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Essentialism

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What Is Psychological Essentialism?

Much of human cognition is characterized by psychological essentialism (Gelman 2003). In its broadest form, psychological essentialism is a conceptual framework that defines our naïve-metaphysical perspective on the structure of objects and categories. Its basis is the distinction between two kinds of properties: Objects of a given kind can have many *accidental* properties: These are properties that the object in question can but need not have, and in respect to which it can change without becoming a different kind of object. *Essential* properties (Essential properties are sometimes called “defining,” and accidental ones “characteristic.” Research in cognitive development, for example, suggests that children’s lexical semantics undergo a “characteristic-to-defining” shift in the preschool years such that children initially base word meaning on superficial features associated with prototypical instances of a given kind, and only later focus on the defining features underlying the category and its prototypical as well as less prototypical members alike (Keil and Battermann 1984)), in

contrast, are those properties that make an object the kind of object it is and that thus define its very identity.

Whether something is a piece of gold is a question of its deep, essential (chemical) properties. If you change these properties, the object in question is no longer a piece of gold. Pieces of gold, on the other hand, usually have some prototypical surface features like looking golden. But these are merely accidental, not defining or essential, features. You can change them, for example, by painting the piece green, without altering the very identity of the object.

Importantly, psychological essentialism is a rather general and abstract framework and we often do not need to know what exactly the essential properties in question are in order to assume that there are some. This is particularly clear in the case of many of our natural kind concepts. No layperson has any idea about the essential properties of being a tiger, elm, or piece of gold (Kripke 1972; Putnam 1975). We are often able to refer to and pick out objects of these kinds demonstratively (“This is a tiger”), and we assume that there must be a deep, underlying essence (its tiger-ness) that defines its natural kind, but mostly we either defer to authority (“zoologists know”) or future research (“they’ll find out”) when having to explain what this essence may be. Our concepts of “tiger”, “elm,” and “gold” function, as it were, as *essence placeholders* (Medin and Ortony 1989).

The Scope of Psychological Essentialism

The most obvious domain of application of psychological essentialism is thought about natural kinds, and in particular biological kinds. Typically, adult humans share the intuition that biological natural kinds, such as tigers and elms, are constituted by shared, deep essential properties that are largely unknown to the folk, but may be specified by scientists or other experts (Atran 1998). Some form of psychological essentialism, however, seems also to be at work in our categorization of artifacts – whose essences have to do with history of invention, production, and use (Bloom 1996; Gelman 2013). Another prominent area in which psychological essentialism features prominently is social categorization: For many social categories, for example, gender, ethnicity, race, or social class, adult humans tend to posit deep, underlying essential properties (even if they are unknown) that contrast with merely superficial accidental properties (Rhodes and Mandalaywala 2017).

Signatures of Psychological Essentialism

From a logical point of view, at the heart of psychological essentialism lies the distinction between deep essential and superficial accidental properties. Typically, in human adults this distinction has a characteristic signature or pattern of manifestations:

- Categories to which psychological essentialism applies are seen as natural kinds that – unlike merely nominal kinds (such as Tuesdays) – are real and objective and out there in the world even if we (still) do not know what their essence is.
- Though considered as radically different, essential and accidental properties are seen as causally related in characteristic ways: Members of a given kind have many of their accidental properties in virtue of their hidden essence that somehow produces patterns of perceivable characteristic features (tigers look like tigers because of their tiger-hood).

- At a given time, membership in such categories (and thus the identity of a given object as object of this kind) is a binary rather than fuzzy matter.
- Over time, membership in the category remains stable even over major transformations of accidental properties (as long as these changes do not affect the essential properties).
- Within the category, there is a tendency to see its members as more homogenous than they really are (like in categorical perception, where analogous stimulus differences are underestimated within and overestimated between categories).

Virtues and Vices of Psychological Essentialism

From a pragmatic point of view, psychological essentialism has many virtues: It is, above all, a powerful cognitive framework for inductive learning and the development of naïve theories. It has been argued, however, that it also comes with cognitive and moral detriments. Cognitively, a rigid overapplication of essentialist assumptions of the stability and unchangeability of natural kinds stands in the way of understanding the dynamic picture of species and their evolution according to Darwinian theory, for example (Gelman and Rhodes 2012; Mayr 1982). Morally, psychological essentialism with regard to social kind can tend to foster racism, sexism, and other evils (Haslam and Whelan 2008).

