



Mechanical problem-solving strategies in left-brain damaged patients and apraxia of tool use

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Résumé en anglais Left brain damage (LBD) can impair the ability to use familiar tools (apraxia of tool use) as well as novel tools to solve mechanical problems. Thus far, the emphasis has been placed on quantitative analyses of patients' performance. Nevertheless, the question still to be answered is, what are the strategies employed by those patients when confronted with tool use situations? To answer it, we asked 16 LBD patients and 43 healthy controls to solve mechanical problems by means of several potential tools. To specify the strategies, we recorded the time spent in performing four kinds of action (no manipulation, tool manipulation, box manipulation, and tool-box manipulation) as well as the number of relevant and irrelevant tools grasped. We compared LBD patients' performance with that of controls who encountered difficulties with the task (controls-) or not (controls+). Our results indicated that LBD patients grasped a higher number of irrelevant tools than controls+ and controls-. Concerning time allocation, controls+ and controls- spent significantly more time in performing tool-box manipulation than LBD patients. These results are inconsistent with the possibility that LBD patients could engage in trial-and-error strategies and, rather, suggest that they tend to be perplexed. These findings seem to indicate that the inability to reason about the objects' physical properties might prevent LBD patients from following any problem-solving strategy.

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