A.I.R.I.P.A.-O.N.L.U.S.
Associazione Italiana Ricerca e Intervento nella
Psicopatologia dell'apprendimento

Via Ippolito Nievo n. 2 – 30027 San Donà di Piave (VE)

C.f. e P. Iva: 03150800278

Ottobre 2010

1. Definizione del disturbo di comprensione del testo (DCT)

La letteratura internazionale ha evidenziato la possibilità di individuare gruppi di studenti che hanno problemi specifici nella comprensione del testo a fronte di abilità di decodifica nella norma (vedi Bishop e Snowling, 2004). In lingua inglese vengono denominati *poor comprehenders* (vedi Cain e Oakhill, 2007 o Cornoldi e Oakhill, 1996), in Italia *cattivi lettori* (vedi Carretti, Cornoldi e De Beni, 2007).

I problemi di comprensione non dipendono dal livello cognitivo generale (QI) che infatti è all'interno della fascia della normalità (>85).

Secondo Bishop e Snowling (2004) il profilo linguistico di questi lettori è diverso da quelli con Dislessia, per il fatto di avere buone abilità fonologiche; nonostante siano emerse delle sovrapposizioni con il Disturbo Specifico del Linguaggio (DSL) (vedi Nation, Clarke, Durand e Marshall, 2004; Nation, Clarke e Snowling, 2002) Bishop e Snowling sottolineano che il fatto di non avere problemi nella decodifica debba farlo intendere eziologicamente diverso dal classico DSL (p. 875). Bishop e Snowling (2004), rielaborando il modello *Simple View of Reading* proposto da Gough (vedi Gough e Tunmer, 1986), propongono di utilizzare due dimensioni per definire i problemi legati al linguaggio: la dimensione legata all'elaborazione fonologica (*phonological skills*) e quella legata agli aspetti semantici e sintattici del linguaggio (*nonphonological language skills*) (vedi Figura 1).

Sulla base di questa tassonomia, i bambini con problemi nella comprensione si caratterizzerebbero per buone abilità di tipo fonologico e basse competenze linguistiche sul versante sintattico e semantico.

Questa posizione è recentemente ben sintetizzato in un documento frutto del lavoro di un panel di ricercatori inglesi che ha lo scopo di informare sulle caratteristiche degli studenti con DCT (vedi allegato 1).

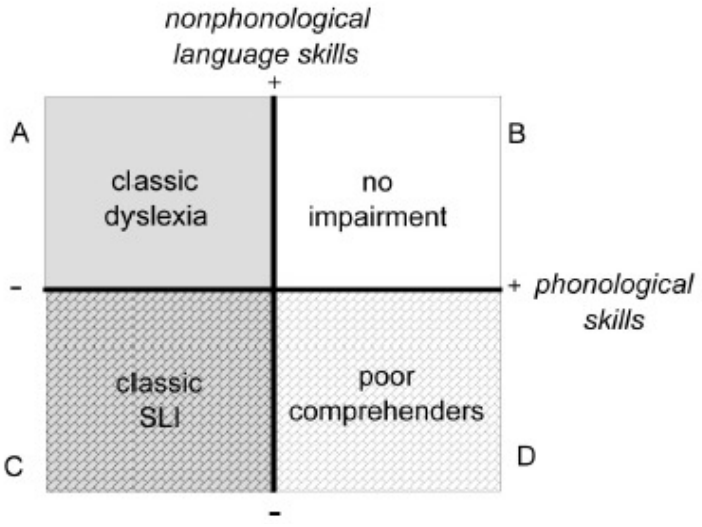

Figura 1. Tassonomia proposta da Bishop e Snowling (2004).

Alcune delle difficoltà di questi bambini riguardano anche la comprensione e produzione orale (vedi oltre), motivo per cui spesso sono inclusi nella categoria dei DSL; tuttavia è da notare che l'analisi dei profili individuali, piuttosto che del gruppo, ha evidenziato che per alcuni bambini il profilo di prestazione non è assimilabile a quello di un DSL (vedi Nation et al., 2004). Inoltre per quanto riguarda la comprensione orale, l'effettiva difficoltà in questa componente potrebbe essere enfatizzata dal fatto che la valutazione prevede l'ascolto di testi trasposti in forma orale: trattandosi di testo, anche se letto, i bambini con DCT mostrano naturalmente delle difficoltà.

L'interesse per le problematiche che riguardano la comprensione del testo dovrebbe essere inoltre dettata dal fatto che esso ha forti ripercussioni sull'apprendimento scolastico (vedi Cain e Oakhill, 2006), e che permette, a differenza della comprensione orale, di fare una scomposizione delle componenti che possono portare ad un problema nella comprensione con la possibilità quindi di pianificare un trattamento mirato (Meneghetti, Carretti e De Beni, 2006).

2. Caratteristiche del DCT

La ricerca che ha approfondito la natura e le caratteristiche del DCT non riguarda una popolazione clinica: la maggior parte degli studi coinvolge infatti bambini selezionati dalla popolazione scolastica normale. I criteri che vengono utilizzati prevedono una prestazione inferiore alla norma (di 1 anno) nella comprensione del testo e abilità adeguate nella lettura ad alta voce e in abilità non verbali (QI performance o abilità spaziali). La Figura 2 rappresenta il profilo tipico del

gruppo di cattivi lettori rispetto ai buoni lettori.

A questi criteri gli studi di Oakhill e Cain prevedono un appaiamento in misure di vocabolario recettivo (ad esempio Peabody Picture Vocabulary test). Questa differenza non è irrilevante quando si cercano di confrontare i risultati presenti in letteratura.

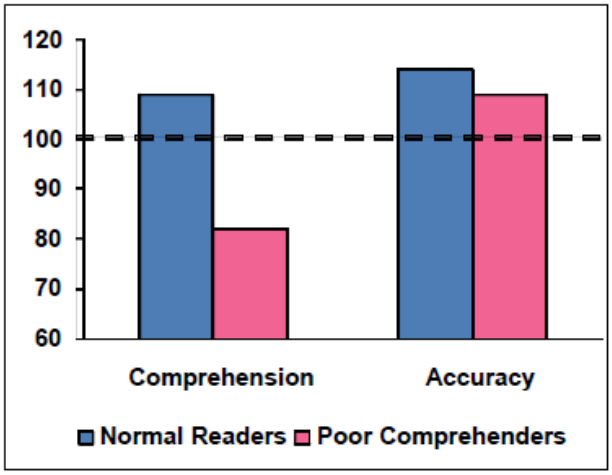

Figure 2: Reading profiles of poor comprehenders and normal readers. Dotted line represents average performance.

Tratto dal documento del panel inglese sulla comprensione del testo (vedi allegato 1).

