When describing what it means to be human, famous Greek philosopher Aristotle defined human

beings as rational animals. In fact, Aristotle emphasised that it is rationality that makes humans

unique and distinct from animals But exactly what it means for people to be

rational has long been an interdisciplinary debate, drawing arguments from fields including philosophy,

economics, psychology and mathematics. Nobel prizes

This essay 1 explores what it means to be rational and whether humans are rationality. This essay is

organised as follows. Section 2 presents different criteria and theories for defining rationality. Sectionbriefly compares different views on human rationality in the literature. Section 4 presents three

case studies that provide empirical evidence on rational decision-making. And the final section (5)

concludes.

In order to understand if humans are rational, we first have to build a framework to define what

we mean by rationality. Definitions of rationality relate to Max Weber’s principle of methodological

individualism , since theories of rational actions underlie theories of rationality. It follows then that

theories of rationality are classically linked to the primacy of “the action frame of reference”

While the social sciences have defined rationality in a

number of different ways, this section focuses on five of the most general notions of rationality.

The first notion regards an individual as rational if she acts in a way that is intentional. This stems

from Weber’s sociology, where the intention of the act is primary, and the outcome of the action

is of secondary importance A simple example of a rational act

under this framework would be for a person to eat ice-cream because she enjoys eating ice-cream, or

alternatively, not to eat ice-cream because she wants to reduce her sugar intake. To act irrationally

according to this theory would be to pursue an action based on non-intentional causes For instance, a lecturer intends to grade all his students’ tests fairly, but he tends to

give higher marks to papers he grades after he’s eaten lunch . In this case the lecturer is unaware

of the influence of external factors on his deliberate decision. Thus, intentional motives are not fully

governing the individual choice. It may also be that a person acts in opposition to her intentions,

such as eating ice-cream because she craves sugar even though she would prefer not to eat ice-cream.

While intentionality is not a particularly strong criterion by which to judge rationality, it is a useful

starting point.

The second criterion for rationality is that choices should be transitive. This approach defines a

rational person as one who is internally consistent in how he orders his subjective preferences

For example, if a person prefers ice-cream to chocolate, and he prefers chocolate to apples,

it must follow that he prefers ice-cream to apples. There is no restriction or structure placed on the

decision itself – there is no “correct” decision. However, if a person makes inconsistent decisions, he

would be considered irrational. For example, a person choosing to eat apples when there is ice-cream

available, given that he prefers ice-cream to apples. The theory supporting this criterion is that

observing a person’s actual choices is the only way of understanding an individual’s real preferences.

As shown by Smith, Eggen & Andre transitivity can be written in mathematical terms

as:

Let A be a set and R be a relation on A :

R is transitive iff for all x, y, and z ∈ A, if xRy and yRz, then xRz.

Applying this definition to the ice-cream example above, whenever x > y and y > z, then also x > z,

where x = ice-cream, y = chocolate and z = apples.

The third theory of rationality defines a rational individual as one who chooses the sufficient means to

achieve an end. This instrumental rationality implies the normative notion of correctness; rationality

is dependent on the ability of a person to select the “correct” means to reach an end

For example, it would be instrumentally rational to start a business if an individual has an end

goal of making profit.

The fourth criterion of rationality is that individuals pursue their self-interest efficiently. This concept

of rationality is more strict as it imposes structure on both the choice of an end and the means to

achieve this end, as well as requiring consistency of the ends. This approach is related to rational

choice theory and is widely used in neoclassical economics. A similar concept to rational choice theory

is that of bounded rationality, as proposed by

The fifth notion of rationality defines a rational person as one that has a good reason, from her point

of view, for her actions. The fact that a person has good reasons and not just any reasons is the main

idea behind Boudon’s theory of rationality The theory presupposes that there is an

ideally good choice that is attainable, but a person could still be rational even if she does not make

this “ideal” choice. Rather, a rational individual makes a reasonable choice from her perspective,

given her circumstances and available information. This is similar to bounded rationality but differs

in that Boudon explicitly emphasises good reasons.

A standard assumption in classical economic literature is that agents hold rational expectations re-

garding their future consumption and make choices on a utility-maximising basis. DellaVigna &

Malmendier test this assumption by investigating how people choose gym contracts. The au-

thors use a data set from three American health clubs, which includes information on the types of

contracts that members hold, the cost of these contracts, and the daily attendance of 7,752 club

members for three years. First, DellaVigna & Malmendier construct a contract choice model

with the assumption that going to the gym has an immediate effort cost and future health benefits;

the model also assumes that the cost of effort is unknown ex ante. Additionally, the model assumes

customers pay a fee to exercise and can choose from and flat-fee, monthly or annual contracts The

authors then make 3 different predictions based on rational beliefs and standard preferences. The

first prediction is the price per expected attendance. The second prediction is that members who

took out monthly contracts would have, on average, a lower initial attendance than those who took

out annual contracts. And the final prediction is that the average actual gym attendance equals the

average forecast of attendance.

The paper finds that people do not choose their optimal contract, given how often they go to the gym

The empirical analysis shows that 80% of monthly members

would have paid less under a pay-per-visit scheme for the same number of visits. And members who

took out monthly contracts upwards of 70$ would have paid 70% less under the flat-fee system for

the same number of visits. A rational utility maximiser would opt to pay less for a given number of

visits if he derived positive utility from having money. Thus, paying more for a given number of gym

sessions suggests that these individuals are not rational.

Monthly gym subscribers can cancel their membership in any month but are charged a higher fee

per month than the annual contract. Individuals who are more unsure of how often they will gym

each month would prefer the monthly contract because it’s more flexible. And those who are more

sure that they will consistently gym would prefer annual memberships because they work out to be

cheaper. Therefore under a rational system of beliefs, annual members have a higher likelihood of

being frequent club users than monthly ones and renewing their annual gym membership. The data

shows that the second prediction does not holds and that annual members are 17% less likely to remain enrolled for longer than a year than monthly subscribers. Finally, the third prediction is contradicted by the results, where the average forecasted monthly visits was 9.5 and the average actual attendance was 4.17 visits per month. The authors conclude that their results are not in line with the predictions of a rational model, and that people likely overestimate their future efficiency or future self-control

In a related study,

Acland & Levy ran an experiment to investigate gym attendance and found that their test

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subjects tended to greatly overpredict the number of future gym visits. The paper concluded from

the results that their subjects were presently biased and naive about self-control problems. These

results and interpretation are supported by Carrera, Royer, Stehr, Sydnor & Taubinsky who

analysed commitment preferences and found that participants held overoptimistic beliefs about gym attendance and could be classified as naive hyperbolic discounters. These empirical studies suggest that humans are not rational when it comes to choosing gym contracts.