

The Relationship of Limb Apraxia Severity
to Motor and Language Deficits
(Abstract)

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Ipsilateral motor and symbolic/linguistic skills were examined in normal persons and in three left hemisphere damaged groups with no, mild, or moderate limb apraxia. When the two apraxic groups were pooled they demonstrated poorer response inhibition and reading relative to the nonapraxic group. There were no significant group differences on motor or language tasks when the three brain-damaged groups were separately compared. These results indicate that there is a limited relationship between limb apraxia and some motor and linguistic skills, and it is time to identify the common factors which link these abilities rather than concluding limb apraxia is either a motor or a symbolic deficit.

DISCUSSION

- Q: One of the things that strikes me about a lot of the research with limb apraxia, especially in trying to establish whether or not it's a symbolic problem, is that symbolic use of gestures is not tested, and the symbolic use of limb movement is not tested.
- A: It depends what you mean by symbolic use. There have been many studies looking at symbolic (e.g. waving goodbye) vs. nonsymbolic (e.g. putting hand under chin) gestures which show that many left hemisphere damaged patients are equally impaired on both types of gestures suggesting that the degree of symbolic value is not critical.
- Q: Let me put it this way. People only know they've got the problem when they're tested. They perform these movements fine when they're at home, but when they're being tested, that's when the disorder shows up. I sort of sarcastically ask them, what difference does it make? Also, I think, that illustrates that the use of these movements, perhaps in the home or perhaps the propositional use of them symbolically is not examined in these particular studies, and I think it might be, in the future.
- A: That's a good point. I have seen two patients, by the way, who were limb apraxic on formal testing and who were also having trouble manipulating objects at home. And certainly a lot of Leipmann's and Geschwind's observations suggest that when a patient is limb apraxic, frequently they will demonstrate clumsiness, even with the actual object.
- Q: Since you brought it up that you're looking at limb apraxia in right as well as left hemisphere damaged patients I wonder if you'd tell us how they behaved, because the idea that sequential motor programming is a left hemisphere mediated skill or perhaps that there's a language basis to limb apraxia has been emphasized.
- A: I think one of the most striking things that we've found is in terms of the quality of errors from right and left hemisphere damaged patients.

First of all, we don't see a difference between left and right hemisphere patients except on the "pretended object use" items. When we ask the patient to do gestures that have no meaning, like putting their thumb to their forehead, we don't get significant differences between right and left hemisphere groups. Similarly, when we ask them to do symbolic movements that aren't pretended object use, like waving good-bye or saluting, we also don't see differences. Where we see differences between the two groups are with pretended object use movements, and the difference is with the body-part-as-object error. What we've shown is that the left hemisphere damaged patients make a more primitive body-part-as-object error (that Kaplan talks about as being most prevalent in the four-year old). This error is the classic body-part-as-object error where the patient uses a body part to symbolize the object (e.g. using index finger as toothbrush). The less primitive body-part-as-object error is made by right hemisphere damaged patients and eight year olds. This error is characterized by the patient holding his hand in the appropriate position to manipulate the pretended object but the hand is moved such that the dimensions of the object are not taken into account (e.g. fist touching teeth as toothbrush). These results suggest that left hemisphere damaged patients are having difficulty differentiating self and object. While the right hemisphere patient's ability to differentiate self and object is not normal, it is better than the left hemisphere patient's.