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Common-Sense Temporal Ontology: An Experimental Study

Abstract

Temporal ontology is the philosophical debate on the existence of the past and the future. It features a three-way confrontation between supporters of presentism (the present exists, the past and the future do not), pastism (the past and the present exist, the future does not), and eternalism (the past, the present, and the future all exist). Most philosophers engaged in this debate agree that presentism is part of the common-sense view of time, or that it is much more commonsensical than the opposed views; also, most of them agree that accordance with common sense is epistemically valuable for a philosophical view. We studied experimentally non-experts' ideas pertaining to the domain of temporal ontology, i.e., as we called it, *common-sense temporal ontology*, focusing on Italian population. We found that a non-overwhelming majority of participants (~64%) favoured presentism, while two significant minorities endorsed pastism (~19%) and eternalism (~17%). We think that our findings provide some support, albeit weaker than expected, for the view that presentism is part of the common-sense view of time or, at any rate, that it is remarkably more commonsensical than rival views.

1. Introduction

Temporal ontology is the philosophical investigation on the ontic status, i.e., the condition of existence or nonexistence, of past and future things. The debate features three main ontological options: presentism, the view that the past and the future do not exist, i.e., only the present exists; pastism, or growing block theory, the view that, in addition to the present, also the past exists; and eternalism, the view that, in addition to the present, both the past and the future exist.¹ There are also forms of pastism and eternalism according to which the past, or both the past and the future, albeit existent, lack attributes of certain kinds (more specifically, those attributes making a thing conscious or concrete), and may be claimed, in this sense, “less existent” or “less real” than the present (which is “fully real” or “fully existent”).² Argumentation in temporal ontology draws upon many and disparate themes such as relativistic physics, semantics of proper names, cross-time relations, truth grounding, temporal passage, persistence, open future and free will, death's badness, past sufferance, and experience of time (in particular, emotions towards past and future things, phenomenal present).³ Such wealth of themes and connections to other branches of philosophical reflection makes the debate in temporal ontology extremely intricate as well as engaging.

A further theme, which rarely shows up in explicit arguments and nonetheless seems to play a relevant role in the debate, is common sense. Those familiar with the literature on temporal ontology know perfectly well how frequent are claims to the effect that presentism is in accordance with common sense or that it is so more than rival ontological views – a point that sometimes is also made in terms of

¹ Here are some very essential references in temporal ontology: presentism is defended by Bourne (2006) and Markosian (2004); pastism by Tooley (1997); eternalism by Mellor (1998), Sider (2001), Cameron (2015). Further references for eternalism are in fn. 7 in §3.

² See, for example, Forrest (2004)'s pastism, according to which the past lacks all properties (and events) that are tied to consciousness and mental activity; Smith 2002's presentism-eternalism hybrid view of time according to which both the past and the future exist but lack all those attributes bestowing concreteness (say, colour, weight, spatial extension).

³ For a presentism-centred overview of various issues debated in temporal ontology see Ingram and Tallant (2022).

accordance with the folk, or naïve, view of time or with folk intuitions about time. The thesis that presentism is commonsensical appears to be shared, with very few exceptions, by supporters and opponents of presentism alike, and thus may be considered the received view, among philosophers, on the matter.⁴ Figuring out what the common-sense views about this or that topic of philosophical interest are like – i.e., determining, we might say, the contents of “common-sense philosophy” (using this term in analogy with the ways in which “common-sense physics”, “common-sense biology” etc. are used in cognitive science) – might be an interesting undertaking, worth pursuing for its own sake; but it may be relevant from the epistemic point of view too, for it is generally accepted that, for a philosophical view, agreement with common sense has a positive value, whereas disagreement a negative one.⁵ Such an epistemological attitude might be reasonably taken to underly, albeit mostly in an implicit way, the frequent mention of presentism’s commonsensicality or intuitiveness; at any rate, if presentism is indeed commonsensical, its commonsensicality can in principle be adduced as evidence in its favour. But is presentism really commonsensical?

As said, philosophers’ agreement on presentism’s commonsensicality is not fully unanimous. Some, such as Zimmerman (2008) and Dainton (2010: 28), seem to believe that common sense might be somewhat undetermined as regards the ontology of time and think that all that can be safely said is that the common-sense view of time is one according to which the past and the future are less real than the present (which is compatible with presentism, but also leaves room for those forms of non-presentism according to which the past, but not the future, or both the past and future do exist, but to a lesser extent than the present).⁶ While these thinkers appear to be motivated by caution, others have gone so far as to forcefully reject the received view or at least to seriously put it into question. Torrenco (2017) holds that, when carefully scrutinised, some common-sense beliefs that might be thought at first glance to favour presentism turn out to be neutral, as they prove to be compatible with both presentism and non-presentism (e.g., the belief that “What has existed (and exists no more) is not what we meet in the present”: p. 52), while other common-sense beliefs even appear to be more compatible with non-presentism than presentism (e.g., the beliefs that “What exists possesses causal powers and is located in space and time”, p. 53, and “What is past *isn’t* abstract”, p. 54); so, contrary to the received view, common sense is either neutral as far as the ontic status of the past is concerned or even favourable to non-presentism. But while Torrenco’s rejection of presentism’s commonsensicality – just like the endorsement of it by those who endorse it – is based on traditional philosophical “harm-chair” reflection (reflection on ordinary language and one’s own intuitions, on the assumption that those intuitions are largely shared by others), doubts on the received view have also come from experimental philosophy. Latham et al. (2021) carried out two very similar experiments in which participants were shown a series of six vignettes, each describing a universe under various temporal aspects including the ontic status of past and future things (objects and events), and asked to indicate which universe resembles most the actual universe. It was found that only about 21% of participants chose the presentist universe – a result which casts doubt on the received view that presentism is commonsensical.

Spurred by Torrenco (2017)’s maverick stance and Latham et al. (2021)’s unexpected experimental findings, we carried out an experimental study aimed at investigating *exclusively* the common-sense views on the ontic status of past and future things, i.e., we might say, *common-sense (or folk) temporal ontology*, thus putting to test the received view about presentism’s commonsensicality. Besides identifying participants’ ontological views about the past and the future, in our study we also aimed at investigating in broad terms the genesis of such views, namely whether they are natural, cultural, or both. We did that

⁴ The opinion that presentism is in accordance with common sense is held by presentists such as Bigelow (1996: 35), Hinchliff (1996: 131), Craig (2000: 8), Markosian (2004: 48), De Clercq (2006: 386), Kierland & Monton (2007: 485), Merricks (2007: 140), Orilia (2016: 595-598); Zimmerman (2011: 226); and by non-presentists such as Putnam (1967: 240), Sider (2001: 11), Petkov (2006: 207), Wüthrich (2012: 441).

⁵ In this paper we assume that accordance, and discordance, with common sense bear epistemic value. How this assumption might be motivated is of course an important issue, which however, except from some brief hints contained in §2, we do not address in this paper.

⁶ However, as noted in fn. 4, Zimmerman (2011) accepts the received view of presentism’s commonsensicality.

by looking for correlations between participants' ontological views and their education levels as well as by directly asking participants what they thought about the origin of their own ontological beliefs.

We found that ~64% of participants share a presentist view, ~19% a pastist one, and ~17% an eternalist one; and we found that ontological ideas (about the past or the future) were considered in ~81.5% of cases as natural (either merely natural or both natural and cultural) and only in ~18.5% of cases as merely cultural – a result which may be taken to offer some reason, however feeble, for generalising the partition of preferences among presentism, pastism, and eternalism beyond the population we studied. Overall, our results offer some support to the received view, although the registered level of endorsement to presentism is lower than we, and we believe many others, presumed.

The paper you are reading describes our study and some of the thinking underlying its elaboration. In §2 we address some issues concerning the definition of common sense, which should be taken into account when conducting an experimental study that attempts to determine its content; in §3 we discuss Latham et al. (2021)'s study and express some reservations about its validity; in §4 we describe our study and its results; in §5 we discuss these results; in §6 we conclude.

2. Common sense: internal inconsistency, commonality, and naturality

A good deal of what each person believes concerns the things of the world *in general*: what kind of things there are, how they are, how they are related to each other, how they behave and interact with each other in processes involving them; and some of such beliefs even concern the world as a whole. We may say that each person has a collection of beliefs representing a personal *view of the world*, which, however, is not only a description of things, but also contains (putative) explanations about them, and thus can be often used to make predictions about them. Through time, a person's view of the world undergoes changes, thanks to experience and education, but some of it tends to remain rather stable. Moreover, a person's view of the world is not purely individual, for many beliefs composing it are shared by other people, and in certain cases by most people, at different places and different times, despite psychological and cultural differences. Since, as a matter of fact, practical or theoretical expertise (of any kind) greatly varies from person to person, in general most common beliefs will be ordinary in character, i.e., acquired without a special education and the effort that is usually involved in it. This collection of ordinary (non-expert) and effortlessly acquired beliefs shared by most people is common sense, at least according to how the term is generally used in contemporary philosophy.

While refining this vague characterisation of common sense into a satisfactory characterisation of common sense is a difficult task, and certainly one beyond the scope of this paper, some issues here cannot be entirely set aside, for they impinge on the very task of investigating the content of common sense experimentally. We shall address three such issues: the possible inconsistency among common-sense beliefs, the measure of commonality of common-sense beliefs, and the natural or cultural origin of common-sense beliefs.

