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Open Access versions of the original paper in this debate as well as most commentaries are linked to from <https://pragmaticnihilism.com>, as is another paper that applies a similar perspective to behaviour change techniques and posits evolutionary learning processes as the foundation for behaviour change.

Confidence in constant progress:

or how pragmatic nihilism encourages optimism through modesty

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We are very grateful to the authors of the commentaries authors who have clearly pointed out areas we neglected to discuss in our original article (Peters & Crutzen, 2017), as well as areas where we may not have described pragmatic nihilism with sufficiently clarity. We hope to be able to do their thoughtful and constructive contributions justice in this response. The commentators made many insightful points that in our view complement the perspective of pragmatic nihilism: after a short summary of pragmatic nihilism, we will briefly list these, and then proceed to respond to the issues where the commentators expressed concerns and disagreement.

Pragmatic nihilism is a perspective on psychological research aiming to foster awareness of the likely non-existence of the variables hypothesized by psychological theory (i.e. the first tenet of pragmatic nihilism; Peters & Crutzen, 2017). Instead, pragmatic nihilism considers those variables useful metaphors, interfacing with reality through operationalisations. Based on this nihilistic foundation, pragmatic nihilism then takes the pragmatic position that those operationalisations are therefore crucial aspects of psychological research, deserving of more attention and care than they commonly receive (i.e., pragmatic nihilism's second tenet). Finally, pragmatic nihilism's third tenet is the tesseract. This tesseract is itself a metaphor for the many specificity-generality dimensions of which each operationalisation represents one specific intersection (a slice of the tesseract, as it were).

De Vries (2017), Fried (2017), Gruijters (2017), and Trafimow (2017) expressed agreement mainly to two implications of pragmatic nihilism: the emphasis on adequate attention for operationalisations and the invitation to carefully consider the use of health psychology theory. Even though neither of these points is novel, we are glad that we are not alone in considering these issues deserving of renewed attention. It appears that this

pragmatic nihilism-fuelled debate on the use of theory and operationalisations arrived at the right moment. We hope that pragmatic nihilism can prove helpful to researchers who want to critically re-assess their use of theory and who want to award a more central place to operationalisations in their thinking about and application of health psychology theory.

At the same time, the commentaries made clear that in our introduction of pragmatic nihilism, we failed to explain both the implications and the foundations sufficiently clearly. Regarding the implications of pragmatic nihilism, this was most evident from De Vries' (2017) commentary. Like Fried (2017), De Vries concurred that network analyses, which can be seen as an implication of the spreading activation metaphor we used to explain the nihilistic side of pragmatic nihilism, can have an added value in health psychology, but expressed concerns that pragmatic nihilism could turn into a justification for haphazard data collection. De Vries expressed similar concerns regarding the treatment of theory from a pragmatic nihilism perspective. Pragmatic nihilism advocates theoretical promiscuity, encouraging researchers to flexibly employ and combine theory, and De Vries argued for the value of integrative theories as curated selections of 'good theories'. We agree that, to use De Vries' term, filters are important: data collection should never occur without careful planning and theory should always be evaluated before it is employed. We believe, however, that both tasks are responsibilities of the individual researcher. Proclivity to theoretical promiscuity does not alleviate a researcher's responsibility to justify their decisions and document those justifications. In fact, considering the tesseract increases attention to the decisions that need to be made regarding many specificity-generalty dimensions of each operationalization before data collection.

More central to the core of pragmatic nihilism, the commentaries of De Vries (2017), Fried (2017) and Trafimow (2017) revealed discomfort, perhaps dismay, at the nihilistic

foundation of pragmatic nihilism. We recognize this reaction: had we not happened to be incorrigible optimists, we might instead have opted for ‘pessimistic nihilism’. However, the response is likely the result of the assumption that pragmatic nihilism is more ambitious than it is. The excellent introduction of the four accounts of the nature of psychological kinds provided by Fried (2017) forms a useful backdrop for this discussion. As Fried pointed out, we neglected to embed pragmatic nihilism in this existing literature. Although we were only partly familiar with this body of literature, there is another reason for this: pragmatic nihilism is what one could call ‘ontologically agnostic’. This may partly explain why Fried’s (2017) interpretation of pragmatic nihilism as hypothesizing psychological kinds as natural, social, practical, or complex, and as prescribing reflective, formative, or network models, did not yield a straightforward conclusion.

