
Françoise Cordier and Fanelly Pariollaud

From the choice of the patients for a transitive verb to its polysemy

Avertissement

Le contenu de ce site relève de la législation française sur la propriété intellectuelle et est la propriété exclusive de l'éditeur.

Les œuvres figurant sur ce site peuvent être consultées et reproduites sur un support papier ou numérique sous réserve qu'elles soient strictement réservées à un usage soit personnel, soit scientifique ou pédagogique excluant toute exploitation commerciale. La reproduction devra obligatoirement mentionner l'éditeur, le nom de la revue, l'auteur et la référence du document.

Toute autre reproduction est interdite sauf accord préalable de l'éditeur, en dehors des cas prévus par la législation en vigueur en France.



Revues.org est un portail de revues en sciences humaines et sociales développé par le CLEO, Centre pour l'édition électronique ouverte (CNRS, EHESS, UP, UAPV).

Electronic reference

Françoise Cordier and Fanelly Pariollaud, « From the choice of the patients for a transitive verb to its polysemy », *Current psychology letters* [Online], 21, Vol. 1, 2007 | 2007, online since 03 mai 2007. URL : <http://cpl.revues.org/index1278.html>

DOI : en cours d'attribution

Éditeur : Centre PsyCLE

<http://cpl.revues.org>

<http://www.revues.org>

Document accessible en ligne à l'adresse suivante : <http://cpl.revues.org/index1278.html>

Document généré automatiquement le 29 septembre 2009.

© All rights reserved

Françoise Cordier and Fanelly Pariollaud

From the choice of the patients for a transitive verb to its polysemy

1 Received July 12, 2006

2 Revised March 3, 2007

3 Accepted March 19, 2007

4 On line May 4, 2007

Introduction

5 We hypothesized that, at the cognitive level, a verb which denotes a process (event, action) refers to the representation of a dynamic situation (Davidson, 1993; Le Ny, 2000, 2005). This is a composite representation which involves not only the verb but also all the thematic roles associated with this verb. All these elements are cognitive components which make it possible to evoke what happens to the individuals or objects of the world. Within this set of elements, the verb plays a fundamental and pivotal role.

6 A verb presented in isolation provides access to general semantic components (aspectual in nature such as dynamicity; or participatory in nature: agentivity, causativity: François, 2004; Wolff, 2003; Wolff & Song, 2003) as well as to more specific components as indicated by the typologies (verbs of movement, perception, verbs indicating interpersonal relations etc., Saint-Dizier, 1997). However, in the absence of any thematic role, the meaning of most of verbs is not saturated and their interpretation is ambiguous and undecided (Rodd, Gaskell, & Marslen-Wilson, 2002). The thematic roles make it possible to identify the meaning (to twist the truth / to twist an ankle) and thus contribute semantic information which forms part of the semantics of the verb.

7 Verbs themselves place constraints on their thematic roles. Selection restrictions specify the semantic characteristics (e.g. "animate/inanimate") which have to be verified by concepts if they are to be legitimately associated with any given verb. However, simply taking account of selection restrictions is insufficient since it does not avoid problem utterances (*I have eaten a wardrobe) which are easily detected by individuals (Le Pesant & Mathieu-Colas, 1998). The real-time detection of semantic anomalies and the high quality of sentence comprehension also suggest that information in memory is organized in such a way that it reflects the individual's understanding of the world. More specifically, there is a high level of consensus between individuals when deciding what can or cannot be an agent or patient of a given transitive verb (Declercq & Le Ny, submitted; Le Ny, 2005). This is precisely the function of the thematic roles which permit an interaction between the syntactic processor and the semantic data and make it possible to express this knowledge in language. They have a rich conceptual role (Carlson & Tanenhaus, 1988; Dowty, 1991; Frazier, 1987; Maunder, Tanenhaus, & Carlson, 1995; McRae, Spivey-Knowlton, & Tanenhaus, 1998; Rayner, Carlson, & Frazier, 1983; Schmauder & Egan, 1998; Tabossi, Spivey-Knowlton, McRae, & Tanenhaus, 1993; Trueswell & Tanenhaus, 1994; Trueswell, Tanenhaus, & Kello, 1993), and we can hypothesize that the choice of an agent / patient will have consequences for the processing of a verb: "one might expect to see difficulty at the verb when a noun is a poor agent" (Trueswell & Tanenhaus, 1994, p.166).

