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Introduction

Costs and Benefits of Imperfect Cognitions

In May 2014 we organised a workshop entitled "Costs and Benefits of Imperfect Cognitions", hosted by the University of Birmingham and funded by an AHRC Fellowship on the epistemic innocence of imperfect cognitions. Most of the talks presented during the workshop are now part of this special issue. Two additional papers are also included.

The purpose of the workshop and this collection of papers is to reflect on the effects of "imperfect cognitions" on agents' wellbeing, success, health, and capacity for knowledge. We consider some paradigmatic examples of irrational beliefs, such as beliefs formed as a result of reasoning mistakes; delusions in schizophrenia, delusional disorders, and anosognosia; memories that are either distorted or entirely fabricated; and beliefs and preferences affected by implicit bias.

Our first objective is to discuss the different types of costs and benefits that such cognitions might have, and debunk some myths. Here are some of the questions the contributors ask: Can delusions have some epistemic benefits? Are ecologically rational choices always adaptive? Why are delusions regarded as pathological whereas other irrational beliefs are not? Are there any positive ways for distorted or false memories to impact on wellbeing or knowledge? Is it true that we are not responsible for actions driven by implicit attitudes?

Our second objective is to explore the relationship among different types of costs and benefits. The following issues are part of this exploration: Do evolutionary advantages and epistemic ones go hand-in-hand? Does the harmfulness of delusions always translate into impoverished epistemic access to the world? What are the effects of an out-of-date conception of the self for wellbeing and socialisation? Can confabulatory explanations of actions guided by implicit bias be good for the agents who provide them? Can a false memory fail to represent reality but succeed in conveying personal meanings?

A very common way of understanding the role of imperfect cognitions is to present them as epistemically bad but otherwise pragmatically useful. Self-deception is the obvious case: if we avoid the belief that we are responsible for some negatively valued event, we end up feeling better about ourselves, but we forego an understanding of the process that led to the event. The thought then is that pragmatic benefits are had at the expense of epistemic ones. Our research into imperfect cognitions has just started, but the contributions to this volume suggest that we should resist the trade-off view of the relationship between pragmatic and epistemic benefits, and adopt a more liberal view of what constitutes an epistemic benefit.

1. What are the benefits of epistemically flawed beliefs?

Lisa Bortolotti is interested in the potential benefits of irrational beliefs, and she focuses on pathological beliefs. In particular, she discusses those delusions that have been construed as playing a defensive function, such as Reverse Othello syndrome, erotomania, and anosognosia. Such delusions are wildly implausible, but at the time at which they are endorsed, they may carry both psychological and epistemic benefits. They act as a defence protecting agents from low self-esteem and the potentially disruptive consequences of overwhelming negative emotions. In virtue of such benefits, they also allow agents to avoid depression and continue interacting with the surrounding physical and social environment in a way that may be conducive to feedback from social exchanges and to the acquisition of useful information. To characterise cognitions that are typically false and irrational but may also carry benefits of this sort, Bortolotti introduces the notion of *epistemic innocence* which captures the status of cognitions that have some significant epistemic benefit and whose benefit could not be attained by other means. To show that at least in some circumstances there may be no alternatives to a delusional belief, Bortolotti argues that in anosognosia people do not have direct evidence of their impairments and are unable to integrate indirect evidence about their impairments in their concept of themselves. This means that one plausible alternative to the delusional belief that they are not impaired, that is, the belief that they are impaired, may not be available to them. Bortolotti concludes that, in the case of motivated delusions, psychological benefits can turn into epistemic ones.

