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Invited book review of Schwartz, B. L. (2002). *Tip-of-the-tongue states: Phenomenology, mechanism, and lexical retrieval*. Mahwah, NJ: Lawrence Erlbaum Associates Inc. ISBN 0-8058-3445-1. Pp. 181. Price $22.50 (Hbk).

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This book addresses a topic of great interest to the general public: tip-of-the-tongue states, the annoying instances when you know that you know a word or name, but are unable to produce it at a specific time. Tip-of-the-tongue (or TOT) states get their name from the subjective experience of the word being on the verge of production, and they are fascinating because they represent a very specific retrieval deficit. The speaker knows every aspect of the meaning of the word he or she is trying to produce, but cannot articulate the word. Parts of the word may be available to the speaker, such as its initial sound or the rhythm of its stress pattern, and often another, incorrect word repeatedly comes to mind in place of the desired word. TOTs have been of interest since James (1890/1952) first described them, and as Schwartz illustrates, they are a relatively universal phenomenon experienced on a routine basis.

Schwartz's coverage of TOTs is thorough, including descriptions of diary and experimental studies as well as theoretical frameworks to interpret these data. While he reviews a good deal of technical information, the presentation is not overly complex, rendering the book accessible to any interested reader. He begins by addressing the expected topics, such as the definition of TOTs and well-established characteristics of TOT states, and

he makes an important and often overlooked point that TOTs fall within *both* the domains of memory and language. He acknowledges that researchers typically study TOTs as either a memory retrieval *or* a language production process, although TOTs actually represent the intersection of the two processes (see MacKay & Abrams, 1996, for relevant discussion).

Schwartz later proposes some exciting new and potentially-controversial ideas concerning TOTs, e.g., explorations of the various emotions surrounding TOT states, and the suggestion of an important cognitive-monitoring function for TOTs. However, Schwartz's speculative comments are not always labelled as such, potentially confusing the naïve reader as to what is well-known and non-controversial in TOT research. For example, he describes at length the "inferential views" of TOTs, which in fact have received very little attention in the field compared to "direct-access theories." In fact, most of the evidence concerning inferential views comes from Schwartz's own (often unpublished) research or from metacognitive studies. While interesting, this approach does not accurately represent the mainstream view of researchers who study TOTs. Similarly, the section on the role of stress in TOT states is intriguing, but Schwartz fails to remind readers that there is currently no direct evidence for any relationship between stress and TOTs.

In conjunction with the ambiguity between speculation and fact, a major criticism of the text is that it contains many inaccuracies, both in details and in global themes. Schwartz occasionally fabricates controversies that do not exist in the field. For example, the majority of researchers view the TOT state as a partial failure of lexical retrieval. The finding that TOT sufferers can frequently provide some phonological information about the sought word necessitates such a view. Schwartz claims that researchers who follow this "lexical retrieval" approach to TOTs do not see an important role for metacognition in TOT states. Although this statement is true to the extent that TOT researchers do not precisely define the role of metacognition in TOT states, TOT researchers do utilize metacognition by relying on

individuals' self-reported ability to accurately recognize TOTs and differentiate them from other types of retrieval failures (e.g., instances when you know that you *should* know a word, but unlike in a TOT, you are not "just about" to produce it). In addition, most TOT researchers are attentive to a feeling of imminence in retrieval and require it for definition of a TOT, contrary to Schwartz's belief that imminence is separable from a TOT state. Schwartz also makes repeated claims that older adults may be more likely to resolve their TOTs than younger adults, despite a lack of statistical evidence to support this trend. Indeed, White and Abrams (1999; see also White & Abrams, 2002) showed that old-old adults (ages 73-83) were *less* likely to resolve TOTs than young adults (ages 18-26) following phonological priming. Furthermore, young-old adults (ages 60-72) exhibited priming similar to (but not greater than) young adults, a result also obtained by James and Burke (2000). Schwartz's suggestions that older adults may resolve TOTs more often than young adults are again only speculative and actually contradict existing research.