Ascribing evidential value to the accordance, or discordance, of a claim with common sense presupposes that common sense itself tends to be, overall, true or close to the truth. This presupposition can be argued for via different routes. It may be argued that the very fact that we have acquired a belief and that it keeps on resisting the many trials involved in our everyday interactions with the world counts as evidence of its truth); or that, typically, common-sense claims are intuitive, i.e., they seem to be true, and they are such for most people, and that intuitiveness of a belief should be taken as evidence of its truth (see Zimmerman (2008: 222) and Rescher (2005: 31), who argue along this line); or that common-sense beliefs are often useful and that the usefulness of a belief is evidence of its (closeness to) truth, for beliefs which represent reality in a more correct way are in general better guides for action than those which represent it in a less correct way (Boulter (2007: 42) and Sankey (2014: 16, 17) argue along this line, and so do Castañeda (1989) and Audi (2015: 226), who however focus on the most basic form of usefulness, namely usefulness for survival). Presumably, not every common-sense belief is intuitive, useful, and in principle testable through everyday experience. However, presumably most, if not all, of them have at least one of these features; thus, jointly considered, the three justificational approaches just mentioned yield a justification, if not for all, at least for most of what is part of common sense. In any

case, when positively evaluating the accordance of a philosophical view with common sense, properly speaking one has in mind not simply its consistency with common sense but rather either its being *part* of common sense, i.e., its *commonsensicality*, or that the view at issue, while not being part of common sense, is *entailed* by some part of common sense. On the other hand, when claiming that it is epistemically bad for a claim to be in discordance with common sense, what is at issue is not simply its not being part of common sense, but its *inconsistency* with some part of common sense or with some claim that is entailed by some part of common sense. A further complication is due to the fact that common sense may well not be internally consistent and thus it may be the case that a philosophical claim is both part of common sense and incompatible with *other* common-sense beliefs. So, despite appearances, ascertaining whether a claim is *overall* more or less in accordance with common sense than another may be a quite challenging undertaking. In our study, we do not try to evaluate the global accordance of any of the three options in temporal ontology with common sense; we exclusively aim at investigating whether one of them – or, better, as we shall clarify in a moment, how much each of them – is part of common sense, setting aside possible inconsistencies with other common-sense beliefs. This means that our results will be compatible with the possibility that any ontological option is both part of common sense and inconsistent with other parts of common sense.

On our minimal characterisation of common sense, the fundamental requirement for a belief to qualify as commonsensical is the wide commonality of it among people. But the criterium of commonality is as fundamental as tricky. While it is usually not expected that armchair judgements about what is, or is not, commonsensical be based on a specification of *how common* among people a belief must be in order to qualify as part of common sense, an experimental study can hardly avoid this issue. One might set the minimal threshold of commonality to 75% of people (as tentatively suggested by Lavazza and Marraffa (2016: VIII)), and motivate this choice as follows: on the one hand, a common-sense belief must be shared by at least the absolute majority of all the people, i.e., more than 50%; on the other hand, it seems to be an exaggerated expectation that it be shared by 100% of the people; therefore, the middle ground appears to be an acceptable measure. At a first consideration, we personally would be perfectly satisfied with this measure, and we guess many other would. But fixing a sharp threshold in this connection seems problematic. Would we refuse to consider part of common sense a belief that is only shared by 70% of people? Or only by 60%? Some may deem such levels of commonality still acceptable – in effect, estimating the measure of commonality of common-sense beliefs would be an interesting topic of experimental research among philosophers and non-philosophers. Unfortunately, the problem cannot be solved by lowering the threshold of commonality, since it would affect any *sharp* threshold which one could settle on. A way out of this problem might be simply dropping any attempt to fix a sharp threshold and embracing what we might call a *gradualist* view of common sense, according to which – while retaining, of course, the other definitional properties of common-sense beliefs such as being ordinary and easily attainable, – the commonsensicality of a belief is taken to vary depending on how widely shared the belief at issue is. On this view, a belief that is shared by only 15% of the people will be also commonsensical, but much less than one shared by 85%, and even a claim that is held by just 1% of the people will be commonsensical, but just very little so.

Adopting such gradualist notion of common sense, which we deem less radical than it might seem at a first glance, would not negatively affect the philosophers' practice to appeal to common sense; quite on the contrary, it appears to suit well possible cases where an overwhelming adhesion to any particular view is lacking. First, while beliefs included in common sense (understood according to the sharp-threshold view of it) are appreciated – among other factors – because of their being very widely shared, the commonality of a belief can be appreciated even if does not reach a minimal threshold. For example, for a belief it is better to be shared by 50% than by the 40% of people, even if neither reaches the minimal threshold of commonality of 75%. Second, how significant is the degree of commonality of a certain view over a certain topic is to be estimated not in isolation, but rather by taking into account the degree of commonality of the *other* philosophical views on that issue. For example, the following might not seem particularly striking: coming to know that 50% of people share a certain philosophical view, when we also come to know that the remaining 50% share the opposite view. In contrast, a commonality of 50% may be significant if the remaining 50% of people were rather divided or had no belief at all about the

topic at issue: in this case, even just a 50% of commonality might be seen as providing a non-negligible epistemic support. Therefore, even a low degree of commonality may be philosophically significant, in comparison with lower degrees of commonality of alternative views. In a gradualist view of common sense, we may say that the various views on the topic at issue have various degrees of commonsensicality. With our study, we were expecting to find an indication that presentism is much more commonsensical than pastism, and pastism much more than eternalism. In an attempt to give an explicit numerical estimate, we would have ventured to say, in consideration of philosopher's received view on the topic and our own experiences, that presentism would have been chosen by at least 90% of our sample.

The third issue we want to briefly address is the origin of common-sense beliefs. We may distinguish, very broadly, three cases: a belief can be natural, cultural, or both. Very roughly, cultural beliefs are those having a cultural origin, i.e., they are due to basic education and popular media (they also include popularised expert beliefs); natural beliefs are acquired by natural means, i.e., through the interaction of our perceptual and cognitive systems with the more basic and general features of the environments in which we happen to live; however, some beliefs may be acquired naturally and confirmed culturally, so that it makes sense to consider them as both natural and cultural. Albeit vague, at least as it has been stated, this tripartition is legitimately applicable to many cases. For example, there seems to be some deep difference in origin between the belief that colour is an objective feature of the surface of material objects, which presumably qualifies as natural; and the belief that asbestos is carcinogenic, which surely qualifies as cultural instead. The issue of whether common sense should be conceived of as including only natural or also cultural beliefs may be partly terminological, but it also connects to more substantial matters. Since human cultures vary a lot across time and space but the basic aspects of human perceptual and cognitive systems, as well as of the environments where humans live, are much more stable, it is plausible to think that, generally speaking, natural beliefs will be more common than cultural ones. This means, to put it in other terms, that the commonality of certain common-sense beliefs is explained by their naturalness. This can be of some relevance to experimental philosophy. When conducting experimental studies trying to figure out the content of common sense, we may also go the other way around and treat evidence that a certain belief is natural, rather than cultural, as an indication of its being also largely shared and thus part of common sense or – on the gradualist view of it – very commonsensical. This would allow us to make some cautious conjecture about whether the result of a study could be generalised beyond the sample, and perhaps even the population, actually studied.

Of course, investigating experimentally whether a certain belief is natural or cultural may be a difficult endeavour leading to uncertain results: if directly asking participants what they believe about the origin of their own beliefs, we must of course hold in due count that introspection is fallible; if trying to correlate a high level of education with a cultural origin of certain beliefs, we must pay attention to the possibility that a high level of education, while certainly being the origin of certain beliefs, may also put participants in a better condition to understand the questions they are asked, thus helping to bring to light beliefs irrespectively of their origin (as remarked for example by Shardlow et al. 2020: §3). Aware of the difficulties of following either route, but holding that little and unsure information in this regard would be better than no information at all, we decided to follow both in our study. Our hypothesis was that presentism would have been considered as more natural than eternalism, and that eternalism would have emerged as a more cultural option, held by those participants having a more scientific education; we made no hypothesis about the naturalness or culturalness of pastism.

3. Latham et al. (2021) on common-sense temporal ontology

Time has so far received little attention in experimental philosophy. Yet common-sense temporal ontology was already experimentally investigated by Latham et al. (2021), though without featuring as the exclusive or primary focus in their study. Its declared main aim was to test the claim that, according to common sense, time passes.

As mentioned in §1, temporal ontology is indeed connected to many other philosophical debates. First and foremost, it is tightly connected to the debate between the dynamic and the static view of time. Here is a quick illustration of it, framed in terms of times. According to the dynamic view of time, or A-

theory, there is a time, i.e., the present one, that unlike all others, possesses a metaphysically distinctive feature, but this feature is subsequently possessed by all times and their contents: past times *were* present, future ones *will be* present. The dynamic view takes various forms, which differ primarily in their way of identifying the distinctive feature of the present: they are presentism, pastism, and A-eternalism, or Moving spotlight theory. On presentism, the metaphysically distinctive feature of the present is existence; on pastism, it is being the edge of existence (what has most recently come to exist); on A-eternalism, it is a primitive property of presentness. According to the static view of time, there is no metaphysically distinctive feature that is had by one time and not by others, and *a fortiori* no such feature is subsequently possessed by all times. The static view of time as such entails eternalism: no time is privileged in any metaphysical significant way, thus not even ontically. It also takes various forms: B-theory, C-theory, or Undirected theory, and Timeless theory, or Unordered theory. They differ with each other primarily because of the kind of ordering each takes to obtain among times. A B-relational order of times is one in which times bear to each other a B-relation of succession (any time is after another time); a C-relational order is one in which times bear to each other just the C-relation of temporal betweenness (any time is between two other times). On the B-theory, times are B-related (as well as C-related); on the C-theory, they are just C-related; on the Timeless theory, they are neither B- nor C-related.⁷

So, Latham et al. carried out two slightly different experiments in both of which participants were presented with six vignettes, each portraying a universe with certain various temporal characteristics and corresponding to one of the above-described theories of time (presentism, pastism, A-eternalism, B-theory, C-theory, and timeless theory); and then asked to choose which vignette in their opinion portrayed the universe most similar to the actual universe. In the second experiment, the authors also investigated the view of time people hold naturally, apart from sophisticated learning. The two experiments were carried out over large samples (600 people in each experiment) and together found that that a majority consisting in ~70% of participants (66.3% in the first experiment, 72.8% in the second one) favoured some form of the dynamic view of time (presentism, pastism, or A-eternalism), while a still substantial minority of ~30% of participants (33.7% in the first experiment, 27.2% in the second one) some version of the static view (B-theory, C-theory, or Timeless theory). But, quite unexpectedly, the experiments also found that none of the six vignettes attained an overwhelming majority of the preferences. The various options in the first experiment attained the following percentage of preferences: A-eternalism 14.5%, presentism 17.4%, pastism 34.3 %, B-theory 17.2%, C-theory 9.3%, timeless theory 7.3%; in the second experiment the following ones: A-eternalism 24%, presentism 24.6%, pastism 24.3 %, B-theory 12.9%, C-theory 7.2%, timeless theory 7.2%. The authors conclude that their experimental findings, on the one hand, warrant the philosophers' opinion that the dynamic view of time is more common-sensical than the static one (albeit the percentage attained by the dynamic view might be not as high as some philosophers might have thought, and the minority favouring a static view of time might be larger than expected); on the other, however, they undermine any claim to the effect that any of the specific theories of time is overwhelmingly more commonsensical than the rivals, and deserves to be praised as *the* common-sense view of time. More specifically, preference accorded to each of the six vignette is not stable across the two experiments, and this, according to the researchers, suggest that "participant's responses are principally sensitive to the presence of dynamical, or non-dynamical features, rather than to the specific kind of dynamical or non-dynamical features" and that "rather than there being at least six fairly complete and determinate theories of time [...], instead, there are two theories of time in that population, one dynamical and non-dynamical, and that these theories are incomplete, or indeterminate, in various respects" (2021: §4).

