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Original article

## Misinformation effect and centrality

### *Effet de désinformation et centralité*

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#### ABSTRACT

**Introduction and objectives.** – The two objectives of this study are to examine the effects of the introduction of post-event information (correct and incorrect) on the memory of the central and peripheral aspects of a given situation and to determine the effects of this additional information on the level of confidence claimed by the participants regarding their reported memories.

**Method.** – One hour and a half after watching a film, the participants were presented with three types of information, by means of open questions: leading, misleading and neutral. One week later, they carried out a recognition task, during which they had to assess to what extent they were sure of their answers.

**Results.** – While the memory of the event was more accurate concerning the central aspects of the event than the peripheral elements, the misinformation effect appeared only in the central condition. In addition, following the presentation of incorrect information, the participants were more certain of their answers related to the central aspects.

**Conclusion.** – These results highlight the importance of taking into account the centrality factor in studies about the misinformation phenomenon.

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#### RÉSUMÉ

**Introduction et objectifs.** – La présente étude a pour double objectif d'examiner les effets de l'introduction d'informations post-événementielles correctes et erronées sur le souvenir des aspects centraux et périphériques d'une situation donnée et de déterminer les effets de ces informations additionnelles sur le niveau de confiance témoigné par les participants vis-à-vis de leurs souvenirs rapportés.

**Méthode.** – Une heure trente après avoir visionné un film, les participants de cette recherche étaient exposés, par le biais de questions ouvertes, à trois types d'informations : des informations suggestives correctes, des informations suggestives trompeuses et des informations neutres. Une semaine plus tard, une tâche de reconnaissance leur était proposée, au cours de laquelle ils devaient évaluer à quel point ils étaient sûrs de leurs réponses.

**Résultats.** – Alors que le souvenir de l'événement se révèle plus juste concernant les aspects centraux de l'événement par rapport aux éléments périphériques, l'effet de désinformation apparaît seulement dans la condition centrale. Par ailleurs, suite à la présentation d'informations erronées, les participants se montrent plus certains de leurs réponses lorsque celles-ci portent sur des aspects centraux.

**Conclusion.** – Ces résultats soulignent l'intérêt de prendre en compte le facteur centralité dans le cadre d'études portant sur le phénomène de désinformation.

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In the judicial field and, more specifically, in the context of eyewitness testimony, several studies show that the conviction of

innocent people is mainly related to mistakes in identification made by the witnesses or the victims (Turtle, Lindsay, & Wells, 2003; cf. Wells & Loftus, 2003; Wells & Olson, 2003). As suggested by several authors, after having witnessed an event requiring the collection of evidence, the people present at the scene are, for example, likely to be exposed to various types of information about this situation,

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which may include inaccuracies and lead them to make an incorrect statement later (cf. Davis & Loftus, 2007; Shaw, McClure, & Dykstra, 2007; Sutherland & Hayne, 2001a). In this context, the misinformation paradigm is one of the procedures most used to study the potentially harmful effects of exposure to misleading post-event information on the memory of witnesses (cf. Loftus, 1979/1996). This phenomenon, highlighted by Loftus, Miller, and Burns (1978), is known as the “misinformation effect” (Loftus & Hoffman, 1989; Tousignant, Hall, & Loftus, 1986).

## 1. The misinformation effect

The experimental procedure established by Loftus et al. (1978) begins with the presentation of an unexpected situation, either real (e.g., Forgas, Laham, & Vargas, 2005; Exp. 2) or, more often, fictional (e.g., English & Nielson, 2010; Underwood & Pezdek, 1998; e.g., in the experiment of Loftus et al., a car is stopped in front of a “Stop” sign). In the second step, after a time lapse of variable length, some of the participants are presented with one or several incorrect suggestion(s) about this event (e.g., the car is stopped in front of a “Give way” sign), in contrast to the other participants in the study. Finally, in the last step, each person is invited to complete a recall or recognition test about the original situation. The results generally reveal that the misled participants are more likely to recall the incorrect elements previously suggested or to recognize them as having been part of the event (Frenda, Nichols, & Loftus, 2011; Gerrie, Garry, & Loftus, 2005).

Among all the studies investigating the factors leading to this misinformation effect, very few have considered the modulating effect of centrality. Yet, it has long been known that recall and recognition performances in the memorization of events are better for central than for peripheral information (e.g., Heath & Erickson, 1998; Ibabe & Sporer, 2004). Similarly, the level of certainty of witnesses about their memory is a variable rarely taken into account although it seems to be a poor indicator of witness reliability. The present research has thus two objectives:

- to examine the effects of the introduction of post-event information on the memory of central and peripheral elements of an event;
- to determine the effects of this additional information on the level of confidence (or of certainty) of the participants about their memories.