Abilità implicate nella comprensione. Dalla letteratura emerge che il gruppo di lettori con problemi nella comprensione del testo ha delle prestazioni più basse in prove che valutano:

1. la capacità di fare inferenze lessicali e semantiche (ad esempio Cain e Oakhill, 1999), anche quando le conoscenze precedenti sul testo vengono controllate (ad esempio Cain, Oakhill, Barnes e Bryant, 2001)
2. le conoscenze e uso di strategie di strategie di lettura e controllo metacognitivo (ad esempio Cataldo e Cornoldi, 1998; Cataldo e Oakhill, 2000)
3. la capacità di crearsi una rappresentazione coerente del testo individuando le informazioni rilevanti ed escludendo quelle irrilevanti (ad esempio Gernsbacher, Varner e Faust, 1990)

Espressione scritta e orale. Numerosi studi hanno evidenziato che questi studenti hanno problemi nella elaborazione linguistica di alto livello che cioè non coinvolge gli aspetti strumentali

del linguaggio, come ad esempio abilità narrative (Cragg e Nation, 2006), linguaggio figurativo (vedi Nesi, Levorato, Roch e Cacciari, 2006), e nell'espressione orale (vedi Cain e Oakhill, 2003). In particolare per quanto riguarda l'espressione scritta e orale il problema riguarda la struttura della narrazione che mostra una bassa coerenza globale e coesione locale, rispecchiando il problema che essi hanno nella costruzione della rappresentazione del contenuto del testo.

Memoria a breve termine e di lavoro. Dal punto di vista dei processi di base diversi studi hanno evidenziato che i cattivi lettori, come gruppo, hanno prestazioni più basse in prove di memoria di lavoro verbale e in minor misura non verbale e nella memoria a breve termine (vedi meta-analisi di Carretti, Borella, Cornoldi, e De Beni, 2009). Vari studi hanno inoltre evidenziato che la prestazione dei cattivi lettori è caratterizzato da un maggior numero di intrusioni: i cattivi lettori tendono a ricordare un maggior numero di informazioni non rilevanti rispetto ai buoni lettori (Borella, Carretti e Pelegrina, in stampa; Cain, 2006; Carretti, Cornoldi, Palladino e De Beni, 2004; Carretti, Cornoldi, De Beni e Romanò, 2005; De Beni e Palladino, 2000; De Beni, Palladino, Cornoldi e Pazzaglia, 1998; Palladino, Cornoldi, De Beni e Pazzaglia, 2001; Pimperton e Nation, 2010).

Questo risultato spiega la tendenza dei cattivi lettori a inserire nella costruzione del modello mentale del testo informazioni non rilevanti (Gernsbacher, 1997).

Consistenza dei profili. È importante sottolineare che i profili degli studenti con disturbo di comprensione del testo sono variabili (vedi Cain e Oakhill, 2006; Cornoldi, De Beni e Pazzaglia, 1996; Nation et al., 2004), quindi se emergono differenze che riguardano il gruppo in tutte le prove appena menzionate, analizzando i profili dei singoli individui alcune abilità potrebbero essere più o meno compromesse.

3. Rapporto con la decodifica

La questione maggiormente dibattuta nella definizione di questo gruppo riguarda il rapporto con la decodifica. É indubbio che la decodifica sia strumentale alla comprensione, infatti un bambino nei primi anni dell'apprendimento non può accedere al significato del testo fintanto non ha appreso la corrispondenza fra lettere e suoni. Tuttavia nella popolazione normale la relazione fra decodifica e comprensione decresce all'aumentare della scolarizzazione (vedi modello "simple view of reading" di Gough e Tunmer, 1996), questo sta a significare che l'automatizzazione della decodifica implica una sua minore rilevanza come predittore della comprensione.

Il fatto che difficoltà nella decodifica non siano sottese ad un problema nella comprensione è stato analizzato in diversi studi (Cain, Oakhill e Bryant, 2000; Catts, Adlof e Weismer, 2006; Lesaux, Lipka e Siegel, 2006; Nation, Cocksey, Taylor e Bishop, 2010; Stothard e Hulme, 1996). In particolare Cain et al., (2000) partendo dalla proposta di Shankweiler (1989) attraverso sei studi hanno analizzato la consapevolezza fonologica in studenti con disturbo di comprensione del testo dai 7 agli 8 anni di età. Secondo Shankweiler e colleghi problemi legati alla comprensione dipendono principalmente da sottili difficoltà in abilità linguistiche di tipo strumentale. In contrasto con questa proposta Cain e colleghi hanno dimostrato che buoni e cattivi lettori hanno prestazioni simili in prove che valutano diversi aspetti dell'elaborazione fonologica (ad esempio compiti di rima, di delezione di fonemi). Le differenze, tuttavia, appaiono quando i compiti utilizzati richiedono il coinvolgimento della memoria di lavoro. Ad esempio nel compito chiamato odd-word-out, in cui viene chiesto di individuare la parola che ha un suono differente rispetto alle altre (per esempio great – grow – grey – treat, in questo caso cambia il primo suono), i cattivi lettori hanno prestazioni più basse rispetto ai buoni lettori. Secondo l'interpretazione di Cain e collaboratori questo tipo di prova richiedendo il coinvolgimento della memoria di lavoro per il mantenimento delle informazioni penalizzerebbe i cattivi lettori.

Un secondo studio di Catts et al. (2006) ha analizzato la prestazione di un gruppo di cattivi lettori, di dislessici e di bambini con sviluppo tipico di terza media mostrando una dissociazione fra i due gruppi di bambini in difficoltà: i cattivi lettori mostravano buone prestazioni in compiti di consapevolezza fonologica (ad esempio ripetizione di parole senza senso, delezione di fonemi), ma prestazioni scadenti in prove di comprensione del linguaggio (ad esempio vocabolario ricettivo, comprensione da ascolto, inferenze). Un pattern di risultati opposti è emerso per il gruppo dei dislessici. Nel secondo studio Catts e collaboratori hanno valutato retrospettivamente le prestazione dei partecipanti del primo studio in prove di comprensione da ascolto, consapevolezza fonologica (ripetizione di non parole) durante la scuola dell'infanzia, includendo poi la prestazione in prove di e comprensione del testo in seconda e quarta elementare. Dai risultati è emerso che già durante la scuola dell'infanzia si evidenzia la dissociazione presente in terza media per quanto riguarda la comprensione da ascolto e la consapevolezza fonologica. Inoltre studiando i cambiamenti nella prestazione nella prova di comprensione risulta chiaro che in seconda elementare il gruppo dei dislessici e dei cattivi lettori ha una prestazione simile e minore di quella del gruppo di controllo. Questo conferma quanto suggerito dal modello “Simple View of Reading” di Gough, Wesley e Peterson (1996; Gough e Tunmer, 1986) secondo il quale nelle prime fasi dell'apprendimento

l'abilità di decodifica abbia un ruolo importante per il successo in prove di comprensione. Tuttavia al passaggio dalla seconda elementare alle classi successive la prestazione dei cattivi lettori risulta progressivamente peggiore anche rispetto ai dislessici, la cui prestazione è comparabile a quella del gruppo di controllo.