Empirical Indicators of Psychological Essentialism in Human Adults and Older Children

The signatures of psychological essentialism mentioned above can be tapped empirically in various ways. Studies on category-based induction, for example, have widely documented that subjects make inductive inferences from some sample objects to other objects based on essential properties rather than their surface accidental properties (Gelman and Davidson 2013). Most

prominent, and most relevant for the evolutionary and ontogenetic question in focus here, have been studies that address subjects' intuition of identity and stability of kind membership over time and over various dramatic property changes (Keil 1989). In one kind of vignette, for example, animals of a given kind (say, piglets) are adopted and raised by animals of another kind (say, tigers) and learn to behave like them, etc. In another kind of vignette, an animal of a given kind (e.g., racoon) is superficially transformed by being shaved, painted or even by surgical treatments to look (and even smell) like an animal of a different kind (e.g., skunk). In both cases, the target question is what the original animal will end up and turn out to be (Keil 1989). In both cases, human adults and children from age 4 to 5 are very firm in their intuition: You can adopt or superficially transform animals as much as you want to, but this will never turn them into animals of a different kind.

Roots of Psychological Essentialism

While psychological essentialism has been amply documented in adult humans and older children, little is known so far about its origins, both ontogenetically and phylogenetically. This is partly due to methodological reasons: Most studies on psychological essentialism heavily rely on language as dependent measure (participants are asked to make explicit identity and category judgments such as "Will this animal end up as a racoon or a skunk?"), and are therefore not suitable for testing nonverbal animals or preverbal infants. This may, however, also partly be due to theoretical reasons. It has been argued that psychological essentialism is a "late and sophisticated achievement" (Fodor 1998, p. 159), both historically and ontogenetically, that heavily rests on linguistic and technological foundations. According to this argument, it simply would not make sense to even look for basic forms of psychological essentialism in infants or nonhuman primates.

Sortal Object Individuation

However, recent research in developmental and comparative psychology has begun to use alternative, nonverbal methods in order to explore ontogenetic and phylogenetic roots of psychological essentialism. This research is based on the assumption that psychological essentialism need not come as an all or nothing package. Rather, it may develop in steps, and there may be more basic and foundational forms of essentialism in which not all of the characteristic adult signatures (see above) are present yet. Quite plausibly, the most basic form of essentialism builds on basic object cognition, namely on intuitions about the identity and stability of objects as members of a given kind – without necessarily including other signatures such as understanding the causal relatedness of essential and accidental object properties. And quite plausibly, the primordial form of such intuitions is found in sortal object individuation (Xu and Carey 1996).

Sortal concepts are kind concepts, linguistically typically reflected in the form of count nouns, such as "tiger," "car," or "duck." Sortal concepts supply criteria of individuation and countability (whenever one can reasonably ask "How many Xs are in the room?" "X" is a sortal concept), and identity (such that one can ask and answer questions of the form "Is this the same X as the one that was here a while ago?"). Sortal object individuation is the capacity to use such sortal concepts to individuate, identify, and track objects. The crucial point for present purposes is the following: Given their role in identity judgments, sortal concepts already involve a basic distinction between essential properties that do preserve identity (even if they are unknown) and merely accidental properties that are irrelevant to identity questions.

Sortal object individuation has been studied in human infants, since a pioneering study by Xu and Carey (1996), with designs like the following: The infant is confronted with a box into which an object of kind A enters at time 1, followed by an object of kind B that comes out of the box at time 2. The central dependent variable is subjects' numerical expectation as to how many objects are in the box, as indexed by their looking and

searching behavior. If they individuate the objects as objects of distinct kinds that cannot turn into each other, they should expect that there must be still (at least) one object, the object of kind A, in the box. Basic versions of such tasks in which an object of kind A (e.g., a ball) and an object of kind B (e.g., a toy duck) are used that differ both in essential and superficial properties are mastered by human infants from around 12 months (Xu 2007). Interestingly, this is the age at which children begin to acquire serious language competence and, indeed, some studies found that sortal object individuation and language development go hand in hand: The children who solve a given sortal individuation task tend to be those children who already understand the requisite words (“ball,” “duck”), and children generally perform better when the objects are explicitly labeled (Xu 2002). This has led to speculations, in line with a long philosophical tradition (e.g., Quine 1957), that sortal object individuation may be basically a linguistically grounded phenomenon (Xu 2002).

However, subsequent comparative studies with analogous tasks amply documented the very same capacities in nonhuman primates (Mendes et al. 2008, 2011; Phillips and Santos 2007; Phillips et al. 2010; Santos et al. 2002). And some studies with dogs and birds even suggest that sortal object individuation may be more ancient and widespread beyond the primate lineage (Bräuer and Call 2011; Fontanari et al. 2011, 2014). Therefore, on the premise that these kinds of tasks really tap sortal object individuation, this capacity seems to be older than language and clearly not uniquely human.

But is this premise justified? Does one really need to use sortal concepts in order to solve these tasks? The basic methodological problem is that in these scenarios, information about the kinds of objects (their essential properties) and information about their merely superficial properties are necessarily confounded (balls and toys ducks are different kinds of objects, but they also look very different). And so success in these tasks could be more parsimoniously explained on the basis of tracking superficial (rather than essential) properties.

