Credal Pragmatism

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Abstract: According to doxastic pragmatism, certain perceived practical factors, such as high stakes and urgency, have systematic effects on normal subjects' outright beliefs. Endorsement of doxastic pragmatism can be found in Weatherson (2005), Bach (2005, 2008, 2010), Ganson (2008) and Nagel (2008, 2010). Upholders of doxastic pragmatism have so far endorsed a particular version of this view, which we may call threshold pragmatism. This view holds that the sensitivity of belief to the relevant practical factors is due to a corresponding sensitivity of the threshold on the degree of credence necessary for outright belief. According to an alternative but yet unrecognised version of doxastic pragmatism, practical factors affect credence rather than the threshold on credence. Let's call this alternative view credal pragmatism. In this paper, I argue that credal pragmatism is more plausible than threshold pragmatism. I show that the former view better accommodates a cluster of intuitive and empirical data. I conclude by considering the issue of whether our doxastic attitudes' sensitivity to practical factors can be considered rational, and if yes, in what sense.
Keywords: belief, credence, practical factors

0. Introduction

Consider the following pair of cases:

> **LOW**: Five minutes ago, Hannah made three sandwiches and placed them in the refrigerator. She told Sarah that she placed the peanut butter sandwich on the left, the tuna sandwich in the middle, and the almond butter sandwich on the right. Hannah then departed just as Sarah's friend Almira arrived for lunch. Sarah knows that Almira has no allergies. Almira says: "I'd love an almond butter sandwich." And so Sarah opens the refrigerator door, points to the sandwich on the right, and says: "The sandwich on the right is an almond butter sandwich. You can have it."

> **HIGH**: This case is just like LOW, except here it is Sarah's nephew Algernon who is visiting for lunch, and he has a severe peanut allergy. He asks Sarah for a sandwich. Sarah knows that the peanut butter sandwich would be fatal to Algernon, but that the almond butter sandwich would be harmless. She also knows that he would slightly prefer the almond butter sandwich to the tuna sandwich. When Sarah goes to the fridge, she can tell, by visual inspection,

which is the tuna sandwich, but she cannot tell, by visual inspection, which is
the peanut butter sandwich and which is the almond butter sandwich. So she
gives him the tuna sandwich.[1]

Intuitively, in LOW, Sarah knows that the sandwich on the right is almond butter (henceforth *r*)
and her assertion is appropriate. By contrast, in HIGH, Sarah doesn't know *r* and does the right
thing in not giving the almond butter sandwich to Algernon. Nonetheless, Sarah's evidence
bearing on *r* is the same in both cases (namely, Hannah's testimony). Philosophers have drawn
different conclusions from this type of case. According to a number of philosophers
(Weatherson 2005; Bach 2005, 2008, 2010; Ganson 2008; Nagel 2008, 2010), the moral of such
cases doesn't concern epistemology but the philosophy of mind. The reason why we have the
intuition that Sarah knows *r* in LOW but not in HIGH is that practical factors like stakes affect
knowledge by generating a difference in outright or full belief (hereafter simply 'belief'), the
doxastic attitude necessary for knowledge.

Such an account of the LOW-HIGH cases and similar pairs of cases presupposes a
particular view about belief, which I call *doxastic pragmatism*. According to this view, certain
perceived practical factors have systematic effects on normal subjects' outright beliefs.[2] These
practical factors concern features of the circumstances or the environment in which the subject
is embedded. In addition to the potential costs of error (viz., the stakes), other practical factors
include the availability of further evidence and the benefits and urgency of having a settled view
about the matter.[3] Practical factors, at least in most cases, are not related to what we may call
truth-relevant factors such as the quality of one's evidence and the reliability of the belief-
forming processes. The notion of 'normal' in 'normal subjects' should be understood as
descriptive rather than normative – for example, in frequentist terms. Doxastic pragmatism aims
to characterize an aspect of the actual regulation of doxastic attitudes of ordinary people,
capturing regularities which are largely predictable by psychology and that eventually might tend
to approximate certain standards of rationality, but not necessarily.

Upholders of doxastic pragmatism have so far endorsed a particular version of this view,
which we may call *threshold pragmatism*. According to this view, the sensitivity of belief to the

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[1] This example is from Ross and Schroeder (2012). Other similar cases can be found in Cohen (1999),
DeRose (1992), Fantl and McGrath (2009), Gerken (2017), Stanley (2005).

[2] An examination on whether the practical sensitivity of belief at issue applies to all types of belief is
out of the scope of this paper. In [Author], I argue that the practical sensitivity of belief does not apply to
dispositional belief, the type of belief required for knowledge.

[3] For discussions on these practical factors, see Gerken (2011, 2017) and Nagel (2008). I will discuss
these practical factors in more detail in §1 and §2.

relevant practical factors is due to a corresponding sensitivity of the threshold on the degree of credence necessary for outright belief. Alternatively, we can conceive a version of doxastic pragmatism according to which such practical factors affect credence rather than the threshold on credence. Let's call this alternative view *credal pragmatism.* Though the latter view seems to be an obvious option, it has received surprisingly little attention in the literature.[4] The aim of this paper is to defend this view. In §1 I set out doxastic pragmatism and introduce two competing versions of it: threshold pragmatism and credal pragmatism. In §2 I argue that certain intuitive and empirical data are better explained by credal pragmatism than by threshold pragmatism. In §3 I consider the issue of whether our doxastic attitudes' being sensitive to practical factors can be considered rational, and if yes, in what sense.

Before proceeding further, let me be clear from the outset on the scope and limits of this paper. My goal in this paper is restricted to the comparative question of which amongst doxastic pragmatist accounts is better. Hence the present discussion will assume at the outset that some form of doxastic pragmatism is right. Philosophers rejecting doxastic pragmatism or withholding their opinions on the issue are free to read my conclusions as merely conditional: amongst versions of doxastic pragmatism, the one providing the best explanation of the available intuitive and empirical data is credal pragmatism. Partly due to reasons of space, I won't consider the merits and defects of doxastic pragmatism compared to competing views. For example, I won't evaluate how comparatively well doxastic pragmatism explains certain cases involving shifts in knowledge ascriptions.[5] Doxastic pragmatism is interesting independently of its ability to explain these cases. By providing an account of how practical factors systematically affect our doxastic attitudes, doxastic pragmatism has important implications for several other issues. As will become apparent in the following sections, the conclusions of the paper have potentially far-reaching implications for the nature and interaction of different types of doxastic states and the

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[4] To my knowledge, the only philosopher who has contemplated this idea is Jon Kvanvig, as recognised in Stanley (2005: 6). Rubin (2015) considers and criticises a corresponding normative view about rational credence, which will become relevant for discussions in §3.