Let us go a little beyond these evaluations and consider what this study may tell us in the ontological respect specifically. If we focus on this, and we apply the remarks made in the previous sections about the appropriateness of a comparative evaluation of the degree of commonality of a philosophical view, we may note that, actually, one ontological option scored not so bad: it is eternalism, which, considering all its four forms (A-, B-, C-theoretical and Timeless) was chosen by ~50% of participants. This degree of commonality, while *per se* probably not so impressive, stands out if compared

⁷ The C-theory is expounded and defended in Farr (2020); the Timeless theory in Barbour (1999).

with the scores attained by presentism and pastism. Moreover, while the single forms of eternalism underwent a change in consensus across the two experiments, the overall percentage of those who chose eternalism remained quite stable: it was 49,3% in the first experiment and 51,3% in the second. So, Latham et al.'s findings might be read in a partly different way: when it comes to ontology, they seem to show that common sense is not really neutral, but instead features a marked propension towards eternalism. Before accepting such conclusion, or those drawn by the authors themselves for that matter, we should, however, consider whether Latham et al.'s study is really capable of offering any support to them.

A good questionnaire in experimental philosophy is one that balances in an appropriate way three conflicting requirements: intelligibility to participants, adherence to the actual philosophical theories, and concision. In our opinion, Latham et al. (2021) very much favoured adherence to the actual philosophical theories over intelligibility and concision; hence, they ended up with a quite long and complex questionnaire, which in our opinion greatly overestimates *non-experts'* cognitive resources and willingness to cooperate. Bluntly speaking, it strikes us as unrealistic to think that an average non-expert could actually understand and fill in their questionnaire within roughly 20 minutes, which the authors in §§3.1.1 and 3.2.1 indicate as the timespan needed for participating in their study (it is not specified, however, if that amount represented a conjectural estimate or the average time actually taken by participants). We also think that their choice of examples of objects and events – particles and detectors, and the hitting of particles against a particle detector – might not have been fully functional to help participants' comprehension. Now, the reasons which might have led authors to choose such examples of events are rather clear: focusing on events capable of being wholly present at an instant allows avoiding any interferences with issues about persistence of continuants and relations between existence and persistence of continuants. However, such a choice of examples must have appeared rather exotic – if intelligible at all – to most participants, and while probably it was not detrimental to the point of misleading participants, it might have contributed to make the various philosophical views and issues more unfamiliar and enigmatic. As a consequence, we believe, it is well possible that the lack of neat and stable adherence by participants to any of the six theories of time might be explained not by the putative indeterminateness, or incompleteness, of their views of time, but rather by a partial lack of comprehension of the vignettes they were presented with. Perhaps the vignettes succeeded in getting participants to have a sense of what the dynamicity and the non-dynamicity of time consist in, but not so much in making intelligible other aspects, including perhaps the ontic status of the past and the future.

In addition to the excessive length, complexity, and questionable choice of examples, there is most importantly a further flaw in the questionnaire of Latham et al., which regards specifically the ontological aspect of the various vignettes. In speaking with non-experts about temporal ontology, and especially in the pretesting of the questionnaires, we realised that getting non-experts to understand the intended sense in which past or future things are said to exist or not to exist is no easy feat. Non-experts appear to have a strong tendency to interpret ontological claims in metaphorical ways, namely in terms of (i) claims in which the verb “exists” is construed as *once existed, presently exists, exists sooner or later, are fixed and cannot be changed, exists in the mind, exists as memory, has practical or emotive relevance for present human activities, is inevitable*; or (ii) claims about *present* things which are in some way related to past or future things, for example: causes, effects, remains, traces, memories, intentions, emotions, plans, rather than claims about the past and future things themselves. When asked whether past things exist or not, many non-experts give affirmative answers, but they only mean that past things still exist *qua* memories or traces or have an emotional relevance; and the question about whether future things exist or not tends to be analogously misunderstood. Latham et al.'s questionnaire did not include any precautions against such very probable misunderstandings and this, in our opinion, significantly weakens the reliability of their results, especially so far as common-sense temporal ontology is concerned.

4. Our study

Our study was aimed exclusively at investigating common-sense temporal ontology, i.e., people's spontaneous beliefs about the ontic status of the past and the future. More precisely, we focused on (i) how widely shared are the three main ontological options in the population we studied, i.e., Italian residents; and (ii) which is the origin of those beliefs in that population, namely: nature, culture, or both.

4.1. Method

Ethical approval for this study was received from the Research ethics committee of [to be completed after reviewing process].

4.1.1. *Participants*

180 people took part in the study. Participants were adult Italian residents (Mean Age = 39.511; Standard Deviation = 14.747), including 101 females, 77 males, and two people who preferred not to provide information about their gender. None of the participants was enrolled in a philosophy undergraduate or postgraduate philosophy course, or in possession of an undergraduate or postgraduate philosophy degree. They were recruited in person or online (via e-mail, Facebook, and WhatsApp) by the authors or their acquaintances. 47 participants failed to meet the inclusion criteria that will be stated in §4.2.

4.1.2. *Materials*

Data were gathered by administering a questionnaire originally written in Italian, in a period going from mid-February to mid-May 2022. The questionnaire was administered online using Google Forms and participants filled it in by desktop, laptop, or mobile devices (no instruction to use a specific device was given). No compensation was paid for participation.

4.1.3. *Design and procedure*

Rather than asking participants to directly choose among the three global options concerning the ontological status of both past and future – presentism, pastism and eternalism –, we decided to question them about the ontic status of the past and the future separately, so as to reconstruct their global ontological stance afterwards. In this way, we thought, participants would have focused in each case on a more restricted issue and that would have made their task easier. So, we split each of the three global ontological options, thus ending up with four different partial options, two about the future and two about the past, which may be briefly described and labelled as follows:

P1, *existent past view*: the past exists;

P2, *nonexistent-but-existed-past view*: the past does not exist, but it did;

F1, *existent future view*: the future exists;

F2, *nonexistent-but-coming-to-exist future view*: the future does not exist, but it will.

Thus, participants had a rather wide choice of ontological options about the past and the future, and their global stances could be traced back to one of the three main positions in temporal ontology, or possibly, even to a forth, more exotic view, which has been explored, but not actually endorsed, by Casati & Torrenco (2011), namely the *Shrinking future theory*, according to which the past does not exist, but it existed, and the future exists, but gradually ceases to exist as it gradually becomes present and then past (it would result from the conjunction of options F1 and P2). To the above-expounded four partial ontological options, however, we added two further ones:

F3, *imminent-end view*: the future does not and will not exist, i.e., the world is about to end;

P3, *recent-beginning view*: the past does not and did not exist, i.e., the world has just come into existence. Options F3 and P3 can be seen as resulting from splitting the ontological view sometimes labelled *frozen presentism*, according to which only the present exists and there is no time passage. Of course, such a view is not actually endorsed by anyone; it is sometimes brought into play just to clarify the dynamic nature of (standard) presentism (see Golosz 2018). We similarly introduced options F3 and P3 with the purpose of clarifying the other options by contrast and, as will be better explained below in commenting the very text of the questionnaire, also to work as “saboteur traps”.

The main part of our questionnaire was correspondingly divided in two main sections, one concerning the ontic status of the past and the other the ontic status of the future, running perfectly specular to each other. The questionnaire was realised in six different versions, attained by combining two different orders of the two main sections – future/past and past/future – and three different orders of the various partial ontological options in them. Each section included an introduction followed by ten questions. Since some questions contained references to others, in the questionnaire all were indexed by a letter and a number: from A1 to A10 in the first section, from B1 to B10 in the second one. For convenience, in this paper we will refer to the first section and to the second section as, respectively, *section A* and *section B* (labels not used in the questionnaire itself).

Let us anticipate something more about the overall structure of the questionnaire. In future/past versions of the questionnaire, section A was about the future and section B about the past. So, Question A1 probed participants’ ideas about the ontic status of the future asking them to choose one among the three options F1, F2, and F3; Question A2 asked them about their confidence in answering Question A1; Question A3 asked participants whether or not they were already aware of the ontological idea expressed in answering Question A1; Question A4 inquired about the origin of that idea, asking participants to choose whether they thought it was natural, cultural, or both; Question A5 asked them to estimate how widely shared their own idea was in percentage terms; Question A6 asked them to rate the confidence of the estimate expressed in answering Question A5; Question A7 asked to choose the most plausible option among three particular ontological claims about the first child born in 2024 in Italy given their ontological ideas about the future: this question was intended as a check on participants’ self-consistency (taken in turn as an indication of their attention and grasp of the issue); Question A8 asked participants how sure they were about their answer to Question A7; Question A9 asked those who answered (to Question A4) that their ontological idea was merely cultural whether or not they once had a natural idea about the issue of Question A1; in the affirmative case, they were presented with Question A10, which asked which one among the three ontological options presented in Question A1 most resembled the natural idea they previously had. After completing section A, participants were presented with section B, concerning the ontic status of the past and including Questions B1-B10, which are perfectly analogous to A1-A10. Past/future versions were the same, just with the two sections inverted in order: Questions A1-A10 were about the past and B1-B10 about the future. All questions required obligatory answers; however, depending on the answers given, participants could skip up to four questions, namely the last two in each section.

We shall now show the actual text of the questionnaire in English translation and make some comment upon it. For exposition’s sake, we shall employ one of the three future/past versions (of course, the information in square brackets is an addition that was not present in the actual text of the questionnaire).

