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Original article

# Non-abstractive global-matching models: A framework for investigating the distinctiveness effect on explicit and implicit memory



*Les modèles d'appariement global non abstractifs :  
un cadre pour l'investigation de l'effet de distinctivité  
dans la mémoire explicite et implicite*

A. Oker<sup>a,\*</sup>, R. Versace<sup>b</sup>

<sup>a</sup> EA 4047, laboratoire d'études cliniques et innovations thérapeutiques en psychiatrie (ECIPSY), université de Versailles-Saint-Quentin-en-Yvelines, 177, rue de Versailles, 78157 Le Chesnay, France

<sup>b</sup> EA 3082, laboratoire d'étude des mécanismes cognitifs (EMC), université de Lyon, 5, avenue Pierre-Mendès-France, 69676 Bron cedex, France

## ARTICLE INFO

### Article history:

Received 23 May 2013

Accepted 10 April 2014

### Keywords:

Distinctiveness  
Implicit memory  
Explicit memory  
Memory traces  
Dissociation

## ABSTRACT

One very well-known memory phenomenon is the observation that if a specific item seems to be different or rare in any way from other items present in the same encoding context, this item is likely to be remembered more accurately. This phenomenon, named the von Restorff effect or the isolation effect, has been known since 1933 and been considered today as one of the possible ways to create distinctiveness. The aim of this article is to report that the current debate concerning its non-emergence in implicit memory tasks is directly due to a theoretical disagreement about the nature of human memory. In this paper, we conclude that non-abstractive global-matching models can provide an effective theoretical framework for the study of the distinctiveness effect with isolation both in implicit and explicit memory tasks.

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\* Corresponding author.

E-mail addresses: [ali.oker@uvsq.fr](mailto:ali.oker@uvsq.fr) (A. Oker), [remy.versace@univ-lyon2.fr](mailto:remy.versace@univ-lyon2.fr) (R. Versace).

## R É S U M É

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*Mots clés :*

Distinctivité  
Mémoire implicite  
Mémoire explicite  
Traces mnésiques  
Dissociation

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Un phénomène particulièrement avéré en mémoire est l'observation même que si un élément spécifique semble être différent ou rare d'une certaine manière des autres éléments présents dans le même contexte d'encodage, cet élément est susceptible d'être mieux rappelé. Ce phénomène, appelé l'effet von Restorff ou l'effet d'isolation, est connu depuis 1933, est considéré aujourd'hui comme l'un des méthodes possibles pour créer la distinctivité. Le but de cet article est de soutenir que le débat actuel concernant la non-émergence de l'effet de distinctivité dans les tâches de mémoire implicite est directement du au désaccord théorique sur la nature et l'organisation de la mémoire humaine. Dans cet article, nous soutenons que les modèles d'appariement global non abstraits peuvent fournir un cadre théorique pertinent pour étudier l'effet de distinctivité et l'isolation à la fois dans les tâches de mémoire implicite et explicite.

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## 1. Introduction

One of the most remarkable feats of human memory lies in the ability to remember an object that has been identified as being different from other objects in any given environment. In 1933, Hedwig von Restorff conducted the first systematic series of studies designed to examine this deviant stimulus effect in memory. von Restorff presented participants with sequences containing one item that was different from all the other items presented in the same context and reported that this isolated item was recalled better than the others that were not isolated. von Restorff's research focused exclusively on recall and recognition (von Restorff, 1933, for a review of von Restorff's work, see Hunt, 1995). This phenomenon, referred to as the distinctiveness effect, has traditionally been considered to be characteristic of episodic memory. Fortunately, our understanding of human memory and the definition of the distinctiveness effect have evolved since 1933. Like every other research topic in cognitive psychology, it seems that independent theoretical debates about the nature and the organization of human memory have had an influence on our comprehension of the distinctiveness effect obtained with an isolation paradigm.

In this paper:

- we aim to show that the current debate about the existence of a distinctiveness effect (or lack thereof) on implicit memory is the result of a theoretical disagreement about the nature of human memory. Indeed, this disagreement mirrors the juxtaposition of the structural and functional approaches to the distinctiveness effect which conceive of the topography of human memory in different ways;
- finally, we believe that there is a unified theoretical framework which can explain all the manifestations of the isolation effect in both implicit and explicit memory tasks. This approach, consisting of the so-called "non-abstractive global-matching models" (for example; MINERVA II described by Hintzman in 1986 and CHARM developed by Metcalfe Eich in 1982), seems to provide an effective framework to study the various manifestations of the distinctiveness effect.

After outlining the problem of how our understanding of the distinctiveness effect has become fragmented across different studies, we will address the question of whether and why some authors believe that the isolation effect cannot be found in implicit memory tasks. Then, we will present the central principal of matching process and what are two constraints that are needed to be resolved in

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