

## Effort feels meaningful

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**People often dislike effort and avoid it when they can, but effort can also imbue tasks with meaning. This is the case for real-life tasks, but also novel tasks devoid of true purpose. Why does effort feel meaningful, under what conditions, and for whom?**

### The effort paradox

The increasing takeover of both unskilled and skilled labor by automation and artificial intelligence suggests that people of the future will exert less mental and physical effort as part of their day-to-day life. And, assuming a robust form of universal basic income – a utopian vision, we know – people will not have to exert as much effort as they do today to earn a pay check. Less work for good pay sounds like a dream. But are the people in this dream happy? Do they live meaningful lives?

Some economists and cognitive scientists might answer in the affirmative. Humans and other animals are lazy. We and they avoid physical and mental effort, finding it aversive and costly. The law of least effort stipulates that we prefer to engage less rather than more effort to obtain the same reward [1]. Countless laboratory experiments uphold this law [1–3]. We are not only miserly with our effort but experience effort as frustrating and stressful [4]. Laboratory experiments thus suggest we would be happier to receive pay for little or no effort over the same pay requiring mental and physical exertion.

When we exit the sterile confines of the laboratory, however, the law of least effort does not look too lawful. Most lottery

winners continue to work despite not needing the cash [5]. Many people delay retirement despite having the financial wherewithal to spend their last days on a sunny resort. And when people do retire, they are not necessarily happier [5]. What is more, people exert effort for fun [6]. Mountain climbing, Rubik's cubing, and video gaming would be uninteresting to most if they were effortless. Why? To be sure, people willingly pay effort costs to reap various social rewards, but here we highlight the need to explore another potential reason: that effort – and perhaps other forms of suffering [7] – imbues tasks with meaning and purpose. Given the centrality of effort to decision-making, where fast effortless thinking is often pitted against slow effortful thinking, understanding effort's meaningfulness takes on both theoretical and applied importance.

### Meaningfulness

Meaning is notoriously difficult to define, but scientists have tried [7]. One common definition suggests that meaning consists of subjectively appraising something as being valuable or important, as having a purpose, and as being coherent and making sense [5]. Other features of meaning include a focus on the future and struggling through challenges [8]. Theoretically, effort is associated with the numerous faces of meaning, though perhaps unevenly.

Despite it being costly, the products of one's efforts are also valued as significant [3]. For example, birds, rodents, grasshoppers, and humans prefer rewards attained via effort or other challenges versus rewards acquired effortlessly [3]. Although not always, effort is typically engaged in the service of some goal, thereby giving a purpose to one's sweat. Finally, effort can introduce regularity and predictability to the world. Given the repeated pairing of effort with reward in the real world, effort can become a secondary reinforcer, with organisms coming to expect reward upon the exertion of effort [3]. In this way, effort

adds value but also order and predictability. In theory, then, effort is associated with value, purpose, and sense-making, while also being future-oriented and challenging.

### Beyond 'because it's there'

Indirect evidence of effort's link with meaning comes from now classic research probing why mountaineers work so hard to scale a summit [6]. When writing about their experiences, mountaineers do not explain their strange behavior by invoking George Mallory's empty quip, 'because it's there'. Instead, they justify their behavior by stating that it provides them with a sense of competence and mastery, and that it allows them to see what they are made of, a means to evaluate themselves. By pushing themselves to their very limits, mountaineering fulfills some basic psychological needs and fosters a sense of meaning. Crucially, there are few effort-free ways to achieve these. One cannot master a craft without effort. It is unfeasible to fulfill one's need for achievement without trying. Given these justifications, mountaineering and other forms of exertion seem less strange.

More direct evidence of effort's link with meaning comes from experiments conducted in the laboratory. In a series of studies, people were more willing to donate to a charity when the contribution process involved an effortful charity run instead of an effortless charity picnic [9]. The more effortful the contribution process, the more meaningful the charity appeared [9]. In another series of laboratory studies, people reported that symbol-counting and Stroop color-naming were both more effortful and meaningful than passively watching the same symbols or Stroop color-words [4]. What is more, the more effort they applied, the more meaning they derived [10]. There is nothing inherently meaningful about counting symbols or naming colors. Yet people seem to derive more meaning, if not happiness, from

even mundane tasks that involve effortful control [8,10].

