

Conti-Ramsden, G. & Durkin, K. (2008) Language and independence in adolescents with and without a history of specific language impairment (SLI). *Journal of Speech, Language and Hearing Research*, **51**, 70-83.

## **Abstract**

### **Purpose:**

Achieving behavioural independence is a key task of adolescent development. This 1 article of a companion set of 2 (the 2<sup>nd</sup> addressing the topic of parental perspectives) presents an investigation of the impact of language ability on independence.

### **Method:**

Longitudinal and follow-up data from 120 adolescents with a history of specific language impairment (SLI), as well as concurrent data on a comparison group of 118 typically developing (TD) young people, are reported. Parental and self-report measures were used to examine independent functioning related to everyday living at the end of compulsory education (16 years of age).

### **Results:**

Adolescents with SLI are less independent than their TD peers, and level of independence is associated with poor early language and poor later literacy skills.

### **Conclusion:**

Language and literacy play a larger role in adolescent independent functioning than nonverbal abilities in both TD adolescents and adolescents with SLI.

## **Address for correspondence:**

Professor Gina Conti-Ramsden, Division of HCD, School of Psychological Sciences, Ellen Wilkinson Building, University of Manchester, Oxford Road, Manchester, M13 9PL, UK

## **Acknowledgements**

We gratefully acknowledge the support of the Nuffield Foundation (Grants AT 251 [OD], DIR/28, and EDU 8366) and the Wellcome Trust (Grant 060774), all awarded to the first author. Thanks to Zoë Simkin for help with database management and analysis, the research assistants who were involved with data collection, and the schools and families who gave their time so generously.

From a developmental perspective, the primary focus of language research has been on infancy and early childhood, with considerably less attention paid to adolescence and early adulthood (Owens, 2004). Yet language continues to develop through adolescence (Nippold, 1998), and young people continuously need to draw on their language resources as they deal with the myriad challenges of the transition into the adult world (Feldman & Rosenthal, 2000; Fortman, 2003; Leftkowitz, Boone, Sigman, & Au, 2001; Smetana, Metzger, Gettman, & Campione-Barr, 2006). Language is an integral part of being human – in particular, of being social. It enables us to make contact with others; to organize, manage, and evaluate our experiences; to influence and inform; and to negotiate our place in the larger environment (Durkin, 1995). Thus, language abilities are important not only in their own right as key developmental achievements but also in terms of their implications for and connections with other aspects of development. In this article and its companion article (also in this issue; Conti-Ramsden, Botting, & Durkin, 2008), we investigate parental views of adolescents' current independence (the present article) and parental perspectives of their adolescents' transition to adult life, including issues related to independence (companion article). In the study reported here, we specifically investigate the relationship

between language development and the attainment of behavioral independence in adolescence. In particular, we examine the consequences of a developmental history of language impairment on young people's ability to manage independently the demands of everyday life with a particular emphasis on activities outside the home.

The achievement of personal autonomy has long been recognized as a fundamental task of adolescent development (Erikson, 1968; Freud, 1958; Steinberg & Silverberg, 1986; Zimmer-Gembeck & Collins, 2003). Most contemporary researchers agree that autonomy is multidimensional, entailing behavioral, cognitive, and affective components (Zimmer-Gembeck & Collins, 2003). Our concern here is with aspects of behavioral autonomy: the capacity for self-regulation, self-governance, the formulation and pursuit of goals, and the successful execution of personal decisions (Feldman & Rosenthal, 1991; Noom, Deković, & Meeus, 2001). These skills underpin the practical aspects of entry into the adult world and are crucial in establishing independence, in due course facilitating occupational paths and independent living arrangements (Arnett, 2000).

Behavioral autonomy as it relates to independence thus covers a number of different skills. These skills are likely to be affected by a young person's language ability. For example, young people need to be able to define their own goals and their personal aims prior to executing these goals (Noom et al., 2001). Language is likely to be involved in both the formulation of goals and their successful execution. Interestingly, though—perhaps because language is transparent (integral to most human activity)—its role in the achievement of behavioral autonomy has been neglected. This is despite extensive research illuminating the importance of social interactions and interpersonal relations to the development of autonomy (Zimmer-Gembeck & Collins, 2003).

---

## Specific Language Impairment (SLI) and Independence

Many adolescents with SLI are at risk of reaching the end of their secondary (high school) education with poor educational and social attainments (e.g. Conti-Ramsden & Botting, 2004; Stothard, Snowling, Bishop, Chipchase, & Kaplan, 1998). This likely will limit the opportunities for at least some individuals with SLI to develop independence. Establishing independence in adolescence is linked in turn to the longer term development of career interests and competencies; young people who develop autonomy successfully in a family context tend to attain more successful outcomes outside the family, including more prestigious employment (Bell, Allen,

Hauser, & O'Connor, 1996). Independence is a fundamental value in society, and lack of independence has both personal and social costs (see Clegg & Henderson, 1999, for a discussion of economic costs of SLI from childhood to adult life).

Preparedness for adult life has been the focus of research with clinical groups with more obvious learning and physical disabilities (Blomquist, Brown, Peersen & Presler, 1998; Sloper & Turner, 1996), but in the case of SLI, there is a dearth of research in the area of independence in the transition to adulthood. Haynes and Naidoo (1991) followed up 34 students who had attended a specialist residential school for children with severe SLI. They found that the majority (85%) of young adults still lived at home with their parents or had poor employment, and 64% were either in unskilled/semiskilled jobs or were unemployed. In the same vein, Howlin, Mawhood, and Rutter (2000) found that among 19 young adults with a history of severe receptive language disorders, only 32% were living independently in their mid-20s (with the figure increasing to 41% when they were in their mid-30s; Clegg, Hollis, Mawhood, & Rutter, 2005). Employment among this group was also poor, with three-quarters of the young adults having manual or unskilled occupations and with records of long periods of unemployment between jobs. In contrast, Records, Tomblin, and Freese (1992) found that among 29 young adults with SLI (between 17 and 25 years of age), 85% were employed and felt satisfied with their job and living situation. Felsenfeld, Broen, and McGue (1994) also found general satisfaction with occupational outcomes in 28 young adults in their mid-30s with a history of speech and language disorders.

Thus, the few longer-term investigations to date tend to focus on what Felsenfeld et al. (1994) refer to as *objective status domains*, such as occupational status and work records in adulthood. Little is known about independence skills in adolescents with SLI that may form the foundation for adult behavioral autonomy. As mentioned previously, these would include activities that reflect the capacity for self-regulation, self-governance, the formulation and pursuit of goals, and the successful execution of personal decisions (Feldman & Rosenthal, 1991; Noom et al., 2001).

In addition, there appears to be heterogeneity of outcomes related to independence in adults with SLI. However, little is known about the potential predictors of such individual differences. There is evidence of an association between early language abilities and later outcome in individuals with autism spectrum disorders (Howlin et al., 2000; Szatmari, Bryson, Boyle, Streiner, & Duku, 2003). In the case of Down syndrome, Sloper and Turner (1996) found that early level of cognitive development was the strongest predictor of later

social-independent functioning. Howlin et al. (2000) found little association between measures of childhood language functioning and adult social-occupational outcomes in a group of young adults with severe receptive language deficits, but their sample was relatively small ( $N = 19$ ); given the heterogeneity of SLI, it is important to examine outcomes in larger samples. Overall, then, although developmental disorders clearly place individuals at risk of poorer outcomes in adult occupational standing, in the case of SLI, studies are few, these studies tend to be based on small sample sizes, and the picture is unclear. This state of affairs has limited the potential for developing our understanding of the possible role of language on independent functioning.

