THE RELATIONSHIP BETWEEN INFERENTIAL PROCESSING AND TEXT PROCESSING: A DEVELOPMENTAL STUDY

Agata Maltese, Annamaria Pepi

Department of Psychology, University of Palermo, Italy
E-mail: agata.maltese@unipa.it , annamaria.pepi@unipa.it

Lidia Scifo
Department of Psychology, University of Palermo, Italy
E-mail: lidia.scifo@unipa.it

Abstract

The research reported here was designed to investigate the critical role played by certain factors implicated in the mental representation of text, and to establish whether their role varies significantly as a function of developmental age. It is assumed that, in order to be able to activate the elaboration of inferences which allow readers to integrate new information with their background knowledge base with a view to constructing the meaning of the text, subjects need to know how to make productive use of the relevant cues present in the text itself. Specifically, it was decided to analyse, in a sample of 180 subjects was selected from three different age groups (7, 10 and 18 years of age respectively), the role of such factors in mediating and influencing the generation of the inferences needed to understand a piece of text characterised by a sequence of information which flows in a logical order, but leads to a conclusion which is contrary to the expectations evoked by the text. In line with this objective, it was decided to take into account factors related to encoding (added information about the key object – a title), those involved in recall (inferential tests regarding the object and action of change), as well as purely metacognitive factors, such as evaluation of one's own comprehension and awareness of textual incongruence, whose presence, according to our assumptions, should facilitate the formulation of inferential hypotheses. It would thus seem that inferential processing is powerfully influenced both by cognitive and structural factors, factors which can play a role during both encoding and recall. The results reported here tend to confirm the hypothesis that there is indeed a significant developmental trend in the role played by those factors involved in the coherent representation of text and in the formulation of inferences. The data suggest that children in the youngest age group obtain the greatest advantage from clues in reaching a more correct representation of the text concerned. it is concluded that inferential processes do not serve only to make connections between propositions, but to construct a coherent mental representation of text (Kintsh, 1994; Zwaan, 1994, 1996).

Key words: Text comprehension, Inference, Reading.

Introduction

Text comprehension is understood to be a complex process including decoding meaning, activating background knowledge, identifying relations between elements in the text and creating several kinds of mental models and memory representations (Carreiras & Clifton, 2004; van den Broek, 2010). The most recent studies in this field thus emphasise the close relationship which holds between text comprehension and the formulation of inferences, a relationship which follows a significant developmental trend (Kintsch, 1993, 2010; Ritchey, 2011) .

This reinforces the hypothesis that the ability to understand written text depends on the subjects' capacity to refer the linguistic structures encountered in a given piece of text to their previously acquired knowledge base, in order to elaborate an appropriate meaning for the new text (Larcan, Maltese, 1998; Maltese, 2000). The construction of meaning, then, as suggested by Boschi (1977), is concerned with the extraction of information from text, as well as its integration with the subject's formerly acquired knowledge. More precisely, such semantic representation, according to Levorato (2000), reconstructs in the reader's memory the "world of narration" : the plot, the characters, their

The elaboration of information during the comprehension process occurs at different levels, ranging from the recognition of individual words to the referencing of the subject's knowledge base in order to draw the inferences necessary for an exhaustive interpretation of the text in question.

Comprehension, then, is to be seen as a multidimensional process, because it involves "reasoning about the text", thereby requiring the reader to perform a complex process of verification and checking of the information contained in the text. In other words, understanding means referring the linguistic structures in a text to the reader's knowledge base in order to arrive at an appropriate hypothesis about the meaning of the text concerned.

In general terms, the comprehension of a piece of text involves understanding the information it contains. Understanding thus entails the identification of the various relationships alluded to in a given input. The comprehension of the meaning of a text may be said to have been achieved when the subject has attained a certain control over the semantic structures, clarified their relationship to the context, and extracted the meaning which the author intended to convey by the literary strategies employed in the text (Rumelhart, 1975; Long, Oppy and Seely, 1997).