8 Recent work has gone further and examined the hypothesis that any given verb is associated with preferred representations of agents and patients (Ferretti, McRae, & Hatherell, 2001) which seem to correspond the best with the representation which individuals have of the dynamic situation (Rosch & Mervis, 1975). These typical agents / patients of the evoked

situation (for example lawyer in agent position for the verb plead, injured person in patient position for the verb treat) would appear to reflect very specific components of the verb (an idea which was already put forward by Weinreich, 1972). This hypothesis focuses on a subcategory of possible agents / patients. At the level of cognitive representations, this implies that the situations evoked by the verb are probably determined by the typical agents / patients. As far as the processing operations are concerned, within the prototypical framework of transitive verbs, the activation processes would seem to apply primarily to these "good" agents and patients (Genneri & Poeppel, 2003; McRae, Feretti, & Amyote, 1997).

9 Nevertheless, this conceptualization becomes more complex when the verb is polysemous. Polysemy is in no way incidental to language. In English, for example, it has been estimated that over 40% of words have more than one meaning (Britton, 1978). How do we predict and characterize the representations of a polysemous verb which is presented on its own? We may well imagine that not all these instantiations are equally predictable. The very many studies that have been conducted in the field of noun polysemy have clearly shown that access to each of the meanings is not equally probable. One of the meanings is more frequently produced in a synonym production task. In this case, we speak of a dominant interpretation (Klepousniotou, 2002; Onifer & Swinney, 1981; Rayner, Pacht, & Duffy, 1994; Simpson, 1994; Simpson & Burgess, 1985; Simpson & Kang, 1994; Simpson & Krueger, 1991; Stanovitch & West, 1983; Tabossi, 1988). Thus, for a given ambiguous verb, we would expect to observe interpretations which vary in terms of their relative dominance in a synonym production task.

10 Several different dynamic situation categories may therefore be instantiated. The matching of a verb and an agent¹, or perhaps even more clearly, a verb and a patient, makes it possible to disambiguate the corresponding verb. Furthermore, we may reasonably expect to observe patients specific to each of these interpretations but in a proportion which is a function of the relative dominance of the interpretations, with the activation of an interpretation necessarily resulting in the activation of the corresponding situation.

11 To summarize, we make the following hypotheses (1) a polysemous verb presented on its own gives access to various meanings; (2) these meanings express different categories of situations; (3) the situation categories make the semantic information associated with the thematic roles available; (4) the probability that the categories of situations will be activated will be a function of the relative dominance of the meanings of the verb; (5) consequently, we expect to observe a high level of correlation between the relative dominance of a meaning and the probability that patients associated with this meaning will be produced.

12 The aim of the tasks presented below is therefore to explain these categories of situations to which verbal meanings provide access. Task 1 will analyze the polysemy of 12 transitive verbs by means of a synonym production task. Task 2 will focus on a thematic role of these 12 verbs using a task requiring the production of patients for these verbs and will establish a correspondence between the data obtained in this experiment and that observed in Task 1.

Task 1: Synonym production

13 The first phase of the investigation was designed to collect information on the meanings denoted by 12 polysemous verbs, and their relative frequencies. To this end, one questionnaire was administered to 100 participants.

Method

14 *Participants.* 100 undergraduate students of psychology from the University of Poitiers, all native French speakers, took part in this production task as part of their classroom work.

15 *Material and procedure.* The stimuli used in the experiment were selected by means of two linguistic tools: "Les Verbes Français" (Dubois & Dubois-Charlier, 1997) and Le Dictionnaire Electronique des Synonymes - DES - (Manguin & François, 2004)². Using a syntactico-

semantic classification, the verbs that we selected had to belong to a number of clearly distinguished conceptual domains (from a base of 14 possible conceptual domains), i.e. a requirement associated with their polysemy. All the stimuli were bisyllabic or trisyllabic verbs, and their frequencies were between 2 and 30 per million according to the Lexique database ($M = 10,12$, $SD = 8,51$) (<http://www.lexique.org>; New, Pallier, Brysbaert, & Ferrand, 2004). All the verbs were transitive, and could accept a direct object in their syntactic structure (a "patient" in terms of the semantic perspective).

