biological motion perception task, but a series of studies conducted with colleagues found that religiosity did not facilitate agency detection (Van Elk et al. 2016).

[19] See: (Haneke et al. 2001)

[20] My definition of 'scope' is in line with how Adolfas Mackonis uses the term (Mackonis 2013).

[21] Many reports of spirit encounters during meditation can be found on the internet. See for example (Okawa n.d.)