



### The Nature of Thinking: Key terms

#### Defining thinking

For this section you need to know the following definitions:-

##### ***Thinking as Association***

This approach suggests that thinking involves the reproduction of previously learned responses and associations. Evidence for this comes from Thorndike - he placed hungry cats in closed cages, within sight of a dish of food. The cage doors could be opened when a pole inside the cage was hit. Gradually, the cats learned that hitting the pole opened the door. They had associated hitting the pole with getting to the food - thoughts were simple associations. The claim of the associationists is that human thinking follows along similar lines - that we will produce responses not through any complex internal representational processes but as a result of associating a particular stimulus with a particular response.

##### ***Thinking as Cognitive Restructuring***

The Gestalt psychologists disagreed with the associationist viewpoint and considered thought to be more than simple associations. They suggested that a person could have insight into, say, a problem's structure and in order to solve the problem they will restructure it. This suggests that thinking through something involves having some insight into the structure of what we are trying to think about and then restructuring it in order to do something about it.

##### ***Thinking as Adaptation***

This idea suggests that thinking develops through adaptation to particularly skilful ways of dealing with problems. The suggestion is that we start with a particular knowledge state referred to as declarative knowledge. This knowledge can be reported (thought about consciously) and is not tied to the situation in which it can be used. This knowledge is gradually adapted, through use, to become procedural knowledge. Procedural knowledge cannot be expressed, is applied automatically (and often unconsciously) and is specifically tuned to specific situations. Anderson (1985) suggests that skill acquisition is a move from the use of declarative knowledge to procedural knowledge - so thinking will differ depending on the level of a person's skill and the demands of a particular task. Thoughts will either be expressible or simply executable.

## Ways of thinking

For this section you need to know the following definitions:

### *Insight*

This refers to the often sudden comprehension of the solution to a problem. It is the “aha” experience when the solution to a problem appears to be a mystery and then all of a sudden, for no apparent reason, the solution becomes clear. There are two examples of this in action - the first involves animals, the second humans. The classic example of insight was carried out by Kohler who studied problem solving in apes. The apes were kept in cages and their task was to reach some bananas outside their cage. The only way they could do this was to use sticks that were lying around in the cage. Kohler said that the apes played around with the sticks for a while, then sat around (thinking?) and suddenly grasped the sticks, joined them together and managed to reach the banana. This, he claimed, was insightful problem solving. An example from humans is the two-string problem (ask your tutor to explain this).

### *Convergent Thinking*

There are, according to Hudson, two different styles of thinking - convergent and divergent. Convergent thinking is problem-bound and is focused on the limitations of the problem. It occurs when the individual has a tendency to work towards **one** single right answer. It often involves some degree of functional fixedness where the person trying to solve a problem cannot view an object as serving any other purpose other than the one it usually serves. For example, if asked to think up as many uses as possible for a brick then the convergent thinker will tend to stay within the boundaries of the functions normally associated with a brick such as building and construction.

### *Divergent Thinking*

This is the opposite to convergent thinking, it is not problem bound and does not focus on one single right answer. It is where the individual will move towards a more novel and original line of thought that might yield any number of possible solutions to a problem. For example, if a divergent thinker was asked to think up as many uses as possible for a brick they would be likely to come up with hundreds of possibilities, very few of which would conform with the usual uses (e.g. castrating a camel, sinking a cat, making a sandwich)

### *Probabilistic Reasoning*

This is the kind of thinking that will usually be used in decision making - it involves assessing the probability that, given a particular set of circumstances A is more likely to happen than B. For example, if you were faced with a police officer just after you had broken into a house and had a video recorder under your arm, you would assess

the probability that (A) they are going to arrest you or (B) they are going to help you carry the video recorder to your get-away vehicle. We would come to a decision based on what is the most likely outcome given what we know about police officers (likelihood ratio) and based on information about how many of each of those instances would occur in the population at large (base-rate information).