Recentemente Nation et al. (2010) hanno confermato che il DCT non si caratterizza per problemi nelle competenze legate alla decodifica e ai processi in essa implicati studiando longitudinalmente un gruppo di cattivi lettori e di lettori normali dai 5 agli 8 anni. I bambini sono stati valutati in 4 momenti successivi (5 aa e 5 mesi, 6, 7 e 8 anni). In tutte le misurazioni i cattivi lettori mostravano uguale prestazione ai controlli in prove di: ripetizione di non-parole, di delezione di fonemi, di appaiamento di suoni, di giudizio di rima). Differenze invece emergevano in prove di conoscenza e consapevolezza sintattica, comprensione orale e vocabolario espressivo. Il problema nella comprensione non è quindi associato a basse competenze nella decodifica, ma competenze linguistiche non fonologiche (vedi Bishop e Snowling, 2004).

4. Valutazione del disturbo di comprensione

È stato stimato che la percentuale di studenti che presentano una qualche difficoltà possa raggiungere valori intorno al 5 – 10% della popolazione scolastica (in Inghilterra vedi Nation e Snowling, 1997; in Italia Cornoldi et al., 1996). L'individuazione di un disturbo di comprensione del testo dovrebbe essere effettuata a partire da due prove di comprensione del testo, controllando il livello di decodifica. La valutazione di approfondimento dovrebbe prevedere delle prove di comprensione da ascolto, capacità di fare inferenze e controllo metacognitivo.

5. Trattamento del DCT

Gli studi sul trattamento dei disturbo di comprensione hanno messo in evidenza che è possibile migliorare il livello di prestazione di studenti con DCT con trattamenti in cui vengono proposte attività che:

a. insegnano strategie di comprensione, migliorano componenti specifiche della comprensione e favoriscono un approccio metacognitivo al compito (Idol, 1987; Johnson-Glenberg, 2000, 2005; Lucangeli, Galderisi e Cornoldi, 1995; Yuill e Oakhill, 1981; Yuill e Joscelyne, 1988);
b. incrementano le competenze legate al linguaggio orale (Aarnoutse, van des Boen e Brand-Gruwel, 1998; Clarke, Snowling, Truelove e Hulme, 2010);
c. si basano sull'apprendimento reciproco (Aarnoutse et al., 1998; Palincsar e Brown, 1984).

La tabella riassume le principali evidenze circa le caratteristiche del DCT. I riferimenti bibliografici sono in alcuni casi solo una selezione degli studi (vedi commenti)

	Disturbo di comprensione del testo		
Prestazione bassa rispetto buoni lettori in:	**SI**	**NO**	**Commenti**
Decodifica			
Accuratezza nella lettura di brano	**X** Ricketts, Bishop e Nation (2008)	**X** Nation, Adam, Bowyer-Crane e Snowling (1999); Nation, Clarke e Snowling (2002); Nation, Marshall e Snowling (2001); Nation e Snowling (1998); Oakhill, Cain e Lemmon (2005a); Oakhill, Hartt e Samols (2005b); Pimperton e Nation (2010); Ricketts, Bishop e Nation (2008); Spooner, Gathercole e Baddeley (2006); Yuill, Oakhill e Parkin (1989)	Gli studenti con DCT sviluppano adeguate abilità di decodifica. È da notare che il livello di accuratezza nella lettura è utilizzato come criterio di appaiamento nella maggior parte degli studi, quindi non emergono differenze (tranne in quello di Ricketts).
Accuratezza nella lettura di parole		**X** Nation, Cocksey, Taylor e Bishop (2010); Pimperton e Nation (2010); Ricketts et al. (2008)	
Accuratezza nella lettura di non-parole		**X** Leong, Hau, Tse e Loh (2007); Megherbi, Seigneuric e Ehrlich (2006); Nation e Snowling (1998); Nation et al. (1999); Nation, et al. (2002); Nation et al (2010); Nation et al. (2001)	
Competenze fonologiche (e.g. delezione fonemi; spoonerismi)	**X** Shankweiler, (1989).	**X** Cain, Oakhill e Bryant (2000); Catts, Adlof e Weismer (2006); Leong et al. (2007); Lesaux, Lipka e Siegel (2006); Nation et al. (2010); Ricketts et al. (2008); Stothard e Hulme (1996); Swanson, Howard e Saez (2006)	
Abilità cognitive generali			
QI verbale	**X** Cain e Oakhill (2006); Nation, Clarke e Snowling (2002)		
QI performance o abilità visuo-spaziali	**X** Catts et al. (2006); Nation et al. (2010); Nation e Snowling (2002)	**X** e.g. Cain e Oakhill (2006); Carretti, Cornoldi, De Beni e Palladino, 2000; Carretti, Cornoldi, De Beni e Romanò (2005); De Beni e Palladino (2000); Nation e Snowling (1998); Nation e Snowling (1999); Nation et al. (2002); Nation et al. (2004); Palladino, Cornoldi, De Beni e Pazzaglia, 2001; Pimperton e Nation (2010); Ricketts et al. (2008); Swanson et al (2006)	Nella maggior parte degli studi è un criterio per l'appaiamento.
Memoria			
Memoria a breve termine verbale		**X** Cain e Oakhill (2006) De Beni, Palladino, Pazzaglia e Cornoldi, 1998; Swanson et al	Gli studenti con DCT non mostrano difficoltà nel mantenimento passivo delle informazioni (memoria a breve