Perhaps this aspect of pragmatic nihilism is best introduced by the controversial essay where Epstein (2016) argues that “[y]our brain does not process information, retrieve knowledge or store memories. In short: your brain is not a computer.” Epstein (2016) cites Zarkadis’ book (2015) *In Our Own Image*, where the six metaphors that have been used successively over the past 2,000 years to explain intelligence are derived from the most advanced technology of each age (e.g., hydraulics and mechanics). The most recent (current) metaphor used widely in psychology, Epstein argues, is strongly based on the information processing characteristics of modern computer systems (for discussion of Epstein (2016), see Golder, 2016; Graziosi, 2016; Shallit, 2016). Epstein further argues that like all those past metaphors, the information processing one is wrong, even going so far so as to argue for abandoning that metaphor. Pragmatic nihilism, instead, is more pragmatic, not discouraging employing a metaphor as long as it is useful, but imploring awareness that it is merely a metaphor. Pragmatic nihilism does, however, share the acknowledgement of constant

progress that underlies Epstein's argument. There is no reason to believe that the metaphors presently employed in the science of psychology happen to closely resemble reality. In fact, given that unlike sciences that have been at it for centuries (e.g. Physics and chemistry), psychology is only 138 years old in 2017 (taking 1879, when Wilhelm Wundt founded the first laboratory of psychology, as its birth year). It would be presumptuous to assume that in such a brief period, psychology managed to advance to a level where psychological theories even approximate the accuracy and sophistication of theories that are used in fields that have been established for many centuries. In that sense, we echo Trafimow's (2012) optimistic view that unifying theories are a possible and desirable goal for psychological science but take a much longer view as to how soon we can expect the first unifying theory to emerge.

Thus, pragmatic nihilism is in fact based on optimism rather than pessimism, on confidence in constant progress. Constant progress means that what the theories and assumptions currently held to be true within psychology will probably turn out to be wrong. This is what we attempted to express in the nihilistic assumption of pragmatic nihilism that "the variables hypothesised by our theories do not exist" (Peters & Crutzen, 2017). We do not claim that nothing exists to link psychology to the physical reality (Gruijters, 2017), or that variables are equivalent to their operationalisations (De Vries, 2017; Fried, 2017; Trafimow, 2017).¹ Instead, pragmatic nihilism urges scientific modesty. It expresses the idea that it is highly unlikely that the variables postulated by any of the currently prevailing theories exist as such in reality. Certainly, *something* exists, and we would not agree that pragmatic nihilism is committed to leaving that black box dark (Gruijters, 2017). We think that it is very

¹ We claim that for all *practical* purposes, variables are equivalent to their operationalisations. Note that not all purposes are practical purposes; one could perhaps even argue that, for example, philosophy is quite the opposite of practical.

useful, even necessary, to continue studying how exactly human psychology ‘works’: and the theories currently used to explain and change behaviour are required steps to arrive at greater understanding. Yet, their importance does not lend them any truthfulness, nor does the fact that those theories are the best that is available at present. Pragmatic nihilism can support theoretical development by facilitating flexible integration of theories, but we agree with Trafimow (2012) that this integration is unlikely to bring us closer to the coveted unification.² We think that it is highly unlikely that the way psychological science presently construes psychological variables accurately represents human psychology. It is not just a matter of finding the correct ‘boxes’ and ‘arrows’: thinking about psychology in terms of boxes and arrows might be the wrong approach in the first place. In fact, while we are very enthusiastic about network models (Borsboom & Cramer, 2013; Dalege et al., 2016; Fried, 2017; Fried & Cramer, 2017) and the novel insights they may afford when employed in, for example, determinant studies, we do not believe these models are the correct way to construe psychological variables, either. Network models might be a step forward from modular models, but like Gruijters (2017), we believe that psychological science is a long way from figuring out the nature of the actual representations and computations. Nevertheless, we believe that it is possible to figure this out in the long run.

Therefore, like Fried (2017), we are not ready to give up on the notion that psychology can discover truths. As psychology students, one of our teachers had a print stuck to his door that said “the best way to stop learning is to think you know the answer,” and we think this applies to the nature of health psychology theories, as well. We think psychology can

² Trafimow (2012) describes an excellent example of Mendeleev’s periodic table, which is not an integration of knowledge regarding all elements in chemistry, but is based on valence as the unifying principle.

discover truths, and we would not argue with the idea that there is *some* truth to the theoretical construct of attitude: it is something that can be measured, predicts behaviour, and can be changed. But we think that it is presumptuous to believe that we currently live in the moment where the 'true nature of psychological constructs' has been figured out already. In the quest for truth in psychological science, one of the things that is still being discovered is how to think about psychology on a very fundamental level. The current more or less modular model used in health psychology, and even the network model, are probably both wrong. That is not necessarily criticism: both ways of construing human psychology have their merits and will likely turn out to be valuable steps along the way. They likely each get some things right, and as such, have tremendous value. But none of them is the final answer. Network models may turn out to perform better in explaining some aspects of human psychology than traditional approaches: but that does not mean that they are necessarily correct. For example, the nodes in the network approach are anchored at a more or less arbitrary level of psychological specificity, and that level is determined largely by what is convenient in terms of the crafting of operationalisations (e.g. separate symptoms of psychopathology). Pragmatic nihilism holds that the fact that that level of specificity is conveniently used in questionnaires, or conveniently observed, does not thereby afford it some veracity. What is convenient when thinking about or measuring aspects of human psychology does not, by virtue of the fact that it comes natural to the scientists doing the science, have to be what is true.