## 2. Centrality

Before being questioned during their testimony, a person may have been exposed to misleading information concerning both the major and minor aspects of the event they have witnessed. This raises the question of what type of information in the memory (central vs. peripheral) best resists the presence of incorrect post-event suggestions. However, as underlined by Christianson (1992), centrality is difficult to define, especially as the boundaries between central and peripheral elements are blurred. This partly explains why the definitions proposed in the literature differ according to the criteria chosen by the authors, which may be conceptual and/or visual-spatial (cf. Burke, Heuer, & Reissberg, 1992). For example, the proponents of a conceptual definition consider that the central elements, unlike the peripheral information, are indispensable to the course of a given event, thus implying that they cannot be removed or changed without altering the general sense (Candel, Merckelbach, Jelicic, Limpens, & Widdershoven, 2004; Heath & Erickson, 1998; Heuer & Reissberg, 1990; Sutherland & Hayne, 2001a). Other authors, focusing more on emotional situations, have adopted a definition incorporating perceptual and spatial

criteria (Brown, 2003; Christianson, 1992; Christianson & Loftus, 1991; Porter, Spencer, & Birt, 2003). According to Christianson (1992), the central elements, directly associated with the source of emotion, refer to the crucial aspects of the event, while the peripheral elements correspond to the irrelevant details, which may be around (or in the background of) that which arouses emotion.

In the context of the misinformation paradigm, concerning the effects of misleading information (i.e., number of incorrect answers in the misleading condition), research reveals that, after having received misleading information about an event, participants produce more incorrect answers when these relate to peripheral aspects (Dalton & Daneman, 2006; Heath & Erickson, 1998; Luna & Migueles, 2009; Sutherland & Hayne, 2001a). These studies highlight that the presence of incorrect suggestions affects the memory of the peripheral more than the central aspects of a given situation. However, a study by Paz-Alonso and Goodman (2008) showed contrasting results to those mentioned above, that is the production of participants was more affected by the presence of misleading information about central than peripheral aspects. Nevertheless, as these authors pointed out, the central elements did not correspond to the most crucial aspects of the event.

When the misleading condition is compared to a condition in which no incorrect information is suggested (i.e., the misinformation effect; cf. Roediger & Geraci, 2007), the results differ just as much. In fact, in one of the studies mentioned below (Luna & Migueles, 2009), no difference was found between the central and peripheral conditions regarding the size of the misinformation effect (this result had already been obtained by the same authors in 2005; Luna & Migueles, 2005, quoted by Luna & Migueles, 2009). In other words, the memories of the central and peripheral elements of the event were equally affected by the incorrect suggestions. In another study (Sutherland & Hayne, 2001a), after analyzing the correct answers, the misinformation effect seemed to exist only in the central condition. Finally, Dalton and Daneman (2006) also observed a misinformation effect in the central condition, although it appeared to be smaller than that found in the peripheral condition. It thus seems that the conclusion that the memories of peripheral aspects are more affected by misleading suggestions needs to be qualified. Lastly, some research has shown a misinformation effect concerning only the peripheral elements (Roebbers & Schneider, 2000; Wright & Stroud, 1998).

In conclusion, the results presented in the literature are relatively dissimilar regarding the influence of centrality on the misinformation effect. Some focus on the effects of misleading information (i.e., the number of incorrect answers in the misleading condition) and reveal either more incorrect answers in the peripheral condition (Dalton & Daneman, 2006; Heath & Erickson, 1998; Luna & Migueles, 2009; Sutherland & Hayne, 2001a), or more mistakes in the central condition (Paz-Alonso & Goodman, 2008). Other results about the misinformation effect (i.e., the number of incorrect answers in the misleading vs. neutral or correct conditions) highlight either a misinformation effect of the same size in the central and peripheral conditions (Luna & Migueles, 2009), or a misinformation effect only in the peripheral condition (Roebbers & Schneider, 2000; Wright & Stroud, 1998). Lastly, some research suggests that the misinformation effect exists only in the central condition (Sutherland & Hayne, 2001a) or that it appears larger in the central than in the peripheral condition (Dalton & Daneman, 2006).

Moreover, very few studies have investigated the effects of exposure to leading information on the memory of adults, especially in relation to centrality. However, a witness may have knowledge of both misleading and correct information, particularly by means of the media, the police or even lawyers. Two studies have shown that the suggestion of correct information can improve the memory of an event (Loftus et al., 1978; Shaw, Garcia, & Robles,

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