[5] For example, I will not be concerned with doxastic pragmatist explanations of shifting knowledge ascriptions in cases like LOW and HIGH. I will also not be concerned with the issue that doxastic pragmatism seems to deliver counterintuitive knowledge ascriptions to specific variants of LOW-HIGH pairs of cases. In one type of case, the subject is unreasonably insensitive to the perceived practical factors (e.g., she isn't psychologically affected by practical factors typical of high stakes cases as one would expect from a normal subject); in another type of case, one is in fact in a high stakes predicament without knowing that she is. For discussions on these issues see Fantl and McGrath (2009, 43-45), Nagel (2008, 292-3; 2010, 427-8) and Sripada and Stanley (2012, 18-23). Alternative accounts of the shifting pattern of knowledge ascriptions include epistemic contextualism, relativism, subjective-sensitive invariantism, pragmatics accounts, etc.

ways in which they are regulated, both normally and rationally. These conclusions are of central relevance to the area of the philosophy of mind concerned with doxastic attitudes and in the study of the rationality of these attitudes.

1. Varieties of doxastic pragmatism

Doxastic pragmatism holds that certain perceived practical factors generate systematic effects on normal subjects' outright belief. More specifically, this view predicts that other things being equal, a mere change in perceived practical factors tends to result in a shift of one's belief status in a certain proposition. Normal subjects might fall short of being ideal rational subjects in many respects but their mental states and behaviours present regularities which are largely predictable by psychology and tend to approximate certain standards of rationality, at least in most cases.[6] By 'perceived practical factors', I mean features of the environment or the circumstance that the subject perceives or is influenced by. It is hence possible to have cases in which certain perceived practical factors have misleading appearances; for example, when one falsely believes that one is in a high-stakes situation. Furthermore, doxastic pragmatism is not committed to any specific account of the mechanisms by means of which perceived practical factors generate effects on outright beliefs. The view itself only concerns the causal correlation between perceived practical factors and those effects. Nonetheless, doxastic pragmatists so far have provided different stories of the relevant mechanisms: in terms of dispositions constitutive of belief, psychological forces generated by the factors and affecting doxastic states' regulation, and so on.

Is it possible to describe and classify the variety of relevant practical factors in a principled way? Let me introduce a classification of the relevant practical factors, drawing upon a widespread distinction between two intellectual duties or epistemic goals.[7] On the one hand, there are practical factors related to the avoidance of error. These have the effect of leading one to assign more weight to the goal of not believing p if p is false. Examples are high costs of being

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[6] The standard of rationality I have in mind is not ideal or unbounded rationality. The latter kind of rationality (e.g., conformity to Bayesian standards) encompasses decision-making strategies that have little or no regard for the constraints of time, knowledge, and computational capacities that real humans face. It is widely acknowledged that real humans often go astray from exhibiting ideal rationality given their heavy reliance on fast-and-frugal heuristics in decision makings. Following Simon (1956) and Gigerenzer et al. (1999), I take that the type of rationality that applies to real humans is bounded rationality. In §3 I will draw a more detailed distinction between these two types of rationality.

[7] This distinction was first introduced by James (1956). See Ganson (2008), Kelly (2014) and Wedgwood (2012: 325) for recent endorsements.

wrong about p, significant benefits of achieving accuracy in judgment, and the availability of further evidence. On the other hand, there are factors related to truth-acquisition. They have the effect of leading one to assign more weight to the goal of believing p when p is true. Examples include considerable benefits of having a settled opinion, remarkable costs of not having a settled view, and difficulty of acquiring further evidence. Let's name the former group *caution-oriented factors* and the latter group *rush-oriented factors*. Notice that this division is only a convenient tool in order to frame them in a simple and intuitive classification.

Using the above distinction between two groups of practical factors, we can characterise the systematic effects of perceived practical factors on beliefs, i.e., the sensitivity to practical factors (hereafter, *practical sensitivity*) of belief suggested by doxastic pragmatism, as follows: in the presence of rush-oriented factors, people tend to believe on the basis of less evidence and fewer cognitive efforts; by contrast, in the presence of caution-oriented factors, people tend to form beliefs only on the basis of more evidence and more cognitive efforts. For example, it is often the case that the higher the stakes the more the evidence one collects and/or the more the cognitive efforts one allocates before forming a belief; on the contrary, the more urgent it is to form a settled opinion the less the evidence one gathers and/or the less the cognitive efforts one spends for reaching a settled opinion. One of the consequences of the practical sensitivity of belief is that normally although one believes p in low stakes circumstances, if the stakes on whether p had been higher one would lose the belief that p, even if the evidence for p remains the same.

Proponents of doxastic pragmatism have defended their views on various grounds. Some forms of doxastic pragmatism rely on particular functionalist accounts of belief. These accounts hold that belief involves having certain practical dispositions that are influenced by perceived practical factors. For example, Ganson (2008) proposes that in order to count as believing p in a range of circumstances, one must be willing to act as if p in those circumstances (ibid., 452). In a similar vein, Weatherson (2005) suggests that one believes p if and only if conditionalizing on p leaves the order of one's preferences over things that matter unchanged (ibid., 422).[8]

Another form of doxastic pragmatism focuses on psychological, rather than metaphysical, aspects of belief. For example, Nagel (2008, 2010) provides analyses of the psychological responses of normal human beings in different practical settings with respect to their belief regulation. Drawing upon a substantial body of empirical studies, Nagel shows that practical factors play an important role in determining how much cognitive effort (such as collecting

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[8] Under one interpretation, Fantl and McGrath (2009: Ch.5)'s view of belief is another functionalist variant of doxastic pragmatism.

evidence and the strategy of evidence-weighing before settling our minds) one is willing to allocate in order to reach a settled opinion. In particular, practical factors play this role by triggering certain psychological forces. If, for example, we consider a subject who perceives herself to be in a high-stakes situation, according to Nagel, there are two psychological forces important for the regulation of her cognitive activities. One force is *epistemic anxiety,* a type of emotive response that normally regulates our cognitive efforts and allocates them in proportion to the expected costs and benefits (Nagel 2010). Another force is *need-to-avoid-closure*, a desire to avoid reaching a subjectively firm belief (Nagel 2008). When perceiving high stakes, the level of epistemic anxiety and need-to-avoid-closure of the subject normally rise, which could in turn result in an immediate loss of one's previously held beliefs in certain propositions that are practically relevant to the high stakes situation.

Still another form of doxastic pragmatism has been defended by Bach (2005, 2008, 2010). Bach holds that high stakes affect confident, doubt-free belief (the type of belief required for knowing) rather than a mere belief which is compatible with doubt. Bach suggests that perceived high stakes raise one's doubt about the truth of the target proposition by enlarging the range of possibilities one takes into consideration and hence making one lose confident, doubt-free belief.