The strategic aspects of this application of logic can be identified as those involved in ways of improving the understanding and memorisation of certain points. The metacognitive aspects are concerned with the selection of the strategies to be employed with any given type of text. Finally, the procedural aspects require the reader to decide how much attention to pay to some parts of the text rather than others.

A considerable body of research supports the idea that memorisation and comprehension are facilitated by internal coherence in a narrative text (Alexander & Jetton 2000).That is to say, the more the events in a text and logically and causally related, the easier it is to remember and understand (Ackerman, 1993; Alfassi, 2004; Cain & coll. 2001, 2010; Yuill and Oakhill, 1991). In others terms, the subject infers a context or "causal field" from the information about time and place settings as well as the characteristics of the protagonists to be found in the text. Consequently, the intersection of various "fields" determines the conditions under which the events in a narrative are verified. The task of the reader is to establish the facts and to order them in a causal chain. The reader therefore operates on the basis of his expectations about the way the story is likely to proceed, making specific predictions and drawing inferences. When events are found to intersect in different causal fields, they come to constitute a network capable of serving

as a representation of the story. In view of this, it is interesting to notice that a causal chain, that is, an episode, is perceived as being over when its objective has been reached, and when the consequences for the characters have been recognised. Children intuitively see an event as an important one in a text as a function of the significance of that event in terms of its causal cohesion with other events (Trabasso and Sperry, 1985).

Research on text comprehension assigns an important role inferential processes, which serve to ensure the ongoing integrity of the network. Infact, constructing inferences can aid in various aspect of text comprehension, resulting in clarification between the relations of text events or concepts (German & Leslie 2001; Kintsch, 1994; Linderholm, Zhao, Cong & Virtue, 2006; Long & coll. 1997,2001;Pillow, 2002; Van Dijk, 1995).

The tendency is to distinguish between three kinds of inference which are generated online, and namely, during the reading process. These are firstly the superordinate aims of the characters, which account for the actions explicitly mentioned in a piece of text, secondly, the causal antecedents, which provide a reason for a given event or action being explicitly mentioned, and thirdly, the global thematic inferences which integrate the main chunks of a text, or which highlight its key points.

Moreover, inferential operations, through the causal connections between the central elements in a text, facilitate the construction of a coherent mental representation. In particular, one can identify three main types of inference: 1) provisional inferences, whose essential function is to correlate new information with previous cognitive contents; 2) logical inferences, which derive from the meanings of specific words; and 3) elaborative inferences, which aim to extend a given reader's understanding of the text by engaging with his wider knowledge of the world.

This typology, in reality, seems to echo the distinction suggested by Oakhill (1993) between "inter-sentence" inferences and "gap-filling" inferences. The former derive from information explicitly mentioned in the text and on which the establishment of its internal coherence depends. "Gap-filling" inferences have to do with the reader's ability to make use of his general knowledge base to make sense of information which is implicit in the structure of the text.

There is a considerable range of factors which can have an effect on inferential processing. These include cognitive factors, which are primarily related to the characteristics of a given reader, and structural ones, which are fundamentally dependant on the structural characteristics of the text concerned. Such factors can exercise their influence both at the time at which information is encoded, as well as during recall. It follows that the more clues there are tending to facilitate access to the information, the fewer will be the number of aids needed during recovery (Wenger and Payne, 1997).

The aim of the present research was to analyse the role of various factors in mediating and influencing the generation of the inferences needed to understand a piece of text characterised by a sequence of information which flows in a logical order, but leads to a conclusion which is contrary to the expectations evoked by the text.

In line with this objective, it was decided to take into account factors related to encoding (added information about the key object – a title), those involved in recovery (inferential tests regarding the object and action of change), as well as purely metacognitive factors, such as evaluation of one's own comprehension and awareness of textual incongruence, whose presence, according to our assumptions, should facilitate the formulation of inferential hypotheses.