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In their paper, **Maarten Boudry, Michael Vlerick, and Ryan McKay** revisit the contribution of the friends of ecological rationality to the rationality debate in cognitive science. The rationality debate concerns the implications of people failing simple inductive and deductive reasoning tasks in experimental settings. The friends of ecological rationality correctly point out that failure in solving the reasoning tasks may be explained in some circumstances by the fact that the tasks are presented in a misleading way. But they also defend a more general and stronger claim, the claim that heuristics regarded as epistemically flawed or biased can be shown to be *ecologically rational*. This is the claim Boudry and colleagues find problematic. Some of the heuristics responsible for reasoning mistakes can be adaptive, but they cannot be redeemed as rational. Boudry and colleagues illustrate the difference between adaptiveness and rationality with the example of superstitious beliefs and fast-and-frugal heuristics. Superstitious beliefs may be adaptive (as in some environments genetic fitness may be enhanced in organisms that avoid risks) but this does not make them rational (as they are badly supported by the evidence and fail to track the truth). A fast-and-frugal heuristic such as the recognition heuristic is useful when people are asked to make a choice in a situation of ignorance. They select better-known versus less well-known items, and this can lead them to making the right choice in some environments. But in advertising the recognition heuristic is exploited: the presence of a known brand determines a consumer's choice, and other relevant factors such as product quality are not taken into account. Heuristics are effective in some domains, and misfire in others. Their local adaptiveness is definitely a benefit, but it is not a good indication of their epistemic rationality.

2. What are the benefits of distorted memories?

Jordi Fernandez argues that memories have (at least) two types of functions and two types of benefits. They preserve information about the past (*narrative function*) and they are reconstructions of events that engage the same capacities involved in imagination and are aimed to build a narrative (*reconstructive function*). They can provide good evidence about the past, thereby allowing the subject to represent the past accurately (which is epistemically beneficial); and they contribute to the formation of beliefs about the past that have an instrumental value for the agent, thereby allowing the agent to satisfy some of her goals (which is adaptively beneficial). Depending on the agent's goals, the epistemic benefits and the adaptiveness of memories can be related. In the paper, Fernandez asks whether two forms of memory distortions—observer memories and fabricated memories—can be adaptive. In the context of trauma, observer memories enable agents to obtain some affective relief in the short term, but may hinder their capacity to develop a coherent and healthy self-concept in the long term. In the context of false memories of abuse, memories can respond to a need for explanation thereby relieving internal tensions, but can cause emotional damage and compromise personal relationships. The interesting result is that, if we take memory to have only a narrative function, then observer memories and fabricated memories are not distorted. They have been produced to further the goals of the agent, not to represent the past correctly. But if we take memory to have only a preservative function, then observer memories and fabricated memories have no benefits, because the only benefits that count are epistemic ones. Fernandez argues that both conclusions are unattractive and that the case of beneficial memory distortions suggests that we should take an inclusive approach to the functions of memory.

Martin Conway and Catherine Loveday reach a similar conclusion to Fernandez, that false memories can have significant benefits for an agent, but start from a more radical position in that they downplay the preservative function of memory, based on empirical investigations of how memory works. Memories and imagined events are constructed in a similar way, inferentially, via the so-called "remembering–imagining system", and the accuracy of autobiographical memories is understood in terms of the relationship between *correspondence* (how the memory captures an experienced event) and *coherence* (how the memory coheres with other beliefs about the self). Whereas a memory can succeed in its coherence, it can never fully succeed in its correspondence as it will always be partial and to some extent distorted. No memories represent events "literally" and maybe they are not supposed to do so. The main function of memory is to "generate personal meanings", that is, to provide an understanding of the world that allows agents to successfully adapt to it.

3. What is pathological in delusional beliefs?

Aikaterina Fotopoulou argues that, just as the past self is known via inference from autobiographical memory, so the present self is known via perceptual inference. Due to its indirect nature, representations of the past and present self are imperfect, both in the context of normal perceptual inference and of pathological conditions such as anosognosia for hemiplegia. Consistent with the prediction–error model, in Fotopoulou's account the brain predicts the hidden causes of sensory inputs and revises such predictions in order to minimise errors. There some delusional beliefs emerging in anosognosia, such as the illusion of movement and the adherence to the denial of paralysis even after the paralysis has been acknowledged. How can these beliefs be explained? A temptation is to rely on a multiplicity of distinct factors, where the hypothesis is that both perception and reasoning are damaged. But Fotopoulou argues instead that we should just focus on *perceptual inference*. In anosognosia prediction errors are absent or unreliable and this results in patients making inferences from out-of-date models of their motor abilities. More specifically, in Fotopoulou's account, anosognosia is due to an inability to update bodily awareness in the light of new information about the affected body parts and to integrate first- and third-person perspectives on the body. Anosognosia for hemiplegia is just an exaggeration of the imperfection of bodily awareness.