## The Present Study

Within this context, the present study aimed to determine the level of independence achieved by adolescents with and without a history of SLI in their last year of compulsory education; self-reports and parental reports were obtained. Because language is integral to most everyday interactions with the social environment and is critical to the formulation and implementation of most behavioral strategies, we expected that individuals with histories of language disorder would be disadvantaged with respect to independence and hence should lag behind their typically developing (TD) peers. In addition, we expected that the severity of current language disorder should contribute to the explanation of variance in independence—that is, over and above likely effects due to nonverbal intelligence. Furthermore, because SLI is identifiable earlier in development and in many cases is an enduring problem, it was also important to determine whether the severity of the disorder in childhood can help predict the likelihood of lower levels of independence in adolescence. Drawing on longitudinal data, we expected that language scores at age 7 years should predict independence in the teenage years, over and above the likely contribution associated with an early measure of nonverbal intelligence. Finally, we considered one possible manifestation of a failure to achieve successful independence, namely getting into trouble with authorities such as the school and the police. In light of previous findings that language difficulties are associated with behavioral problems and poorer social relations (Beitchman, Wilson, Brownlie, Walters, Inglis, & Lancee, 1996; Conti-Ramsden & Botting, 2004; Durkin & Conti-Ramsden, 2007), we expected that the young people with SLI would be more likely than TD youth to have experienced sufficiently serious problems in these contexts for the problems to have been drawn to parental attention; if this is so, then again we would expect negative outcomes to be associated with severity of disorder.

In addition, the relative neglect of those with SLI in the study of independence and other aspects of behavioral functioning may be at least partly due to the fact that SLI has traditionally been considered a disorder of language with other areas of functioning remaining unimpaired. This theoretical assumption, known as *residual normality*, has been challenged recently (Karmiloff-Smith, 1998; Thomas & Karmiloff-Smith, 2002). Evidence is beginning to emerge suggesting that through development, the presence of language difficulties can affect other areas of functioning—for example, visuospatial abilities, which may not be directly related to language (Hick, Botting, & Conti-Ramsden, 2005; Hoffman & Gillam, 2004). Within this context, the investigation of independence in young people with SLI in this study affords a theoretically interesting opportunity to gather evidence regarding the condition of SLI itself: Is SLI primarily a language problem, a “pure” disorder with associated difficulties that directly relate to language? Or is SLI a developmental condition with associated problems in a number of areas, some of which are not directly related to language?

## Method

### Participants

*Adolescents with SLI.* The participants in this investigation were originally part of a wider study: the Conti-Ramsden Manchester Language Study (Conti-Ramsden & Botting 1999a, 1999b; Conti-Ramsden, Crutchley, & Botting, 1997). This cohort was recruited from 118 language units attached to English mainstream schools. These language units provided a list of year 2 children attending for at least 50% of the week. Across England, approximately 500 children fit this criterion. All language units were asked to participate, and two units declined this invitation. Subsequently, approximately half of the eligible children in each unit were randomly sampled. This resulted in an initial study cohort of 242 children. The age range was 7;5 (years;months) to 8;9 and consisted of 186 boys (76.9% of the cohort) and 56 girls (23.1% of the cohort). These children were reassessed as part of the original study at 8, 11, 14, and 16 years of age.

From the original cohort of 242 children, 139 (57.4%) agreed to participate in the present stage of the study. Of those who did not take part, contact had been lost with 51 children (21.1%), and 52 children (21.5%) did not consent to take part. There were no significant differences on any psycholinguistic test at 7 years between those individuals who did agree to participate and those individuals who did not agree to participate in this study. Adolescents were then selected for participation in the present stage study based on longitudinal data showing

that all adolescents met criteria for SLI at least at one time point (7, 8, 11, or 14/16 years). Criteria were as follows:

1. Performance IQ (PIQ) of 80 or more and at least one concurrent standardized language test score  $>1 SD$  below the population mean at one of the longitudinal assessment stages.
2. No sensorineural hearing loss.
3. English as a first language.
4. No record of a medical condition likely to affect language.

In addition to the SLI criteria above, participants in this stage of the study were also required to have complete adolescent and parent questionnaires. In total, there were 120 adolescents with SLI (72.5% male, 27.5% female) aged between 15;2 and 16;9 ( $M = 15;9$ ).

*TD adolescents.* A comparison group of adolescents from a broad background participated in the study. Census data as per the 2001–2002 General Household Survey (Office of National Statistics) were consulted to target adolescents who would be representative of the range and distribution of households in England in terms of household income and maternal education. Initially, TD adolescents from the same schools as the participating adolescents with SLI were targeted. This was followed by a second wave targeting schools in areas where we required more representation in terms of particular household income/maternal education brackets.

TD adolescents were matched in terms of age and socioeconomic status (SES; household income and maternal education) to the sample with SLI described earlier. These TD adolescents had no history of special educational needs or speech and language therapy provision. There were 118 TD adolescents (64% male, 36% female) aged between 15;2 and 16;7 ( $M = 15;11$ ).

All adolescents (SLI and TD) were attending their last year of compulsory secondary education. There was no significant difference in the sex ratio of males to females between the two groups,  $\chi^2(1, N = 238) = 1.81, p = .179$ .

*Participants' SES background.* Data were collected from the participants' parents to ascertain levels of maternal education (minimal to degree level; see Table 1) and household income (<£5,200 to >£52,000 per annum; see Table 2).

No significant differences were found between TD adolescents and adolescents with SLI in maternal education levels,  $\chi^2(2, N = 234) = 1.76, p = .416$ , or household income bands,  $\chi^2(3, N = 235) = 4.39, p = .222$ . Importantly, therefore, the TD adolescents were similar to the adolescents with SLI in terms of SES indicators. Further, the household income of both groups ranged from the lowest bracket found in the 2001–2002 General Household Survey (Office of National Statistics) to the highest bracket and thus was representative of the range of

**Table 1.** Maternal education levels of adolescents with specific language impairment (SLI) and typically developing (TD) adolescents.

Maternal education level	Mothers of adolescents with SLI ( $n = 117$ )	Mothers of TD adolescents ( $n = 117$ )
	%	%
No educational qualifications	23.9	17.1
GCSE/O-levels/A-levels/college	62.4	66.7
University/polytechnic/postgraduate education	13.7	16.2

Note. GCSE = General Certificate of Secondary Education; O-levels = ordinary levels; A-levels = advanced levels.

household income distribution found in England as a whole. This is a particular strength of the study, as the comparison TD group came from a broad socioeconomic spectrum (see also the Results section for current language status of TD adolescents).

## Tests and Materials

### Concurrent Battery at 16 Years (Adolescents With SLI and TD Adolescents)

*Receptive and expressive language.* Receptive language was assessed using the Word Classes subtest of the Clinical Evaluation of Language Fundamentals–Revised (CELF-R; Semel, Wiig, & Secord, 1987). In this test, the child is required to identify two words that are related by semantic class, opposites, spatial features, or temporal features from a list of four words read aloud by the examiner.

Expressive language was assessed using the Recalling Sentences subtest of the CELF-R. This subtest is designed to assess recall and reproduction of surface structure as a function of syntactic complexity. The child is required to repeat sentences of increasing complexity given verbally by the tester.