		(2006)	termine), mentre la loro prestazione è più bassa quando devono mantenere e contemporaneamente elaborare le informazioni. Si veda la meta-analisi di Carretti, Borella, De Beni e Cornoldi (2009) per ulteriori riferimenti bibliografici
Memoria di lavoro verbale	**X** e.g. Cain e Oakhill (2006); Carretti, Cornoldi, De Beni e Palladino (2004); De Beni et al. (1998); Pimperton e Nation (2010); Swanson et al (2006)		
Linguaggio			
Vocabolario recettivo	**X** Cain e Oakhill (2006); Catts et al (2006); Nation e Snowling (1998)	**X** e.g. Cain (2006); Cain et al. (2000); Ehrlich, Remond e Tardieu (1999; Oakhill et al. (2005a); Oakhill et al. (2005b); Yuill, Oakhill e Parkin (1989)	Criterio di appaiamento in molti studi di Cain e Oakhill
Vocabolario espressivo	**X** Nation et al. (2010); Nation e Snowling (1998); Nation e Snowling (2002); Ricketts et al. (2008)		
Competenze sintattiche	**X** Nation et al. (2004); Nation et al. (2010)	**X** Cain e Oakhill (2006)	
Comprensione da ascolto (orale)	**X** Catts et al. (2006); Megherbi et al. (2006); Nation et al. (2004); Nation et al. (2010)		
Comprensione idiomi o linguaggio figurativo	**X** Cain, Oakhill e Lemmon (2005); Nation et al. (2004); Nesi, Levorato, Roch e Cacciari (2006)		
Espressione scritta e/o orale	**X** Cragg e Nation (2006); Cain (2006); Nation et al. (2004)		
Componenti della comprensione			
Inferenze e integrazione fra parti del testo	**X** Cain e Oakhill (1999); Cain e Oakhill (2006); Cain, Oakhill, & Elbro (2003); Oakhill, (1984); Cain, & Oakhill (1999). Cain, Oakhill, Barnes & Bryant (2001); Catts et al. (2006); Long e Chong (2001); Oakhill et al. (2004); Spooner et al. (2006)		Gli studenti con DCT fanno meno inferenze durante la lettura. Il minor numero di inferenze non dipende da una mancanza di conoscenze precedenti.
Risoluzione anafore	**X** e.g. Ehrlich e Remond (1997); Ehrlich et al. (1999); Oakhill e Yuill (1986); Yuill e Oakhill (1988)		La difficoltà nella risoluzione delle anafore è maggiore quando l'anafora e il suo referente non sono adiacenti.
Conoscenza della struttura della storia	**X** Cragg e Nation (2006); Cain (2006); Nation et al. (2004); Yuill e Oakhill (1991)		Gli studenti con DCT hanno difficoltà ad individuare gli eventi principali, il contesto in una storia. Gli studenti con DCT non riescono ad individuare gli elementi che definiscono una

			storia ben strutturata e integrata. Gli studenti con DCT non utilizzano gli indici presenti nella storia (e.g. titolo) per fare previsioni sul contenuto.
Controllo metacognitivo	**X** e.g. Cain e Oakhill (2006); Cataldo e Cornoldi (1999); Cataldo e Oakhill (2000); Garner, 1988; Papetti et al. (1992); Oakhill et al. (2005)		Gli studenti con DCT non monitorano il livello di comprensione. In caso di mancata comprensione non usano strategie per ritornare a capire. Gli studenti con DCT non individuano inconsistenze nel testo.

Bibliografia

Aarnoutse, C. van den Bos, K., e Brand-Gruwel, S. (1998). "Effects of listening comprehension training on listening and reading. *Journal of Special Education, 32,* 115- 126.

Bishop, D. V. M., & Snowling, M. J. (2004). Developmental dyslexia and specific language impairment: same or different? *Psychological Bullettin, 130,* 858-886.

Borella, E., Carretti, B., & Pelegrina, S. L. (in stampa). The specific role of inhibition in reading comprehension in good and poor comprehenders. *Journal of Learning Disabilities.*

Cain, K. (2006). Individual differences in children's memory and reading comprehension: an investigation of semantic and inhibitory deficits. *Memory*, *14*, 553-569.

Cain, K., & Oakhill, J. (1999). Inference making ability and its relation to comprehension failure in young children. *Reading and Writing, 11*, 489-503.

Cain, K., & Oakhill, J., (2003). Reading comprehension difficulties. In T. Nunes, P. Bryant (a cura di) *Handbook of Children's Literacy,* (pp. 313-338). Dordrecht: Kluver Academic Publisher.

Cain, K., & Oakhill, J. (2006). Profiles of children with reading comprehension difficulties. *British Journal of Educational Psychology, 76,* 683-696.

Cain, K., & Oakhill, J. (Eds) (2007). *Children's Comprehension Problems in Oral and Written Language: A Cognitive Perspective.* Guildford Press.

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

Cain, K., Oakhill, J., & Bryant, P. (2000). Phonological skills and comprehension failure: a test of the phonological processing deficit hypothesis. *Reading and Writing, 13,* 31-56.

Cain, K., Oakhill, J., & Lemmon, K. (2004). Individual differences in the inference of word meanings from context: the influence of reading comprehension, vocabulary knowledge, and memory capacity. *Journal of Educational Psychology, 96*, 671-68.

Carretti, B., Cornoldi, C., De Beni, R., & Palladino, P. (2004). What happens to information to be suppressed in working memory tasks? Short and long term effects. *The Quarterly Journal of Experimental Psychology, 57A*, 1059-1084.

Carretti, B., Cornoldi, C., De Beni, R., & Romanò, M. (2005). Updating in working memory: A comparison of good and poor comprehenders. *Journal of Experimental Child Psychology, 91*, 45-66.

Carretti, B., Cornoldi, C., & De Beni, R. (2007). Il disturbo di comprensione del testo. In C.

Cornoldi *Difficoltà e disturbi dell'apprendimento* (pp. 143-162). Bologna, Il Mulino.

Carretti, B., Borella, E., Cornoldi, C., & De Beni, R. (2009). Role of working memory in explaining poor comprehenders performance: A meta-analysis. *Learning and Individual Differences*, 19, 246-251.

Cataldo, M. G., & Cornoldi, C. (1998). Self-monitoring in poor and good reading comprehenders and their use of strategy. *British Journal of Developmental Psychology, 16,* 155-165.

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, 92,* 791-799.

Catts, H. W., Adlof, S. M., & Weismer, S. E. (2006). Language deficits in poor comprehenders: a case for simple view of reading. *Journal of Speech, Language, and Hearing Research, 49,* 278-293.

Clarke, P. J., Snowling, M. J., Truelove, E., e Hulme, C. (2010). Ameliorating children's reading-comprehension difficulties: a randomized controlled trial. *Psychological Science, 21*, 1106-1116.

Cornoldi, C., De Beni, R., & Pazzaglia, F. (1996). Profiles of reading comprehension difficulties: An analysis of single cases. In C. Cornoldi &J. Oakhill, (a cura di), Reading comprehension difficulties: Processes and intervention (pp. 113–136). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Cornoldi, C. & Oakhill, J. (1996) (a cura di), Reading comprehension difficulties: Processes and intervention. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Cragg, L., & Nation, K. (2006) Exploring written narrative in children with poor reading comprehension. *Educational Psychology,* 26, 55-72

De Beni, R., & Palladino, P. (2000). Intrusion errors in working memory tasks: Are they related to reading comprehension ability? *Learning and Individual Differences, 12*, 131-143.

De Beni, R., Palladino, P., Pazzaglia, F., & Cornoldi, C. (1998). Increases in intrusion errors and working memory deficit of poor comprehenders. *The Quarterly Journal of Experimental Psychology, 51*(A), 305–320.