After clicking on the link participants found a screen view with a general introduction to the questionnaire:

QUESTIONNAIRE ON TIME

The Questionnaire we present to you falls within a line of research carried out by researchers of the Department of [to be completed after reviewing process] Our aim is to understand your ideas on some themes about time understood as an aspect of reality. In philosophy, many – including the authors of this questionnaire – hold that people, even if not expert in

philosophy, have their own ideas about some issues of philosophical interest and that, for philosophers, it is important to take them seriously into consideration.

In this questionnaire we briefly describe to you some philosophical ideas on the existence of the things of the future and of the things of the past [in past/future versions: *of the things of the past and of the things of the future*], and we ask you some questions to understand whether your ideas resemble some of them.

Filling in the questionnaire takes about 20 minutes.

The questionnaire you will fill in will remain rigorously anonymous (not even your e-mail address will be saved).

We thank you for your kind cooperation and the time you are dedicating to us.

After having provided their informed consent, participants were asked some demographic questions (gender, which was not compulsorily required, and age, which was), and about their education:

EDUCATION

Highest qualification you have obtained.

- Elementary school education
- Lower secondary school education
- High school education
- Undergraduate degree
- Postgraduate degree (PhD, Master, etc.)

Participants who chose one of the two lowest qualifications available were directly presented with the instructions for filling in the questionnaire. Those who chose one of the three other qualifications were first asked what type of Lower secondary school, Graduate, or Postgraduate course they had attended and were possibly currently attending; and after that, they too were presented with the instructions for filling in the questionnaire:

INSTRUCTIONS

As anticipated, we present to you a series of philosophical ideas on the existence of things of the future and of the past [in past/future versions: *of the past and of the future*], and we ask you some questions about them. All questions are closed-ended. There are no right or wrong answers: you are only asked to express what you think. Some philosophical ideas that we will describe to you and some questions that we will ask you may appear to you trivial while others, on the contrary, strange: please, make an effort to interpret them LITERALLY, for the words we chose accurately convey them. We thus ask you to carefully read the questionnaire and answer in earnest, expressing exclusively what you do think. Please, bear in mind that before submitting the questionnaire you can at any moment go back to check or change your previous answers.

The main part of the questionnaire then followed. Section A, concerning the ontic status of the future, was opened by a warning meant to direct participants' attention to some fundamental terminological points:

THINGS OF THE ACTUAL FUTURE

In what follows, we describe to you three philosophical ideas regarding the existence of the actual future.

Before we proceed, however, it is necessary to make some VERY IMPORTANT CLARIFICATIONS:

- by “THINGS OF THE ACTUAL FUTURE”
 - it is meant the VERY THINGS (of the future): material objects, for example a cake produced in 2023; and events, for example the fall of a leaf from a tree in 2036;
 - it is NOT meant thoughts, goals, fantasies, or emotions that refer to future things (for example, the anxiety for the next medical examination or the goal to take a walk on the next weekend);
 - it is meant the things that there will ACTUALLY be (they are just a little part of all future possible things).
- by “EXISTENCE”
 - it is meant CONCRETE existence, that is existence in physical space;
 - is not meant some sort of existence in the mind in the form of thought, project, emotion, etc.

This warning was soon followed by the main question about the ontic status of the future and three ontological options (their labels, here indicated in square brackets, were of course absent in the questionnaire as it was presented to participants):

Question A1 – Which of the following three philosophical ideas about the existence of the things of the actual future does appear more plausible to you? (PLEASE NOTE: the following ideas are to be interpreted LITERALLY.)

○ [F1, *existent-future view*] The things of the actual future are objects of thoughts, projects, fantasies, and emotions. The actual future is what in view of which we act in the present and thus it has a strong relevance to the present: in this sense, the things of the actual future can be said to be real. However, the things of the future are also real in the sense that they EXIST and are PLACED AT FUTURE MOMENTS. This means that, for things, the passage from being future to being present does not involve any passage from nonexistence to existence, but only a relocation – in a literal sense – from the future to the present. For example, the you (yourself in flesh and blood) of noon, 1st January, 2023 exists and is immutably placed at the future moment “noon, January 1st, 2023”: although it cannot be perceived with the senses (for example, seen or touched) by the you of the present, the you of noon, January 1st, 2023 is literally existing at that future moment. This holds for every you of the actual future and for every thing of the actual future: for every material object of the actual future, for example the cake of your next birthday party and a leaf that will grow in spring 2036; and for every event of the actual future, for example, your next medical examination and the first goal scored during the next Football world cup.

○ [F2, *Nonexistent-but-going-to-exist-future view*] The things of the actual future are objects of thoughts, projects, phantasies, and emotions. The actual future is what in view of which we act in the present and thus it has a strong relevance to the present: in this sense, the things of the actual future can be said to be real. While being real in this sense, the things of the future, strictly speaking, DO NOT EXIST: they WILL EXIST only when they will be present. This means that, for things, the passage from being future to being present involves a passage from nonexistence to existence. For example, the you (yourself in flesh and blood) of noon, 1st January, 2023 will exist only when it will be present, but it is not yet present and so it does not exist: only the you of this present moment exists. This holds for every you of the actual future and for every thing of the actual future: for every material object of the

actual future, for example the cake of your next birthday party and a leaf that will grow in spring 2036; and for every event of the actual future, for example, your next medical examination and the first goal scored during the next Football world cup.

○ [F3, *Imminent-end view*] The things of the actual future DO NOT EXIST (placed at future moments) and WILL NEVER EXIST (will never be present): we ourselves and the whole physical universe will cease to exist in an instant. All our thoughts, our projects, our fantasies, and our emotions that seem to refer to events or material objects of the actual future are illusory: in effect, they do not refer to anything at all, because what they should refer to does not exist and will never exist. For example, the you (yourself in flesh and blood) of this moment exists, but the you of noon, 1st January, 2023 does not exist (placed at a future moment) and will never exist (will never be present). This holds for every you of the actual future and for every thing of the actual future: for every material object of the actual future, for example the cake of your next birthday party and a leaf that will grow in spring 2036; and for every event of the actual future, for example your next medical examination and the first goal scored during the next Football world cup.

○ The differences among the ideas described above are not clear to me.

Section A proceeded with Questions A2-A10; for convenience of exposition, however, we now jump to Section B, showing its preliminary warning and its first question (next, we shall expound the continuations of both sections).

THE THINGS OF THE PAST

In what follows, we describe to you three philosophical ideas regarding the existence of the past.

Before that, however, it is necessary to make some VERY IMPORTANT CLARIFICATIONS:

• by “THING OF THE PAST”

- it is meant the VERY THINGS (of the past): material objects, for example Julius Caesar in flesh and blood; and events, for example your birth;

- it is NOT meant thought, remains, or traces (of any kind) of past things, which may or do exist in the present (for example, archaeological remains or the sense of satiety produced by the sandwich eaten an hour ago);

- it is NOT meant the memories, thoughts, fantasies, or emotions that refer to past things (for example the memory of our first bike, or the shame we are feeling now for an event that happened three days ago).

• by “EXISTENCE”

- it is meant CONCRETE existence, that is existence in physical space;

- it is not meant some sort of existence in the mind in the form of thought, memory, emotion, etc.

Question B1 – Which of the following three philosophical ideas about the existence of the things of the past appears more plausible to you? (PLEASE NOTE: the following ideas are to be interpreted LITERALLY.)

○ [P1, *Existent-past view*] The things of the past have left effects, traces and remains, and often continue to be objects of thoughts, memories, and emotions. The present, then, depends on the past and the past has a strong relevance for the present: in this sense, the things of the past may be said to be still real. However, the things of the past are also real in the sense that they EXIST and are PLACED IN THE MOMENTS OF THE PAST. This means that, for

things, the passage from being present to being past does not involve any passage from existence to nonexistence, but only a relocation – in a literal sense – from the present to the past. For example, the you (yourself in flesh and blood) of noon, January, 1st, 2020 exists and is immutably placed at the past moment “noon, January 1st, 2020”: although it cannot be perceived with the senses (for example, seen or touched) by the you of the present, the you of noon, January 1st, 2020 is literally existing at that past moment. This holds for every you of the past and for every thing of the past: for every material object of the past, for example dinosaurs (every single dinosaur in every moment of its life) and Napoleon Bonaparte in every single moment of his life); and for every event of the past, for example the fall of a leaf from a tree in 1930 and your last birthday party.

○ [P2, *Nonexistent-but-existed-past view*] The things of the past have left effects, traces and remains, and often continue to be object of thoughts, memories, and emotions. The present, then, depends on the past and the past has a strong relevance to the present: in this sense, the things of the past may be said to be still real. While being real in this sense, the things of the past, strictly speaking, DO NOT EXIST: they EXISTED only when they were present. This means that, for things, the passage from being present to being past involves a passage from existence to nonexistence. For example, the you (yourself in flesh and blood) of noon, 1st January, 1st, 2020 existed only when it was present, but it is no longer present and so it does not exist: only the you of this present moment exists. This holds for every you of the past and for every thing of the past: for every material object of the past, for example dinosaurs (every single dinosaur in every moment of its life) and Napoleon Bonaparte (Napoleon Bonaparte in every single moment of his life); and for every event of the past, for example the fall of a leaf from a tree in 1930 and your last birthday party.

○ [P3, *Recent-beginning view*] The things of the past DO NOT EXIST (placed at past moments) and DID NEVER EXIST (were never present): we ourselves and the whole physical universe have come into existence an instant ago. All our thoughts, our memories, and our emotions that seem to refer to events or material objects of the past are illusory: in effect, they do not refer to anything at all, for what they should refer to does not exist and did never exist. For example, the you (yourself in flesh and blood) of this moment exists, but the you of noon, 1st January, 1st, 2020 does not exist (placed at a past moment) and did never exist (was never present). This holds for every you of the past and for every thing of the past: for every material object of the past, for example dinosaurs and Napoleon Bonaparte, and events, for example the fall of a leaf from a tree in 1930 and your last birthday party.

○ The differences between the ideas described above are not clear to me.