So far, doxastic pragmatists have all subscribed to a particular version of doxastic pragmatism, i.e. *threshold pragmatism*. This view relies on the distinction between belief and credence. The latter notion characterises the degree of confidence in a proposition. For example, among things that one believes, it is natural to think that one is more confident that 2+2=4 than that Ulaanbaatar is the capital of Mongolia. Similarly, among things that one fails to believe, one could take one thing to be more unlikely than another thing. Threshold pragmatism is a type of threshold view about belief, according to which belief is reducible to or requires a degree of credence above some threshold. In particular, threshold pragmatism endorses a *practical sensitivity of the threshold*: the threshold on credence necessary for belief varies in accordance with perceived practical factors. More specifically, the threshold is practically sensitive in the following way: holding fixed the amount of available evidence, rush-oriented factors tend to lower the threshold, while caution-oriented factors tend to raise the threshold. Threshold pragmatism is the thesis that the practical sensitivity of the threshold is the cause of the practical sensitivity of belief.

We can easily identify endorsements of threshold pragmatism in the works of doxastic pragmatists mentioned above. For example, here is one passage from Weatherson:

> [I]nterests matter not because they affect the degree of confidence that an
> agent can reasonably have in a proposition's truth. (That is, not because they
> matter to epistemology.) *Rather, interests matter because they affect whether those*

reasonable degrees of confidence amount to belief. (That is, because they matter to philosophy of mind.) (Weatherson 2005: 435-6; italics added)

Ganson builds threshold pragmatism directly into her account of belief:

In order to count as believing *p* in a range of circumstances, one must be willing to act as if *p* in those circumstances: *one's degree of belief that p has to be high enough that one is willing to act as if p under those circumstances.* (Ganson 2008: 452; italics added)

Here is another passage that explicitly illustrates threshold pragmatism:

Practical features, such as the cost if *p* should turn out to be false, […] are relevant to determining the threshold for outright belief. Higher thresholds will demand stronger, more conclusive, or more plentiful evidence than lower thresholds. (ibid., 454)

Bach commits to a mobile threshold for confident, doubt-free belief. For example, he writes:

[T]he higher stakes raise the threshold of confident, doubt-free belief. […] One's practical interest explains the rise in the threshold of confident, settled belief, and thoughts of counterpossibilities make it more difficult for this threshold to be crossed. (Bach 2008: 83)

Nagel also expresses her sympathy for threshold pragmatism. She mentions that the focus on threshold 'fits neatly' with uses of expressions such as 'desired confidence level' in psychologists' descriptions of certain cases (Nagel 2010: 417-18).

These doxastic pragmatists take the sensitivity of the threshold to practical factors to be part of an inference to the best explanation of the practical sensitivity of belief. However, they put forward the hypothesis with neither substantial argument nor evidence. They simply stipulate it. Curiously, they didn't consider an obvious alternative position, which I will call *credal pragmatism*. According to credal pragmatism, *the practical sensitivity of credence* (i.e. the credence's variation in accordance with perceived practical factors), rather than the practical sensitivity of the threshold, is the cause of the practical sensitivity of belief. More specifically, according to the practical sensitivity of credence, holding fixed the amount of available evidence, rush-oriented factors tend to raise the degree of credence (i.e., subjective confidence), while caution-oriented factors tend to lower the degree of credence. According to credal pragmatism, it is credence that changes with practical factors, while the threshold on credence necessary for outright belief is

unaffected by the relevant practical factors.[9] In the next section, I will argue that credal pragmatism is the more plausible version of doxastic pragmatism. In particular, I will show that this view not only can accommodate data supporting threshold pragmatism, but also fits well with other empirical and intuitive data that cannot be easily explained by threshold pragmatism.

2. Credal pragmatism vs. threshold pragmatism

In this section, I argue that credal pragmatism accommodates a wide range of empirical and intuitive data better than threshold pragmatism. In §2.1, I consider intuitive data involving belief and confidence ascriptions which seem to favor credal pragmatism over threshold pragmatism. In §2.2, I examine the two views in the light of relevant empirical data provided by a substantial body of psychological researches. In §2.3, I consider and reply to possible worries.

2.1. Intuitive data

Consider a subject who experiences a transition from a low-stakes situation to a high-stakes one. For example, imagine a variant of the initial LOW-HIGH case in which Hannah makes many sandwiches, several of each kind (tuna, peanut butter and almond butter), arranged in the fridge in the same order as in the original case. Suppose Sarah receives visits on the same day from her friend Almira, who does not have any allergy, and her nephew Algernon, who has a severe peanut allergy. Almira arrives first. Sarah gives her an almond butter sandwich, picking it from the right side in the refrigerator. After Almira has left, Algernon arrives. As in HIGH, Sarah could not distinguish the peanut sandwiches from the almond butter sandwiches, so she serves the tuna sandwich to Algernon.

According to threshold pragmatism, although Sarah doesn't believe *r'*–that the sandwiches on the right are almond butter–when she chooses the sandwich for Algernon, her confidence with respect to *r'* remains the same as before. However, it sounds odd for Sarah to say things like "I have exactly the same confidence in *r'* as before when I gave the sandwich to Almira, but I don't believe *r'* now". On the contrary, it seems very reasonable for Sarah to mutter things such as "Well, I am not as confident in *r'* as before. This is why I don't know *r'*." This indicates that,

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in accordance with credal pragmatism, the high stakes in the new situation affect not only Sarah's belief, but also her confidence.

In addition, we can conceive a further variation of the case in which another guest of Sarah, Bob, who knows all about the guests' preferences, Algernon's allergy and the position of sandwiches in the fridge, observes the whole story and asks Sarah why she didn't give Algernon the sandwich on the right. According to threshold pragmatism, the following conversation should sound perfectly fine:

> Bob: "Why didn't you give an almond butter sandwich to Algernon?"
> Sarah: "Well, I am not sure anymore that *r'*."
> Bob: "But are you equally confident?"
> Sarah: "Yes of course! After all, my evidence for *r'* is the same as before. But even though I'm exactly as confident as before that *r'*, it is unreasonable for me to believe that now."

Compare Sarah's last response with another answer,

> Sarah*: "Well, I don't feel as confident as before. I'd rather remain agnostic about *r'* now."