**Table 2.** Household income bands collapsed (£ per annum) of adolescents with SLI and TD adolescents.

Income band	SLI households ( $n = 117$ )	TD households ( $n = 118$ )
	%	%
5,200 or less–10,400	17.1	12.7
10,401–20,800	29.9	24.6
20,801–36,400	31.6	29.7
36,401–52,000 or more	21.4	33.0

Thus, receptive and expressive language skills were measured by single tasks that formed part of a longer assessment (i.e., CELF-R). These specific subtests were chosen because they are used widely in the literature and are considered good indicators of these skills (Conti-Ramsden, Botting, & Faragher, 2001; Gillon & Dodd, 2005; Stothard et al., 1998). We were also mindful of the length of the sessions for the TD participants. The adolescents with SLI did receive a full CELF-R assessment, including all the subtests for both the expressive scale (Formulated Sentences, Recalling Sentences, and Sentence Assembly) and the receptive scale (Oral Directions, Word Classes, and Semantic Relationships). Given the availability of these data, we repeated all the analyses involving the SLI group using the full CELF-R measures. The results reported below were unchanged—that is, there was no further contribution of language (expressive or receptive) to any of the analyses when the full scales were used versus the single subtests. Thus, the article reports findings involving the single subtests, as this was the common measure across groups.

*Reading.* Reading comprehension was assessed by the Reading Comprehension subtest of the Wechsler Objective Reading Dimensions (WORD; Wechsler, 1993) test. This measure is a series of printed passages and orally presented questions designed to tap skills such as recognizing stated detail and making inferences. The child reads a passage and is then verbally asked a question by the tester. This subtest was selected because it was thought to tap skills that were likely to affect the ability of young people to function outside the home—for example, reading timetables or menus.

*Nonverbal ability.* PIQ was assessed using the full form of the Wechsler Intelligence Scale for Children (WISC-III; Wechsler, 1992). This widely used assessment comprises Picture Completion, Coding, Picture Arrangement, Block Design, and Object Assembly subtests.

### **Early Battery at 7 Years (Adolescents With SLI Only)**

Receptive language was assessed using the Test for Reception of Grammar (TROG; Bishop, 1982); expressive language was assessed using the Bus Story Test (BS; Renfrew, 1991); nonverbal ability was assessed using Raven's Coloured Progressive Matrices (Raven, 1986); and reading was assessed using the British Ability Scales—Word Reading subtest (BAS-wr; Elliot, 1983).

### **Independence Measures: Adolescent and Parent Interviews**

Measures of independence were selected items from the wider Adolescent Questionnaire and Parent Questionnaire (both devised for the present study). The areas covered and items included in these questionnaires

were developed to examine relevant areas of development in the transition to adulthood.

There were 11 items on the Parent Questionnaire concerning independence. Seven of these items were also applicable to be asked of the adolescents and were featured on the Adolescent Questionnaire. This gave us an opportunity to have self-report (in addition to parental report) of independence. This was thought to be an important additional perspective. We were interested in developing an independence index that went beyond self-help skills (e.g., looking after oneself) to include the ability to carry out tasks necessary for everyday living (e.g., using the telephone) and that emphasized the ability to carry out activities outside the home (e.g., traveling independently, going out on their own or with friends). This emphasis on independence outside the home, in the formulation of goals and their successful execution, was important to us in order to examine young people in specific contexts carrying out activities that were likely to form the foundation for behavioral autonomy. The specific items included in the questionnaires were as follows:

1. Are you/is he able to go to a local shop to do some shopping?
2. Can you/can he remember to keep a doctor's appointment?
3. Can you/can he take a phone message?
4. Can you/can he use the telephone to talk and text?
5. Do you/does he go out on his own or with friends?
6. Can you/can he manage money (plan spending and understand money)?
7. Do you/does he have a part-time job?
8. Is he planning/intending to live independently from the family?<sup>1</sup>
9. Is he able to look after himself with no help?<sup>1</sup>
10. Is he able to travel independently?<sup>1</sup>
11. Does he organize going out on his own?<sup>1</sup>

Responses were coded to indicate ability (yes) or non-ability (no) in each area of functioning for each participant. For each item, the respondent was asked whether or not the young person was able to undertake the activity independently.

A further question inquired whether the young person had ever been in trouble. This was asked of parents only and required a "yes/no" response. For those who responded "yes," further questions were asked about the type of trouble (with school, with police, or with organizations such as shops and clubs) that the young person had experienced.

<sup>1</sup>Parent questionnaire only.

It needs to be noted also, that within a working month, parents participated in an interview about their adolescents' transition to adulthood (see companion article on parental perspectives). Parents' thinking about their children's future may have affected how current performance was rated. However, the order of the questionnaires' administration was not fixed, and as mentioned previously, parents participated in a wide battery of assessments and interviews.

## Procedure

The TD adolescents and adolescents with SLI who were assessed and interviewed either at home or at school on the previously mentioned measures were part of a wider battery. Assessments took place in a quiet room with only the participant and a trained researcher present. Each testing session lasted for either a morning or an afternoon, with appropriate breaks. The parents of the young people were interviewed separately at home for a single period of about 2 hr.

## Results

### Participant PIQ and Language Profiles

Psycholinguistic data were available at age 14 years (2 years prior to the present stage) for 80 of 120 (67%) adolescents with SLI. The remainder (40 of 120; 33%) had identical concurrent psycholinguistic data available at age 16 years. For ease, in this article no distinction is made between these data, and they are referred to as *concurrent data*.

All 118 TD adolescents had concurrent data available from the present stage. The reading comprehension measure was available for approximately half ( $n = 63$ , 53.4%) of the TD adolescents. As mentioned previously, we were mindful of the length of the session for the TD adolescents. Thus, in the initial stages of the study, we did not include measures of literacy for the TD adolescents. This decision was revised mid-study, and this subtest was included. Statistical comparisons that involve this measure of reading comprehension—for example, regressions reported in the paragraphs that follow—use casewise deletion by default, which means that they adjust the analyses to include only those participants with full data sets.

The psycholinguistic profiles of the adolescents (see Table 3) indicated that the mean scores for the TD adolescents were within the normal range for age, whereas the scores for the adolescents with SLI were poor for age. Table 4 presents the correlations between the expressive language, receptive language, and reading comprehension scores.

**Table 3.** Concurrent psycholinguistic profiles (standard scores) of adolescents with SLI and TD adolescents.

Measure	Adolescents with SLI ( $n = 120$ )		TD adolescents ( $n = 118$ )	
	M	SD	M	SD
CELF-R Receptive subtest (Word Classes)	83.7	16.5	99.9	13.3
CELF-R Expressive subtest (Recalling Sentences)	73.6	10.3	97.5	14.9
WORD Reading Comprehension <sup>a</sup>	75.8	14.2	92.2	11.4
WISC-III PIQ	84.3	18.8	101.0	15.2

Note. CELF-R = Clinical Evaluation of Language Fundamentals-Revised; WORD = Wechsler Objective Reading Dimensions; WISC-III PIQ = Wechsler Intelligence Scale for Children, Third Edition, Performance IQ.

<sup>a</sup> $n = 63$  for TD adolescents.

As expected, one-way analyses of variance (ANOVAs) revealed that TD adolescents performed significantly better than adolescents with SLI on tests of receptive language,  $F(1, 235) = 69.08$ ,  $p < .001$ , partial  $\eta^2 = .23$ ; expressive language,  $F(1, 235) = 208.34$ ,  $p < .001$ , partial  $\eta^2 = .47$ ; reading comprehension,  $F(1, 178) = 62.06$ ,  $p < .001$ , partial  $\eta^2 = .26$ ; and nonverbal IQ,  $F(1, 233) = 55.85$ ,  $p < .001$ , partial  $\eta^2 = .19$ .