In practice, the purpose of this investigation can be summarised as follows: a) to investigate whether and to what extent school age subjects in various stages of development are sensitive to factors capable of inducing inferences; b) to analyse, in developmental terms, subjects' sensitivity

to textual anomalies; c) verify the capacity of subjects to monitor their own comprehension, and d) investigate the presence of any differences in the above processes.

Methodology of Research

Sample of Research

In line with the experimental hypotheses given above, a sample of 180 subjects was selected from three different age groups (7, 10 and 18 years of age respectively). The subjects were all attending state schools in the Palermo area.

Subject selection involved:

- controls for socio-cultural variability, through the administration of a sociological questionnaire. This took account of socio-economic level, the number of family members and the academic qualifications of parents.
- measurement of the potential subjects' ability to correctly order temporal and logical sequences. This was achieved by administering a specific test involving the re-ordering of eight pictures to form a story.
- the M. T. reading and comprehension test, with tests appropriate for each age group, (Cornoldi, 1981).

Subjects were assigned to experimental groups on the basis of the outcomes of these three preliminary measurements.

Subjects in the 3 information encoding groups were presented either with no clues, 1 clue, or 2 clues and a title. The two inference test groups were asked to make inferences either on the object (the 1 test condition) or on the object and the intention (the 2 test condition). Finally, there were 6 evaluation parameters: memory; detection; inference; self-evaluation; and coherence. This latter was a within subjects factor.

Instrument and Procedures

The material employed in the experimental phase consisted of six stories, each composed of seven sentences, presented in the form of typed sheets of paper (see Appendix).The 1st sentence served to introduce the main character and the setting of the story in question, whilst the 2nd sentence had to do with the objective the character had set himself. The 3rd and 4th sentences varied as a function of experimental group. They dealt either with actions directly related to the object which the character had to be able to use in order to achieve his aim and which were laid out in the text in the form of clues, or with actions unrelated to the character's objective. The 5th sentence gave a conclusion of the text which was incoherent with expectations raised by the previous sentences. Finally, the 6th and 7th sentences describe actions unrelated to the intentions of the main character in the story. During this phase, each subject was tested individually, with the order of story presentation being randomised. Moreover, the presentation of each story in the experimental conditions *1/2 clues + title* was preceded by a title consisting of the name of the

object to be used in the inference. Immediately following the reading of the text, performed by the researcher, the subject was asked six questions about the text. These questions were designed to evaluate memory, detection, inference, self-evaluation of comprehension and flexibility. Specifically, the memory question was about a detail regarding sentence 2 of the text. Subjects were required to say if it had been mentioned or not, with correct YES / NO answers being randomly distributed within the six stories. The detection question investigated confirmation or lack of it of the subjects' expectations at the conclusion of the story. The question relating to inference about the object investigates the role assumed by the object in determining the conclusion of the story. On the other hand, the question concerning inference about intentions, used exclusively in the 2 test condition, suggests a possible change in the intentions of the character. The question about self-evaluation was concerned with the subject's perception of his own level of comprehension, with subjects rating themselves on a scale of one to five. Finally, the last question, relating to flexibility, consisted of the suggestion to the subject of possible solutions to the incoherence in the story, which were alternatives to the intentions specified at the beginning of the story. Furthermore, the presentation order of the two inferences in the 2 test condition were randomised between subjects.

Pre-test: Each subject was presented with eight pictures to be re-ordered in such a way as to reconstruct the sequence found in a story. The story was then read out to the subjects, who were also asked several questions aimed at evaluating their comprehension of the reading.

Experimental stage: Each subject was tested individually. It was explained to them that they would listen to a story and then be asked some questions. The order of story presentation was randomised. The procedure involved subjects being given a typewritten version of the story which was read out to them, so as to ensure access to both visual and auditory presentation. Subjects were then asked six test questions. The first four of these were presented orally, whilst the last two were presented on a typewritten sheet of paper. The 6^{th} question included the five suggested alternative answers, presented in random order for each story and between stories.