Before proceeding with the rest of the two sections, let us make some remarks on the parts we have already expounded. The main *desideratum* underlying the whole design of our questionnaire, in particular the illustration of the various options in temporal ontology was intelligibility to non-experts: we wanted a questionnaire capable of communicating the gist of the ontological options, even at the risk of sacrificing to some extent philosophical precision and faithfulness to the letter of the actual theories. With this purpose in mind, we carried out some pretests on subjects without any proper philosophical knowledge. Albeit conducted in rather informal ways, with a relatively small number of people (ten), and mostly on versions of the questionnaire that were fairly different from the final one, pretesting has been quite instructive and has greatly contributed to make the final version what it is. Through conversations with participants in the pretests after they had completed the questionnaire, it emerged that they had a strong propension to avoid a literal interpretation of the claims they were presented with: it was not enough to say “past things exist” or “past things do not exist” to convey to non-expert subjects what temporal ontology is about; and that most of them claimed that the past, or the future, exists due to the tendency to give a metaphorical construal of ontological claims about the past and the future – the

tendency we described in the previous section and which, in our opinion, was ignored by Latham et al. (2021).⁸ In order to minimise this tendency and thus put participants on the right track, we intervened in various ways. First of all, as seen, we decided to open each main section of the questionnaire with a preliminary warning specifying how to understand and how not to understand terms such as “past things”, “future things”, “existence”, etc. However, since preliminary warnings are often read by participants with little attention or not taken in due account while reading and filling up the core of a questionnaire, we decided to formulate the very ontological options about the past and the future in ways that, hopefully, would have compelled participants to focus their attention appropriately. We implemented various measures to achieve this. First, we introduced options F3 (the future does not and will not exist) and P3 (the past does not and did not exist): we thought that getting participants to explicitly consider these views, however implausible they may be, would have helped them understand the *other* options: in particular, we wanted to pre-empt a possible misunderstanding of F2 (the future does not exist, but it will) and P2 (the past does not exist, but it did) precisely in terms of, respectively, F3 and P3. Moreover, exactly because of their extreme implausibility, options F3 and P3 were also meant to serve as “saboteur traps”, i.e., as a bait to attract preference from those participants who were not really willing to express their actual beliefs, but perhaps were just interested in choosing the most bizarre options available: we thought that no reasonable person could seriously believe options P3 and F3, and we thus took preference for such options as ground for exclusion (in any case we were expecting that only a tiny minority of participants would have chosen those options). Second, we presented the other two options in each section as partly agreeing on some senses in which the future – in the case of F1 and F2 – and the past – in the case of P1 and P2 – might be taken to be real. This was done in order to have participants understand that those senses are *not* what was really at issue. Our hope was that reflection on similarities and differences among the three options in each section would have helped participants to grasp what they were really asked about. Third, in the description of the various ontological options we included some examples of more or less ordinary past and future things; in particular, to make the various options less abstract and more interesting, we invited the participants to think of themselves *qua* past or future things. Fourth, somewhat controversially, we presented not only options F2 and P2 but also options F1 and P1 *as inherently dynamic*, rather than, as it would be ideal, in neutral terms as regard the issue of the passage of time, i.e., entirely setting aside any reference to the dynamic or static character of it. It seemed to us that bringing into play the idea of temporal passage would have helped participants to grasp what is at issue in temporal ontology: we thought that talking of the passage of the things from being future to being present or from being present to being past as involving (in options F2 and P2) – or, on the contrary, as not involving (in options F1 and P1) – a concomitant passage from existence to nonexistence, or from nonexistence to existence, could have been effective in getting participants to focus on the *very things* of the past and future, rather than on present thing (causes, effects, traces, emotions etc.) that are related to them. At the same time, we were quite confident that any participant favouring a static view of time very probably would have chosen anyway options F1 and P1, rather than choosing any other options or giving up with the questionnaire. It may be complained, however, that, by so doing, we ended up forcing possible *static* participants to choose dynamic ontological options (F1 and P1) and thus it is illegitimate to infer that those who chose (both) those options have in fact a dynamic view of time (i.e., a view more similar to A-eternalism than to some form of static eternalism). This complaint may well be right, but we think it does not seriously impair our study: forcing some static participants to choose dynamic options, and thus not being able to tell whether participants favouring eternalism have a dynamic or static view of time is a price we are well willing to pay in order to make the ontological options more understandable for most participants.

⁸ Here are some more details on the pretesting: nine out of the ten participants in the pretests filled in the questionnaire in ways that would have qualified them as either pastists or eternalists (only one as presentist); however, after the conversations with them, eight out of nine realised that their view was actually better captured by presentism, while one kept being rather uncertain and finally opted for eternalism.

The remaining parts of sections A and B (including, respectively, questions from A2 to A10 and from B2 to B10) are very similar and thus, to save space, we shall present the text of section A and indicate in square brackets where section B differs).

Question A2 [B2] How confident are you of the answer to Question A1 [B1]?
CLARIFICATION: we are not asking you if you have any justification (data or evidence) in support of your answer, but just how sure you feel from a subjective point of view.

- Not at all
- Little
- Averagely
- Very much
- Completely
- I cannot answer because the differences among the ideas described in Question A1 [B1] are not clear to me.

Question A3 [B3] – Sometimes we happen to have ideas in an unconscious way (that is, we have them without realising that we have them). In connection with the idea you have expressed in answering Question A1 [B1], were you aware of already having it before filling in this questionnaire?

- Yes, I was aware of it.
- No, I was not aware of it: I came to realise to have this idea exactly while filling in this questionnaire.
- I cannot answer because the differences among the ideas described in Question A1 [B1] are not clear to me.

Questions A3 and B3 were included not so much because we were really interested in knowing about participants' awareness of their own ontological ideas, but rather simply as a manner to get them to focus on the distinction between having an idea and being aware of having it, a distinction that was presupposed in subsequent questions. In particular, we wanted participants not to confuse, or conflate, with each other not having been aware of an idea and not having possessed it at all.

Question A4 [B4] – In answering Question A1 [B1] you relied on your personal idea about the existence of the things of the actual future [the past]. What is, in your opinion, the origin of this idea?

- I believe that I have it in a natural way and NOT thanks to my education or cultural background (that is, school, university, personal readings, documentaries and films, conversations with experts, etc.).
- I believe that I have it thanks to my education or cultural background (that is, school, university, personal readings, documentaries and films, conversations with experts, etc.), and NOT in a natural way.
- I believe that I have it in a natural way and it is anyway consistent with my education or cultural background (that is, school, university, personal readings, documentaries and films, conversations with experts, etc.).
- I cannot answer because the differences among the ideas described in Question A1 [B1] are not clear to me.

Question A5 [B5] – In your opinion, within a group of randomly chosen people, which is approximately the percentage of people who would answer Question A1 [B1] in the same way you did?

- 0%
- 10%
- 20%
- 30%

- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%
- I cannot answer because the differences among the ideas described in Question A1 [B1] are not clear to me.

Question A6 [B6] How sure are you of the answer to Question A5 [B5]? CLARIFICATION: we are not asking you if you have any justification (data or evidence) in support of your answer, but just how sure you feel from a subjective point of view.

- Not at all
- Little
- Averagely
- Very much
- Completely
- I cannot answer because the differences among the ideas described in Question A1 [B1] are not clear to me.

We have already explained in §2 why we thought that gathering information about what participants believe about the origin (natural, cultural, or both) of their beliefs may yield some indication on whether those very beliefs are commonsensical or, as we had better say, how much they are commonsensical: this is the rationale for Questions A4 and B4. A similar reason underlies Questions A5-A6 and B5-B6: we think that some rough indication about how widespread a belief is could be gained by directly asking those who supposedly have it. After all, the efficacy of human interaction at various levels (starting with communication) is largely based on the assumption that we know a great deal about what others believe. While this surely holds for practical matters of everyday life, it may also hold for some more abstract issues such as those addressed in the questionnaire. Of course, participants' answers in this connection must be taken with caution and the indication they give not overestimated.

A7 [B7] Choose the claim that, based on your idea of the existence of the things of the actual future [of the past], seems more plausible to you.

- The first child born in 2024 in Italy exists and is positioned in moments of the future. [Julius Caesar exists and is positioned in moments of the past.]
- The first child born in 2024 in Italy does not exist, but he/she will exist when he/she will be present. [Julius Caesar does not exist, but he did when he was present.]
- The first child born in 2024 in Italy does not exist (positioned in future moments) and will never exist (will never be present). [Julius Caesar does not exist (positioned in past moments) and never existed (he was never present).]
- The differences among the three claims are not clear to me.

A8 [B8] How sure are you of your answer to Question A7 [B7]? CLARIFICATION: we are not asking you if you have any justification (data or evidence) in support of your answer, but just how sure you feel from a subjective point of view.

- Not at all
- Little
- Averagely
- Very much
- Completely
- I cannot answer because the differences among the claims stated in Question A7 [B7] are not clear to me.

Questions A7 and B7 aimed at checking whether participants reply consistently with their answer to, respectively, A1 and B1, when presented with particular instances of ontological claims rather than with general views.

The final parts of either section, including, respectively, questions A9-A10 and B9-B10, were aimed at investigating participants' natural ideas about the ontic status of the actual future and the past, in case they had any.

A NATURAL IDEA?

At a previous question (Question A4 [B4]) you answered that you believe that you have your idea about the existence of the things of the actual future [of the past] thanks to your education or cultural background (that is, school, university, personal readings, documentaries and films, conversations with experts, etc.) and NOT in a natural way.

Question A9 [B9] – Have you ever had previously a natural idea (even if only in an unconscious way) on the existence of the things of the actual future [the past]?

- Yes, I had one, but I abandoned it.
- No, I have never had one.

YOUR NATURAL IDEA

Question A10 [B10] – Which of the following philosophical ideas on the existence of the things of the actual future [the past] is more similar to the natural idea you had? (PLEASE NOTE: they are exactly the same ideas presented in Question A1 [B1].)

Question A10 continued by presenting once again the ontological options F1, F2, and F3, in the same order as in Question A1; analogously, ontological options P1, P2, and P3 were offered again in Question B10, in same order as in Question B1. Access to Question A9 was conditional on having given a certain answer to Question A4: participants only had access to it if they had answered that they believe that their ontological idea about the actual future was merely cultural; if they had answered otherwise, they were directed to section B. Access to Question A10, in turn, was conditional on having given a certain answer to Question A9: participants only had access to it if they had answered that they had a natural idea about the ontic status of the past but they had abandoned it; otherwise, they were directed to section B. After having answered Question A10, participants were presented with section B. Access to question B9 and B10 was organised in an analogous manner (they were conditional, respectively, on answers to Question B4 and B9). After filling in section B, participants were invited to send their questionnaire and were thanked for their help.