At least to my ears, Sarah's response in the first conversation sounds very odd while the latter response sounds very natural. Once again, this intuition cannot be easily accommodated by threshold pragmatism, but it fits perfectly well with credal pragmatism.[10]

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[10] An anonymous referee suggests that a rewording of the dialogue would not necessarily favor credal pragmatism over threshold pragmatism. In particular, the referee observes that if we replace 'confident' with 'likely for you/me', the dialogue would not sound particularly odd. The referee also observes that it would sound odd for Sarah to say: "Even though my evidence hasn't changed, given how much is at stake *r'* is less likely for me now". I think that the referee's considerations touch an important point about the relation between confidence and likelihood. An explanation of why one may not find counterintuitive the modified dialogue is that we tend to attribute different meanings to expressions such as 'being likely for someone'. This expression may sometimes refer to subjective confidence, but more frequently it is used to refer to epistemic probability (probability of a proposition given one's evidence). The notion of probability relevant for epistemic chance and epistemic modals is almost universally considered to be epistemic – not subjective – probability. With an epistemic reading in place, it is clear that if in the above case Sarah's evidence remains the same across the contexts, also the likelihood of *r'* on her evidence remains the same (by definition). With such a reading, it is not surprising that the modified dialogue doesn't sound odd and Sarah's claim sounds inconsistent. However, if one moves to alternative readings of likelihood not indicative of subjective confidence, the intuitive judgments are not relevant to test credal and threshold pragmatism.

If you share the same intuitions in the cases considered above, we can conclude from this that our intuitive judgments in cases involving a shift from low stakes to high stakes provide an at least *prima facie* support for credal pragmatism and speak against threshold pragmatism. Moreover, our intuitive reactions seem to reveal a general principle relating belief and confidence in line with credal pragmatism – that is, don't revise a belief if you don't lose confidence.

2.2. Empirical data

A series of psychological studies have investigated how motivational forces affect attainment and avoidance of what psychologists call 'closure'. 'Closure' is a notion first introduced by Arie Kruglanski referring to the phenomenological transition from hesitant conjecture to a subjectively firm and settled belief.[11] The relevant motivational forces include 'need-for-closure' (NFC) and 'need-to-avoid-closure' (NTAC). NFC is a concept referring to some form of desire or other tendency to possess some knowledge on a given topic, any definite knowledge as opposed to confusion and ambiguity. NTAC is a concept referring to the opposite desire or tendency to avoid acquiring a definite answer to a question. Importantly, NFC and NTAC are conditions that can be triggered through manipulating circumstantial factors. Typically, rush-oriented factors bring about NFC and caution-oriented factors give rise to NTAC. Nagel (2008, 2010) appeals to some of the existing empirical researches on NFC and NTAC in order to bring evidential support to doxastic pragmatism. It turns out that some of those researches also provide data relevant for a comparative assessment of threshold pragmatism and credal pragmatism.

Let us start with evidence concerning the practical sensitivity of credence and credal pragmatism. A series of studies provides both direct and indirect positive evidence for the practical sensitivity of credence. Direct evidence can be found in a study by Mayseless and Kruglanski (1987, Study 2). This study features a measurement of the shift of confidence corresponding to every single increase of evidence in the process of reaching a settled opinion. In their study, all participants were asked to identify a digit very briefly shown on a tachistoscope. All of them were allowed to control the tachistoscope and were able to repeat the stimulus presentation as many times as they wished. When a participant formed a settled opinion about one digit, the next digit would start being presented, and so on until 12 digits had been named. Participants were evenly divided into three groups measuring specific conditions: NFC, NTAC

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[11] In his words, closure is "the juncture at which a belief crystallizes and turns from hesitant conjecture to a subjectively firm 'fact'" (Kruglanski and Webster 1996: 266). Given this definition, closure implies the self-transparency of one's belief; hence closure entails belief. The opposite is not always true: there can be non-transparent beliefs, and in such cases belief doesn't involve closure.

and Neutral. One group of participants were told that there is a close connection between forming unambiguous, clear-cut opinions and high intelligence. This was supposed to heighten their NFC. Participants in another group were promised very attractive rewards only if all 12 digits were correctly identified. This was supposed to strengthen a tendency to maximum accuracy, thereby heightening NTAC. Finally, a third group of participants in a 'neutral' group were not given any special instructions or rewards.

During the test, participants were asked to rate their confidence in the guessed result following each presentation of the digit on a 0-100 scale, where 0 represents being not at all confident and 100 represents being confident beyond a shadow of doubt.[12] This resulted in two kinds of data concerning the shift of confidence with each new piece of evidence. One is the *initial confidence*, which measures the initial confidence rating. This reflects the influence of early evidence on one's confidence. The other is the *direct confidence shift*. It measures the difference between two adjacent ratings of confidence, and it represents the contribution of each new datum to the participants' confidence level. The study reports the following significant results: the averaged initial confidence is highest in the NFC condition (50.84), intermediate in the Neutral condition (34.78), and lowest in the NTAC condition (27.43). In addition, the averaged direct confidence shift in the NTAC condition is the smallest (13.46) and in the NFC condition is the highest (38.49), with the Neutral condition (20.44) falling in the middle.[13]

The above results vindicate the practical sensitivity of credence prescribed by credal pragmatism, i.e. in responding to the same kind of evidence, certain pragmatic conditions generate systematic variations in the subject's credence. Other things being equal, under the influence of rush-oriented factors, people tend to rely heavily on early evidence and give more credibility to each piece of evidence than in normal circumstances in which those factors are absent. In contrast, with exposure to caution-oriented factors, people tend to assign less importance to early information and give less credibility to each piece of evidence than in normal circumstances.

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[12] In the studies of Mayseless and Kruglanski (1987), the data on subjective confidence comes from participants' self-evaluation. What is measured, more precisely, is a higher-order evaluation about one's own confidence. If we accept Williamson's claim about the non-luminosity of mental states, the subjective confidence might not be always transparent to the subject herself. However, since paradigmatic examples of non-luminosity concern only marginal cases, this should not create a substantial problem for taking the empirical data at face value. That said, it might be good to take these empirical data with some reservation.

[13] These data measure the confidence change score of all presentations. There is another group of data measuring confidence change of all presentations that excludes null presentations, where null presentations mean participant reports seeing nothing on the screen. Again, in this group of data, there is a significant difference in magnitude of confidence shift between the NTAC condition (18.07), the Neutral condition (32.64) and the NFC condition (42.6).

In addition to this direct evidence for the practical sensitivity of credence, the same study also provides indirect evidence for the practical sensitivity of credence on the basis of a cluster of other data. First, Mayseless and Kruglanski also measured the number of presentations that each participant chose to observe. Moreover, they recorded the confidence of each participant in the formation of closure, which they call *final confidence*. The difference between one's initial confidence and final confidence constitutes the total confidence shift. The result of the total confidence shift divided by the number of presentations indicates the average confidence shift given each piece of evidence. Call it *derived confidence shift*. Table 1 illustrates how derived confidence shift in the three conditions is calculated based on original experimental data.[14] According to the results, although the values of the derived confidence shift are different from the corresponding direct confidence shifts, the derived confidence shift in the three conditions exhibits the same ranking pattern as the direct confidence shift, i.e. NTAC < Neutral < NFC. This result, again, vindicates the phenomenon that people tend to respond differently to the same kind of evidence under different pragmatic conditions, as prescribed by credal pragmatism.

