Magical thinking – Reality or illusion?

IS there any connection between the thought process of an adult refusing to walk under a ladder and a child scared by a toy lion that has 'come to life'? How can magical thinking protect us, or condemn us to a life of psychological illness? Read on as I reveal all in an area curiously neglected by psychology.

Do we believe in magic? And if we do, then why? **EUGENE SUBBOTSKY** *investigates.*

Magical thinking and magical beliefs

We find it quite natural that our thoughts or words can produce effects in our mental world, or in the outer world: we can think of moving our hand and do it, we can ask for a favour and be granted it. What we would find surprising is if our thoughts, wishes or words produced similar effects in non-animate physical objects. We would not try to move a rock by just wishing it would move ('thought over matter' magic). Non-animate objects don't suddenly acquire spontaneity ('coming to life magic') or violate fundamental properties of space and time (e.g. solid objects going through each other without damage being done). Old people don't become young again ('transformation magic').

All this and more can happen in our dreams and imagination. Here we are all magical thinkers – we can be young again, fly, move ourselves to other planets in an instant. But can we admit that magical thinking could leave its home ground – imagination – and trespass into the world of reality? If we do that, then we upgrade ourselves from magical thinkers into believers in magic.

In ancient Greece people believed that the Oracle could see the future, and that sacrifices of animals to gods affected weather and crops. Everybody was a believer in magic, and the world was full of magical transformations. Today, things are different. Scientists have explained much of the physical world and produced effects that would be viewed as magical a few centuries ago (transmitting auditory and visual messages remotely; flying in the air and space). They persuaded most of us that believing in magic contradicts both everyday experience and the fundamental laws of nature. In the modern civilised world magical thinking is ousted from nature and finds its last refuge in art, religion and imagination. Yet traces remain, in the everyday lives of both children and adults, with some surprising and important implications.

Do children believe in magic?

Psychologists have long been fascinated by the fact that young children in Western cultures remain relatively free from the grip of rationality. Karl Buler (1930) wrote of early childhood as a period of fairy tales, when children really believe in dwarfs and giants. Taking a more empirical approach, Jean Piaget (1926) found that four- to seven-year-old children can attribute consciousness to non-animate things (e.g string that 'wants' to untwist because 'it knows it's twisted'), and that desire can lead to a belief that magical activities can influence reality (e.g one boy believed his ailing mother would get better if he gave up a precious toy).

In a more recent study Harris *et al*. (1991) asked children aged four and six years to pretend that there was a creature (a rabbit or a monster) in an empty box. When left alone, many children behaved as if the pretend creature was really in the box. The authors hypothesise that children 'infuse' the creature with reality, believing that thinking alone can create real physical objects ('consciousness over matter magic').

In one of my studies (Subbotsky, 1985) children aged four, five and six years were told a story of a girl who had been presented with a magic box that could turn pictures into real objects. When asked if such things can happen in real life, almost all children denied this. But when the experimenter went out of the room 'to make a phone call', up to 90 per cent of children tried to magically convert pictures into objects and were bitterly disappointed when this did not happen.

In a different experiment (Subbotsky, 1985) children of the same age were told a story of a girl who had a magic table for a birthday present. The table could turn toy figures of animals into real live ones. Again, asked if this could happen in life, only a few four-year-olds said 'yes'. Yet, when the children had an opportunity to see a real table that looked exactly like the one in the story and saw that a small plastic lion started moving on the table (through the use of magnets), only a few of the children behaved in a rational manner (looked for the mechanism, searched for the wires). The rest of the

Magic movements?

