**Decision-making psychology can bolster conservation**

**Sarah Papworth**

*The actions that lead to conservation successes and failures are the result of decision making by individuals and organisations about what to conserve and how to conserve it. The psychology of decision making should be considered when assessing conservation outcomes.*

There is a current focus on evidence-based approaches to conservation, and on promoting evidence-based decision making through knowledge transfer and exchange1. These approaches attempt to address the ‘research-implementation gap’, yet they ignore the psychology of decision making. In fact, the psychology of conservation practitioners is a key part of decision making2, and could have a substantial impact on conservation actions and on individuals living in conservation areas3. Conservation psychology is a growth sub-discipline4,5, but there has been little investigation of the psychology of those professionals who implement actions for natural resource management and protection.

I suggest that applying the ideas of dual-processing theory could contribute to closing the research-implementation gap in conservation. This theory suggests that humans possess two systems for decision making: type I, which is low-effort and intuitive, relying on heuristics and pattern-matching for rapid decision-making; and type II, which is deliberative and analytical, reviewing and processing all information and requiring a greater cognitive burden6,7. Dual-processing theory characterises these two types of decision making as distinct processes, although some argue that they are extremes at either end of a continuum8. To exemplify how decision making might move along this continuum over time, consider a novice birdwatcher, who uses a guide to match the bird they see to a description in a book. This is analytical type II processing. As the birdwatcher gains expertise, this process becomes less and less cognitively challenging, until they automatically classify an individual bird to its species after only a brief glimpse — an example of type I processing.

How does this theory apply to conservation practice? If individuals are using type I decision making, they are unlikely to seek and evaluate sources of information, such as formally produced conservation prioritisations. Indeed, we would only expect evidence-based conservation to be considered when analytical type II decision-making is being used. Under these circumstances, structural and other barriers (such as access to information or institutional and financial constraints9) could prevent the use of conservation evidence, but these barriers are irrelevant if type I decision-making is being used in the first place.

For example, previous research on dual-processing theory has suggested that individuals are more likely to use type I decision making when they experience time pressure7. Indeed, the time taken to locate and access primary literature was the most common reason given by conservation management-plan compliers for not using this evidence9. Although producing research summaries that can be more rapidly processed reduces the time taken to gather information1, this time reduction still relies on people using type II decision making, which may not happen, particularly if they are under extreme time pressure.

At first glance, type I decision making seems to better describe how conservation professionals make decisions 9–12. But conservation professionals do use both experiential and scientific knowledge to support their decisions13. Understanding the contexts in which each type of decision making occurs is important. For example, experts are more likely to use intuitive, type I decision making14. This suggests that younger professionals, or those who move into a new area (whether geographically or conceptually), are more likely to use type II decision making, and thus more likely to search for information. This idea is supported by the increased use of scientific papers by less-experienced Australian management-plan compliers11. Therefore, designing undergraduate courses which include information on how to locate and evaluate conservation evidence, and including similar information in training courses or job inductions, is one way to use our understanding of the psychology of decision making to further conservation practice.

In addition to ensuring that research is accessible in the decision-making contexts in which it is likely to be used, we should try and understand the situations when type I or type II decision making might lead to better conservation outcomes. As mentioned above, expertise is associated with type I decision making. In one example of this among conservation professionals, practitioners at the Office of Environment and Heritage in New South Wales, Australia, gave assessments of vegetation condition in a protected area that were considered comparable to a quantitative assessment which depended on more time-intensive collection of primary data12. They produced these assessments even though most only had access to personal experience. In this context, if vegetation condition was being assessed to determine whether mitigation were necessary, producing additional information and moving from type I to type II decision making would not necessarily produce a superior decision. The importance of expertise is already recognised in conservation science15, but by recognising contexts when intuitive, type I decision making produces equal or better conservation outcomes, we can focus on producing research and supporting type II decision making in other contexts.

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