One reason effort might imbue actions with meaning is that effort can help people escape meaning-sapping boredom [3]. People become bored when their environments do not adequately engage their attention, such as when working on meaningless tasks. Yet recent laboratory studies suggest that boredom can be lessened and meaning increased when the same dull tasks require effort [4]. People will sometimes even seek out effort to relieve boredom and increase meaning [4].

### Explaining effort's meaningfulness

A challenge for cognitive science moving forward is to interrogate why effort feels meaningful, under which conditions, and for whom (Box 1). If cognitive biases are partly the product of not engaging sufficient effort, understanding effort's inherent meaning might help boost people's effort willingness and thereby inoculate against the worst of these biases.

At the proximate or mechanistic level, we wonder whether effort's meaning-making is illusory, a way for organisms to make sense of their past actions and allow for unconflicted future ones [11]. According to modern workings of cognitive dissonance theory [11], dissonance is aroused when cognitions with action implications come into conflict with each other, thereby making it difficult to act. By retrospectively overvaluing the products of effort, though, organisms might form a preference between otherwise similar items that would

have left them indifferent and uncertain about how to act, thereby helping them solve the paradox that befuddled Buridan's donkey.

An alternative account is that effort's meaningfulness is not illusory, but in fact a statistical property of the real world. Unlike in laboratory settings, where effort and reward can be neatly separated, in the real world reward often follows effort, albeit at variable rates of reinforcement. The association between effort and reward is so ingrained that people assume that the more reward they are offered, the more they will have to work, even in laboratory contexts where it is made clear that no such contingency exists [12].

At the ultimate or functional level, perhaps effort's meaningfulness is a cultural product that functions to prepare people for a life of work; it might also sustain the perceived legitimacy of unequal societies. Cultures that valorize hard work – think of the Protestant and Confucian work ethics [3] – lionize those who really try, resulting in greater economic production and consumer supply. More provocatively, the belief in effort's inherent meaningfulness might give wings to the concepts of merit and social mobility [13]. We wonder if the concept of merit requires that people internalize the belief that effort pays. When people stop believing that effort pays, not only will they stop trying, but they might also start asking uncomfortable questions about how elites achieved their station in life [13]. Effort's perceived meaningfulness, then, might act as a system-justifying force.

Finally, because effort is both costly and hard to fake, it might be especially meaningful in signaling people's true intentions and even their moral character [14]. Effort's costliness is why it is so useful as a social signal: if a person is willing to endure effort costs to gain membership in some group, it is probably safe to assume that they really want to join that group. It might also be reasonable to assume that if this person was willing to pay effort costs to join a group, they might also be willing to do the same to achieve some of their other goals. The exertion of effort thus fosters broad moral trait ascriptions [14].

### Concluding remarks

People are mostly annoyed by needing to push themselves. Effort is a slough. Because it is so challenging, though, (some) people find it meaningful too. A challenge for cognitive science moving forward is to understand why.

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### Declaration of interests

No interests are declared.

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#### Box 1. For whom is effort meaningful and under which conditions?

There are limits to effort's meaningfulness. Effort is unlikely to be meaningful for those compelled to exert effort. Effort might only generate meaning for those who freely choose to exert themselves [7]. Without free choice, effort cannot be justified [11] and made meaningful. Further, not everyone derives meaning from effort. People low in need for cognition – people who report not enjoying mental effort – discount the value of mental work and are willing to forego extra rewards to avoid it [2]. We suspect that they also would not derive much meaning from pushing themselves. In contrast, people high in meaningfulness of effort (a new self-report measure assessing the meaning people draw from exerting effort) may find cognitive work especially meaningful [10].

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