Gernsbacher, M. A. (1997). Two decades of structure building. *Discourse Processes, 23,* 265-304.

Gernsbacher, M. A., Varner, K. R., & Faust, M. E. (1990). Investigating differences in general comprehension skill. *Journal of Experimental Psychology: Learning, Memory and Cognition, 16*, 430-445.

Gough, P. B., & Tunmer, W. (1986). Decoding, reading and reading disability. *Remedial and Special Education, 7*, 6-10.

Gough, P. B., Wesley A. H., & Peterson, C. L. (1996). Some observations on a simple view of reading. In C. Cornoldi & J. Oakhill (a cura di) *Reading comprehension difficulties. Processes and intervention* (pp. 1-14). Mahway NJ: Lawrence Erlbaum Associates.

Idol, L. (1987). Group story mapping: a comprehension strategy for both skilled and unskilled readers. *Journal of Learning Disabilities, 20,* 196-205.

Johnson-Glenberg, M. C. (2000). Training Reading Comprehension in Adequate Decoders/Poor Comprehenders: Verbal Versus Visual Strategies, *Journal of Educational Psychology,* 92, 772-782.

Johnson-Glenberg, M. C. (2005). Web-based training of metacognitive strategies for text comprehension: Focus on poor comprehenders. *Reading and Writing: An Interdisciplinary Journal*, *18*, 755-876.

Lesaux, N.K., Lipka, O., & Siegel, L.S. (2006). Investigating cognitive and linguistic abilities that influence the reading comprehension skills of children from diverse linguistic backgrounds. *Reading and Writing: An Interdisciplinary Journal, 19*(1), 99-131.

Lucangeli, D., Galderisi, D., e Cornoldi, C. (1995). Specific and general transfer effects following metamemory training. *Learning Disabilities Research and Practice, 10*, 11-21.

Meneghetti, C., Carretti, B. e De Beni, R. (2006). Components of reading comprehension and scholastic achievement. *Learning and Individual Differences, 16,* 291-301.

Nation, K., Adams, J. W., Bowyer-Crane, C. A., & Snowling, M. J. (1999). Working memory deficits in poor comprehenders reflect underlying language impairments. *Journal of Experimental Child Psychology, 73,* 139-158.

Nation K., Clarke P., Marshall C.M., Durand M., (2004). Hidden language impairments in children: parallels between poor reading comprehension and specific language impairment? *Journal of Speech Language & Hearing Research, 47,* 199-211.

Nation K., Clarke P., Snowling M., (2002). General cognitive ability in children with reading comprehension difficulties. *British Jounral of Educational Psychology, 72,* 549-560.

Nation K., Cocksey J., Taylor J. S. H. e Bishop, D. V. M. (2010). A longitudinal investigation of early reading and language skills in children with poor reading comprehension. *Journal of Child Psychology and Psychiatry, 51*,1031–1039.

Nation, K., & Snowling, M. (1997). Assessing reading difficulties: the validity and utility of current

measures of reading skill. *British Journal of Educational Psychology,* 67, 359–370.

Nesi, B., Levorato, M.C., Roch, M. & Cacciari, C. (2006). To break the...embarrassment: Text comprehension skills and figurative competence in skilled and less-skilled text comprehenders. *European Psychologist, 11*, 128-136.

Oakhill, J., Hartt, J., & Samols, D. (2005). Levels of comprehension monitoring and working memory in good and poor comprehenders. *Reading and Writing, 18*, 657-686.

Palincsar, A. S. & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction, 1*, 117-175.

Palladino, P., Cornoldi, C., De Beni, R., & Pazzaglia, F. (2001). Working memory and updating processes in reading comprehension. *Memory and Cognition, 29*, 344-354.

Pimperton, H., & Nation, K. (2010). Suppressing irrelevant information from working memory: Evidence for domain-specific deficits in poor comprehenders. *Journal of Memory and Language, 62*, 380-391.

Shankweiler, D. (1989). How problems of comprehension are related to difficulties in word reading. In: D. Shankweiler & I. Y. Liberman (eds.), *Phonology and reading disability: Solving the reading puzzle* (pp. 35–68). Ann Arbor, MI: University of Michigan Press.

Stothard, S. E., & Hulme, C. (1992). Reading comprehension difficulties in children: The role of language comprehension and working memory skills. *Reading and Writing, 4,* 245-256.

Swanson, H. L., Howard, C. B., & Sáez, L. (2006). Do different components of working memory underlie different subgroups of reading disabilities? *Journal of Learning Disabilities, 39*, 252-270.

Yuill, N., & Oakhill, J.V. (1988). Effects of inference training on poor reading comprehension. *Applied Cognitive Psychology*, *2*, 33–45.

Yuill, N., & Oakhill, J.V. (1991). *Children's problems in textcComprehension. an experimental investigation*. Cambridge: Cambridge University Press.

Yuill, N., & Joscelyne, T. (1988). Effect of organizational cues and strategies on good and poor comprehenders' story understanding. *Journal of Educational Psychology*, *80*, 152–158.

Yuill, N. M., Oakhill, J. V., & Parkin, A. J. (1989). Working memory, comprehension skill and the resolution of text anomaly. *British Journal of Psychology, 80*, 351–361.

Reading Comprehension: Nature, Assessment and Teaching

The goal of reading is understanding. In order to understand print, a child must be able to decode the words on the page and to extract meaning. A large body of research focuses on how children learn to decode text and how best to foster children's decoding skills. In contrast, we know much less about the process of reading comprehension in children. In this booklet we first consider what is required in order to 'read for meaning'. We then move on to discuss children who have difficulties with reading comprehension. Our aim is to enable teachers to assess individual differences in reading and to foster the comprehension strategies that characterize fluent reading.

The Simple View of Reading

The introduction of the National Literacy Strategy in English schools in 1998 recommended that schools deliver a structured teaching programme of literacy through a daily literacy hour. Subsequently in 2006, the Independent Review of the Teaching of Early Reading chaired by Sir Jim Rose, recommended that the teaching of systematic phonics should be mandatory within a 'broad and rich language curriculum'. It is this broad and rich language curriculum that is fundamental to the development of good reading comprehension. The implementation of this review used as a framework the Simple View of Reading, depicted in Figure 1.