	NFC	Neutral	NTAC
Initial confidence (IC)	50.84	34.78	27.43
Final confidence (FC)	78.03	57.98	90.8
Total confidence shift (TC = FC – IC)	27.19	23.2	63.37
Number of presentation (N)	3.24	5.14	18.28
Derived confidence shift (= TC/N)	8.39	4.51	3.47

Table.1 Calculation of derived confidence shift under three conditions. Shaded lines are derived results based on original experimental data of Mayseless and Kruglanski (1987, Study 2).

Further indirect evidence for the practical sensitivity of credence comes from an important phenomenon called 'unfounded confidence paradox'. According to this phenomenon, heightened NFC generates higher confidence in less accurate judgments. This is already detectable in Mayseless and Kruglanski (1987, Study 2), where participants in the NFC condition group tend to finish with higher confidence than those in the Neutral condition even if the

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[14] Note that the number of presentations clearly demonstrates the practical sensitivity of belief – that is, people tend to collect less evidence under NFC conditions and more under NTAC conditions in order to form settled beliefs.

evidential basis (in terms of the number of presentations) held by the former group is weaker than the latter. Two series of studies add further confirmation to this phenomenon. One series of studies confirms part of the above results by reporting elevated subjective confidence under heightened NFC. The studies manipulate NFC in different ways – for example, by putting subjects in environments with distracting noises (Kruglanski and Webster 1991; Kruglanski *et al.* 1993), making the task appear to be dull for subjects (Webster 1993), and adding time pressures to decision-making (Kruglanski and Webster 1991). According to another series of studies, heightened NFC increases the subject's tendency to use quick but less accurate, even biased, evidence-processing strategies (e.g. relying on stereotypes and various heuristics) in reaching judgments, as opposed to more extensive and accurate evidence-weighing and evidence-integrating methods (Kruglanski and Freund 1983; Freund et al. 1985; Jamieson and Zanna 1989; Heaton and Kruglanski 1991; Gigerenzer and Todd 1999; Van Hiel and Mervielde 2002; Roets et al. 2008) . Now, if confidence or credence were not sensitive to rush-oriented factors, it would be difficult to see how we can even make sense of the 'unfounded confidence paradox'. After all, if subjects' credence only depends on accuracy or truth-related factors, we should expect that in cases where less accurate judgments are reached, subjects end up with lower confidence than what it is actually reported. This supports the practical sensitivity of credence, providing further grist to the mill of credal pragmatism.

So far we have considered evidence supporting credal pragmatism. Let us now consider evidence relevant for assessing threshold pragmatism. If we think that believing p is having credence in p that passes some threshold, then the formation of a settled belief implies that one's credence has passed that threshold. Recall that final confidence is the degree of confidence necessary for the formation of closure for each participant. Since closure is the point at which a subject reaches a final verdict, thereby forming a firm belief about the matter, we can also assume that that point is also indicative of the threshold level in that situation. Therefore, the final confidence is indicative of the confidence necessary for reaching the threshold in a circumstance. Should there be a flexible threshold affected by practical factors, it is reasonable to expect that the averaged final confidence under different conditions would somewhat reflect the (alleged) shift of the threshold. Assuming the correlation between the threshold level and the final confidence, according to threshold pragmatism, the averaged final confidence in NTAC condition should be the highest and the one in NFC condition should be the lowest.

However, according to the results of Mayseless and Kruglanski (1987, Study 2), the averaged final confidences do not differ significantly between the NFC condition (78.03) and the NTAC condition (90.8), both of which are higher than the Neutral condition (57.98). Threshold

pragmatism can explain why the final confidence in the NTAC condition is higher than the one in the Neutral condition, but it cannot explain why the final confidence in the NFC condition is higher than in the Neutral condition. Similar results featuring higher final confidence in NFC conditions than in Neutral conditions have also been reported in Kruglanski and Webster (1991), Kruglanski *et al.* (1993) and Webster (1993). These results indicate that the threshold for belief on credence is lower in normal cases than in cases involving rush-oriented factors – contrary to what we should expect if threshold pragmatism were true. In addition, Webster (1993) also finds that the final confidence in NTAC conditions is significantly lower than that in both the Neutral conditions and the NFC conditions.[15] Contrary to what threshold pragmatism predicts, this result indicates that the threshold for belief on credence in cases involving caution-oriented factors is lower than that in those involving rush-oriented factors. All these results constitute counterevidence against what threshold pragmatism predicts about the relation between the various conditions.

These data pose serious explanatory challenges for threshold pragmatism, but are perfectly compatible with credal pragmatism. According to credal pragmatism, the high final confidence under NFC conditions reported in most of the above-mentioned studies can be explained in terms of the fact that under those conditions one tends to be overconfident in one's judgment despite the paucity of evidence. As for the experiments highlighting a high final confidence under NTAC conditions, credal pragmatists can emphasize the robustness of the epistemic position that subjects with elevated NTAC tend to acquire in the process of reaching a settled judgment. For instance, the high averaged final confidence in the NTAC conditions (90.8) in Mayseless and Kruglanski (1987, Study 2) can be seen as a natural consequence of the numerous repetitions of the digit presentation on average (18.28 times) and thus of the more robust evidential support. Finally, for what concerns the low final confidence under NTAC conditions reported in Webster (1993), credal pragmatists can explain it in terms of one's inclination to be extra cautious in these circumstances, possibly to a degree that overbalances the excellence of one's relevant epistemic position.

In summary, empirical researches have provided evidence for the practical sensitivity of credence in accordance with what credal pragmatism predicts and evidence against the practical sensitivity of the threshold as required by threshold pragmatism. Thus, empirical data provide support for credal pragmatism over threshold pragmatism.

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[15] Webster detects this result in all three experiments. Here is the result of the experiments: i) Experiment 1 – 10.50 for NFC condition, 8.44 for neutral condition, 5.66 for NTAC condition; ii) Experiment 2 – 10.61 for NFC condition, 8.42 for neutral condition, 5.76 for NTAC condition; iii) Experiment 3 – 9.91 for NFC condition, 7.53 for neutral condition, 4.62 for NTAC condition.

2.3. Some objections and replies

Some may wonder whether the psychological studies discussed in §2.2 are genuinely relevant and helpful to the present philosophical debate.[16] In particular, one may wonder whether it is appropriate to draw conclusions about one's degree of confidence on the basis of studies using self-reports of how one would rate one's own confidence. Admittedly, phenomenological feelings of sureness and self-reporting are not the typical dispositions philosophers have looked at for measuring subjective confidence.