While proposing nonexistent controversies, Schwartz glosses over some important distinctions by failing to distinguish between genuine TOTs and illusory TOTs. In traditional TOT research, people are often given a recognition test to identify the words for which they were having TOTs, and TOTs for words that were not the intended targets are excluded from analysis as "incorrect" TOTs. When asked an unanswerable question in illusory TOT research (e.g., "What is the only living reptile that flies?"), people who indicate a TOT are probably having a TOT for a *different* word that answers a related question (as in the Moses effect; Shafto & MacKay, 2000), similar to the incorrect TOTs of traditional TOT research and different from genuine TOTs. Another indicator of the fundamental difference between genuine and illusory TOTs comes from Schwartz himself: He reports that he tried to conduct illusory TOT studies with older adults, but was unable to do so because the older participants often detected the implausibility of the questions. This difference in detection between young

and older adults does not occur in genuine TOT studies, where both young and older adults perform the task in a similar manner. For this and other reasons (detailed in Taylor & MacKay, 2002), it is important to separate research on illusory TOTs from research testing genuine TOTs, which Schwartz does not do. A related issue involves the research using TOTimal stimuli (in which a participant learns a name and other information for a drawing of a novel animal), which is fundamentally different from research testing genuine TOTs. The TOTimal studies involve new learning, which is a significantly different process that is not involved with genuine TOTs, which occur for well-known words that we have known for a long time. In sum, Schwartz's "mixing and matching" of substantially different TOT-like phenomena is misleading.

With respect to discussions of TOT theories, Schwartz's descriptions of many of the theories that have been used to account for TOT-related phenomena are overly simplified. While it is clearly necessary to be brief in the descriptions, critical components of the models are often overlooked, rendering interpretation difficult. For example, in describing the transmission deficit approach to TOTs, Schwartz calls it a two-stage model, by which he may simply mean that words and phonology are stored at separate levels, which is correct under the transmission deficit model. However, the more common use of "two stage" in lexical models refers to serial access to components, and Schwartz fails to clarify that this is not the case; priming is transmitted in parallel fashion in the transmission deficit model. He further fails to discuss the important role for lexical nodes in TOT states. Within the transmission deficit model, they are the "frame" of the word, and their activation coupled with failed activation of the word's complete phonology causes the sensation of TOTs. A better approach would have included much more detail on the mainstream theories of TOTs, rather than an entire chapter (Chapter 5) that delves into the intricacies of metacognitive theories, which Schwartz takes the liberty of applying to TOTs.

The incompleteness of Schwartz's theoretical descriptions leads him to overlook the significance of the links between theory and data. Schwartz says that the data from TOT resolution studies show that the "transmission deficit model can account for TOT resolution, but it does not really speak to TOT etiology" (p. 65). However, the priming studies of James and Burke (2000) and White and Abrams (2002) were specifically designed to test the premise that TOTs are caused by weakened connections from phonology to lexical items. Both of these articles reported evidence that strengthening these connections (via presentation of words that are phonologically-related to the target word) helps people to resolve their TOTs. More directly, James and Burke (2000; Experiment 1) demonstrated that presentation of phonologically-related words reduced the likelihood of TOTs for target words (see also Rastle & Burke, 1996), illustrating a direct relationship between phonology and TOT occurrence. Schwartz, however, seems to ignore the theoretical frame for those studies and instead focuses on one aspect of the results in an apparent attempt to suggest that there are currently no viable theoretical accounts of TOTs within the domain of lexical retrieval.

Schwartz's book has a few miscellaneous problems beyond its theoretical and empirical depictions. In terms of details, this book is very poorly edited. Figure 3.2 has been plagiarized from James and Burke (1995), and is neither properly attributed to its creators nor accurately described (in fact, it has no figure caption at all). While most books include some typographical errors, Schwartz's text has an inordinate number of problems, including multiple incorrect uses of punctuation, mis-cited dates, and misspellings, all of which distract from the content. Finally, in thinking about future TOT studies, it is not always clear why Schwartz calls for more of certain types of research. For example, Schwartz indicates his desire to see more neuropsychological (especially imaging) studies concerning TOTs, but he does not give a rationale for this desire, and it is not obvious what he believes this research would add to our understanding of TOTs.

In sum, Schwartz's book contains some useful and interesting information, but the valuable contributions of this book may be outweighed by the inclusion of inaccuracies and false distinctions. While the book is written at a level comprehensible to any educated reader, its inherent problems make it difficult to recommend to anyone unfamiliar with the research, theories, and issues involved. Researchers within the arena of TOTs, however, should read this book and respond to it in their research, both by following up Schwartz's interesting suggestions and by countering his inaccuracies.

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