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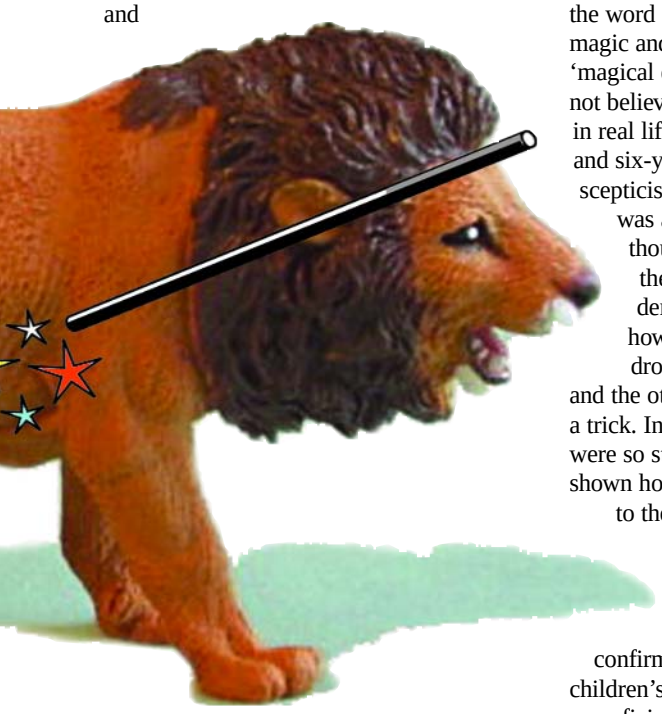
children either ran away fearing that the lion was coming to life, or applied a magic wand they had been given in order to stop the lion moving. These studies clearly show that when children are about four, most are aware that magic can exist only in fairy tales. But this awareness is confined to verbal judgements: in their actions, four- to six-year-olds behave as magic believers.

Why do children believe in magic?

There is no doubt that our culture supports and maintains magical beliefs. Most preschoolers believe in Santa Claus, the Easter Bunny and the Tooth Fairy, and parents usually support these beliefs. Woolley *et al*. (2002) even managed to induce some level of belief in the reality of a novel fantastic entity (the Candy Witch) in three- and four-year-old children.

The fact that beliefs in fantastic entities are so widely spread among preschoolers, coupled with the children's 'magical behaviour' shown in the above experiments, makes it puzzling that in their verbal judgements most children deny that magic can be real. Could this be due to a special balance between the costs and benefits of engaging in magical behaviour in different circumstances, as some psychologists believe (Woolley, 1997; Woolley & Phelps, 1994)? For instance, in an interview situation children are likely to show rational and logical thinking, because an interviewer expects this from them; whereas thinking in a magical way brings no benefit to them. The balance of costs and benefits was reversed in the situation when the same children felt in danger of being attacked by a lion if they disregarded the possibility of the magical transformation; and even if they didn't believe, there was nobody around to appreciate their courage.



But how stable is children's verbal scepticism towards magic? If shown a magical effect, would children be able to defend their rational views and discount the effect as a trick? Or would they be quick to change their minds and say that real magic came true? If, in this situation, they embraced a magical explanation this would mean that children are ready to change their beliefs even when the cost–benefit balance remains stable.

To examine this, we presented five-, six- and nine-year-old children with a causal effect that looked like an instance of real magic: an experimenter put a new postage stamp in an apparently empty box and cast a magic spell on the box ordering the postage stamp to be burned (Subbotsky, 2004). When the children opened the box, they found a half-burned stamp (the effect was achieved by a trap door inside the box). First, the children were interviewed on their understanding of the difference between proper magic and magic tricks. This precaution was necessary because the word *magic* can stand for both proper magic and stage magic. Before seeing the 'magical effect', most of the children did not believe that proper magic could happen in real life. But afterwards, most of five- and six-year-olds abandoned their scepticism and acknowledged that this was an instance of proper magic, even though the cost–benefit balance was the same before and after the demonstration. In nine-year-olds, however, only half of the children dropped their original sceptical view, and the other half kept saying that this was a trick. In five-year-olds magical beliefs were so strong that even after they were shown how the trick was done, they stuck to their magical explanations. In contrast, older children quickly recovered their scepticism towards magic after the trick was explained. The experiment confirmed our assumption that younger children's verbal disbelief is only superficial: at this age children are happy to be persuaded that magic is real. It is between six and nine years that children seem to really abandon magical beliefs.

What about adults?

On the basis of the above experiments adults should be even more sceptical towards magic than nine-year-old children. Indeed, when undergraduates were repeatedly presented with magical effects similar to those described above, they did not succumb to magical explanations (Subbotsky, 2004).