- 16 The first page of the test booklet was a page of written instructions. These emphasized the goal of the experiment, namely to produce a synonym for each of the presented verbs and more specifically the first meaning that came to mind. A written example was provided. If no synonymous verb came to mind spontaneously, the participants also had the option of writing down a sentence which used the proposed verb (in order to avoid too many non-responses since a pre-test had revealed that these occur frequently in this situation). The 12 verbs were typed on the second page, and an empty box was left after each of them.

Results

- 17 Given that multiple verbs belonging to the same conceptual domain could be produced as synonyms (for example, the verb "prévenir" has the synonyms "alarmer", "alerter", "annoncer", "appeler", "signaler", all of which are synonymous with one another), we introduced a response categorization stage. Five judges had the task of grouping the synonymous verbs together on the basis of their conceptual domain. No disagreements were observed for these groupings. In contrast, some verbs were discarded because they did not correspond to any of the interpretations of the target verb. Moreover, when the participants used the possibility left open to them of constructing a sentence on the basis of the target verb, some sentences were discarded by the judges because the choice of patient did not resolve the ambiguity of the verb. All these responses that were rejected by the judges - and represented 9.1 % of the total - were grouped together under the heading "Other". Non-responses represented 3.9% of the data (see appendix 1). Consequently, meanings belonging to two different conceptual domains were finally adopted as distinct meanings acting as a source of polysemy. These meanings – literal or metaphoric - were expressed by the verb which was expressed most frequently within this experimental framework (see Table 1).

Discussion

- 18 Our observations concerning polysemous verbs replicate those already obtained for polysemous nouns: there is a great diversity in the relative dominance of their interpretations which determines the probability that one or other of the interpretations of the verb will be produced out of context (Klepousniotou, 2002; Simpson, 1994; Simpson & Burgess, 1985; Simpson & Kang, 1994; Stanovitch & West, 1983; Tabossi, 1988). However, verb polysemy possesses one specific characteristic compared to that of nouns: the interpretations that were finally adopted were so on the basis of a semantic categorization task which made it possible to select a verb liable to represent a large number of mutually synonymous verbs. In this situation a meaning can - at a certain level of abstraction - be expressed by a large number of different signifiers. This, at least, is the case for a population of students but there is no reason to think that things would be very different for a more heterogeneous sample. The large number of different signifiers introduces "noise" into the data and risks interfering with certain types of experiment (we are thinking of lexical decision tasks in particular).
- 19 This specific situation may also lead us to formulate hypotheses concerning the level at which the information is modeled within the semantic networks (highly similar representations of situations) or connectionist networks. It would appear that "attractor basin" type models (Borowsky & Masson, 1996; Joordens & Becker, 1997) are able to take account of this

characteristic since they are able to "retrieve" semantic information with varied orthographic patterns. The proposal made by Rodd, Gaskell and Marslen-Wilson (2002, 2004) relating to polysemous nouns (as opposed to homonyms) which supposes that they possess large, surface basins which contain more than one stable state for one and the same attractor basin could be even more relevant in the case of verbs. The very frequent cases observed in the verbal semantics of verbs with multiple synonyms which themselves are usually mutually synonymous (Manguin & François, 2004), would appear to be particularly appropriate for simulating this situation.

Task 2: Patient production

20 The second phase of the investigation was designed to collect information about possible patients (positioned as direct objects of the transitive verbs). To this end, one questionnaire was administered to 100 participants.

Method

21 *Participants.* 100 undergraduate students of psychology from the University of Poitiers, native French speakers, took part in this production task as part of their classroom work. These participants had not performed the first task of synonym production.

22 *Material and procedure.* The same 12 verbs were used again. The first page of the test booklet consisted of written instructions. The participants were asked to name the object or individual on which the action expressed by the verb is most commonly performed. Two examples were provided. The participants were also asked to avoid overly general responses (such as thing, or somebody) which could apply almost equally to all the verbs. The 12 verbs were typed on the second page, and an empty box was left after each of them.