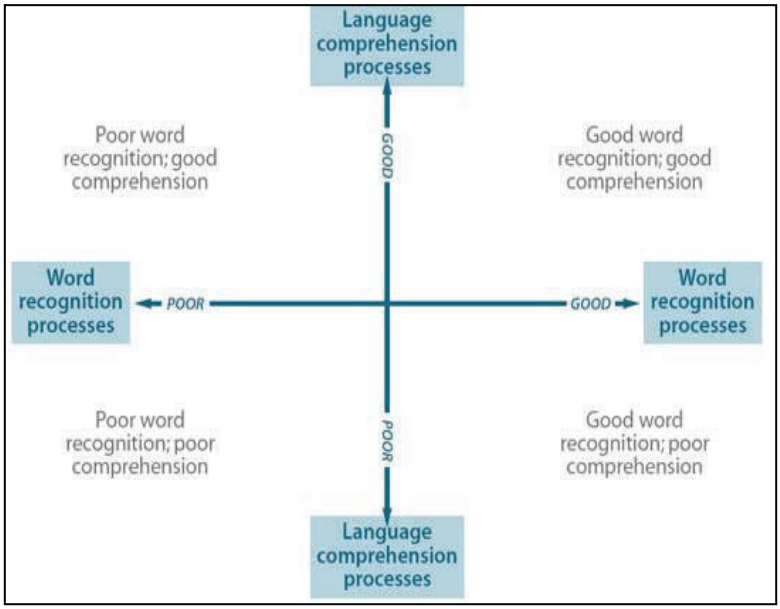

Figure 1: The Simple View of Reading

The Simple View of Reading makes clear that two relatively separate skills underlie variations in reading development: word recognition skills (depicted on the horizontal axis) and language comprehension processes (depicted on the vertical axis).

As Figure 1 shows, a person's reading competence depends upon both of these skills: typical fluent readers are shown in the upper right quadrant with good word recognition and comprehension skills, while children with dyslexia are shown in the upper left quadrant (poor word recognition, and good comprehension).

Children with comprehension difficulties fall in the lower half of the figure. Poor reading comprehension can occur either in combination with poor word recognition or when word recognition skills are well developed. If a young child cannot decode a word accurately, s/he cannot comprehend that word. Consider the difference in meaning between *'He thought the girl was very pretty'* and *'He thought the girl was very petty'*, two sentences that differ by only a single letter. Accurate decoding of words is necessary for access to meaning.

However, it is children who can decode well but still have comprehension difficulties (lower right quadrant) that are the focus of this booklet. Such children often go unnoticed in the classroom because their difficulties are 'hidden' behind their seemingly 'fluent' reading. We refer to these children as 'poor comprehenders'.

What is comprehension?

Comprehension is the goal of both reading and listening. Successful comprehension enables readers (or listeners) to acquire information, to experience and be aware of other worlds (including fictional ones), to communicate successfully, and to achieve academic success.

Good reading comprehension involves reading the words on the page, accessing their meanings, computing the sense of each sentence and much else as well. To understand text in a meaningful way, readers need to integrate the meanings of successive sentences and to establish *local coherence*. Readers also need to establish how the information fits together as a whole, that is, *global coherence*. For both local and global coherence, readers need to incorporate background knowledge and ideas (retrieved from long-term memory) to make sense of details that are only implicit (see Box 1).

Box 1 : Local and Global Coherence

The importance of local and global coherence and the role of background knowledge are well illustrated in by this short text, modified from Trabasso and Suh (1993):

> Betty wanted to give her mother a present (1).
> She went to the department store (2).
> She found that everything was too expensive (3).
> Betty decided to knit a sweater (4).

One way to establish local coherence is through *pronoun resolution*. In the above text, the pronoun "she" in sentences 2 and 3 refers back to the protagonist "Betty", who was introduced in the first sentence. The pronoun links the two sentences and enables their meanings to be integrated. Local coherence alone is often not sufficient to understand the overall meaning of the text. Why did Betty decide to knit a jumper? This sentence is anomalous unless the reader makes the *causal inference* that the jumper will be the present that Betty gives to her mother. The role of general knowledge in successful comprehension is demonstrated by sentences 2 and 3: general knowledge about the conventions of buying and selling and where to purchase presents is needed to make sense of these two sentences.

Thus, the product of successful comprehension is a representation of the state of affairs described in the text. This representation includes causal relations between the events, the goals of the characters (protagonists), and spatial and temporal information that is relevant to the story line. Models of skilled comprehension refer to this representation as a mental model or situation model. These meaning-based representations are not unique to reading comprehension: they are the product of successful comprehension of spoken discourse as well.

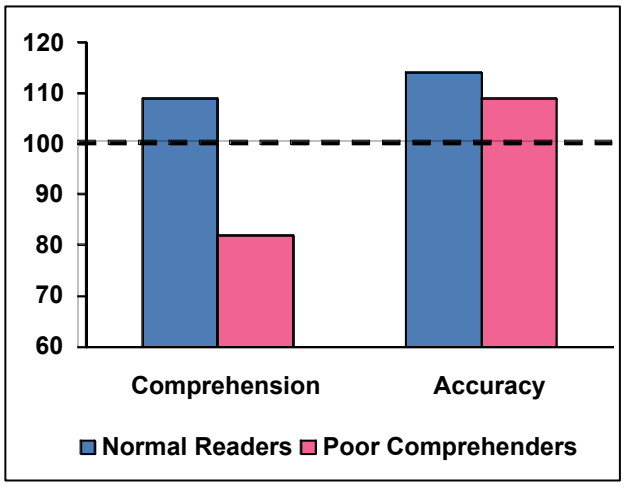

Figure 2: Reading profiles of poor comprehenders and normal readers. Dotted line represents average performance.

Characteristics of poor comprehenders

Poor comprehenders comprise up to 10% of 7 to 11-year-olds in UK schools. Children with a similar profile of reading ability (see Figure 2) are the subject of international studies and it is noteworthy that the 'poor comprehender' profile is observed not only in English but also in more regular languages that are 'easier' to decode (such as Italian).

Listening comprehension is an important foundation for reading comprehension: children use many of the same processes when reading text as they do to understand stories read aloud to them. It follows that the comprehension difficulties experienced by poor comprehenders extend beyond the written word: their comprehension of spoken texts and their ability to produce coherent narratives is poor.

In contrast to children with dyslexia-related difficulties, poor comprehenders do not show difficulties on tests of phonological awareness or in the speed and automaticity with which they can decode single words or nonwords. Some studies have demonstrated that poor comprehenders use sentence context less when reading than good comprehenders, and they have some subtle difficulties reading unfamiliar exception words (e.g. *month* and *mould*). However, none of these word-level problems account for their comprehension difficulties.

Poor comprehenders experience a range of difficulties both in the metacognitive skills and control processes that aid the construction of a mental representation of text and in some of the oral language processes that underpin these; many poor comprehenders also have limited working memory capacity (see Box 2). In addition, it is thought that poor comprehenders adopt a lower *standard of coherence*, that is, they are more likely to accept a lack of consistency within a text than those who comprehend well. Indeed it is likely that a number of different cognitive profiles are associated with the behavioural manifestations of 'poor reading comprehension'.