Results of Research

A preliminary analysis of the results reveals considerable differences in the performance of subjects in the three different age groups. The memory test was especially sensitive to age ($F(2.162) = 19.277$; $p>0.001$). This tends to suggest that the presence of clues in the structure of the test only plays a crucial role in answers to the memory test with the youngest subjects. The clues, indeed, facilitate access to causal information, allowing children to create a coherent mental representation of stories. In other words, in lines with the claims made by Ackerman (1993), the primary function of clues is to describe and localise a set of items represented in memory as candidates for recall. With regard to the factor of detection, the capacity to identify incongruence seems to increase with age ($F(2.162) = 8.663$; $p>0.01$), but doesn't seem to be influenced by the presence of clues. These results are reinforced by the significant relationship found to exist between detection and the number of correct inferences drawn, a relationship which is, in turn, influenced by the age factor. In line with these findings, the youngest age group, as compared with the oldest, seem to be especially benefited by the presence of encoding clues ($F(2.162) = 11.662$; $p>0.01$). Taken as a whole, the findings of this research tend to suggest that factors both of recall and encoding work together to facilitate the comprehension of an incongruous story, stimulating the activation of inferential processes ($F(2.162) = 2.632$; $p>0.05$).

Moreover, the interaction of such factors varies as a function of age. A considerable increase was found between the ages of 7 10, and 18. This result would seem to give more weight to the importance of the role of a title in stimulating the elaboration of causal inferences, because it acts as an *advance organiser* capable of summarising the main points in a story.
Age also seems to play a critical role in the subjects' capacity to correctly evaluate their own level of comprehension. Infact, the oldest subjects demonstrate the best metacognitive skills, and that is, the ability to evaluate their own resources and to adapt their strategies to the needs of the comprehension task on hand. On the basis of the findings reported here, it is claimed that the oldest subjects assign greater importance to their own comprehension skills. A plausible explanation of this is that, in general, young children expect a text they are presented with to be coherent and to contain exhaustive realistic information. In consequence, this expectation influences their monitoring of their understanding, because it is incompatible with their "trust" in the authority of the text, something which is typical of younger subjects. Of great interest in this regard are the results of the flexibility test. Specifically, the type E responses, "not plausible", were only found with seven-year-old subjects. Moreover, Type B responses, in line with the clues available, increase dramatically with age. Finally, type A responses, plausible but alternatives to the solution suggested by the clues, decrease with age, revealing increasing adherence to context, which obviously correlates with increased memory capacity.To sum up, the findings reported here tend to suggest that older subjects dedicate more time and attention to the elaboration of anomalous information. This could provide the right explanation of the increase with age of the correlation between the number of correct inferences and coherent responses. In general, young children may not recognise the critical role played by inference in the comprehension of text because they don't realise that its meaning is only a partial incomplete representation of the meaning intended by the author. That is, they don't realise that the meaning of a text has to be filled out by inferences in order to be fully understood.

Discussion

The findings reported in this paper suggest a number of interesting hypotheses about the factors capable of influencing the development of causal inferences in the comprehension of prose (Barbieri and Miculian 2002; Cataldo and Oakhill 2000; Rapp, van den BroekMcMaster, Kendeou & Espin, 2007; Rubman & Waters, 2000). It has been shown that events related to certain categories of text are more easily remembered than others by subjects in the age groups examined here. More precisely, The most frequently recalled events are those relating to background, the first episode in a narrative and its consequences. On the other hand, those most difficult to recall are those in the middle and at the end of the text. In the view of the authors, one possible explanation of this finding is to be found in the conception of prose as having a hierarchical structure, with the main objective the narrative character has set for himself being located at the summit. This notion, from an educational point of view, would imply making full use, in teaching text comprehension, of pieces of text constructed on the basis of causal cohesion. This would facilitate the formulation of inferences. It also suggests that students should be encouraged to be aware of the structure of the text. That is, it would be important to give them some knowledge of metalinguistic, so as to facilitate their mental elaboration of the text.