Another set of studies, therefore, combined the logic of such individuation studies with the logic of verbal transformation stories (used in research on psychological essentialism) in order to investigate whether infants and nonhuman primates really make use of sortal (and not just property-based) object individuation. In one study, 14-month-old infants saw events of the following structure: at time 1, an object with appearance A (e.g., a toy bunny) entered into a box, and at time 2 infants either saw an object with appearance A (same bunny) or with appearance B (e.g., toy carrot) come out of the box (Cacchione et al. 2013). The two appearances, in real fact, belonged to one and the same object (a soft toy that could be turned inside out, with carrot-appearances on one side, and bunny-appearances on the other). Crucially, there were two groups of infants: One had been previously familiarized with such dual-aspect objects, while the other one had not. The ignorant infants took the difference in superficial appearance as diagnostic for questions of numerical identity (they searched longer in the bunny/rabbit condition than in the bunny/bunny condition). The infants in the other group (familiar with such dual-identity objects), in contrast, ignored the superficial differences for their judgment of numerical identity (they did not search differently in the two conditions). That is, given the requisite background knowledge, infants disregard the superficial feature differences in much the same way as older children disregard the superficial feature differences between a normal racoon at time 1 and a skunk-looking racoon at time 2 (after it has been painted, etc.), when it comes to the question of the animal’s identity.

In another study with a slightly different approach, great apes saw a food item of kind A (e.g., slice of banana) enter into a box and a food item either of kind A or of kind B (e.g., slice of carrot) come out of the box. Crucially, in some conditions, the food item entering the box was first changed in its superficial properties (e.g., the banana slice was painted orange) so that it was perceptually more similar to items of kind B than to other items of kind A. The findings were very clear: Apes treated kind information as more valuable than surface feature information

when inferring the number of objects present in the box. They searched longer in conditions involving a difference in kind between the object placed and the object retrieved from the box (as compared to conditions involving only surface feature differences) (Cacchione et al. 2016).

Distinguishing Deep/Inside from Superficial/ Outside Features

Converging evidence for a systematic distinction between deep and superficial features in 14-month-old human infants comes from a study by Newman and colleagues (Newman et al. 2008): When trying to figure out the sources of behavior of a self-propelled object (e.g., a toy cat), infants searched more for its internal (deep) rather than its external (superficial) features. That is, they seem to appreciate that the self-generated movement of agents is more likely to be caused by deep internal properties than by more accidental external features.

Summary and Outlook

Psychological essentialism marks a fundamental way of human thinking about the natural and the social world. The workings of psychological essentialism and its underpinnings have been extensively studied in research in cognitive and social psychology. From an evolutionary and ontogenetic point of view, however, still little is known about its origins and roots. It has sometimes been assumed that essentialism crucially builds on sophisticated linguistic and cultural influences, and should thus emerge relatively late both phylo- and ontogenetically. Recent comparative and developmental research, in contrast, highlights the possibility that precursors and/or basic forms of essentialist thought develop early in humans and are shared with other species in the primate lineage and possibly beyond. In particular, sortal object individuation – the capacity to keep track of a given object as object of a certain kind over time – may be a primordial form of essentialist cognition. It may be the first clear form of fundamental distinguishing between essential properties of objects that determine

their identity over time and merely accidental properties that can be changed without altering the object's identity.

Many open questions remain for future research, of course: Is sortal object individuation merely a precursor to or rather already an early form of psychological essentialism? Resolving this question may be largely a terminological matter: If psychological essentialism is conceived in such a way that its core is the distinction between essential and accidental properties and that it can otherwise come in degrees, sortal object individuation appears as one (perhaps even the) basic form of essentialist cognition. If, however, psychological essentialism is seen itself as an all-or-nothing matter that necessarily involves all the different signatures found in adults, then sortal object individuation may be merely a precursor.

What is currently largely unknown is how other signatures typically associated with psychological essentialism (such as assumptions about the causal relations between essential and accidental properties) develop(ed) through ontogeny and evolution. Relatedly, how do children develop the barebones of essentialist sortal object individuation into the full-fledged adult framework of essentialist reasoning? Finally, what other potential foundations of essentialist cognition may there be, and how do they relate to sortal object individuation? It has been suggested, for example, that human essentialism develops out of a fundamental cognitive tendency to explain events and patterns by focusing on inherent features of the relevant constituents, the so-called inherence heuristics (Cimpian and Salomon 2014). Future research will need to clarify whether such a heuristic is an additional and complementary building block out of which full-fledged psychological essentialism finally develops; or alternatively, whether it is even the most basic cognitive foundation that underlies psychological essentialism.

Cross-References

- ▶ [Artificial](#)
- ▶ [Categories](#)

- ▶ Categorization
- ▶ Concept
- ▶ Formation
- ▶ Inductive
- ▶ Natural
- ▶ Reasoning

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