### Current Language Status

Adolescents with SLI were classified as currently impaired if, at the time of the study, they met the following criteria for SLI: PIQ (WISC-III; Wechsler, 1992) of 80 or more and concurrent expressive or receptive language standard score (CELF-R expressive language [Recalling Sentences]/receptive language [Word Classes]; Semel, Wiig, & Secord, 1987) of less than 85. It is important to note that these concurrent criteria are identical

**Table 4.** Correlations between measures of language and literacy.

Subtest	CELF-R Receptive	CELF-R Expressive
CELF-R Expressive	.57**	
	.36**	
	.60**	
WORD Reading Comprehension	.64**	.55**
	.42**	.11
	.67**	.59**

Note. Top value in each cell denotes adolescents with SLI, middle value denotes TD adolescents, and lower value denotes both.

\*\* $p < .01$ .

to the criteria used for the selection of study participants using the longitudinal data.

Using the specific criteria described above, exactly half of the adolescents with SLI (59 of 118) were classified as meeting criteria for SLI at the time of the study (16 years old). The remaining 50% had all met the established SLI criteria at some point in the last 9 years. Of this group, 15 (13% of the total) demonstrated concurrent normal nonverbal and language ability, and 41 (35% of the total) showed nonverbal and language ability in the impaired range. It is now documented that a subgroup of children with SLI has declining PIQ across time (Botting, 2005). Thus, the profile of some of the children (nonverbal and language ability in the impaired range) was likely to be due to their PIQ scores dropping since they were recruited to the study. There is evidence suggesting that children with this profile (low PIQ and language ability) perform in important ways much like children with SLI with nonverbal IQ within the normal range (Leonard, 2003). In addition, there were 3 (3%) adolescents with impaired nonverbal abilities but normal language scores. Therefore, at the time of the study, a total of 100 of 118 adolescents (85%) had current language difficulties indicated by scores at least 1 *SD* below the mean on standardized tests of expressive and/or receptive language.

In terms of the wider educational profiles of these adolescents, the majority were placed in supported educational placements during their high school years (88% at 11 years, 80% at 14 years, and 78% at 16 years). Further, the majority were identified formally as having special educational needs (SEN) during secondary schooling (81% at 11 years, 73% at 14 years, and 73% at 16 years). It is important to note that of the 18 adolescents without current language difficulties as measured by our concurrent psycholinguistic battery (described earlier), 10 had a statement of SEN. Of those without a statement of SEN, 2 of 8 were placed with support in school. In sum, the vast majority of the adolescents with SLI participating in the study had recognized academic problems that required special support in school at the time of the study. Thus, we are confident that the adolescents participating in this study were a group of young people with a history of SLI.

Of the TD adolescents, 86 of 118 (73%) had normal PIQ and language scores (as defined earlier). In addition, 25 of 118 (21%) had normal PIQ but low expressive or receptive language, and 4 of 118 (3%) had normal language but low PIQ. There were 3 of 118 (3%) with both low PIQ and language. Thus, regardless of PIQ, 90 of 118 (76%) TD adolescents appeared to have normal language functioning. It needs to be noted that the 28 TD individuals who did not appear to have normal language functioning (using our psycholinguistic battery) had no history of special educational needs or speech and

language therapy provision and were considered by schools to be TD adolescents. The study aimed to recruit a TD comparison group that was representative of England as a whole and thus included representation from individuals whose parents belonged from the lowest to the highest income brackets as per census data. Nevertheless, it could be argued that these 28 individuals may have influenced the results unduly. With this in mind, all the analyses involving the TD group were repeated, excluding these 28 individuals. The results were unchanged except for a minor permutation in one of the analyses, which is specified in the relevant section. Hence, we report the findings involving the full sample of TD adolescents because they are representative of the range of household income and maternal education and are matched on key variables to the adolescents with SLI.

---

## What Is the Level of Independence of Adolescents With and Without a History of SLI? Parental Report of Adolescent Independence

The proportions of adolescents with SLI and TD adolescents reported by parents to be competent in each area of independent functioning are presented in Table 5. Regardless of the question asked, fewer adolescents with SLI than TD adolescents were reported by parents to be functioning independently. Across the various items, between 57.7% and 99.2% of TD adolescents were reported to be competent in areas related to independence, compared with 30%–85.8% of adolescents with SLI. The average item difference between groups was 26.2%. The three areas of independent functioning with the least discrepancy between the adolescents with SLI and TD adolescents were going shopping, using the telephone to talk and text, and managing money. The three areas with the greatest discrepancy between groups were going out, looking after themselves with no help, and organizing their own going out.

Given that there were several items measuring independence, it was of interest to determine whether they had adequate internal consistency and whether they indeed represented a single factor. Factor analysis was performed on all 11 items using (a) tetrachoric correlation coefficients (given the dichotomous nature of the responses for each variable; Christoffersen, 1975) and (b) oblique rotation, based on the assumption that if there was more than one underlying factor, these would most likely be correlated. Two factors were generated using principal component analysis. Factor 1 explained 54.8% of the variance (Eigenvalue = 6.03), and Factor 2 explained 11.5% (Eigenvalue = 1.26).

Eight variables loaded positively on Factor 1. These were *going out on own*, *traveling independently*, *having a*

**Table 5.** Proportions (percentage of total) of adolescents with SLI and TD adolescents reporting ability in areas of independence.

Area of independence	Parental report		Self-report	
	Adolescents with SLI (%)	TD adolescents (%)	Adolescents with SLI (%)	TD adolescents (%)
Going to a local shop	85.8	99.2	90.0	100.0
Remembering a doctor's appointment	57.5	78.8	66.4	90.7
Taking a phone message	65.0	97.5	87.5	99.2
Using the telephone to talk and text	74.2	94.9	69.2	94.9
Going out on own or with friends	35.3	70.3	34.2	66.9
Managing money	73.9	94.0	85.8	98.3
Having a part-time job	30.0	57.6	36.7	69.5
Planning to live independently	55.0	78.0	n/a	n/a
Being able to fully look after themselves	63.5	99.2	n/a	n/a
Being able to travel independently	78.2	99.1	n/a	n/a
Organizing own going out	61.7	99.2	n/a	n/a

part-time job, going shopping, planning to live independently, using the telephone, looking after themselves, and organizing their own going out. Similarly, eight variables loaded negatively on Factor 2 and included *traveling independently, going shopping, using the telephone, looking after themselves, keeping a doctor's appointment, taking a phone message, managing money, and organizing their own going out*. All 11 items loaded on at least one of the factors. Thus, the two factors appeared to relate to the same latent variable (independence), one positively related and the other negatively or inversely related. In other words, one factor could be described as "high/good independence," where higher scores on a particular item loaded into this factor. This is described as items being positively related to the factor. The reverse appeared to be the case for the second factor. This factor could be described as "low/poor independence," where a lower score on a particular item loaded into this factor and thus could be described as being negatively related to the factor. These results indicate a single-factor solution (Tabachnick & Fidell, 2001); hence, we developed a composite parental report independence score by summing the individual items. Cronbach's alpha indicated that the questionnaire had adequate reliability ( $\alpha = .77$ ). Scores ranged from a minimum of 0 (*no independent functioning*) to a maximum of 11 (*high independent functioning*). Adolescents with SLI were significantly less independent ( $M = 7.0, SD = 2.7$ ) than the TD adolescents ( $M = 9.7, SD = 1.0$ ) according to this composite parental report,  $F(1, 219) = 96.70, p < .001$ , partial  $\eta^2 = .31$ .