Results

23 A list of patients was collected for each of the verbs. Five judges had the task of assigning the patients to the two previously separate interpretations of the verb. Patients on which the judges did not agree or which the judges did not assign to either of the two interpretations represented 6.9 % of the responses. Non-responses accounted for 11.6 % of the data (see appendix 2). Table 1 presents the number of patients compatible with each of the interpretations.

24

25 Table 1: Relative dominance of interpretations and frequency of choice of the categories of patients for 12 French polysemous verbs.

Verb Dominant interpretation Secondary interpretation	Relative Dominance. Number of responses (out of 100)	Number of patients (out of 100)
Accorder		
Accepter (accept)	63	61
Ajuster (adjust)	28	31
Coller		
Scotcher (stick)	86	94
Punir (punish)	3	1
Combler		
Remplir (fill)	64	75
Satisfaire (satisfy)	27	8
Décrocher		
Enlever (remove)	44	68
Obtenir (obtain)	16	13
Délivrer		
Donner (give)	55	54
Libérer (free)	40	31
Encadrer		
Entourer (frame)	51	57
Surveiller (manage)	45	38
Fouetter		
Battre (whip)	89	63
Mélanger (whisk)	7	21
Froisser		
Chiffonner (dust)	87	81
Vexer (annoy)	5	15
Ordonner		
Obliger (oblige)	72	13
Ranger (tidy)	23	46
Piquer		
Trouer (make a hole in)	48	48
Voler (steal)	33	7
Refroidir		
Rafrâichir (cool down)	84	71
Tuer (kill)	3	7
Renvoyer		
Retourner (send back)	60	43
Licencier (sack)	28	48

26

Establishing a relation between the two production tasks 1 and 2

27

We hypothesize that the dominance of the interpretation is directly correlated with the proportion of patients to which this interpretation applies. A Spearman rank correlation coefficient was calculated for all the interpretations of the verbs ($N = 24$) and related, on the one hand, to the dominance of the interpretation (number of productions for 100 participants) and, on the other, to the number of patients produced (for 100 participants). We obtained a Spearman rank correlation coefficient of 0.77. This was significant: $t(23) = 5.62, p < .0001$.

Discussion

28

There is clearly a strong relation between the meaning of a verb and its relative dominance, on the one hand, and the number of patients produced for each of its meanings on the other. This

allows us to emphasize the fact that being able to access the meaning of a verb implies both access to its general components (aspectual or participatory in nature) and to more specific components as indicated by the typologies (movement, perception, interpersonal...). In effect, in such cases, there would be no reason to expect the thematic roles - and particularly the patient - to have any special influence on the search for synonyms, and the two tasks - synonym production, patient production - should lead to non-correlated results. However, this is not the case and there is a very high level of dependence. The verb would therefore indeed seem to provide access to the representation of a dynamic situation, a representation which contains both the semantic components of the verb core and those associated with the thematic roles. When a verb is presented on its own, individuals "enrich" its meaning by specifying a situation in which they evoke the possible patients. It is this task - which is implicitly present in Experiment 1 - that Experiment 2 makes explicit.

29 This implicit production of arguments when the verb is presented alone also makes it possible to interpret why access to the different meanings of a verb in a lexical decision task is slower than access to the different meanings of an ambiguous noun (Cordier, Coutelet, & François, submitted).

30 The results obtained in the two tasks suggest that there is a link in long-term memory between the verb and the concepts that may play a thematic role, thus reflecting the individual's knowledge of the world. In this case, the semantic link is oriented towards the potential patients of the verb. However, there is no reason to think that this will function differently for the other thematic roles. Within the semantic composition of the possible patients for a verb, it is necessary for certain characteristics to be compatible with the semantic make-up of the verb itself (Le Ny, 2005) as suggested by the experiments conducted by Ferretti, McRae and Hatherell (2001). The final experiment presented in this latter article, namely an intermodal priming study using sentences, specifically reveals that the activation of thematic agent and patient roles is modulated by syntactic cues. Within an integrated perspective of the processing of words, thematic roles and schemas, these authors interpret their results as confirming the hypothesis that a fine-grained knowledge of the world is closely linked to the assignment of thematic roles. The fact that the activation of any given type of patient depends on the dominance of the verb is fully compatible with this overall view. At the same time, it adds a level of complexity which seems to be absolutely necessary.