In response, I agree that that these studies focus only on a specific disposition manifesting subjective confidence. In this respect, my arguments are supposed to provide only partial, defeasible, *prima facie* evidence for the superiority of credal pragmatism over other forms of doxastic pragmatism. However, I also think that introspection is one of the best means to access one's own mental attitudes (though a fallible one), and that sincere self-reports of confidence can provide important indications of our degrees of confidence. This is evident if we consider how these dispositions interact with other dispositions typically related to doxastic attitudes. For example, if someone has behavioural dispositions indicating that she is not confident that *p*, but at the same time sincerely reports that she is confident that *p*, we take her as having incompatible dispositions, indicating some incoherence in her doxastic attitudes.

This is not to say that such dispositions constitute infallible guides to our degree of confidence. Undoubtedly there are cases in which we lack transparent access to our confidence. Phenomenological dispositions are indeed fallible. However, cases in which these dispositions fail to manifest one's confidence are abnormal, often related to pathological conditions, and relatively uncommon. The studies concern a large number of subjects participating in several and repeated studies in controlled conditions. A significant and systematic divergence of self-reports from actual confidence in all or most subjects would be surprising and in need of explanation. For this reason, I think that in general self-reports of normal and presumably reasonable subjects provide at least defeasible evidence of their degree of confidence.

A second worry about the studies is that at least some of the factors triggering NFC and NTAC conditions are not obviously like those typically featured in the philosophical literature on knowledge ascriptions. For example, there seems not to be much in common between factors such as being in high or low stakes and being told there is a close connection between forming unambiguous, clear-cut opinions and high intelligence (Mayseless and Kruglanski 1987, Study 2).

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[16] I would like to thank an anonymous referee for encouraging me to consider and address the various objections discussed in this sub-section.

My response to this kind of worry is twofold. First, I would like to observe that, as stressed in the introduction, the debate on doxastic pragmatism is not limited to explaining traditional cases relevant for adjudicating specific debates on knowledge ascriptions. The debate concerns more broadly the general way in which various kinds of practical factors affect the regulation of our doxastic attitudes. However, second, I also think that there is a closer connection than one may initially think between the factors involved in the psychological studies and those traditionally considered by philosophers. In particular, doxastic pragmatists are keen to include amongst practical factors affecting doxastic attitudes, not only stakes, but also, for example, the significant benefits of achieving accuracy in judgment, urgency in forming a settled opinion, available cheap means of double-checking, or the difficulty of acquiring further evidence. The factors considered in the psychological studies triggering NFC and NTAC seem to be reducible, more or less directly, to one or the other of these factors. For instance, in the study of Mayseless and Kruglanski (1987), the promise of a reward for identifying the digits correctly is supposed to indirectly influence one's dispositions to accuracy by stressing the potential gain in getting the digits right, and thus the costs of being wrong about them. Similarly, being told there is a close connection between forming unambiguous, clear-cut opinions and high intelligence is supposed to create a tendency to reach conclusions faster, thus influencing urgency to form a settled opinion on the matter. Noises (for example Kruglanski and Webster 1991; Kruglanski *et al.* 1993) and unattractiveness of the task (for example Webster 1993) are supposed to increase the difficulty of acquiring further evidence.[17]

It is not my intention here to draw a full analogy between the practical factors involved in traditional cases and those in the considered psychological studies. However, I think that it is fair to stress important similarities amongst them. It is not casual that the very same practical factors relevant for credence shift in the experimental studies have been considered relevant by other doxastic pragmatists. Notably, Nagel (2008) used the same studies to argue for her view, and has interpreted the data in the same way in which I interpreted them – with the only difference being that I have stressed the special support that these data provide to a specific type of doxastic pragmatism. Some of these studies are also discussed by Mikkel Gerken (2017, Ch. 12) in connection with the debates on knowledge ascription and shifty epistemology.[18] Since the paper's

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[17] It is important to stress that these interpretations are not merely my conjectures. The authors of the studies designed them for tracking features such as significant benefits or costs of achieving accuracy in judgment, benefits or costs in forming a settled opinion, and difficulties of information processing, and interpreted their results in this way.

[18] Weisberg (2017) uses the same cluster of studies to discuss related issues about the metaphysics of doxastic attitudes.

main focus is on the comparative evaluation of different forms of doxastic pragmatism, the fact that other doxastic pragmatists consider such studies as relevant for their views makes the present use not unmotivated, at least from a dialectical perspective.

Another worry is that most of these studies are a few decades old, limited in scope and number, and not designed to test or fit the specific alternatives at issue. One may have doubts about their significance for the present debate. I admit that the considered body of studies may be insufficient to draw definitive conclusions. However, I would like to observe that the set of studies is sufficiently complete and significant to provide at least *prima facie* evidence for my conclusions. It is important to stress that, while these studies are a bit dated, they are still considered paradigmatic in the growing literature on NFC and their results have never been contested. Recent overviews in this literature show that the considered studies are neither partial, nor marginal or considered unreliable by the scientific community. On the contrary, they have been very well-received and continuously referenced in the growing number of studies on the theory of need for closure and its applications.[19] Moreover, some recent studies in descriptive decision theory seem to provide further confirmation of the results of the studies discussed in the previous sub-section. In particular, a series of studies shows that lay people's probability estimates for negative events are systematically influenced by features of perceived outcomes and risks, such as the severity of the consequences, affective richness, salience and vividness of the scenario (Loewenstein et al. 2001; Rottenstreich and Hsee 2001; Sunstein 2002; Harris et al. 2009). These studies partially confirm the effects of practical factors on credence predicted by the studies discussed in §2.2.

I conclude this subsection by considering a quite different kind of worry. One may wonder whether credal and threshold pragmatism are really incompatible alternative, conflicting views. In particular, one may conceive a more nuanced version of threshold pragmatism, allowing exceptions to the threshold shift in some specific circumstances such as those considered in the above studies (which would be accounted for by credence shifts). According to this view – which we may call *mixed* pragmatism – the practical sensitivity of belief would be explained by the practical sensitivity of both credence and the threshold.[20]

Although we cannot utterly deny the viability of this view, I think that credal pragmatism has at least two advantages over it. First, considerations of simplicity and ontological parsimony favour credal pragmatism. In order to explain the available data, a mixed pragmatism must presuppose two separate mechanisms of doxastic attitudes' formation and regulation: one

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[19] See e.g. Roet et al. (2015) for a recent review.

[20] Thanks to an anonymous referee of this journal for drawing my attention to the possibility of this mixed view.

mechanism regulating the practical sensitivity of the threshold in specific circumstances, and another regulating the practical sensitivity of credence. In contrast, credal pragmatism can explain the same data assuming a single mechanism of credence regulation. Thus credal pragmatism provides a simpler, more parsimonious explanation of the data than the mixed view. Hence, assuming a threshold sensitive to practical factors seems unnecessary and would require more burdensome ontological and psychological commitments. Second, as argued above, the idea that the threshold is sensitive to practical factors in the way suggested by threshold pragmatism seems incompatible with some of the available data. In particular, some of the previous studies indicate that the threshold is not sensitive to the relevant practical factors in any of the ways threshold pragmatists suggest. On the contrary, in the considered studies the threshold sometimes seems to shift in exactly the opposite of the predicted direction, lowering in cases involving caution-oriented factors and rising in cases involving rush-oriented factors. Absent an account of why the threshold would be affected in completely different ways in different contexts, the mixed view would sound *ad hoc*, less principled than credal pragmatism.