Conclusions

These findings suggest that comprehension involves not only cognitive processes related to the elaboration of information, but also metacognitive factors to do with awareness and control of such elaboration. This research has focussed in particular on two specific aspects of metacognitive control: 1) the ability to identify and focus attention on the central points in a text; and 2) the capacity to evaluate the coherence of the text and detect incongruence. With regard to the former, an analysis was made of strategies adopted by children and university students in their comprehension of narrative text. Their ability to comprehend text by distinguishing pertinent information from irrelevant points in the structure of the text was highlighted. The results reported here support the hypothesis that development involves an increasing ability to assess the degree of salience of the various elements in a text. This in turn implies an ever more efficient use of the clues made available in the text structure for the formulation of inferences, thus allowing readers to integrate explicitly stated information with that which can only be deduced from their reading of the text. As regards the second aspect of metacognitive control, it was found that monitoring capacity, which allows subjects to notice ambiguity and incongruence in a text, was relatively poor in the youngest subjects studied here. Young children seem to be unable to accept the possibility of alternative solutions. This mental rigidity suggests that they are incapable of adequately evaluating their own level of comprehension (De Beni and Pazzaglia, 1994**)**. This also explains the tendency by older subjects to pay more attention to the elaboration of anomalous information, and consequently to producing a greater number of coherent responses and correct inferences (Ferreira & Dell, 2000; German & Leslie 2001). Overall, then, the findings of this research provide further support for the notion that clues have a fundamental role to play in comprehension. In other words, the presence of clues allows the developing child to achieve a more complete mental representation of text through the generation of meaningful causal networks.

These conclusions emphasis the importance, in an educational setting, of using text constructed in accordance with specific criteria of causal cohesion, so as to stimulate the subjects *metalinguistic awareness*, which, by allowing more direct access to cognitive structures, should facilitate their mental elaboration of text.

APPENDIX

STORY

Title: The Car

1. Mary had to go out with her friends
2. She put on her coat and gloves and got the keys, because she intended to go out in her car
3. She shut all the windows properly 3b. She went into the garage to get the car
4. She turned off the lights 4b. and turned of the car alarm
5. Mary went out on her boyfriend's motorbike
6. They went to the cinema and then to a pizza place
7. She got home late

TEST QUESTIONS

I. Did Mary put her gloves on?
II. Did you expect Mary to go out on her boyfriend's motorbike?
III. Was her car working?
IV. Did Mary intend to go out on her boyfriend's motorbike?
V. In your opinion, why didn't Mary go out in her car?
   (a) She changed her mind
   (b) Her car wasn't working
   (c) Her car was badly parked
   (d) Her boyfriend invited her to go out with him
   (e) Mary hasn't got a driving licence

References

Ackerman, B. (1993). Children's Understanding of the Relation between Referential Knowledge and Referential Behavior. Journal Of Experimental Child Psychology,56, 385-411.

Alexander, P., & Jetton, T. (2000). Learning from text: a multidimensional and developmental perspective. In M. L. Kamil, P. B. Mosenthal, P. D. Pearson, & R. B. (Eds.), Handbook of reading research: Vol. III (p. 285−310). Mahwah, NJ: Erlbaum.

Anderson, J.R., Spiro, R.J., Anderson, M.C. (1978). Schemata and scaffolding for the representation of information in connected discourse. American Educational Research Journal, 15, 433-450.

Ausebel, D. P. (1960). The use of adavance organizers in the learning and retention of meaningful material. Journal of Educational Psychology,61, 267-272

Barbieri M.S., Miculian O. (2002). La comprensione dell'inferenza come fonte indiretta di conoscenza. Età Evolutiva, 2, 17-28.

Cain, K., Oakhill, J. V., Barnes, M. A., & Bryant, P. E. (2001). Comprehension skill, inferencemaking ability, and their relation to knowledge. Memory&Cognition, 29(6) , 850-859.