## Comparing Parental and Self-Reports of Independence in Adolescence

Recall that there were seven independence items common to both the Parent Questionnaire and Adolescent

Questionnaire (see Table 5). It was possible, therefore, to directly compare parental reports versus adolescents' self-reports of independence.

Composite scores were created as above by summing the items. This created composite variables with scales from 0 (*no independent functioning*) to 7 (*high independent functioning*). For the parental report items, the adolescents with SLI had a mean score of 4.3 ( $SD = 1.7$ ) compared with a mean score of 5.9 ( $SD = 0.8$ ) for TD adolescents. The self-report composite score had a mean of 4.7 ( $SD = 1.6$ ) for the adolescents with SLI and a mean of 6.2 ( $SD = 0.8$ ) for the TD adolescents.

Measures of independence were compared by treating them as repeated measures in a mixed two-way ANOVA. There was one between-subjects factor (group: SLI vs. TD adolescents) and one within-subjects factor (informant: parental vs. self-report). The ANOVA revealed a significant effect of group,  $F(1, 224) = 90.90, p < .001$ , partial  $\eta^2 = .29$ . TD adolescents appeared to be more independent than adolescents with SLI, regardless of informant (SLI:  $M = 4.6, SD = 1.5$ ; TD:  $M = 6.1, SD = 0.7$ ). In addition, there was also a significant effect of informant,  $F(1, 224) = 18.47, p < .001$ , partial  $\eta^2 = .08$ . Adolescents, regardless of whether they were TD or SLI, reported themselves to be more independent than their parents did (self-report:  $M = 5.51, SD = 1.48$ ; parental report:  $M = 5.18, SD = 1.54$ ). Results revealed no significant interaction,  $F(1, 224) = 0.53, p = .467$ .

## Which Variables Are Associated With Independence in Adolescents, Generally?

To determine the extent to which independence could be predicted by the adolescents' psycholinguistic characteristics (language and literacy), hierarchical regression analysis was conducted. Regression analyses

included all adolescents participating in the study (TD + SLI) and parental ratings of independence using the independence composite score based on all 11 items. The first block for the regression consisted only of nonverbal IQ in order to examine its independent contribution and to control for its potential effect. The second block added concurrent language and reading comprehension measures. Such analyses should reveal the contribution of these measures to independence above and beyond that of nonverbal IQ. Finally, the third step added group status. Group status was dummy coded (0 = not SLI, 1 = SLI). The regression model was significant,  $F(5, 165) = 15.83, p < .001$ .

Table 6 shows the results of the hierarchical regression analysis of factors associated with parental rating of independence in adolescence.

After considering the effects of nonverbal IQ (7%), it was found that language and literacy measures added a significant amount of variance (16%) to the model. Group status also significantly added to the regression model (8%). Overall, the model explained 30% of the variance in independence. Two of the independent variables contributed significantly to the prediction of independence before group status was added: expressive language ( $p < .01$ ) and reading comprehension ( $p < .01$ ). The addition of group status removed the contribution of expressive language (as these two variables were highly correlated,  $r = .73$ ), but the contribution of reading comprehension remained significant ( $p < .05$ ). The analysis was also repeated excluding the 28 TD adolescents who did not

appear to have normal language functioning. This removed the contribution of reading comprehension, but the contribution of expressive language remained significant ( $p < .01$ ).

## Which Variables Are Associated With Level of Independence in Adolescents With SLI? Concurrent Measures

The adolescents were divided into groups using one key independence variable, namely their parents' opinion of whether or not adolescents could fully look after themselves without help. This variable was selected because virtually all (99.2%) of the TD adolescents were reported to be able to fully look after themselves without help, and there was a large discrepancy (35.7%) between the TD adolescents and the adolescents with SLI on this measure. After removing five cases due to missing data, it was found that 42 (36.5%) of the adolescents with SLI required help and thus were referred to as the "low independent functioning" group, whereas 73 (63.5%) did not require help and were referred to as the "adequate independent functioning" group.

Examining concurrent measures first, logistic regression was performed with independence status (adequate/low) as the dependent variable. The first block for the regression consisted of nonverbal IQ at 16 years. The second block added receptive language, expressive language, and reading comprehension at 16 years. A forward stepwise procedure was used with significance levels for entry set at  $p = .05$ . Reading comprehension at 16 years (concurrent) was the only factor significantly related to independence (odds ratio [OR] = 1.04, 95% confidence interval [CI]: 1.01–1.07,  $p < .01$ ). For every one-point standard score increase in reading comprehension, the probability of having adequate independent functioning is increased by 4%. For every five-point increase, the probability is increased by 23%.

## Early Predictors

It is of great interest to examine early predictors of level of independence in adolescence. Because the young people with SLI were part of a longitudinal investigation, psycholinguistic test scores were available at initial recruitment into the study—namely, 7 years of age—in addition to those available from the present stage. Early measures at 7 years of age were examined in terms of outcome into the adequate/low independence groups at 16 years of age. Logistic regression analysis was performed with independence status as the dependent variable. The first block of the regression analysis consisted of nonverbal IQ at 7 years. The second block

**Table 6.** Hierarchical regression analysis predicting parent ratings of independence from concurrent variables.

Variable	Unadj R <sup>2</sup>	ΔR <sup>2</sup>	f <sup>2</sup>	B	SE B	β
Step 1	.07		.07			
WISC-III PIQ				.04	.01	.26**
Step 2	.23	.16	.29			
WISC-III PIQ				.00	.01	.01
CELF-R Receptive				-.01	.02	-.07
CELF-R Expressive				.04	.01	.29**
WORD Reading Comprehension				.05	.02	.29**
Step 3	.30	.08	.43			
WISC-III PIQ				-.00	.01	-.01
CELF-R Receptive				-.00	.01	-.01
CELF-R Expressive				.00	.02	.00
WORD Reading Comprehension				.04	.02	.23*
Dummy variable (SLI/not SLI)				2.13	.51	.41**

\* $p < .05$ . \*\* $p < .01$ .

added expressive and receptive language at 7 years. A forward stepwise procedure was used, with significance levels for entry set at  $p = .05$ . Expressive language (as measured by the BS at 7 years) was found to be significantly related to independence at 16 years (OR = 1.05, 95% CI: 1.00–1.09,  $p < .05$ ). For every one-point standard score increase in expressive language, the probability of having adequate independent functioning is increased by 5%. For every five-point increase, the probability of having adequate independent functioning is increased by 33%. Table 7 shows the psycholinguistic profiles (early and concurrent) of the adequate and low independence groups.

## How Do Adolescents Manage Independence? Reports of Getting Into Trouble

Parental report of whether the young person had been in trouble revealed that 22.5% of adolescents with SLI and 15.3% of TD adolescents had such experiences. This difference was not significant,  $\chi^2(1, N = 238) = 2.04$ ,  $p = .153$ . Being in trouble at school or with the police were the most common types of trouble for adolescents, according to parents. The least common category reported was trouble with organizations such as shops and clubs.

However, it was observed that adolescents who had experienced trouble (regardless of group membership)

**Table 7.** Early and concurrent profiles of adolescents with SLI in low versus adequate independent functioning groups at age 16 years.