Gruijters (2017) proposes an extension to pragmatic nihilism in which he adds a belief system as an interface between the realm of metaphors and the physical realm. This conceptualisation comes very close to what we have in mind with pragmatic nihilism, except that we deliberately refrained from describing or labelling what that interface might be,

based on the considerations outlined above. This relegates pragmatic nihilism to a perspective that, through nihilism and pragmatism, facilitates developing and applying theory, instead of a philosophical perspective on the nature of human psychology or the constructs used in psychological theories. We conceived of pragmatic nihilism to offer useful metaphors, no truth. Gruijters' addition is very helpful in discussing this side of pragmatic nihilism, and addresses exactly one of the sore spots of psychology. Discovering what Gruijters calls the belief system, some interface between the physical realm and that of psychological theory, would allow building psychological theory from building blocks that have some verifiable truth. However, as it is, a disconnect remains. Pragmatic nihilism does not pretend to contribute to eliminating this gap: instead pragmatic nihilism counsels acknowledging its existence and adopting the associated modesty, which in our view is needed to progress from the current state of affairs towards unification.

We would not go so far as to agree with Trafimow (2017) that pragmatic nihilism would hold that "I like/dislike red pillows" is a valid measurement of attitude towards exercising, but we would probably agree that that item is a valid operationalisation of *an aspect* of attitude towards exercising. An aspect that is (we assume) irrelevant to whether one actually exercises; and if one would define attitude as a psychological construct that predicts behaviour, the operationalisation "I like/dislike red pillows" would probably be disqualified as potentially valid. For example, such an operationalization is not in line with the definition of attitude provided by theories such as the reasoned action approach (Fishbein & Ajzen, 2010), emphasizing the importance of De Vries' filters (2017). Operationalisations should be consistent with the definitions provided by a theory, but we agree with Trafimow that researchers have great freedom in crafting operationalisations. We would argue that the

“belief system gap” is what affords researchers this freedom. Exactly because of this gap, we agree that auxiliary assumptions deserve more attention than they currently receive, but we see this position as complementary, not alternative, to pragmatic nihilism. Gruijters (2017) made a similar point, arguing that pragmatic nihilism excludes unidimensionality. We concur, but not because pragmatic nihilism argues that psychological variables only exist as their operationalisation. Pragmatic nihilism acknowledges that *something* else exists: it simply urges acknowledging that the current state of psychological science is a long way from closing the gap that Gruijters closes with the belief system. Psychology exists: something drives human behaviour and experience. But that something is unlikely to be the variables hypothesized by our current theories, and therefore what is measured is not those variables. The process of developing a measurement instrument or manipulation for a construct does not yield “the” operationalisation of a psychological variable that objectively exist as a modular unit somewhere in our minds, or even as a distinct emergent property of a network. Instead, that process yields one potential operationalisation of an *aspect* of human psychology usefully captured by that hypothesized variable.

This perspective means that, as Gruijters (2017) suggests, pragmatic nihilism would hold that unidimensionality is not a sensible concept, as unidimensionality assumes that the relevant variable exists and can have one or more dimensions. Instead, pragmatic nihilism would construe dimensionality as a continuous property: a function of the psychological breadth of a variable as captured by its definition. This would also mean that, an unwieldy number of incomparable attitude measurement instruments exists (Gruijters, 2017). Much like the first tenet of pragmatic nihilism that the variables hypothesized in psychological theories do not exist as such, we understand that this is not necessarily received as good

news by most researchers. To those researchers new to this perspective, we apologise for having borne this news, but we believe that its unpleasant nature notwithstanding, this perspective is valuable when researching or developing psychological theory and behaviour change interventions. We believe modesty regarding the current state of affairs within psychology is needed to pave the way for progress within the discipline.

We hope we have managed to address the most pertinent issues in the commentaries, and, where we expressed disagreement, we hope we have managed to explain our position. We also hope that the perspective of pragmatic nihilism can help researchers flexibly employ health psychology theory, and that the metaphor of the tesseract, in particular, can help researchers in more carefully describing the auxiliary assumptions of their theories. In the end, as Gruijters (2017) aptly summarized, pragmatic nihilism is intended to help researchers and intervention developers get to their coffee a bit faster. We hope that pragmatic nihilism, like coffee, will revitalize its users and foster an alert approach to health psychology.

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