3. Credal pragmatism and epistemic rationality

A central feature of credal pragmatism is that credence is supposed to be sensitive to practical factors such as stakes and urgency. The practical sensitivity of belief and of credence provides a picture that seems incongruous with a common normative presumption about doxastic attitudes according to which they should be exclusively sensitive to truth-relevant factors. Does this suggest that the systems regulating the formation of doxastic attitudes are fundamentally defective (at least in circumstances involving the relevant practical factors), and therefore that belief and subjective confidence formed by taking practical factors into account are epistemically irrational? This section is concerned with this and related issues about how credal pragmatism can square with some orthodox constraints on rational credence.

In the literature, we can already find some argument for the irrationality of credence sensitivity to practical factors. In particular, Rubin (2015) considers a pragmatic encroachment on credence according to which maximally rational credence is interest-relative or sensitive to practical factors. She shows that an agent whose credence shifts merely with a change in stakes is vulnerable to a kind of diachronic Dutch Book. Such an agent would accept a certain series of bets, provided respectively before and after a particular high-stakes situation turns up, that collectively leads to a sure loss. According to classical Dutch Book arguments, if a subject is

vulnerable to a Dutch Book, then her credences cannot be (ideally or maximally) rational. In particular, one's credences cannot be rational due to violations of Conditionalization rules.[21] Accordingly, as Rubin illustrates, having credence which is sensitive to practical factors cannot be rational, at least if we assume the standard Bayesian picture of rationality.

While admitting this point, we should keep in mind that the vulnerability to diachronic Dutch Book arguments can only work as an objection to normative theories of credence and credence update (for example, to a theory claiming that maximally rational credence *should be* sensitive to practical factors). Nonetheless, the practical sensitivity of credence and credal pragmatism are descriptive theses, concerning how belief formation, retention and revision work for normal human beings in cases involving perceived practical factors. Thus the point made by Rubin doesn't constitute a direct threat to these theses.

Furthermore, it is important to acknowledge that many philosophers and psychologists have radically different opinions about which attitudes or methods should count as rational. Many of them do not buy the idea that a subject is rational only when her credences are exclusively sensitive to truth-relevant factors and are updated using standard formal methods. Rather, they suggest that human beings can still be considered rational in some important sense even when they do not obey strict Bayesian standards. They oppose standards of *bounded rationality* to standards of *unbounded* or *ideal rationality*.[22]

On the one hand, we have unbounded, ideal rationality that takes truth and accuracy as its only rationality standards, abstracting away from limitations of cognitive abilities. An ideally rational subject's doxastic attitudes are completely isolated from influences of non-truth-relevant factors, such as influences of psychological, emotional, practical or environmental factors. Ideally rational subjects' credences should obey principles based on rules of logic, probability theory and so forth and can measure the truth-relevant factors to the highest accuracy.

On the other hand, human beings are not ideal rational agents. In reality, our cognitive performances are bounded by serious physical, ecological and temporal limits. Even though the human mind commits to certain patterns of cognition (such as various types of heuristics, biases

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[21] There are a variety of different conditionalization rules. The most prominent ones are Bayesian Conditionalization ($P_{new}(X)=P_{initial}(X|E)$ (provided $P_{initial}(E)>0$)) and Jeffrey Conditionalization ($P_{new}(X)=P_{initial}(X|E_1)\cdot P_{new}(E_1)+P_{initial}(X|E_2)\cdot P_{new}(E_2)+\ldots+P_{initial}(X|E_n)\cdot P_{new}(E_n)$). Conditionalization rules are considered as the exclusively correct methods for credence change. According to standard views (e.g., orthodox Bayesian theory), it is rational to modify one's credence on the basis of these methods, *and only on their basis*. This remark is important because, according to credal pragmatism, practical factors also affect credence in absence of new evidence.

[22] For overviews of discussions and relevant literaure on different types of rationality see e.g. Samuels et al. (2004) and Hertwig and Pedersen (2016).

and fallacies) that are not recommended by the standards of ideal rationality, humans might not be irrational. *Bounded rationality* characterizes the type of rationality relative to subjects with constraints due to limitations of mental and environmental resources.[23] A theory of bounded rationality focuses both on the structure of the environments and on the adaptation of the capacities of cognitive systems to the environments, for example through evolution and development.[24]

In the latter picture, it is boundedly rational that doxastic attitudes' regulation (formation, possession and retention) is adapted to environmental and practical factors. Our limitations due to cognitive resources (time, energy and etc.) do not allow us to carry on perpetual information seeking procedures or allocate infinite energy toward reaching a given judgment or opinion. The search and deliberation must be ended at some point. But we cannot terminate the search arbitrarily or consciously leave some relevant evidence out of consideration either; otherwise we would end up forming a shaky and highly uncertain base of judgments for actions and decisions. Then how can we form a solid judgmental base without exhausting ourselves? It is very plausible that through evolution we gained "the capacity to occasionally shut our minds, that is, develop the sense of secure knowledge that obviates our felt need for further agonizing deliberation" (Kruglanski 2004: 2). Importantly, due to the drive of bounded rationality, we allocate our energy in accordance with the demands of each task and reach closure at the point in which the accuracy of judgment is sufficient for a given purpose. Hence, although the practical sensitivity of belief is obviously irrational from the point of view of ideal rationality, it manifests bounded rationality. As was argued in the last section (§2), the practical sensitivity of belief depends on the practical sensitivity of credence, so the latter is boundedly rational as well.

Credal pragmatism fits extremely well with the demands of bounded rationality. An agent whose credences vary with practical factors in the way specified by credal pragmatism would give more weight to error possibilities and reduce the confidence in the relevant proposition in NTAC cases. For example, in high stakes cases, circumstances engender cognitive pressures on the subject, requiring one to be cautious and avoid risks of getting things wrong on a certain matter. Lower degrees of confidence and underestimation of evidence in such cases can be seen as functional to the goal of postponing closure until one's epistemic position has been

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[23] According to a famous analogy suggested by Hebert Simon, "Human rational behaviour…is shaped by a scissors whose two blades are the structure of the task environments and the computational capabilities of the actor" (Simon 1990: 7).