Profile	Low independence group ( $n = 42$ )	Adequate independence group ( $n = 73$ )
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )
PIQ at age 7 years	103.5 (14.8)	108.4 (13.8)
TROG at age 7 years*	81.5 (12.4)	86.3 (10.5)
Bus Story at age 7 years <sup>†</sup>	81.3 (8.0)	85.2 (11.1)
BAS Word Reading at age 7 years	84.9 (12.1)	86.9 (12.0)
PIQ at age 16 years	80.6 (22.4)	86.6 (15.9)
CELF-R Receptive subtest at age 16 years*	79.3 (15.4)	86.3 (16.7)
CELF-R Expressive subtest at age 16 years	71.8 (8.8)	74.6 (11.0)
WORD Reading Comprehension at age 16 years*	70.8 (16.4)	78.8 (12.0)

Note. TROG = Test for Reception of Grammar; BAS = British Ability Scales.

\* $p < .05$ . <sup>†</sup> $p = .05$ .

had overall lower language and reading skills than those who had not. For both groups of adolescents at 16 years (SLI and TD), those who had been in trouble had lower expressive language,  $F(1, 235) = 4.12$ ,  $p < .05$ , partial  $\eta^2 = .02$ ; lower reading skills,  $F(1, 179) = 5.87$ ,  $p < .05$ , partial  $\eta^2 = .03$ ; and borderline lower receptive language,  $F(1, 235) = 3.63$ ,  $p = .058$ , partial  $\eta^2 = .02$ . In contrast, no differences were found in PIQ as a function of trouble status,  $F(1, 233) = 1.02$ ,  $p = .313$ .

## Discussion

This study involved longitudinal and follow-up data from a large group of adolescents with a history of SLI as well as concurrent data on a comparison group of TD young people. Parental as well as self-report measures were used to examine independent functioning. The findings across the measures suggest that overall, adolescents with a history of SLI are less independent than their TD peers and that independence is associated with poor early language and poor later literacy skills. Further findings suggest that language and literacy play a larger role in adolescent independent functioning than nonverbal abilities in both TD adolescents and adolescents with SLI.

### Independence in Adolescence

The present study examined independent functioning in domains relevant to everyday living. These included self-care activities, traveling and meeting people, and managing finances, among others. Autonomy in these kinds of tasks is foremost in young people's subjective sense of reaching adulthood: Accepting responsibility for oneself, making independent decisions, and financial independence are consistently ranked among the top criteria (Arnett, 2000). By the end of compulsory schooling (i.e., 16 years of age) most TD adolescents appeared competent in the areas of independence examined. As would be expected, they were developing competence in the basic skills associated with self-sufficiency. In contrast, and as predicted, adolescents with SLI fared significantly less well in both parental and self reports on independence. This finding is consistent with the assumptions that language abilities are integral to a range of everyday personal competencies and that those who suffer language impairment will lag behind their more typical peers in the development of independence. Also of interest was the finding of similarities in self-perception by both groups of adolescents. Both groups perceived themselves as being more independent than their parents did. In this respect, the young people with SLI were behaving very much like their TD peers.

Although adolescents with SLI were less independent than their TD peers overall, there was greater

heterogeneity in this group. Some young people were performing very much like TD adolescents, whereas others were having difficulties in a number of areas related to independent functioning. This is in line with previous studies, where outcomes for individuals with a history of SLI have been found to be variable and sometimes difficult to predict (Beitchman, Wilson, Brownlie, Walters, Inglis, & Lancee, 1996; Beitchman, Wilson, Brownlie, Walters, & Lancee, 1996; Howlin et al., 2000). The larger sample size in the present study allows for great confidence in estimating the proportion of adolescents with SLI who do manifest problems in respect of independence, and our data indicate that approximately 36% fall into this category.

It has been suggested that adults may unwittingly bias their responses in the case where it is known that the child has had problems, thus resulting in potential overreporting of difficulties in special needs groups (Redmond, 2002). However, in the present study, we found the aforementioned pattern of results and variability in outcomes for both parent-reported independence and self-reported independence. A positive advantage for adolescent reporting was observed across groups compared with parental report. Adolescents generally perceived themselves as more independent than their parents did (regardless of group). Nonetheless, the self-report results still reflected the poorer and more variable performances by adolescents with SLI. This pattern of findings suggests that the parental questionnaire used in this study yielded valid responses.

## ***The Role of Language and Literacy in Independent Functioning***

The results of the present investigation underline the importance of language and literacy to independent functioning in adolescence. First, regression analyses involving all participants and concurrent measures revealed that expressive language and reading with understanding accounted for approximately 16% of the variance in independent functioning. This was after controlling for nonverbal IQ (which accounted for 7% of the variance). Regardless of group status, adolescents with better expressive language and reading comprehension abilities were more independent. Thus, as expected, verbal and literacy abilities do appear to be fundamental to the successful undertaking of everyday living activities such as phoning and texting friends or organizing independent travel (e.g., reading bus schedules). Our findings indicate that language and literacy play a larger role in adolescent independent functioning than do nonverbal abilities when independence is defined to include not only tasks related to everyday living but also activities outside the home. Thus, it needs to be acknowledged that the greater weight of verbal versus

nonverbal abilities found in independent functioning in SLI may be at least partly due to how independence was defined in the present study via the instrument used.

Second, analyses within the SLI group also revealed language and literacy to be key associates of independent functioning. When examining concurrent variables, reading with understanding was found to be the one significant factor related to independence in adolescents with SLI; however, as illustrated in Table 4, the reading measure was significantly correlated with both expressive and receptive language in adolescents with SLI. The longitudinal nature of this investigation also afforded the examination of early predictors of adolescent independence in SLI, although it needs to be noted that no such information was available for the TD group, thus limiting any potential comparisons across groups. Expressive language ability at 7 years of age was found to be significantly related to independence at 16 years in young people with SLI. Furthermore, examination of the psycholinguistic profiles of young people in low versus adequate independence groups revealed that adolescents with low independence exhibited more severe language difficulties in childhood. It is important to note that in persistent SLI, expressive and receptive skills are usually found to be correlated. In our sample, these two skills were correlated as follows:  $r = .45$  at 7 years, and  $r = .57$  at 16 years. Thus, the early predictor identified (i.e., BS at 7 years) reflects not only level of expressive language but its association with depressed receptive skills. The group categorized as low independence in adolescence continued to exhibit language difficulties but also presented with problems in reading with understanding.

The results of this investigation contrast with the null findings of Howlin et al. (2000). These investigators found no relationship between early language skills and later social functioning (which included some measures of independence) in a group of individuals with language impairment, although they did find such a relationship in a group of participants with autism. Howlin et al.'s (2000) small sample ( $n = 19$ ) had a specific profile of severe receptive difficulties in early childhood. The study may not have had enough power to observe the types of associations that we observed in the present investigation. Our findings are more in line with the work of Beitchman and colleagues (Beitchman, Wilson, Brownlie, Walters, Inglis, & Lancee, 1996; Beitchman, Wilson, Brownlie, Walters, & Lancee, 1996). These investigators found that type of language difficulty (presence of receptive language problems early in childhood) as well as persistence of these difficulties related to poorer behavioral, emotional, and social outcomes in middle childhood in SLI. This being said, type of language difficulty did not reveal a similar association when developmental and academic outcomes were examined in the same cohort. This could be partly due to the potentially strong correlation between expressive

and receptive language in at least some subgroups of SLI that Beitchman and colleagues (Beitchman, Wilson, Brownlie, Walters, Inglis, & Lancee, 1996; Beitchman, Wilson, Brownlie, Walters, & Lancee, 1996) studied. The present study also furthers our understanding of the developmental factors that may lead to heterogeneity of outcomes in SLI. We suggest that severity of language difficulty in childhood (as indexed by expressive and/or receptive language) and the development of associated literacy difficulties in adolescence contribute at least partly to the level of independent functioning achieved in adolescence by young people with a history of SLI. Nonetheless, given that the model reported here accounted for 30% of the variance, it also needs to be noted that other factors (e.g., opportunities to be independent or co-morbid difficulties in other areas) are likely to be influential in adolescent independence.

