

Headword: Money

The term *money* encompasses the institutions that people use to store wealth, to measure value, and to exchange goods and services. Also, it encompasses the material objects related to such institutions, such as coins and banknotes. As money plays a major role in most people's lives, most people develop a profound and multifaceted relationship with money. In childhood, reflecting the development of their cognitive and numerical abilities, people develop an understanding of what money is and how it is used. As becomes evident during adulthood, much like food, money is also a reward for which people are willing to work. Also, money easily attracts symbolic meaning, e.g., related to power, luck, and self-reliance. Due to cognitive decline, older adults make less optimal decisions about money, especially in novel environments that require learning. Nevertheless, older adults are less vulnerable to temporal discounting, so they outperform younger adults in some decision contexts. Taken together, people's relationship with money is profound and multifaceted, but also variable across the lifespan.

Childhood

The effective use of money requires well-developed cognitive abilities. For example, to accurately distinguish between coins and banknotes, people need the ability to discriminate between different objects. To make computations with money, people not only need the ability to count, but they also need to have a *number sense*, which involves having abstract knowledge of numbers and mathematical operations. To move on from understanding money itself to understanding economic concepts (e.g., that people can earn money through work), people need to understand how society operates. All these abilities and knowledge structures typically develop during childhood.

In psychology, researchers have often taken a cognitive–developmental approach to examining children’s understanding of money. Inspired by Jean Piaget’s work, researchers who took this approach tried to describe a series of stages, through which children’s understanding of money progresses. For example, children first start to understand that money can be used to buy things. Later, they start to understand that some coins are more valuable than others, and that a certain set of coins can be insufficient to buy certain things. At an even later age, they understand why people sometimes get change in stores. So, with the gradual development of their cognitive abilities, children’s understanding of money matures, too.

Children learn about economic concepts in a similar, perhaps stepwise, way. At around age 4–5, most children understand that they would sell more lemonade in a busy street than in a quiet street (the effect of demand on sales). Only later, at around age 8, most children understand that they would sell less lemonade if many other kids would also sell lemonade in the same street (the effect of supply on sales). The difference can be explained by the fact that the demand–sales relationship is positive, whereas the supply–sales relationship is negative. As a result, understanding supply requires somewhat more advanced numerical skills than understanding demand.

As the research addressed above suggests, money can be considered a domain in which general cognitive and numerical capacities are helpful. Still, it is important to note that there is more to the relationship between people and money than just having well-developed executive functions. After all, much like food and drugs, money has rewarding properties. Also, money is a cultural product with which people develop kinds of associations (e.g., money is associated with power), which is used in all kinds of rituals and ceremonies. So, to understand money-related behavior, it is necessary but not sufficient to consider cognitive and numerical functions. Money-related behavior depends on many aspects of the human mind.

Adulthood

For adults, money is an object that is desired, that energizes behavior, and that shapes learning and decision making. In other words, for adults, money is a *reward*. When people anticipate money (or when they receive money unexpectedly), this activates brain structures that drive motivated behavior. Notably, activity in one such structure, the *ventral striatum*, directly reflects the subjective value of money that can be earned. Located deep in the brain, the ventral striatum is part of the *dopamine system*. The dopamine system, in turn, communicates to large parts of the cortex that rewards (such as money) can be earned. Dopamine, a neuromodulator, facilitates several aspects of human cognition. Generally, at the risk of oversimplification, dopamine reduces signal-to-noise ratio in various parts of the cortex, and causes people to perform well on all kinds of tasks.

This biological mechanism is often triggered by managers, when they promise their employees extra money when they perform well on the job. The effectiveness of such monetary ‘bonuses’ is well-established in cognitive and work psychology: when people get paid contingent on their performance, they perform better, on various tasks. Nevertheless, the use of money as a reward suffers from a poor reputation, perhaps especially among practitioners. In part, this bad reputation stems from the widespread, but false, idea that money can only enhance performance on simple tasks (e.g., typing in numbers in a spreadsheet) but not difficult tasks (e.g., doing complex computations). Instead, psychological research shows that money improves performance especially on tasks that are complex.

Still, it cannot be denied that money has a dark side. Due to money’s rewarding properties, people can get addicted to money-related behaviors, such as gambling and shopping. The latter may involve the over-use of credit cards, which attenuate the aversive feeling associated with spending money (the *pain of paying*). Also, when people work to attain monetary rewards, they may feel that their freedom of choice is restricted. So, adults’

relationship to money is ambivalent: money is a desired commodity that directs and energizes behavior, but its use and its pursuit are not without risks and downsides.

Beyond conceptualizing money as a reward, it is also useful to think of money as a product of culture. Curiously, anthropologists have reported that money objects (e.g., coins, banknotes) are frequently used in rituals and ceremonies, throughout the world and throughout history. Such rituals include receiving money for milk teeth, grooms 'purchasing' their brides during weddings, and burying the deceased with money for use in the afterlife. Relatedly, more so than other man-made objects, money attracts symbolic meanings; for example, money can become to symbolize power, luck, and self-reliance. In line with such symbolism, psychologists have observed that merely exposing people to money (e.g., by letting them touch it, count it, or look at it) leads them to act in more self-reliant ways (e.g., asking for help less quickly). So, money is more than just a number or just a reward: people have cultural associations with money, particularly with its material forms, and these associations shape their behavior.

Older adulthood

Like in childhood, age-related changes in cognitive abilities have an important impact on how older adults deal with money. Notably, people's capacity to reason quickly and to solve novel problems tends to decline when they get older. As a result, older adults perform worse on tasks in which they have to use recent information (e.g., about money they have won on previous trials) to make new decisions. So, on these tasks, older adults are less likely to make choices that maximize their earnings.

Still, with age comes experience, and experience with money has distinct advantages. In their decisions, younger adults treat immediate money (\$100, now) as much more valuable than distant money (\$100, in two months). Older adults are more patient and less prone to such *temporal discounting*. In decisions that involve time, older adults have indeed been

found to be more effective compared to younger adults. On a side note, temporal discounting can explain why most employees start to care about their retirement plan only when they get close to their retirement age. From the perspective of financial responsibility, it would be better to start thinking about retirement much earlier, in younger adulthood. Yet, as they are more sensitive to temporal discounting, younger adults fail to see the value of money that is decades away.

Some aspects of people's relationship with money remain unchanged when they move into older adulthood. For example, like in younger adults, older adults' striatum responds to the value of money that can be gained. Similarly, ageing does not seem to be associated with general changes in risk-seeking. So, together, although older adults may have difficulties in quickly and dynamically using information to make decisions about money, money still functions as a reward to them, and their increased patience may sometimes even be advantageous.

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See also: Executive functioning; Generosity; Materialism; Motivation; Numeracy; Organizations; Reward sensitivity; Socioeconomic status

Further reading

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