Yet anthropological studies have repeatedly shown magical beliefs to be widespread among adults. In her account of witchcraft and magical practices in present-day England, Luhrman (1989) estimates that several thousand people, usually well-educated middle-class individuals, practise magic. Naturalistic observations have shown that out of 51 pedestrians passing a ladder positioned over a pavement, 37 preferred to step into the road to avoid walking under it (Jahoda, 1969). And in their survey of magical beliefs Zusne and Jones (1982) found that 64 per cent of US college students endorsed at least some magical beliefs – a finding that undermines the assumption that magical beliefs are associated with poor science education.

There is also evidence of magical thinking in adults from psychological research. Paul Rozin and colleagues demonstrated that in disgust and other domains people's behaviour conforms to the main laws of sympathetic magic: contagion ('once in contact, always in contact') and similarity ('the image equals the object'). For example Rozin *et al*. (1986) found that university students were reluctant to taste their preferred juice if a sterilised dead cockroach was briefly dipped in it; they were also less willing to try a piece of chocolate if it was shaped in the form of dog faeces than if it had the shape of a muffin. When given a choice, the students preferred to taste sugar water from a glass labelled as 'Sucrose' and not from a glass labelled as 'Cyanide'. Amazingly, the preference for a neutrally labelled glass of sugar water was shown even if the alternative glass was labelled negatively ('Not cyanide, not poison') (Rozin *et al*., 1990). A similar magical transfer of an undesired quality from a person to an object was shown in the domain of the fear of contagion: students rated a sweater briefly worn by a person with AIDS as a significantly less desirable

to wear than one worn by a healthy man (Rozin *et al*., 1992).

The authors interpret these results as various cases of the same mechanism of magical thinking – 'participation' (Nemeroff & Rozin, 2000). When engaged in participation, a person subconsciously suspends the borderline between their mind (e.g. feelings of fear or disgust) and the real world (e.g. juice or a piece chocolate that is perfectly suitable for consumption). Normally, participation is a useful protective psychological mechanism, but if it gets out of hand it can lead to obsessive compulsive thinking (an illusion that external events which are, in fact, totally irrelevant to a person have a personal meaning and are intended to harm or benefit the person).

Psychological research has shown that in healthy children there is a significant association between magical thinking and obsessive-compulsive thoughts and behaviours (Bolton *et al*., 2002). If pushed still further, obsessive-compulsive thinking can develop into obsessive compulsive disorder (OCD). Here, magical thinking enters the area of clinical research. Schizophrenic patients tend to engage in magically based compulsive thinking to a considerably larger extent than both the general population (Tissot & Burnard, 1980) and non-schizophrenic psychiatric patients (George & Neufeld, 1987).

Altogether, these studies present magical thinking as scattered on a scale from helpful protective reactions (e.g. disgust or fear of contagion) to the reactions of a troubled mind (e.g. OCD). Potentially, studies on clinical aspects of magical thinking can provide insights into the nature of hallucinatory disorders and other problems of modern life that are based on magical mechanisms (like religious fanaticism, ethnic conflicts or international terrorism). For example, that rational people consciously do irrational things that bring about mass loss of human life, including their own, can only be understood in terms of magical thinking – namely, a feeling of participation in some powerful force (God, nation, destiny) that makes the destructive actions seem rational in the perpetrators' eyes.

Magical thinking is also evident in situations that involve threats to personal welfare beyond the subconsciously based emotional reactions in the above experiments. After I cast a magic spell to badly scratch a card in an apparently empty box, half of the undergraduate participants refused to take part in a repeat with their hands in the box (Subbotsky, 2001). They explained their decisions in a manner that suggested they believed in the damaging power of the magic spell. In fact, in this 'high-cost' situation British university students showed the same degree of magical beliefs as uneducated peasants in a mountain village in central Mexico, a 'magic tolerant' culture (Subbotsky & Quinteros, 2002). Yet in their verbal judgements British adults – unlike Mexican adults – denied that it was possible to transform real physical objects by a magic spell.