31 Given these syntactico-semantic constraints, it is thus plausible to imagine that there are statistical frequency effects which result, more specifically, in the production of typical patients. Some verbs elicit the production of typical patients whereas others do not. In the case of verbs ordonner, piquer, accorder, fouetter, the foremost of the named patients did not account for even 20 % of productions. The fact that the typicality of the patient is dependent on the target verb is a factor which suggests that there may be nuances in the position and role of typicality in the organization of representations in long-term memory. It is perfectly possible that the effects associated with the processing of frequency (frequency of experienced situations of linguistic experiences) are not sufficient to permit a dominant specification to emerge rapidly in the network.

General Discussion

32 The data obtained in these two tasks (synonym production, patient production) suggests that memory contains information organized in a way that reflects the knowledge that individuals have of a given situation. The assignment of thematic roles is crucial in this awareness of world knowledge. Individuals not only know the entities to which a given thematic role can be assigned. In certain cases, they also possess a preferred representation of the entities which are best able to play this thematic role. It would, moreover, be interesting to identify the factors which determine the amplitude of the typicality gradient (a distribution of responses without

the emergence of any good example versus the emergence of one or more good examples). The degree of abstraction of the verb could be one of these factors.

- 33 The modeling of the network of concepts in memory must therefore specify the nature and the strength of the links between the verb and its thematic roles. Even though research into schemas and scripts (Davidson, 1994; Kintsch & Mannes, 1987; Sharkey, 1986; Yekovitch & Walker, 1986), mental models and situation models (Ericsson & Kintsch, 1992; Gernsbacher, 1990; Johnson-Laird, 1980), have considered all types of concepts within the semantic network, it is nevertheless clear that the majority of studies have focused on noun-based relations. This data is ill suited to the task of identifying the network of specific relations which forms around the actions and events expressed by words or can do so in only a very fragmentary manner. Contrasting but complementary research conducted by Ferretti et al. (2001), McRae et al. (1997), McRae et al. (1998), McRae et al. (2001), has focused on the internal composition of the representation of situations and, by concentrating on the relations between the verb and its agents / patients, emphasized the specific semantic influences in the assignment of thematic roles. The experiments presented above share this thrust. To account for these results within models of semantic memory it will be necessary to add a degree of complexity to the traditional semantic networks and to hypothesize that, beyond the habitual semantic links (hyponymy, antonymy, synonymy, relations between property-based concepts: Cree & McRae, 2003; Cordier & Tijus, 2001; McRae, Cree, Seidenberg, & McNorgan, in press; Wu & Barsalou (submitted)), individuals have a representation of what can accomplish (agent) or undergo (patient) any given action.
- 34 The links between a verb and its thematic roles have a direction. Other links may be present between the agents or patients, on the one hand, and the verb on the other (McRae, Hare, Elman, & Ferretti, 2005). This does not imply that these links should be thought of as reversible: the nature of the link is not the same depending on its direction (Le Ny, 2005) and its strength may be dependent on its direction. Some connectionist models take the directionality of relations into account (Kintsch, 2001; Rumelhart & Todd, 1993) and make it possible to consider ways of modeling this type of link.

Acknowledgements

- 35 We thank J.F. Le Ny for his helpful comments on this study.

Appendix 1

- 36 List of synonyms for the verb *Combler* (fill / satisfy). They are grouped by interpretation: dominant interpretation first, followed by secondary interpretation.

Combler

Remplir	34
Boucher	19
Emplir	2
Rajouter	1
Sentences	8

Total: 64

Satisfaire	5
Rendre heureux	4
Gâter	3
Aimer	1
Chouchouter	1
Choyer	1
Contenter	1
Offrir	1
Réjouir	1

Sentences	9	
		Total: 27
Other	4	
Non-responses	5	

Appendix 2

- 37 List of patients for the verb *Combler* (fill / satisfy). They are presented relative to each of the interpretation, from the most frequent to the most infrequent. The order corresponds to the typicality gradient.