Kengo Miyazono also considers the costs of delusional beliefs, and attempts to account for their pathological nature. What is the difference between everyday irrational beliefs, such as the unjustified belief in the infidelity of one's spouse

or common instances of self-deception, and delusional beliefs that are symptoms of schizophrenia and delusional disorders? Miyazono critically assesses several answers provided in the literature and dismisses them: delusions are not necessarily more bizarre, more irrational, or less understandable than non-delusional beliefs. Moreover, it is not always the case that a person with delusions lacks responsibility for the actions guided by her delusional beliefs. Miyazono's positive account is that delusions are pathological because they involve a *harmful biological malfunction*. Delusions are harmful because they disrupt good functioning and often negatively affect the quality of life of people who report them. Delusions are malfunctioning beliefs because the processes by which they are formed are abnormal in some important respect (that is, in some respect other than statistical normality), where the respects in which the process malfunctions vary according to one's preferred aetiological account of delusions. In the person who forms delusions, either experience is abnormal or, additionally, there are deficits concerning attention and reasoning.

4. What are the costs and benefits of implicit cognitions?

Jules Holroyd investigates responsibility for implicit biases and the actions resulting from them. Holroyd considers three epistemic conditions for responsibility for implicit bias, endorsing the third, which is that one should have observational awareness of the effects of implicitly biased behaviour. Observational awareness is being aware that one's behaviour has some morally undesirable property, for example, the property of being discriminatory. According to Holroyd, we should not be asking whether agents do, as a matter of fact, have observational awareness of their biased behaviour, but rather, whether they *ought to* have this awareness, and whether they are culpable for not having it. Drawing on empirical work, Holroyd argues that agents *can* have observational awareness of their discriminatory behaviours that are based on implicit attitudes. She also argues that agents ought to have this awareness, and resists the claim that agents are not responsible for behaviours manifesting biases because biased actions are guided by implicit cognitions. Finally, Holroyd considers the role of other imperfect cognitions in relation to implicit biases, specifically, failures of attentiveness, and self-deception. She suggests that an investigation into whether agents are responsible for actions guided by implicit biases may in part depend on the relationship between implicit biases and other imperfect cognitions.

Ema Sullivan-Bissett is interested in the epistemic status of confabulatory explanations of decisions or actions guided by implicit bias. She is keen to resist the trade-off view of imperfect cognitions; that a cognition enjoys pragmatic benefits at the expense of epistemic ones. To this end, she too appeals to the notion of *epistemic innocence*. She focuses on two imagined cases of decisions or actions guided by implicit biases. Via an analysis of these cases, she argues that at least sometimes, confabulatory explanations of decisions or actions guided by implicit bias are *epistemically innocent*. First, they may be epistemically beneficial. They fill an explanatory gap, potentially leading to the acquisition and retention of true beliefs and knowledge, and they also help to maintain consistency between an agent's beliefs. Second, alternative (more epistemically worthy) explanations that could confer these benefits are unavailable. Sullivan-Bissett concludes that when we are in the business of epistemic evaluation, we should consider both the epistemic benefits of an imperfect cognition, and the context in which it occurs.

5. Conclusions

We believe that the eight papers in this issue initiate a much needed interdisciplinary dialogue on imperfect cognitions, and make substantial progress in answering key research questions about the types of costs and benefits that such cognitions in the clinical and non-clinical population may have.

Hopefully the ideas presented here will also stimulate further empirical research and conceptual investigation into different forms of imperfect cognitions, and help sketch a more psychologically realistic account of human agency and cognition.

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