In another experiment (Subbotsky, 2003) adult participants who all denied that proper magic could happen in real life were asked to imagine that a woman approached them at dusk on an empty street. The woman introduced herself as a witch, and offered to cast a magic spell on his or her future life. In one condition, this was a good spell, intended to make the participant rich and happy. In another condition, this was a mean spell that aimed to make the participant's life miserable. It was predicted that if the participants did not believe that their future lives could be affected by magic, then in both conditions, for a variety of reasons, about half of the participants would go for the spell. But if, contrary to the scepticism shown in the interview, participants did believe in the effect of the magic spell on their lives, then their responses in the two conditions would diverge. In the 'good spell' condition, there would still be a 50/50 split between those who go for a spell and those who do not. In the 'bad spell' condition a significantly larger number than 50 per cent of participants were expected to reject the witch's offer: although they would still have been motivated to accept the spell (in order to comply with the witch's request or to prove to themselves that they don't treat the threat seriously), the subconsciously held belief that the bad spell can adversely affect their lives would be a force powerful enough to outweigh the tendency to comply. The results strongly supported the 'belief in magic' hypothesis: in the 'good spell' condition, 10 out of 17 participants said that they would go for a spell, either in order to prove they don't believe in magic or in order to benefit from the spell. In the 'bad spell' condition, all 17 participants said 'no', and justified their answers by the fear that the spell might actually affect their future lives.

Altogether, the above experiments show that in Western individuals, the belief in magic does not disappear at the age of nine years. Rather, magical beliefs lurk at the bottom of the mind, ready to arise at the right moment. Not only are we all magical thinkers, we also believe in magic, at least with part of our minds.

Why do adults believe in magic?

According to Bruno Bettelheim (1977), in children a magical belief is fuel for imaginary role-play and fantasising that helps children to cope with the chaos of

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Many of us are tempted by the enchantment of magic

their subconscious desires and master difficult problems of life. I would add to this that thinking and playing with magical things helps young children to maintain the feeling of independence and power – something that they mostly lack in real life. But why do adults believe?

First of all, because magic makes this world a more interesting and exciting place. Mummified by the depressing monotony of everyday life, many of us are tempted by the enchantment of magic. Those readers who disagree may try to find an alternative explanation for the facts that works of imagination like *The Lord of the Rings* and *Harry Potter* became multimillion-dollar businesses, and that nearly every bookshop accommodates a spacious section of occult readings.

Secondly, magic can give us a helpful hand in circumstances that are beyond rational control. According to some theorists, the illusion of control is a typical feature of the human mind and has an important adaptive function (Langer, 1975; Zusne & Jones, 1982). Although an illusion, it pushes a person towards higher achievements and helps us cope with the troubling diversity and unpredictable nature of everyday life. Thus, when we set off for a flight, we can never be 100 per cent certain that we are going to make it. It is in this kind of situation that we resort to 'magical behaviour', like crossing fingers or knocking on wood. In more serious situations, like having an incurable illness, a person is even more likely to turn to magical thinking. For those who believe in God, prayer can stand for magic, but for those who do not, the belief in magic and the supernatural is the only way to establish and maintain hope. The alternative is hopelessness and despair. That is why there have always been (and, perhaps, always will be) people who claim they have special supernatural healing powers. In fact, contemporary psychotherapy uses techniques that are similar to (or based on) those developed by magic and religion, like traditional shamans' techniques of autosuggestion and creating imaginary reality for healing and other purposes (Mindell, 1993).

Thirdly, magical thinking, like phenomenalistic thinking, makes the non-animate world more understandable and humane (Subbotsky, 2000). When we are in a rush and our car won't start, we may speak to it. This 'humanising' function of magical thinking is heavily exploited by advertising: in a TV clip, a speeding car can turn into a running jaguar, and a piece of chocolate can take a human shape.

Last but not least, magical thinking constitutes a foundation for the way our individual and social mind works (see Nemeroff & Rozin, 2000). Our emotional and communicative reactions are literally based on the laws of sympathetic magic. The phenomena of emotional contagion, hypnotic suggestion, magical healing, and placebo effects are just a small sample of those reactions. Magical thinking is important for establishing and maintaining human relations. In love, in parenting we frequently perform little rituals (hugging, making presents, doing small things together) that, from the strictly rational view, are unnecessary. These magical rituals shrinking or disappearing is usually a bad sign for the relationship.

'magical beliefs lurk at the bottom of the mind, ready to arise at the right moment'

To conclude, just as rational thinking helps us to cope with problems in the physical world, magical thinking comes to our aid when we deal with problems in our personal, social and emotional life. That is why magical thinking goes well along with rational logic, and is an exciting topic for psychological research.

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