4.2. Data analysis

We adopted three criteria for exclusion from the analysis. First, we excluded participants who gave question A7 an answer inconsistent with the one given to A1, or who gave question B7 an answer inconsistent with the one given to B1. For example, in past/future versions of the questionnaire we excluded those who picked option P1 (the past exists) when answering question A1, and chose that Julius Caesar does not exist, but existed when he was present, in answering A7. We took such inconsistencies as indicating lack of attention or understanding by participants. Second, we excluded participants who chose at least once the option “I cannot answer because the differences among the ideas described in Question A1 [B1] are not clear to me” when answering questions A1, A7, B1 or B7. We did not exclude those (few) who chose “I cannot answer” *only* when answering questions A5 and B5, which regarded the percentage of commonality of their own ontological idea: we took it that, in these cases, choosing “I cannot answer” was just a way to avoid the question rather than as an actual confession of lack of understanding: probably, participants took those questions as asking too much of them. Third, we also

excluded participants who chose *at least one* among options F3 (the future does not and will not exist) and P3 (the past does not and did not exist) when answering questions A1 or B1, and those who chose *at least one* among the corresponding particular instances – namely, “The first child born in 2024 in Italy, does not exist (positioned in future moments) and will never exist (will never be present)” and “Julius Caesar does not exist (positioned in past moments) and never existed (he was never present)” – when answering questions A7 and B7. For example, we excluded those who chose both options F3 and P3, thereby qualifying as frozen presentists; but we also excluded those who chose only one among options F3 and P3, or the corresponding particular instances in questions A7 and B7: as no reasonable person could seriously believe that the world has just come into existence or be about to cease to exist, we consider any choice of such options as a sign of lack of understanding or attention, or of an attempt at sabotaging the inquiry by intentionally choosing the apparently most bizarre options. Overall, roughly 26,1% ($n = 47$) of all participants were excluded from data analysis, according to one or more of the above-mentioned criteria.

We studied the spread of each global ontological position – presentism (resulting from the combination of P2 and F2), pastism (P1 and F2), and eternalism (P1 and F1) – in our sample, and the effect on the choices of participants of the ways in which the four ontological ideas composing them and the two main sections (about the past and about the future) were ordered. To do that, we conducted a Generalised Linear Model analysis (“Poisson” family, link-function “log”), setting *Frequency* as our Dependent Variable, and *Global ontological position* (values: *Presentism*, *Pastism*, *Eternalism*) and *Order* (values: each one of the six versions of the questionnaire) as the Independent Variables. All analyses were carried out using R software, Version 4.2.2.

The analysis showed statistically significant differences in *Frequency* (Chisq (2, N=133) = 51.825, $p < 0.001$). More specifically (see fig. 1), it emerged that presentists in our sample were significantly more than both pastists (Bonferroni post-hoc test: z . ratio = 5.379; $p < .001$) and eternalists (Bonferroni post-hoc test: z . ratio = 5.561; $p < .001$), while there was no significant difference between the numbers of pastists and eternalists (Bonferroni post-hoc test: z . ratio = 0.289; $p = 1.000$). A majority amounting to 63.9% of participants ($n = 85$) opted for presentism; 18.8% ($n = 25$) for pastism; and 17.3% ($n = 23$) for eternalism (and 0.0% of participants ($n = 0$) opted for the shrinking future universe view, i.e., chose F1 and P2). So, our research hypothesis that presentism would have been endorsed by most participants was confirmed, though by a number lower than we expected.

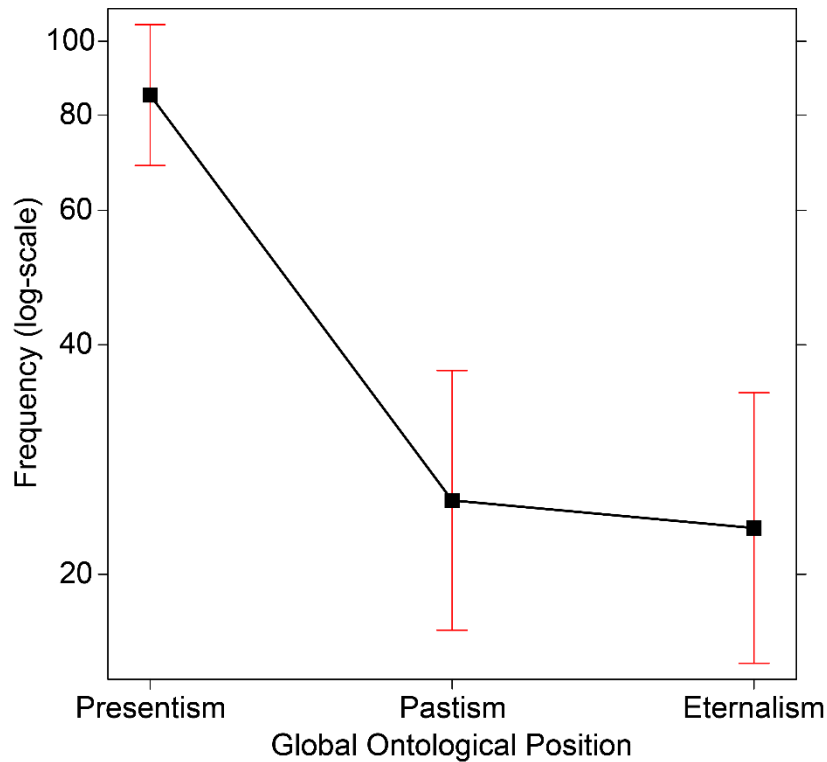


Fig. 1: Frequency (log-scale) of the three global ontological positions. The bars represent the 95% confidence interval.

Order and *Global ontological position* were shown to have no significant joint effect on *Frequency* (Chisq (10, N=133) = 11.095, $p = 0.350$). Since we noticed, however, that presentism had received a proportionally wider acceptance in future/past versions (74,6%, $n = 53$, over 71 participants) than in past/future ones (51,6%, $n = 32$, over 62 participants), we repeated the analysis clustering the six versions of the questionnaire into two main versions: a past/future-ordered version and a future/past-ordered one (each group including three versions). Contrary to our first impression (see fig. 2), *Order** (values: *Future/past ordering*, *Past/future ordering*) was shown to have no significant effect on the frequency of presentism (Bonferroni post-hoc tests: z. ratio = 2.254; $p = 0.363$), neither on the frequencies of pastism (Bonferroni post-hoc test: z. ratio = -1.381; $p = 1.000$) and eternalism (Bonferroni post-hoc test: z. ratio = -1.034; $p = 1.000$).

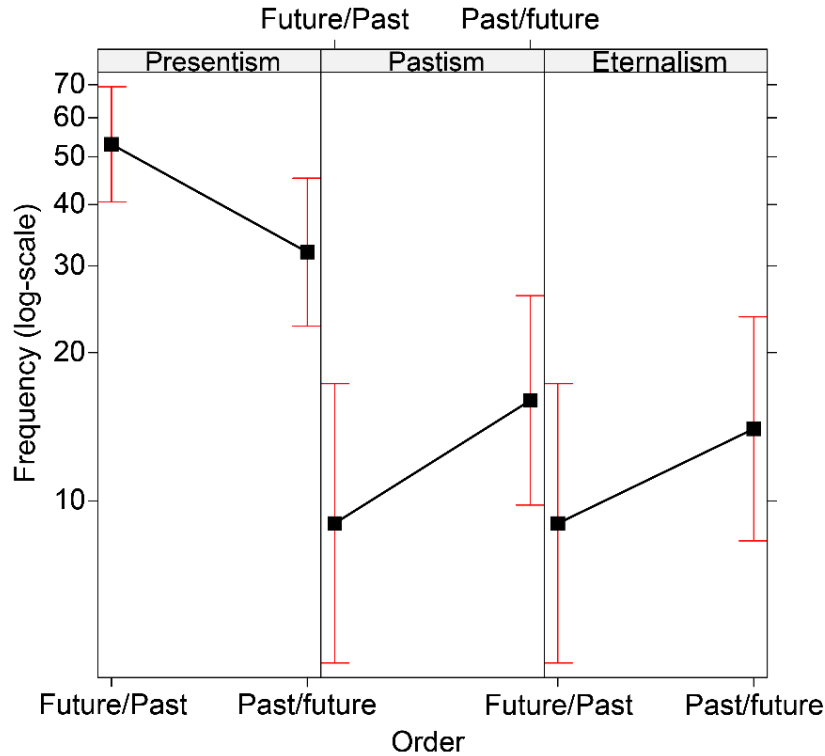


Fig. 2: Frequency (log-scale) of the two orders (Future/past ordering, Past/future ordering) according to the global ontological positions. The bars represent the 95% confidence interval.

Next, we studied participants' confidence in their own ontological ideas, as it is expressed in answering Questions A2 and B2 (relating, respectively, to Questions A1 and B1). To do that, we assigned integers from 0 to 4 to the qualitative assessments used in Questions A2 and B2: 0 = Not at all, 1 = Little, 2 = Averagely, 3 = Very much, 4 = Completely; then, we applied a Linear Mixed Model analysis ("Gaussian" family, link-function "identity"), setting *Estimated confidence* (values: 0, 1, 2, 3, 4) as the Dependent Variable, and *Global ontological position* (values: *Presentism*, *Pastism*, *Eternalism*) as the Independent Variable. We assumed ID (/Subjects) as Random factor, since each participant gave two confidence rates, namely one about the past and one about the future (repeated measures experimental design).

This analysis showed (see fig. 3) that no significant effect on *Confidence* was exerted by *Global ontological position* ($\text{Chisq}(2, N=133) = 0.805, p = 0.669$). Moreover, average confidence rate was not very high: for eternalism it was 2.673; for pastism 2.460; for presentism 2.606; so, overall, halfway between "Averagely" and "Very much". These results may be taken to suggest that ontological ideas about past and future, while being part of the common-sense view of the world, are not those firm convictions some philosophers might take them to be (especially, when presentism is at issue); or they may be due to participants' perplexities regarding the abstractness and unfamiliarity of the matters addressed in the questionnaire.