Combler	Interpretations	Patients	Nb Patients
	Remplir	trou	35
		vide	21
		manque	15
		lacune	2
		bagages	1
		brèche	1
			Total:75
	Satisfaire	enfant	5
		amant	1
		couple	1
		femme	1
		Total:8	
Other			Total:1
Non-responses			Total:16

Bibliography

- Boroswky, R., & Masson, M.E.J. (1996). Semantic ambiguity effects in word identification. *Journal of Experimental Psychology: Learning, Memory and Cognition*, 22, 63-85.
- Britton, B.K. (1978). Lexical ambiguity of words used in English text. *Behavior Research Methods and Instrumentation*, 10, 1-7.
- Carlson, G.N., & Tanenhaus, M.K. (1988). Thematic roles and language comprehension. In W. Wilkens (Ed.), *Syntax and Semantics*, vol 21, (pp263-287). New York, NY : Academic Press.
- Cordier, F., & Tijus, C. (2001). Object properties. A typology. *Current Psychology of Cognition*, 20(6), 445-472..
- Cree, G.S. & McRae, K. (2003). Analyzing the factors underlying the structure and computation of the meaning of chipmunk, cherry, chisel, cheese, and cello (and many other such concrete nouns). *Journal of Experimental Psychology: General*, 132, 163-201.
- Davidson, D. (1993). *Actions et Evénements*. Paris, Presses Universitaires de France.
- Davidson, D. (1994). Recognition and recall of irrelevant and interruptive atypical actions in scripts-based theories. *Journal of Memory and Language*, 33, 757-775.
- Dowty, D. (1991). Thematic proto-roles and argument selection. *Language*, 67/3, 547-619.
- Dubois, J., & Dubois-Charlier, F., (1997). *Les Verbes Français*. Paris : Larousse
- Declercq, C., & Le Ny, J.F. (submitted). Verb-patient co-occurrences in texts and verb-meaning in memory.
- Ericsson, K.A., & Kintsch, W. (1992). Memory in comprehension and problem solving. A long-term working memory. *Psychological Review*, 102, 211-245.

- Ferretti, T.R., McRae, K., & Hatherell, A., (2001). Integrating verbs, situations schemas, and thematic role concepts. *Journal of Memory and Language*, 44, 516-547.
- François, J. (2004). *La Prédication Verbale et les Cadres Prédicatifs*. Louvain, Paris, Editions Peters.
- Frazier, L. (1987). Theories of sentence processing. In J. Garfield (Ed.), *Modularity in knowledge representation and natural language processing*. Cambridge, Mass.: MIT Press.
- Genneri, S., & Poeppel, D. (2003). Processing correlates of lexical semantic complexity. *Cognition*, 89, B27-B41.
- Gernsbacher, M.A. (1990). *Language Comprehension as Structure Building*. Hillsdale, New Jersey, Lawrence Erlbaum.
- Johnson-Laird, P.N. (1980). Mental models in cognitive science. *Cognitive Science*, 4, 71-115.
- Joordens, S. & Becker, S. (1997). The long and short of semantic priming effects in lexical decision. *Journal of Experimental Psychology: Learning, Memory and Cognition*, 13(5), 1083-1105.
- Kintsch, W. (2001). Predication. *Cognitive Science*, 25, 173-202.
- Kintsch, W., & Mannes, S.M. (1987). Generating scripts from memory. In E. Van Der Meer & J. Hoffmann (Eds), *Knowledge-aided information processing* (pp. 61-80). Amsterdam: North Holland.
- Klepousniotou, E. (2002). The processing of lexical ambiguity: homonymy and polysemy in the mental lexicon. *Brain and Language*, 81, 205-223.
- Le Ny, J.F. (2000). La sémantique des verbes et la représentation des situations. *Syntaxe et Sémantique*, 2, 17-54
- Le Ny, J.F. (2005). *Comment L'esprit Produit du Sens*. Paris, Odile Jacob.
- Le Pesant, D., & Mathieu-Colas, M. (1998). Introduction aux classes d'objets. *Langages*, 131, 6-33.
- Manguin, J. L., & François, J. (2004). Le dictionnaire électronique des synonymes du Crisco. Un mode d'emploi à trois niveaux. *Cahiers du Crisco*, 17, 1-62.
- Maunder, G., Tanenhaus, M.K., & Carlston, G.N. (1995). Implicit arguments in sentence processing. *Journal of Memory and Language*, 34, 357-382.
- McNamara, T. (2005). *Semantic Priming. Perspectives from Memory and Word Recognition*. New York, Psychology Press.
- McRae, K., Cree, G.S., Seidenberg, M.S., & McNorgan, C. (in press). Semantic feature production norms for a large set of living and nonliving things. *Behavior Research Methods, Instruments and Computers*.
- McRae, K., Ferretti, T.R., & Amyote, L. (1997). Thematic roles as verb-specific concepts. *Language and Cognitive processes*, 12, 137-176.
- McRae, K., Hare, M., Elman, J.L., & Ferretti, T.R. (2005). A basis for generating expectancies for verbs from nouns. *Memory and Cognition*, 33(7), 1174-1184.
- McRae, K., Spivey-Knowlton, M.J. & Tanenhaus, M.K. (1998). Modeling the influence of thematic fit (and others constraints) in on-line sentence comprehension. *Journal of Memory and Language*, 37, 283-312.
- New, B., Pallier, C., Brysbaert, M. & Ferrand, L. (2004). Lexique 2: A new French lexical database. *Behavior Research methods, Instruments & Computers*, 36, 516-521.
- Onifer, W., & Swinney, D.A. (1981). Accessing lexical ambiguities during sentence comprehension: effects of frequency of meaning and contextual biases. *Memory and Cognition*, 9, 225-236.
- Rayner, K. Carlson, M., & Frazier, L. (1983). The interaction of syntaxes and semantics in sentence processing: eye movements in the analysis of semantically biased sentences. *Journal of Verbal Learning and Verbal Behavior*, 22, 358-374.
- Rayner, K., Pacht, J.M., & Duffy, S.A. (1994). Effects of prior encounter and global discourse bias on the processing of lexically ambiguous words: evidence from eye fixations. *Journal of Memory and Language*, 33, 527-544.
- Rodd, J.M., Gaskell, M.G., & Marslen-Wilson, W.D. (2002). Making sense of semantic ambiguity : semantic competition in lexical access. *Journal of Memory and Language*, 46, 245-266.

