

# How does psychotherapy work? A case study in multi-level explanation.

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## *Abstract:*

Multi-level explanations abound in psychiatry. However, formulating useful such explanations is difficult or (some argue) impossible. I point to several ways in which Lane et al. successfully use multi-level explanations to advance understanding of psychotherapeutic effectiveness. I argue that the usefulness of an explanation depends largely on one's purpose, and conclude that this point has been inadequately recognised in psychiatry.

Lane et al. note that there is no universally accepted account of how psychotherapy works. They draw on neurological and psychological data to develop a theory about the relationships between memory, emotion, and semantic structures; they then put this theory to work in explaining how psychotherapy works and how it can be made more effective. Since it draws on biological, psychological, and social elements, Lane et al.'s account of psychotherapeutic effectiveness can be deemed a 'multi-level' explanation.

Understanding and treating mental illness is recognised by many psychiatrists to require consideration of biological, psychological, and social perspectives; yet organising these perspectives into useful, coherent explanations remains fraught with difficulty. Some, such as Christopher Frith, hold that multi-level explanations are, in an important sense, unintelligible and uninformative (Frith 1992, p. 26). Others, such as Michael Marmot (2005, p. 53) and Nassir Ghaemi (2010, p. 58ff), view multi-level explanations as impracticably complex, and believe that for practical purposes it is necessary to constrain one's thinking to a single level when trying to understand a medical phenomenon.

*Pace* these writers, Lane et al.'s account of psychotherapeutic effectiveness provides a case study of the usefulness of multi-level explanation. I identify three specific ways in which Lane et al. advance understanding of psychotherapeutic effectiveness by drawing on multi-level insights. I then argue that whether a given explanation is useful depends largely on what purpose one intends the explanation to serve, and that this point has not been adequately recognised in psychiatry.

First, Lane et al. note that attention to one level can lead us to revise beliefs about the composition of another level. For example, they note that memory reconsolidation—which involves changes in recalled memories—is behaviourally similar to so-called ‘extinction’, in which a new memory overrides an old one. Extinct memories, unlike earlier versions of reconsolidated memories, can reappear over time. Lane et al.’s account of psychotherapy depends upon reconsolidation and extinction being distinct psychological processes. The claim that they are *psychologically* distinct is supported by their *biological* differences: Lane et al. note that the two processes differ at the cellular/molecular level. As such, a multi-level explanation of these processes advances understanding of them.

Second, sometimes there is no single-level explanation for why a given phenomenon exists. Lane et al. answer the question of why our memories admit of revision through reconsolidation by appealing to Klein et al.’s (2002) argument that this feature is adaptive, since it enables us to update existing knowledge in light of new information. Appealing to adaptiveness in this way explains a *psychological* phenomenon (the mutability of memory through reconsolidation) in *biological* (evolutionary) terms. Confining ourselves to the psychological level makes it hard to see how this feature of memory could be advantageous; indeed, the flashbulb memory literature in psychology conceives it chiefly in terms of a vulnerability to error, as Lane et al. note. Multi-level explanation of memory reconsolidation, then, helps us understand it better.

Third, psychiatry is a goal-directed enterprise: its goal is to prevent, cure, and/or manage mental illness. A multi-level understanding of how a desired effect occurs can reveal new ways of achieving that effect, thereby opening up new possible treatment routes. Lane et al. draw on their *biologically*-informed understanding of the *psychological* processes underlying psychotherapeutic success to suggest ways of pharmacologically bringing about the results of successful psychotherapy. Whilst psychotherapy is one way of effecting desirable memory modification, pharmacologically manipulating patients’ emotional responses during recollection could be another. Lane et al. note that efforts to develop such treatments are already under way: propranolol, a beta-adrenergic antagonist, has been used to block the formation (or strengthening) of traumatic memories in patients with (or at risk of) post-traumatic stress disorder. Further multi-level insights into the biology of psychotherapy could reveal new opportunities for pharmacological intervention.

Lane et al. make use of these and other multi-level explanations in understanding psychotherapeutic effectiveness and considering how its effectiveness can be improved. Reflecting on their article reveals not only that multi-level explanations can be useful, but also that the usefulness of a multi-level explanation—or, indeed, any explanation—depends largely on what one wants from it. Frith’s complaint that the multi-level explanation “‘alien thoughts are caused by inappropriate firing of dopamine neurones’ ... is clearly inadequate’ might be reasonable given his wish to learn about ‘the nature of hallucinations’ and ‘the role of dopamine neurons within the physiological domain’ (Frith 1992, p. 26). Yet this explanation is useful if our aim is, instead, discovering whether pharmacologically manipulating dopamine neurons is likely to be an effective way to control alien thoughts. Similarly, Marmot and Ghaemi’s complaint that multi-level explanations are best avoided if we are to avoid becoming ‘paralysed by complexity’ (Marmot 2005, p. 53) is reasonable in cases where one’s aims are most

effectively realised by considering only single-level explanations, but not in cases—like that of Lane et al.’s attempt to explain how psychotherapy works—where achieving one’s aims requires consideration of multi-level factors.

I remarked above that combining the perspectives of different levels into coherent explanations of mental illness is a difficult task. Whilst impressive work has been done—particularly by Kenneth Kendler (e.g. 2008, 2012) and by Kendler and John Campbell (e.g. 2009, 2014)—to demonstrate the need for multi-level explanations in psychiatry and to consider how they are best formulated, the question of what makes a good explanation *for a given purpose* has been ignored. We know, for example, that some cases of depression are best explained primarily in terms of psychosocial factors such as bereavement, and that others are best explained primarily in terms of biological factors such as abnormal brain activity—but what factors *in general* determine whether and when attention to one or another level, or to multiple levels, is explanatorily more appropriate and useful is an issue that requires further investigation.

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