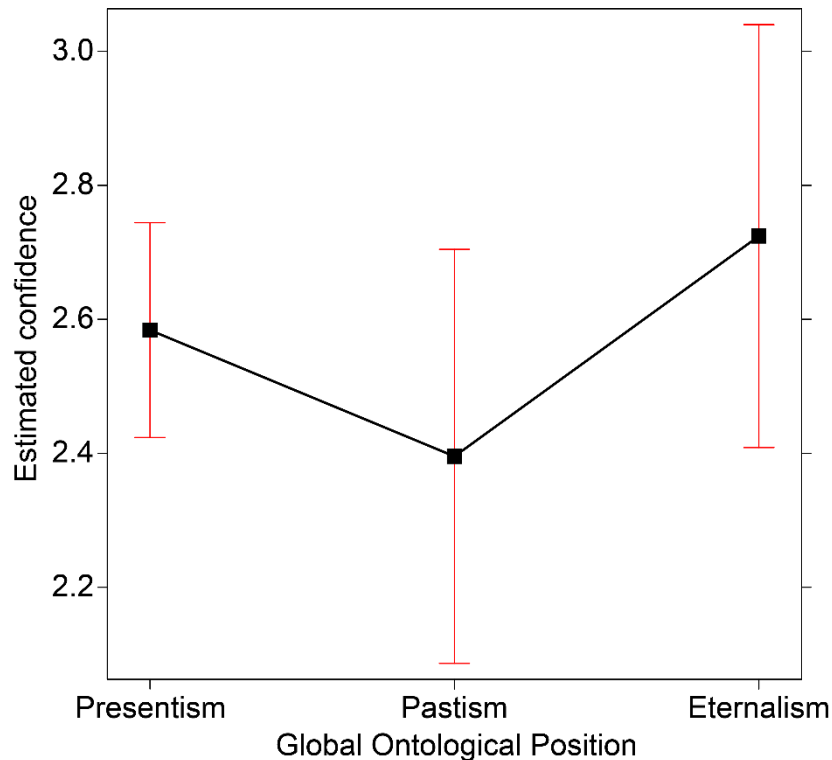


Fig. 3: Estimated confidence of the three global ontological positions. The bars represent the 95% confidence interval.

Along with participants' ontological ideas about the past and the future, we wanted to investigate their origins. More specifically, we wanted to glean some indication, first, about whether those ideas could be collectively taken to be more natural or more cultural; second, about which one, if any, of the three global ontological positions could be considered decidedly more natural than others. In this latter respect, our prediction was that presentism would have resulted more natural.

We first studied participants' levels of education, assuming that higher levels of education are plausibly associated with a more culturally-informed view of time and, vice versa, lower levels of education with a more natural view. We decided to consider one's highest qualification attained as a main indicator of educational level. On this basis, participants to our study were grouped according to five educational levels: Elementary school education: 0.0% (n = 0); Lower secondary school education: 9.8% (n = 13); High school education: 25.6% (n = 34); Undergraduate degree: 39.8% (n = 53); Postgraduate degree (PhD, Master, etc.): 24.8% (n = 33). We conducted a Generalised Linear Model analysis ("Poisson" family, link-function "log"), setting *Frequency* as the Dependent Variable, and *Global ontological position* (values: *Presentism*, *Pastism*, *Eternalism*) and *Level of education* (values: *Elementary school education*, *Lower secondary school education*, etc.) as the Independent Variables. We did not find (see fig. 4) any significant conjoined effect exerted by *Level of education* and *Global ontological position* on *Frequency* (Chisq (6, N=133) = 4.496, p = 0.609).

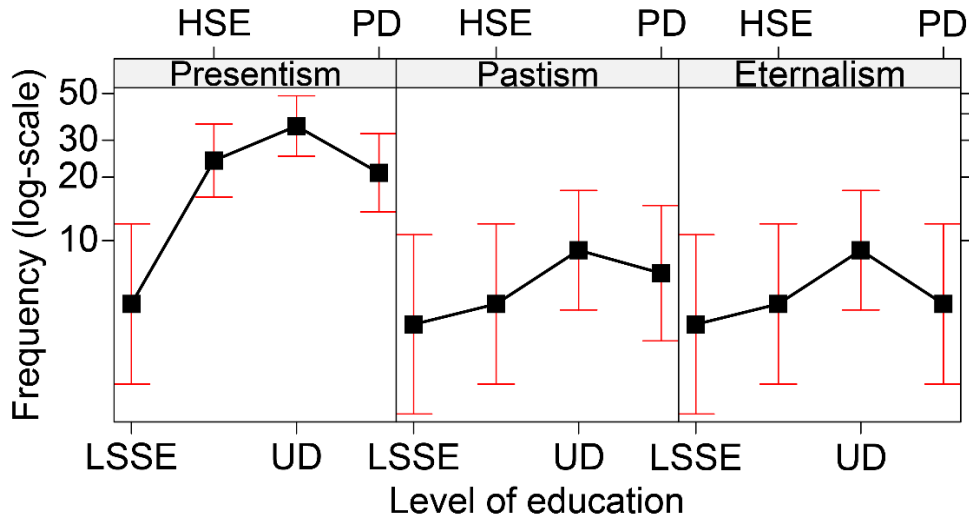


Fig. 4: Frequency (log-scale) of the different levels of education (LSSE = Lower secondary school education; HSE = High school education; UD = Undergraduate degree; PD = Postgraduate degree) according to the global ontological positions. The bars represent the 95% confidence interval.

We then focused on participants having a degree, to check whether the *kind* of academic (undergraduate and postgraduate) education had some effect on the ontological ideas about the past and the future. So, we sorted participants' academic educations into three groups: *Hard-scientific education*, i.e., education involving primarily the study of hard sciences; *Socio-humanistic Education*, i.e., education involving primarily the study of human and social sciences; and *Mixed education*, i.e., involving both kinds of studies. Of all participants possessing a degree, 23.6% ($n = 20$) had an hard-scientific education; 74.4% a socio-humanistic education ($n = 64$); and 2.3% a mixed education ($n = 2$). We expected to find a larger preference for eternalism among those having an hard-scientific or mixed academic education, on the assumption that they had a higher chance to be familiar with contemporary physics, which is usually taken to support eternalism. We conducted a Generalised Linear Model analysis ("Poisson" family, link-function "log"), setting *Frequency* as our Dependent Variable, and *Global ontological position* (values: *Presentism*, *Pastism*, *Eternalism*) and *Academic education* (values: *Hard-scientific education*, *Socio-humanistic education*, *Mixed education*) as the Independent Variables. Contrary to our hypothesis (see fig. 5), we did not find any significant conjoined effect by the kind of *Academic education* and *Global ontological position* on *Frequency* ($\text{Chisq}(4, N=133) = 8.262, p = 0.082$).

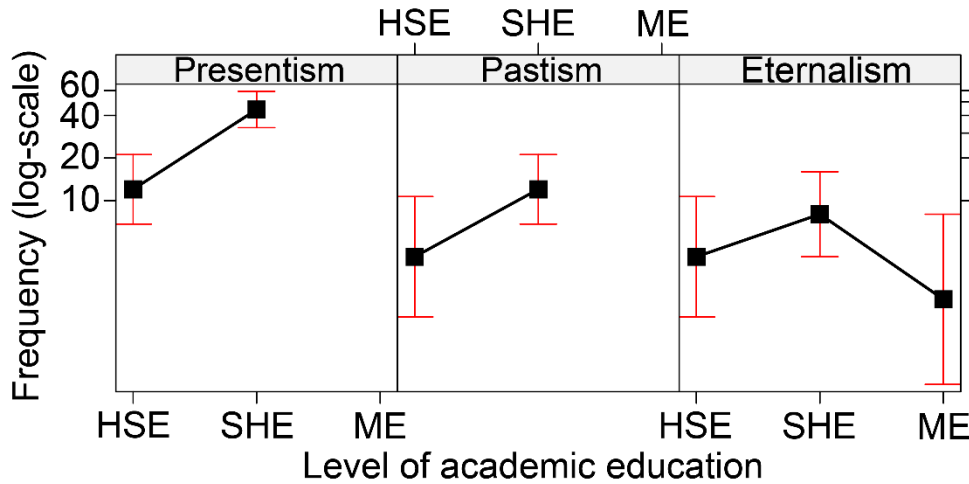


Fig. 5: Frequency (log-scale) of the different levels of academic education (HSE = Hard-scientific education; SHE = Socio-humanistic education; ME = Mixed education) according to the global ontological positions. The bars represent the 95% confidence interval.

Thus, we focused on participants' answers to Questions A4 and B4, which asked them whether they considered each of their (partial) ontological ideas (i.e., the one about the past and the one about future) to be (i) *merely natural* ("I believe that I have it in a natural way and NOT thanks to my education or cultural background [...]"); (ii) *merely cultural* ("I believe that I have it thanks to my education or cultural background [...], and NOT in a natural way."); or (iii) *both natural and cultural* ("I believe that I have it in a natural way and it is anyway consistent with my education or cultural background [...]"). In this connection, our prediction was that presentism would have been judged natural, rather than merely cultural, more frequently than eternalism (while we did not have any hypothesis about pastism). We accordingly clustered options *merely natural origin* and *both natural and cultural origin* into a single option, namely, *natural origin*. We applied a Generalised Linear Model analysis ("Poisson" family; link-function "log"), assuming *Frequency* as the Dependent Variable, and *Global Ontological Position* (values: *Presentism*, *Pastism*, *Eternalism*), *Time Dimension* (values: *Ontological idea about the past*, *Ontological idea about the future*), and *Origin* (values: *Natural*, *Merely cultural*) as the Independent Variables.

Differences in *Origin* proved to be significant (Chisq (1, N=133) = 114.608, $p < 0.001$). Partial ontological ideas about the past or the future (i.e., P1, F1, P2, and F2) were deemed to be natural significantly more often than they were deemed to be merely cultural (Bonferroni post-hoc test: z. ratio = 9.408; $p < .0001$); more specifically, they were taken to be natural in 81.6% of cases ($n = 217$) and merely cultural just in 18.4% of cases ($n = 49$). *Time dimension* and *Origin* had no conjoined significant effect on *Frequency* (Chisq (1, N=133) = 0.231, $p = 0.631$): ontological ideas about the future were considered natural by 80.5% of participants ($n = 107$) and merely cultural by 19.5% ($n = 26$); those about the past were considered natural by 82.7% of participants ($n = 110$) and merely cultural by 17.3% ($n = 23$). *Global ontological position* and *Origin* (see fig. 6) together had a slightly significant effect on *Frequency* (Chisq (2, N=133) = 7.748, $p = 0.021$); however, none of the three global ontological positions turned out to be *the* natural one, i.e., resulted overwhelmingly more natural than the others: presentism was considered natural by 78.8% of those who endorsed it ($n = 136$), eternalism by 78.3% ($n = 36$); pastism by 94% ($n = 47$). (Bear in mind that participants were asked about the origin of their ontological ideas about the past and the future *separately*; so, for each global ontological position, the number of participants who judged it natural corresponds to half of n .) So, it seems that ideas in common-sense temporal ontology are overall more natural than merely cultural, but each of the three global ontological positions, and mainly pastism, was judged much more frequently natural than merely cultural by the respective supporters.