We want to emphasize the influence of literacy in adolescent outcomes in SLI. Evidence is beginning to emerge suggesting that those young people with SLI who have difficulties with literacy are more at risk of poor outcomes than are those who do not have such difficulties. Tomblin, Zhang, Buckwalter, and Catts (2000), for example, found that risk for behavioral disorders was greater in those children with SLI who also had developed reading difficulties by second grade. In the same vein, it is now being suggested that reading difficulties (i.e., dyslexia) may be a less severe form of SLI (Snowling, Bishop, & Stothard, 2000) and that the combination of language and literacy difficulties observed in approximately half the children with SLI can result in increasingly detrimental effects in development (Bishop & Snowling, 2004; Catts, Fey, Tomblin, & Zhang, 2002).

Language and literacy skills also appeared to be associated with managing independence. Contrary to predictions, we did not obtain a significant difference in parental reports of young people getting into trouble as a function of having SLI versus TD. However, we did find that, regardless of group membership, young people who were reported to have been in trouble (mainly in school or with the police) had overall lower language and literacy skills than those who had not. In contrast, no difference in PIQ was observed between these two groups. These results are in line with findings of previous studies involving clinic and forensic samples. Investigations have often reported language impairments not previously diagnosed (Brownlie et al., 2004; Davis, Sanger, & Morris-Friehe, 1991) as well as literacy difficulties (Snowling,

Adams, Bowyer-Crane, & Tobin, 2000) in juvenile offenders and incarcerated youth.

Overall, the results indicate that adolescents with poor language and literacy skills are at increased risk for low independence. In the specific case of adolescents with a history of SLI, the risk of poorer scores on independence is magnified, with approximately one third of the sample not being able to fully look after themselves without help at 16 years of age and evidence of discrepancies between adolescents with SLI and TD peers in areas that do not appear to be directly related to language per se—for example, remembering a doctor's appointment or managing money. These findings suggest that we need to continue broadening our focus of study of SLI to include other functional abilities associated with, or consequent upon, language difficulties. These findings also suggest that we need to question the theoretical conceptualization of SLI as a "pure" disorder. The data presented in this investigation suggest that SLI is a developmental condition with associated problems in a number of areas. Future research needs to examine—longitudinally and in more detail—the gradually developing competencies of children and young people with SLI and the interrelationships among them.

## *Clinical Implications*

The results of this study extend previous research pointing to associations between language impairments and other developmental problems. They emphasize the importance of language and literacy to adequate independent functioning in the transition to adulthood, and they demonstrate, in particular, that a substantial proportion of young people with histories of SLI are at risk of personal, social, and economic disadvantage. In the companion article on parental perspectives, we explore these findings further. In particular, we examine the potential impact of adolescents' levels of independence on parental concerns and expectations.

In addition, the findings underscore the need for intensive intervention directed at improving oral language skills of children presenting difficulties at school entry. The study also highlights the need to monitor and support not only the oral language skills of these children but their reading progress throughout their school years. Finally, this investigation suggests that other areas of functioning, particularly those related to developing independence, are in need of support in a considerable proportion of adolescents with a history of SLI.

## References

- Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55*, 469–480.
- Beitchman, J. H., Wilson, B., Brownlie, E. B., Walters, H., & Lancee, W. (1996). Long-term consistency in speech/language profiles: I. Developmental and academic outcomes. *Journal of the American Academy of Child and Adolescent Psychiatry, 35*, 804–814.
- Beitchman, J. H., Wilson, B., Brownlie, E. B., Walters, H., Inglis, A., & Lancee, W. (1996). Long-term consistency in speech/language profiles: II. Behavioral, emotional and social outcomes. *Journal of the American Academy of Child and Adolescent Psychiatry, 35*, 815–825.
- Bell, K. L., Allen, J. P., Hauser, S. T., & O'Connor, T. G. (1996). Family factors and young adult transitions: Educational attainment and occupational prestige. In J. A. Graber, J. Brooks-Gunn, & A. C. Petersen (Eds.), *Transitions through adolescence: Interpersonal domains and context* (pp. 345–366). Mahwah, NJ: Erlbaum.
- Bishop, D. V. M. (1982). *Test for Reception of Grammar*. Manchester, England: University of Manchester.
- Bishop, D. V. M., & Snowling, M. (2004). Developmental dyslexia and specific language impairment: Same or different? *Psychological Bulletin, 130*, 858–886.
- Blomquist, K. B., Brown, G., Peersen, A., & Presler, R. N. (1998). Transitioning to independence: Challenges for young people with disabilities and their caregivers. *Orthopaedic Nursing, 17*, 27–35.
- Botting, N. (2005). Non-verbal cognitive development and language impairment. *Journal of Child Psychology and Psychiatry, 46*, 317–326.
- Brownlie, E. B., Beitchman, J. H., Escobar, M., Young, A., Atkinson, L., Johnson, C., et al. (2004). Early language impairment and young adult delinquent and aggressive behavior. *Journal of Abnormal Child Psychology, 32*, 453–467.
- Catts, H. W., Fey, M. E., Tomblin, J. B., & Zhang, Z. (2002). A longitudinal investigation of reading outcomes in children with language impairments. *Journal of Speech, Language, and Hearing Research, 45*, 1142–1157.
- Christoffersen, A. (1975). Factor analysis of dichotomised variables. *Psychometrika, 40*, 5–32.
- Clegg, J., & Henderson, J. (1999). Developmental language disorders: Changing economic costs from childhood into adult life. *Mental Health Research Review, 6*, 27–30.
- Clegg, J., Hollis, C., Mawhood, L., & Rutter, M. (2005). Developmental language disorders—A follow up in later adult life. Cognitive, language and psychosocial outcomes. *Journal of Child Psychology and Psychiatry, 46*, 128–149.
- Conti-Ramsden, G., & Botting, N. (1999a). Classification of children with specific language impairment: Longitudinal considerations. *Journal of Speech, Language, and Hearing Research, 42*, 1195–1204.
- Conti-Ramsden, G., & Botting, N. (1999b). Characteristics of children attending language units in England: A national study of 7-year-olds. *International Journal of Language and Communication Disorders, 34*, 359–366.
- Conti-Ramsden, G., & Botting, N. (2004). Social difficulties and victimization in children with SLI at 11 years of age. *Journal of Speech, Language, and Hearing Research, 47*, 145–161.
- Conti-Ramsden, G., Botting, N., & Durkin, K. (2008). Parental perspectives during the transition to adulthood of adolescents with a history of specific language impairment (SLI). *Journal of Speech, Language, and Hearing Research, 51*, 84–96.
- Conti-Ramsden, G., Botting, N., & Faragher, B. (2001). Psycholinguistic markers for specific language impairment (SLI). *Journal of Child Psychology and Psychiatry, 42*, 741–748.
- Conti-Ramsden, G., Crutchley, A., & Botting, N. (1997). The extent to which psychometric tests differentiate subgroups of children with SLI. *Journal of Speech, Language, and Hearing Research, 40*, 765–777.
- Davis, A. D., Sanger, D. D., & Morris-Friehe, M. (1991). Language skills of delinquent and non-delinquent males. *Journal of Communication Disorders, 24*, 251–266.
- Durkin, K. (1995). *Developmental social psychology*. Oxford, United Kingdom: Blackwell.
- Durkin, K., & Conti-Ramsden, G. (2007). Language, social behavior, and the quality of friendships in adolescents with and without a history of specific language impairment. *Child Development, 78*, 1441–1457.
- Elliot, C. D. (1983). *British Ability Scales*. Windsor, England: nferNelson.
- Erikson, E. H. (1968). *Identity: Youth and crisis*. New York: Norton.
- Feldman, S. S., & Rosenthal, D. A. (1991). Age expectations of behavioral autonomy in Hong Kong, Australian and American youths: The influence of family variables and adolescent values. *International Journal Psychology, 26*, 1–23.
- Feldman, S. S., & Rosenthal, D. A. (2000). The effect of communication characteristics on family members' perceptions of parents as sex educators. *Journal of Research on Adolescence, 10*, 119–150.
- Felsenfeld, S., Broen, P. A., & McGue, M. (1994). A 28-year follow-up of adults with a history of moderate phonological disorder: Educational and occupational results. *Journal of Speech and Hearing Research, 37*, 1341–1353.
- Fortman, J. (2003). Adolescent language and communication from an intergroup perspective. *Journal of Language and Social Psychology, 24*, 104–111.
- Freud, A. (1958). Adolescence. *Psychoanalytic Study of the Child, 13*, 255–278.
- Gillon, G., & Dodd, B. J. (2005). A prospective study of the relationship between phonological, semantic and syntactic skills and specific reading disability. *Reading and Writing, 6*, 321–345.
- Haynes, C., & Naidoo, S. (1991). *Children with specific speech and language impairment*. Oxford, England: Blackwell.
- Hick, R., Botting, N., & Conti-Ramsden, G. (2005). Cognitive abilities in children with specific language impairment: Consideration of visuo-spatial skills. *International Journal of Language and Communication Disorders, 40*, 137–149.
- Hoffman, L. M., & Gillam, R. B. (2004). Verbal and spatial information processing constraints in children with specific language impairment. *Journal of Speech, Language, and Hearing Research, 47*, 114–125.