Oral Language Skills	Vocabulary; Grammar / Syntax; Oral expression
Higher-level Language Skills	Narrative skills; Figurative Language; Discourse processes
Metacognitive Strategies	Integration and inference making; Use of cohesive devices and context; Knowledge of Story Conventions and Structures; Comprehension monitoring
Executive Processes	Verbal working memory; Suppression/inhibition

Box 2: Common areas of difficulty for poor comprehenders (for a fuller account see Cain & Oakhill (2007) and Nation (2005)).

Assessing Reading Comprehension

A large number of reading comprehension assessments are available. We offer some general principles regarding the assessment of comprehension skills.

1. Reading comprehension is not a unitary construct but a complex skill dependent on a number of cognitive processes. To understand written text, a child needs to decode printed words and to access their meanings; relevant background knowledge needs to be activated, and inferences have to be generated as information is integrated during the course of reading. In addition, control processes monitor both ongoing comprehension and the internal consistency of text, allowing the reader to initiate repair strategies if comprehension breakdown is detected (at the simplest level, re-reading a section of the text). The complexity of reading comprehension presents challenges for assessment, especially as many of the cognitive processes that contribute to reading comprehension are covert and therefore cannot be directly observed or measured.

2. The Simple Model shows that children may be at risk of reading comprehension failure because of difficulties with word-level decoding accuracy and fluency, with linguistic comprehension, or with both. A thorough assessment should include tests designed to measure both decoding and comprehension. Decoding is much simpler to assess than comprehension and certainly unless they have a reasonable level of decoding skill, a child will struggle to comprehend text. However, it is important always to remember that successful decoding is no guarantee that successful comprehension will follow; in the extreme case of '*hyperlexia*' a child's decoding far outstrips their comprehension and such children have been said to 'bark at print'.

3. Tests of reading comprehension vary in terms of the nature of text that the child reads, and the response format via which comprehension is measured (see Box 3). Some texts are as short as a single sentence whereas others contain extended passages comprising a number of paragraphs. Some texts are read silently whereas others are read aloud. Of those that are read aloud, some allow for reading errors to be corrected by the tester. Different response formats include multiple-choice, true-false judgements, sentence completion, open question-answer and story-retell. Across all response formats, the nature of the question varies substantially with some items being more or less dependent on decoding, specific vocabulary, background knowledge and the particular type of inference needed. Tests also vary with respect to the load they place on cognitive resources such as working memory.

	Neale Analysis of Reading Ability (NARA-II): NFER-Nelson	**York Assessment of Reading for Comprehension (YARC) Primary: GL Assessment**	**Suffolk Reading Scale: NFER-Nelson**	**Group Reading Test (GRT 2): NFER-Nelson**
Age Range	Age 6-12 yrs	Age 4 to 11yrs	Age 6-14;11 yrs	Age 6-14 yrs
Administration				
Group			x	x
Individual	x	x		
Reading				
Silent			x	x
Aloud (feedback)	x	x		
Text				
Simple sentence			x	x
Short passage	x	x		x
Extended passage	x	x		
Response Format				
Cloze			x	x
Multiple-choice				x
Short answer	x	x		
Measures	Accuracy Comprehension Reading Rate	Accuracy Comprehension Reading Rate	Reading Comprehension	Reading Comprehension
Strengths	Assesses sentence level and text-level comprehension. Taps memory for literal information and inferencing skills.	Assesses word, sentence - and text-level comprehension. Taps a range of different types of inference.		
Limitations	Pupil receives feedback to bootstrap decoding. Some questions can be answered verbatim with reference to text. Reading rate confounded with accuracy.	Pupil receives feedback to bootstrap decoding. Reading rate confounded with accuracy.	Substantial load on decoding skill. Does not assess text-level comprehension strategies.	Substantial load on decoding skill. Focus is on sentence-level comprehension strategies (local coherence)

Box 3: Some commonly used measures of reading comprehension

4. Since tests of reading comprehension vary in task demands, it is important to be clear that the nature of the assessment influences which children may be identified – or fail to be identified – as having comprehension impairments. Some tests that are marketed as measures of reading comprehension are in fact very highly dependent on decoding. Hence, children can fail because they have decoding rather than specific comprehension difficulties or, on the other hand, some children may pass leaving their comprehension impairments undetected. Indeed, some children perform well on tests of reading comprehension that measure sentence-level comprehension yet have quite substantial comprehension impairments when reading extended discourse. Another common problem with many comprehension tests is that certain questions can be answered correctly using background knowledge (without the text having to be read). Thus, some children's reading comprehension difficulties may be masked because they can rely on general knowledge to answer the comprehension questions while conversely, children with low levels of background knowledge may be penalized.

5. Given the complexity of comprehension, it seems likely that children may fail to understand what they have read for a variety of different reasons. Thus, a comprehensive assessment should include measures of decoding accuracy and fluency, oral language, general cognitive resources and working memory as well as reading comprehension. In addition, every effort should be made to assess comprehension of extended text or discourse, not just word- or sentence-level comprehension.

Identifying Poor Comprehenders

The 'gold standard' for the identification of a poor comprehender (i.e. someone with specific reading comprehension difficulties) is the individual administration of a test of reading comprehension. When teachers are hearing children read, they should routinely ask them a few questions to probe their understanding; for example, *What do you think the main character felt like? Why do you think that happened? What do you think will happen next?* If a child who, despite being a good reader/speller, has difficulty in answering such questions, then it is recommended they use the Neale Analysis of Reading Ability (NARA-II), or the more recently standardized York Assessment of Reading and Comprehension (YARC) to provide a full assessment of such children's reading skills: their prose reading accuracy, fluency and comprehension. Observation of children's behaviour during the test will shed light upon their ability to monitor comprehension, and to self-correct, as well as their use of 'look-back' strategies during the questioning. Finally, a qualitative analysis of their responses can be helpful in providing insight into the nature of their difficulties, especially with inferences.

In the early phases of reading instruction, the emphasis is typically on phonics and the development of decoding skills. It is difficult at this stage to obtain reliable estimates of reading comprehension. However, it is wise to monitor the development of children's vocabulary and their listening skills early on, because slow development of these skills can signal likely future reading comprehension difficulties.

Developing Reading Comprehension Strategies

A meta-analysis conducted by the US National Reading Panel (2000) highlighted teaching techniques that have been shown to be effective in promoting reading comprehension:

- Comprehension monitoring
- Graphic/semantic organisers (diagrams) for learning new vocabulary
- Story structure training focusing on plots, characters and main events
- Question answering
- Question generation
- Summarisation (identifying and integrating details to create a coherent and succinct summary of a text)
- Multiple strategy teaching.