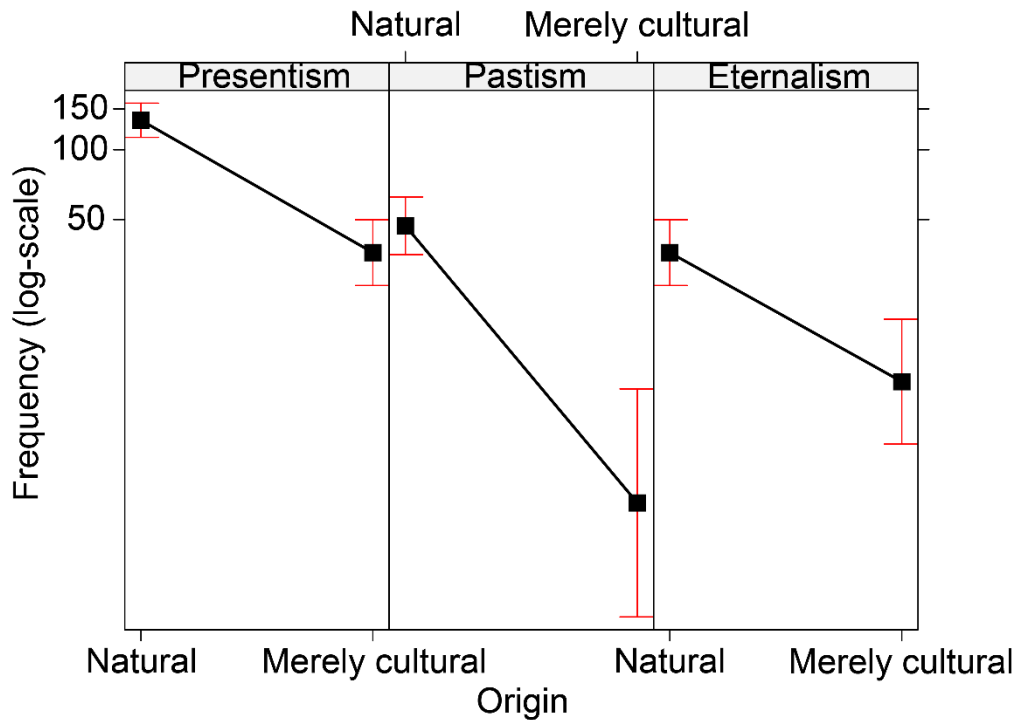


Fig. 6: Frequency (log-scale) of the different levels of origin (natural origin; merely cultural origin) according to the global ontological positions. The bars represent the 95% confidence interval.

Lastly, we studied participants' estimates about the commonality of their own ontological ideas within a hypothetical group of randomly chosen people, as they are expressed in answering questions A5 and B5; in doing so, we were interested in checking whether they roughly corresponded to the actual spread of each global ontological position within the very sample we considered. We used a Generalised Linear Mixed Model ("Binomial" family, link-function "logit"), assuming ID (/Subjects) as Random factor (repeated measures experimental design), and setting *Commonality rate* (values: 0%, 10%, ... 100%) as the Dependent Variable, and *Global ontological position* (values: *Presentism*, *Pastism*, *Eternalism*) as the Independent Variable.

The effect of *Global ontological position* on *Commonality rate* was significant (Chisq (2, N=133) = 10.946, $p = 0.004$). The average commonality rates given by the supporters of each global ontological view were (see fig. 7): 52% for presentism, 48% for pastism, 39.6% for eternalism; hence, both eternalists and pastists greatly overestimated the spread of their own positions, while presentists somewhat underestimated theirs (presentism vs eternalism: Bonferroni post-hoc test: z. ratio = 3.306; $p = .003$. The remaining comparisons are not significant). These results appear to conflict with the averagely high rate of naturality given to each global ontological position. This point and others will be discussed in the next section.

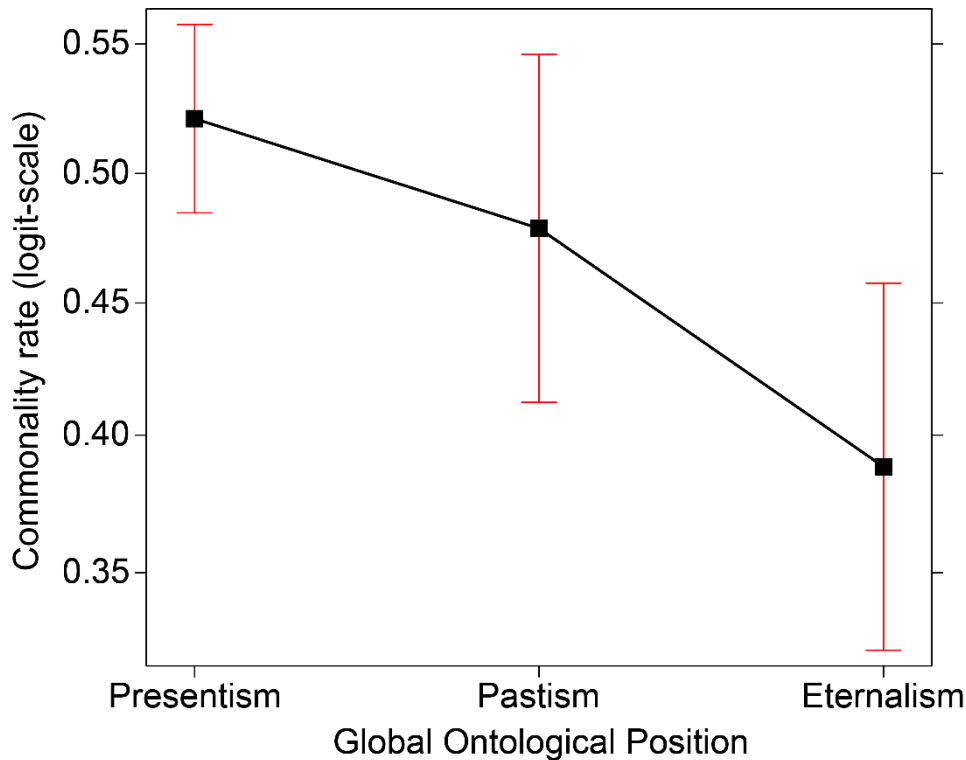


Fig. 7: Commonality rate (logit-scale) of the three global ontological positions. The bars represent the 95% confidence interval.

5. Discussion

To sum up our main findings: presentism was endorsed by ~64% of subjects in our sample, pastism by ~19%, and eternalism by ~17%; participants' ideas in temporal ontology, overall, qualified mostly as natural (~81.5%), rather than merely cultural (~18.5%), and each one of the three options qualified as much more natural than merely cultural. So, our findings only partly matched our predictions.

First of all, presentism scored remarkably worse, and correspondingly pastism and eternalism remarkably better, than we expected; and this may disappoint those presentists who, more or less explicitly, assign some evidential value to their view's commonsensicality. Still, our findings are at odds with Latham et al. (2019)'s findings, and we think they support different conclusions. Although not extracted from a very abundant sample, our findings vindicate to some extent the received view that presentism is part of the common-sense view of time; or, at least, that it is much more commonsensical than rival views in temporal ontology (if, as argued in §2, commonsensicality is taken as a matter of degrees). If so, then the assignment of evidential value to presentism's commonsensicality is not really misplaced, and even more so if (in compliance with the remarks made in §2) it is agreed that the degree of commonsensicality possessed by a certain philosophical view is not to be appreciated in isolation, but rather taking into account how many competing views it has and how commonsensical each of them is: in this connection, one should note that presentism has two rivals and more than triple supporters than either of them.

Moreover, contrary to our expectations, presentism did not qualify as mostly natural and eternalism as mostly merely cultural: all positions were most frequently rated as natural rather than merely cultural, with pastism standing out under this respect. There are three remarks we would like to make about this result.

(1) It apparently conflicts with the comparatively low rates of commonality which were given for all three global positions. Presumably, if someone believes a certain idea to be natural rather than merely cultural, then they should also believe it to be very largely shared by other people, at least on the plausible assumption that natural ideas tend to be more similar across people than cultural ones. This apparent conflict might be explained by the possible circumstance that many participants took the natural origin

of an idea as an individual matter, thinking that different people may have natural ideas about a certain topic and those ideas may still be different (which may in fact be the case: even on the assumption of a correlation between naturalness and commonality, it is implausible that all interpersonal differences in common-sense ideas might be due to cultural influences). At the same time, as mentioned in the previous section, the abstractedness and the unfamiliarity of the issues might have engendered in most participants a cautious attitude, which might have led them to give relatively low commonality rates (as well as relatively low confidence rates).

(2) From an epistemic point of view, it is reasonable to think that no single global ontological position might draw any exclusive advantage from its being rated natural so frequently, because they all have been.

(3) Nevertheless, the fact that ontological ideas were, overall, much more frequently rated as natural rather than as merely cultural provides some reason, though definitely not a strong one, to think that the distribution of the three global ontological options that we found in the population we studied might extend beyond it.

6. Conclusion

We studied experimentally non-experts' ideas pertaining to the domain of temporal ontology, i.e., common-sense temporal ontology. We found that a non-overwhelming majority of participants in our sample endorsed presentism, while two significant minorities endorsed pastism and eternalism. In addition, we found that each of the three views were considered by most of the respective supporters as natural rather than merely cultural. We think that our findings yield some support, albeit weaker than expected, to the received view that presentism is part of the common-sense view of time or, at any rate, that it is remarkably more commonsensical than rival views.

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