

TREE REPRESENTATIONS OF ASSOCIATIVE STRUCTURES IN SEMANTIC AND
EPISODIC MEMORY RESEARCH

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We expose some research in the area of psychology of memory involving proximity or distance matrices. We propose some ways of building up such matrices. Then we detail an algorithm allowing the representation of proximity matrices by an additive tree, and contrast this new algorithm with previous ones. Finally, we examine some results obtained with this method.

1. INTRODUCTION

The general purpose of this paper is to emphasize the utility and describe the use of additive trees in order to describe data collected in the field of the psychology of memory. This paper is threefold: we first describe some research leading to the construction of distance or proximity matrices; secondly we expose and detail the construction of an additive tree as a representation of the original matrix; finally, we examine the results obtained.

The utilization of clustering methods for attesting the organization of memory or revealing its structure has been strongly advocated recently by some authors in different areas of cognitive psychology (see, among others: Miller (1969), Henley (1969), Friendly (1978), Rosenberg et al (1968), (1972), (1982)). Most of the used methods amount to represent the original matrix by an Ultrametric Tree. Recently, there has been an attempt to build some methods leading to representations less stringent than the classical Ultrametric Tree, i.e. the Additive Tree (see Carroll & Chang (1973), Cunningham (1974), (1978); Sattath & Tversky (1977)). We propose hereafter an (economic) heuristic giving an Additive Tree from a proximity matrix and illustrate it with some examples borrowing from our current research or from classical papers.