Box 4
Reciprocal Teaching (RT)

RT refers to an instructional activity that takes place in the form of a dialogue between teachers and students regarding segments of text

The teacher and students take turns assuming the role of the teacher in this dialogue

The dialogue is structured by the use of four strategies:

Clarifying

Question Generating

Summarising

Predicting

One approach that brings together many of these techniques is *Reciprocal Teaching*, which has been the basis of many of the later interventions. This form of multiple strategy teaching is based around discussion between children and a tutor. To begin with the activities are highly scaffolded; as skills develop the children take more of a lead and the input from the tutor is reduced (see Box 4).

Interventions for Poor Comprehenders

A number of small-scale training studies provide evidence that reading comprehension can be improved in poor comprehenders.

Strategies include training in:

- Inferencing and monitoring skills
- Lexical inference resolution, question generation and prediction
- Mental imagery encouraging children to make representational and transformational pictures in their minds
- Visualizing and Verbalising

A recent large scale randomized controlled trial, the '*READing for MEaning*' project http://www.york.ac.uk/res/crl/readme.html compared **three** different approaches to ameliorating the reading comprehension difficulties of poor comprehenders:

- Text Comprehension (TC) comprised work on inferencing, metacognition and *RT* to develop strategies to support text comprehension and production.

- Oral Language (OL) focused on training children's strategies for understanding and producing spoken language. It used a listening version of *RT* as a core technique, linking to activities that targeted key areas of oral language, namely vocabulary, figurative language and spoken narrative (see Figure 3 for example).

- Combined (COM) made explicit links between written and spoken language and highlighted strategies that could be used across both domains. It integrated all components from the other two approaches so that, for example, new vocabulary was introduced for use in both written and spoken contexts.

Each of these programmes, delivered by trained teaching assistants as part of a 20-week intervention was effective in bringing about significant gains in reading comprehension. Strikingly, one year after the intervention finished, the children who received the OL programme were ahead of the other groups not only maintaining their gains, but also increasing their comprehension skills further.

Gains in reading comprehension have positive effects not only on children's attainments but also on their enjoyment of reading and on their self-esteem. It is vitally important to be aware of individual differences in reading comprehension in children of all ages, to identify early children who are falling behind their peers and to put interventions in place.

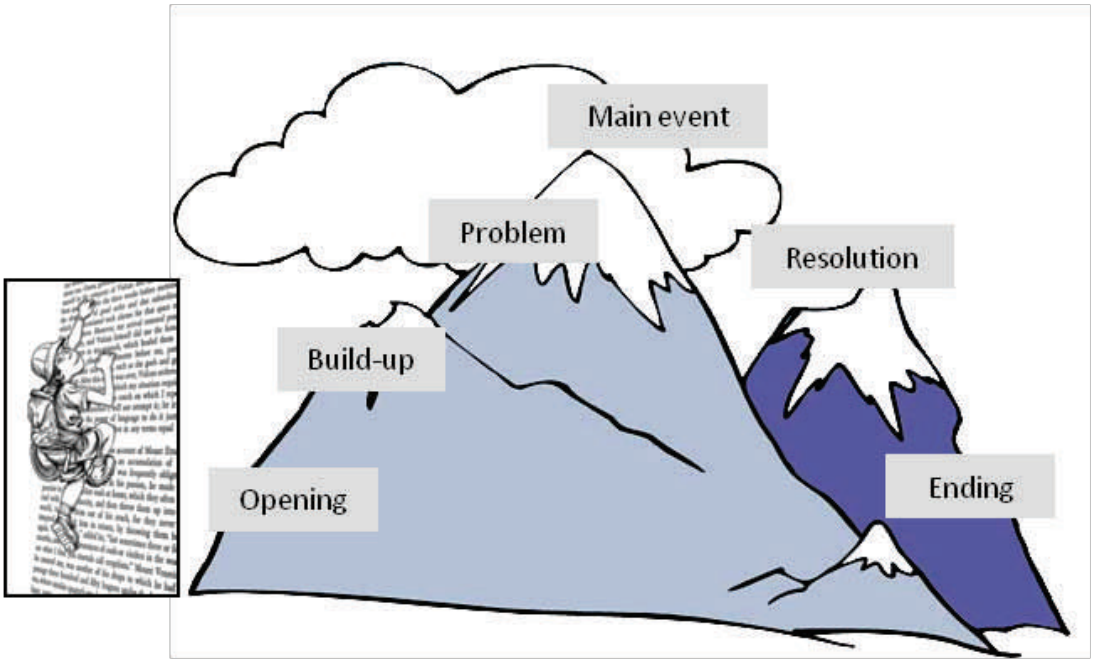

Figure 3: Example of an activity to support story structure (from the READMe project)

Further Reading

Cain, K. and Oakhill, J.V. (2006). Assessment matters: Issues in the measurement of reading comprehension. *British Journal of Educational Psychology,76 (4),* 697-708.

Cain, K. and Oakhill, J.V. (2007). Reading comprehension difficulties: correlates, causes, and consequences. In Cain, K. and Oakhill, J.V. (Eds). *Children's comprehension problems in oral and written language*. Guilford Press.

Independent Review of the Teaching of Early Reading, Department for Education and Skills, 2006.

Keenan, J. M., Betjemann, R. S., & Olson, R. K. (2008). Reading comprehension tests vary in the skills they assess: Differential dependence on decoding and oral comprehension. *Scientific Studies of Reading, 12*, 281-300.

Nation, K. (2005). Children's reading comprehension difficulties. In M. J. Snowing & C. Hulme (Eds.) *The Science of Reading: A Handbook* (pp. 248-266). Oxford: Blackwell.

Nation, K. (2006). Assessing children's reading comprehension. In M.J. Snowling and J. Stackhouse (Eds.), *Dyslexia, Speech and Language: A Practitioner's Handbook.* Whurr.

POSTnote 'Teaching Children to Read' Parliamentary Copyright 2009. The Parliamentary Office of Science and Technology, 7 Millbank, London, SW1P 3JA; Tel: 020 7219 2840 **www.parliament.uk/parliamentary_offices/post/pubs2009.cfm**

Snowling, M.J., Stothard, SE., Clarke, P., Bowyer-Crane, C., Harrington, A., Truelove, E., Nation, K., & Hulme, C. (2009) *YARC York Assessment of Reading for Comprehension. Passage Reading*. GL Publishers.

Yuill, N., & Oakhill, J. (1991). *Children's problems in text comprehension: An experimental investigation.* Cambridge: CUP.

This booklet was compiled following the ESRC Seminar Series 'Reading Comprehension: From Theory to Practice' and is a collaboration between research groups at the Universities of York, Oxford, Lancaster and Sussex

LCD
Language and Cognitive Development

LANCASTER UNIVERSITY

THE UNIVERSITY of York

US
University of Sussex