Cain, K., Oakhill, J., & Bryant, P. (2004). Children's reading comprehension ability: Concurrent prediction by working memory,verbal ability, and component skills. Journal of Educational Psychology, 96 , 31-42

Carpenter, P.A., Daneman, N.M. (1981) Lexical retrieval and error recovery in reading: a model based on eye fixation., Journal of Verbal Learning and Verbal Behaviour, 20,. 37 – 160.

Carpenter. P., Just. M.A. (1988). The role of working memory in language comprehension, in Klar D., Kotovsky K. (eds), Complex information processing: the impact of Herbert Simon, Erlbaum, Hillsdale.

Carreiras, M. & Clifton, C. (2004). On the on-line study of language comprehension. In M. Carreiras & C. Clifton (Eds.), The on line-study of sentence comprehension (pp. 1-14). New York: Psychology Press

Cataldo, M.G., Oakhill J. (2000). Why are poor comprehenders inefficient searchers? An investigation into the effects of text representation and spatial memory on the ability to locate information in text. Journal of Educational Psychology, vol. 92, n° 4, 791 – 799.

Cornoldi, C. & Oakhill, J. (1996). Reading Comprehension Difficulties, Erlbaum, Mahwah, Nj.

Cornoldi, c.& Colpa G., Prove di lettura MT, Guida all'uso, Organizzazioni Speciali, Firenze, 1981.

Daneman, M. & Carpenter, P.A. (1980). Individual Differences in Working Memory and Reading. Journal of Verbal Learning and Verbal Behavior, 19, 450-466.

De Beni R. Pazzaglia F. (1994). Analisi di alcune abilità metacognitive implicate nella comprensione del testo scritto: caratteristiche evolutive e relazioni tra competenza metacognitiva e abilità di lettura. Rassegna di Psicologia, 1, vol. xi, 77-97.

De Beni, R., Pazzaglia, F. (1995). La comprensione del testo. UTET Libreria, Torino

Ferreira, V.S., Dell G.S. (2000). Effect of ambiguity and lexical availability on syntactic and lexical production. Cognitive Psychology, 40, 296 – 340.

German, T. P., Leslie A.M. (2001). Children's inferences from "knowing" to "pretending" and "believing". Journal of Developmental Psychology, 19, 59 – 83.