- Rodd, J.M., Gaskell, M.G., & Marslen-Wilson, W.D. (2004). Modeling the effects of semantic ambiguity in word recognition. *Cognitive Science*, 28, 89-104.
- Rosch, E., & Mervis, C.B. (1975). Family resemblances: studies in the internal structure of categories. *Cognitive Psychology*, 7, 573-605.
- Rumelhart, D.E., & Todd, P.M. (1993). Learning and connectionist representations. In D.E. Meyer & S. Kornblum (Eds.), *Attention and performance XIV* (pp.3 – 30). Cambridge, MA: MIT Press/Bradford Books.
- Saint-Dizier, P. (1997). Semantic verb classes and lexical conceptual structures for enhancing the conceptual modelling and the access to databases. *Journal of Data and Knowledge Engineering*, 21, 197-211.
- Schmader, A.R. & Egan, M.C. (1998). The influence of semantic fit on on-line sentence processing. *Memory and Cognition*, 26(6), 1304-1312.
- Sharkey, N.E. (1986). A model of knowledge-based expectations in text comprehension. In J.A. Galambos, R.P. Abelson, & J.B. Black (Eds.), *Knowledge structures* (pp. 49-70). Hillsdale, NJ: Erlbaum.
- Simpson, G.B. (1994). Context and the processing of ambiguous words. In M.A. Gernsbacher (Ed.), *Handbook of psycholinguistics*. San Diego : Academic Press.
- Simpson, G.B., & Burgess, C. (1985). Activation and selection processes in the recognition of ambiguous words. *Journal of Experimental Psychology: Human Perception and Performance*, 11, 28-39.
- Simpson, G.B., & Kang, H. (1994). Inhibitory processes in the recognition of homograph meanings. In D. Dagenbach & T.H. Carr (Eds), *Inhibitory processes in attention, memory and language*. San Diego, C.A.: Academic Press.
- Simpson, G.B., & Krueger, M.A. (1991). Selective access of homograph meanings in sentence context. *Journal of Memory and Language*, 30, 627-643.
- Stanovich, K.E., & West, R.F. (1983). On priming by a sentence context. *Journal of Experimental Psychology: General*, 112(1), 1-36.
- Tabossi, P. (1988). Accessing lexical ambiguity in different types of sentential contexts. *Journal of Memory and Language*, 27, 324-340.
- Tabossi, P., Spivey-Knowlton, M., McRae, K., & Tanenhaus, M.K. (1993). Semantics effects on syntactic ambiguity resolution: Evidence for a constraint-based resolution process. In C. Umiltà & M. Moscovitch (Eds), *Attention & Performance XV*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Trueswell, J.C. & Tanenhaus, M.K. (1994). Toward a lexicalist framework for constraint-based syntactic ambiguity resolution. In C. Clifton, K. Rayner, & L. Frazier (Eds). *Perspectives on sentence processing*. Hillsdale, NJ : Lawrence Erlbaum.
- Trueswell, J.C., Tanenhaus, M.K., & Kello, C. (1993). Verb-specific constraints in sentence processing: separating effects of lexical preference from garden-paths. *Journal of Experimental Psychology: learning, Memory and Cognition*, 19(3), 528-553.
- Weinreich, U. (1972). *Explorations in semantic theory*. Mouton, The Hague, Paris.
- Wolff, P. (2003). Direct causation in the linguistic coding and individuation of causal events. *Cognition*, 88, 1-48.
- Wolff, P. & Song, G. (2003). Models of causation and the semantics of causal verbs. *Cognitive Psychology*, 47, 276-332.
- Wu, L.L., & Barsalou, L.W. (submitted). Grounded concepts in perceptual simulation: 1. Evidence from property generation.
- Yekovitch, F.R. & Walker, C.H. (1986). Retrieval of scripted concepts. *Journal of Memory and Language*, 25, 627-644.