- Howlin, P., Mawhood, L., & Rutter, M.** (2000). Autism and developmental receptive language disorders—A follow-up comparison in early adult life: II. Social, behavioral and psychiatric outcomes. *Journal of Child Psychology and Psychiatry*, *41*, 561–578.
- Karmiloff-Smith, A.** (1998). Development itself is the key to understanding developmental disorders. *Trends in Cognitive Sciences*, *2*, 389–398.
- Lefkowitz, E. S., Boone, T. L., Sigman, M., & Au, K.-F.** (2002). He said, she said: Gender differences in mother-adolescent conversations about sexuality. *Journal of Research on Adolescence*, *12*, 217–242.
- Leonard, L.** (2003). Specific language impairment: Characterizing the deficit. In Y. Levy & J. Schaeffer (Eds.), *Towards a definition of SLI* (pp. 209–231). Mahwah, NJ: Erlbaum.
- Nippold, M. A.** (1998). *Later language development: The school-age and adolescent years*. Austin, TX: Pro-Ed.
- Noom, M. J., Deković, M., & Meeus, W.** (2001). Conceptual analysis and measurement of adolescent autonomy. *Journal of Youth and Adolescence*, *30*, 577–595.
- Office of National Statistics.** (2003). *General Household Survey, 2001–2002*. England: ESDS.
- Owens, R. J. R.** (2004). *Language development: An introduction* (6th ed.). Boston: Allyn & Bacon.
- Raven, J. C.** (1986). *Coloured Progressive Matrices*. London: H. K. Lewis & Co.
- Records, N. L., Tomblin, J. B., & Freese, P. R.** (1992). The quality of life of young adults with histories of specific language impairment. *American Journal of Speech-Language Pathology*, *1*, 44–53.
- Redmond, S.** (2002). The use of rating scales with children who have language impairments. *American Journal of Speech-Language Pathology*, *11*, 124–138.
- Renfrew, C.** (1991). *The Renfrew Language Scales: Bus Story Test*. Bicester, United Kingdom: Winslow Press.
- Semel, E., Wiig, E. H., & Secord, W.** (1987). *Clinical Evaluation of Language Fundamentals* (rev. ed.). San Antonio, TX: The Psychological Corporation.
- Sloper, P., & Turner, S.** (1996). Progress in social-independent functioning of young people with Down Syndrome. *Journal of Child Psychology and Psychiatry*, *37*, 103–114.
- Snowling, M., Bishop, D. V. M., & Stothard, S. E.** (2000). Is preschool language impairment a risk factor for dyslexia in adolescence? *Journal of Child Psychology and Psychiatry*, *41*, 407–418.
- Steinberg, L., & Silverberg, S. B.** (1986). The vicissitudes of autonomy in early adolescence. *Child Development*, *57*, 841–851.
- Stothard, S. E., Snowling, M. J., Bishop, D. V. M., Chipchase, B. B., & Kaplan, C.** (1998). Language impaired preschoolers: A follow-up into adolescence. *Journal of Speech and Hearing Research*, *41*, 407–418.
- Szatmari, P., Bryson, S. E., Boyle, M. H., Streiner, D. L., & Duku, E.** (2003). Predictors of outcome among high functioning children with autism and Asperger syndrome. *Journal of Child Psychology and Psychiatry*, *44*, 520–528.
- Tabachnick, B. G., & Fidell, L. S.** (2001). *Using multivariate statistics* (4th ed.). Boston: Allyn and Bacon.
- Thomas, M., & Karmiloff-Smith, A.** (2002). Are developmental disorders like cases of adult brain damage? Implications for connectionist modelling. *Behavioral and Brain Sciences*, *25*, 727–788.
- Tomblin, J. B., Zhang, X., Buckwalter, P., & Catts, H.** (2000). The association of reading disability, behavioral disorders, and language impairment among second-grade children. *Journal of Child Psychology and Psychiatry*, *41*, 473–482.
- Wechsler, D.** (1992). *Wechsler Intelligence Scale for Children* (3rd ed.). London: The Psychological Corporation.
- Wechsler, D.** (1993). *Wechsler Objective Reading Dimensions*. London: The Psychological Corporation.
- Zimmer-Gembeck, M. J., & Collins, W. A.** (2003). Autonomy development during adolescence. In G. R. Adams & M. Berzonsky (Eds.), *Blackwell handbook of adolescence* (pp. 175–204). Oxford, England: Blackwell.
- of Intellectual Disability Research*, *40*, 39–48.
- Smetana, J. G., Metzger, A., Gettman, D. C., & Campione-Barr, N.** (2006). Disclosure and secrecy in adolescent-parent relationships. *Child Development*, *77*, 201–217.
- Snowling, M., Adams, J. W., Bowyer-Crane, C., & Tobin, V.** (2000). Levels of literacy among juvenile offenders: The incidence of specific reading difficulties. *Criminal Behaviour and Mental Health*, *10*, 229–241.