Graesser, A.C. & Goodman S. (1985). Implicit Knowledge Question Answering and the Representation of Expository Text. In Understanding Expository Text, Eds. B. Britton, J.B. Black, (Hillsdale, N.J.: Lawrence Erlbaum Ass.)
Graesser, A.C., Millis, K.K., Zwaan, R.A. (1997).Discourse comprehension, Annual Review of Psychology, 48, 163-89
Graesser, A.C., Zwaan, R.A. (1995). Inference Generation and the Constructing of Situation Models, in A.C. Weaver, S. Mannes, C.R. Fletcher (a cura di) Discourse Comprehension. Essays in Honor of Walter Kintsch, Hillsdale, N.J. Erlbaum
Kintsch, W. (1994). Text Comprehension, Memory and Learning. American Psychologist, 49, 294-303.
Larcan, R., Maltese, A. (1998). Analisi evolutiva dei processi di comprensione: contributo di ricerca, in Di Vita, A.M , Larcan R. (a cura di) Crescere nella complessità, Edizioni Unicopli, Milano
Levorato, M.C. (2000). le emozioni della lettura. ed. Il Mulino (Bo)
LONG D.., CHONG J.L., (2001) Comprehension skill and global coherence: a paradoxical picture of poor comprehenders' abilities, Journal of Experimental Psychology: Learning, Memory and Cognition, 2001, Vol. 27, N° 6, 1424 – 1429.
Long, D., Oppy, B. & Seely, M. (1997). Individual Differences in Readers' Sentence- and Text Level Representations. Journal Of Memory And Language, 36, 129-145
Maltese, A. (2000). Analisi evolutiva dell'inferential processing: implicazioni educative, in Larcan, R. Pepi, A. (a cura di), Verso l'alfabetizzazione, Oasi Editrice (en).
Oakhill, J. (1993). Children's Difficulties in Reading Comprehension. Educational Psychology Review, 5, 223-237.
PILLOW B.H (2002). Children's and adults' evaluation of the certainty of deductive inferences, inductive inferences, and guesses. Child Development,Vol. 73, N° 3779 – 792.
Rapp, D. N., van den Broek, P., McMaster, K. L., Kendeou, P., & Espin, C. A. (2007). Higherorder comprehension processes in struggling readers: a perspective for researchand intervention. Scientific Studies of Reading 11(4) , 289-312.
Reading to learn: effects of combined strategy instruction on highschool students. The Journal of Educational Research, 97(4) , 171-184.
Ritchey, K.A. (2011). How generalization inferences are constructed in expository text comprehension. Contemporary Educational Psychology,36, 280-288
Rubman, C. N., & Waters, H. S. (2000). A, B Seeing: The role of constructive precesses in children's comprehension monitoring. Journal of Educational Psychology, 92 , 503- 514.
Rumelhart, D.E. (1975). Note on a Schema for Stories. Ed. Academic Press
Rumelhart, D.E. (1977). Understanding and summarizing brief stories, in Laberge D., Samueles S.J. (a cura di), Basic Processes in reading: perceptions and comprehension, Erlbaum, Hillsdale.
Trabasso, T. & Sperry, L. (1985). Causal Relatedness and Importance of Story Events. Journal Of Memory And Language, 24, 595-611.
Van den Broek, P. (1994). Comprehension and Memory of Narrative Texts: Inferences and Coherence. In M.A. Gernsbacher (Ed), Handbook of Psycholinguistics, 539-588.
Van den Broek, P. (2010). Using texts in science education: Cognitive processes and knowledge representation. Science, 328,453-456
Van Dijk, T.A.(1995). On Macrostructures, Mental Models and Other Inventions: A Brief Personal History of the Kintsch-van Dijk Theory, in C.A. Weaver, S. Mannes , C.R. Fletcher, Discourse Comprehension. Essays in Honor of Walter Kintsch, Hillsdale, N.J., Erlbaum.

Van Dijk, T.A., Kintsch, W. (1983). Strategies of discourse comprehension, Academic Press, New York.
Wenger, M.J. & Payne, D.G. (1997). Cue Integration Across Study Tasks and Direct and Indierct Retrieval Instructions: Implications for the Study of Retrieval Processes. Journal of Experimental Psychology: Learning, Memory and Cognition, 23, 102-122.
Yuill, N. & Oakhill, J. (1991). Children's Problems in Text Comprehension: An Experimental Investigation, Cambridge: Cambridge University Press.
Yuill, N., Oakhill, J. & Parkin, A. (1989). Working Memory, Comprehension Ability and the Resolution of Text Anomaly. British Journal of Psychology. 80, 351-361.
Zwaan, R.A.(1994). Effect of genre expectations on text comprehension, Journal of Experimental Psychology: Learning, Memory and Cognition, 20, 920-933
Zwaan, R.A.(1996). Toward a model of literary comprehension, in Britton, B.K., Graesser, A.C. (a cura di) Models of understanding text, Erlabaum, Mahwah.

Agata Maltese	PhD, Assistant Professor, Department of Psychology, University of Palermo, Italy Viale delle Scienze, Edificio 15; 90128; Palermo E-mail: agata.maltese@unipa.it
Annamaria Pepi	PhD, Full Professor, Department of Psychology, University of Palermo, Italy Viale delle Scienze, Edificio 15; 90128; Palermo E-mail: annamaria.pepi@unipa.it
Lidia Scifo	PhD student, Department of Psychology, University of Palermo, Italy Viale delle Scienze, Edificio 15; 90128; Palermo E-mail: lidia.scifo@unipa.it