Notes

- 1 Any animate object is always a possible candidate as the agent of a verb of action, even if possesses only a low level of typicality.
- 2 This electronic dictionary of synonyms can be consulted at the following address: <http://elsapl.unicaen.fr/>

References

Electronic reference

Françoise Cordier and Fanelly Pariollaud, « From the choice of the patients for a transitive verb to its polysemy », *Current psychology letters* [Online], 21, Vol. 1, 2007 | 2007, online since 03 mai 2007. URL : <http://cpl.revues.org/index1278.html>

Françoise Cordier

Langage, Mémoire et Développement Cognitif, UMR6215, CNRS/University of Poitiers, France, (francoise.cordier@msh.univ-poitiers.fr)

Fanelly Pariollaud

Langage, Mémoire et Développement Cognitif, UMR6215, CNRS/University of Poitiers, France

Copyright

© All rights reserved

Résumé / Abstract

Nous faisons l'hypothèse qu'un verbe de procès renvoie à la représentation d'une situation. Nous examinons cette hypothèse dans le cadre de la polysémie verbale pour 12 verbes du français. Deux tâches sont mises en place : une tâche de production de synonymes (tâche 1) et une tâche de production de patients (tâche 2). La tâche 1 met en évidence deux interprétations pour chacun des verbes, l'une dominante et l'autre secondaire. La tâche 2 conduit à observer une forte corrélation entre la dominance relative de la signification et le nombre de patients produits. Les résultats sont compatibles avec l'hypothèse que des liens existent en mémoire permanente entre un verbe et ses rôles thématiques, et que les modélisations de la mémoire doivent les prendre en compte. Ils permettent également de supposer qu'une production implicite d'argument se met en place rapidement lorsque le verbe est présenté seul.

We hypothesized that a process verb refers to the representation of a situation. We examined this hypothesis within the framework of verb polysemy for 12 French verbs. Two tasks were used: a synonym production task (task 1) and a patient production task (task 2). Task 1 revealed two interpretations for each of the verbs, one dominant and the other secondary. Task 2 indicated a high level of correlation between the relative dominance of an interpretation and the number of patients produced. The results are compatible with the hypothesis that memory contains permanent links between a verb and its thematic roles and that memory models must take account of these. They also suggest that the implicit production of an argument occurs rapidly when the verb is presented on its own.

Keywords : polysemy, thematic roles, verbs