[24] One important line of research following this conception of bounded rationality goes under the label of 'ecological rationality'. This captures the importance of the environment in constraining and enabling decision making. See Todd and Brighton (2016) for a recent development of the theory of ecological rationality and relevant references.

sufficiently strengthened. In other NTAC cases, environments can be cognitively cooperative, providing cheap means to strengthen one's epistemic position – such as the easy availability of further evidence. In those cases, diminished confidence allows delaying the time of closure in order to take advantage of these means. In NFC cases, overconfidence helps in reaching opinions in contexts in which rapid formation of opinion and decision is more important than accuracy, or where unfriendly environments involve obstacles to the enhancement of one's epistemic position. Thus, far from compromising the agent's ability to solve decision problems effectively and efficiently, credence's sensitivity to practical factors in different environments helps the achievement of one's specific goals.

Even though it allows doxastic attitudes to be sensitive to practical factors, bounded rationality can be classified as a type of epistemic rationality broadly construed, for it concerns the achievement of epistemic goals, i.e. seeking truth and accuracy and avoiding falsity and error.[25] In particular, while bounded rational subjects tend to use different cognitive methods in response to pragmatic settings of the circumstance, this does not prevent those methods from being directed at forming true beliefs or avoiding false ones, and to be thereby sensitive to evidential and accuracy-conducive considerations.[26] In this regard, it must be noted that for a bounded rational subject perceived practical factors do not interact with the subjects' doxastic deliberation as practical reasons, but rather work by indirectly influencing the strength of certain evidential considerations or by weighting a certain epistemic goal more than the other (e.g., avoiding error rather than getting the truth, or *vice versa*).[27]

Hence, the initial worry considered in this section – that credal pragmatism doesn't fit well with the common normative presumption about doxastic attitudes according to which they should be exclusively sensitive to truth-relevant factors – can be addressed by two sets of considerations: first, since the practical sensitivity of credence and credal pragmatism are descriptive theories, their advocates do not have to take a stand on whether it is rational that credences are sensitive to practical factors. Second, as far as the contemporary debate on the

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[25] I take this to be the mark of epistemic rationality as opposed to other types of rationality. However, if one conceives the difference between types of rationality in different terms, I am open to alternative ways of shaping the distinction.

[26] This notion of epistemic rationality has been discussed in recent works in epistemic utility theory. Decision theory admits an influence of practical factors in the determination of utilities, such as for example psychological effects of risk aversion (Buchak 2014). Campbell-Moore and Salow (ms) argue that these considerations apply also to epistemic utilities. The relevant influence of practical factors does not make rationality less epistemic, for it is still directed at maximizing accuracy (or truth) and minimizing risk of error (falsity).

[27] On the indirect ways in which practical factors influence evidential considerations and epistemic rationality in the relevant cases, see e.g., Grimm (2011) and Wedgwood (2012: 325).

nature of epistemic rationality goes, many philosophers and psychologists still find room for assessing practically sensitive credences as rational, at least in a qualified sense.

Nonetheless, one may be still concerned about the compatibility of credal pragmatism and Bayesianism. One may worry that if credences are subject to easy and systematic variance with simple changes in practical factors, the powerful Bayesian model can no longer be usefully applied to credences.[28] It is worth stressing that standard Bayesianism is commonly considered a normative theory of credence, not a descriptive one. This is confirmed by a series of studies showing that, as a matter of fact, in most circumstances people do not regulate their doxastic attitudes according to Bayesian standards and do not update credence using Bayesian methods.[29] Thus, if the worry is that credal pragmatism would threaten Bayesianism as a descriptive theory, there are independent reasons to think that Bayesianism is not a good model for how people actually regulate and update their credences. Nonetheless, one could wonder whether a systematic divergence from Bayesian standards at the descriptive level would constitute a genuine cost for credal pragmatism.

In response, I don't think we should be too pessimistic on the possibility of applying a Bayesian framework to credal pragmatism. The standard Bayesian model can still be usefully applied to one's credences in normal circumstances where no practical factors affect the subject's confidence. Furthermore, credal pragmatism is compatible with non-standard Bayesian models. In particular, Bayesianism has two main components: first, rational credences should satisfy the probability calculus (probabilism); and second, that rational credences should be updated by conditionalizing on new evidence. Agents whose credences are sensitive to practical factors can still satisfy probabilism. Even though affected by practical factors, a system of credences can perfectly cohere in ways that satisfy Kolmogorov's probability axioms.

It seems that if credal pragmatism is true, one would systematically violate Conditionalization principles. This is because credence's updates do not depend uniquely on new evidence, but also partially on practical factors. However, credal pragmatism is compatible with a modified version of conditionalization featuring *weighted evidence* rather than *raw evidence*. In this model, before factoring the evidential support into conditionalization rules, this support is weighted differently in different practical circumstances. More precisely, a lower probabilistic weight is given to evidential support in caution-oriented circumstances and a higher weight in rush-oriented circumstances. This mechanism allows for preserving a version of the

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[28] Thanks to an anonymous referee for pressing me to address this important worry.

[29] Phillips and Edwards (1966), Robinson and Hastie (1985), Zhao et al. (2012), Douven and Schupbach (2015).

Conditionalization principle as a useful tool for updating credence on new evidence also within a credal pragmatist framework.[30]

In sum, I do not think that credal pragmatism is in conflict with a Bayesian model. On the contrary, we can conceive a Bayesian-friendly version of credal pragmatism preserving the core tenets of Bayesianism – probabilism and specific versions of the Conditionalization rule.

4. Conclusion

In this paper, I have considered two competing versions of doxastic pragmatism, threshold pragmatism and credal pragmatism. I argued that the latter fares better than the former in accommodating a range of intuitive and empirical data. The available data seem to vindicate the practical sensitivity of credence predicted by credal pragmatism. Furthermore, the data indicate that, if there is a threshold on credence necessary for outright belief, this is not sensitive to practical factors as threshold pragmatism predicts. I also considered the potential worry that credal pragmatism doesn't fit well with the common normative presumption about doxastic attitudes. I argued that this worry can be addressed by two sets of considerations: first, the practical sensitivity of credence and credal pragmatism are descriptive theories, not prescriptive ones. Second, the contemporary debate on the nature of epistemic rationality makes room for assessing practically sensitive credences as rational, at least in a qualified sense. Though more work is needed to establish the practical sensitivity of credence and credal pragmatism, I hope to have provided at least some *prima facie* motivations for favouring credal pragmatism over threshold pragmatism.

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[30] I am aware that the present discussion is too sketchy and abstract. Unfortunately the limited space doesn't allow a detailed discussion. In [Author], I develop this non-standard Bayesian model and compare it to that discussed by Clarke (2013). In his article, Clarke shows that credence sensitivity to contextual factors is compatible with a Bayesian framework. Though I disagree with his framework, I think that it provides another illustration of how credence sensitivity to contexts can be compatible with a Bayesian framework.

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