# A Follow-Up Study of Treated and Untreated Greek Adolescents with a History of Specific Developmental Language Disorder

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**Abstract:** Research has shown that specific developmental language disorders (SDLD) may develop over time into other impairments or disorders. For instance, children with these diagnoses often show learning, social adjustment or behaviour disorders in adolescence. On the other hand, many professionals claim that early intervention has a significant effect on these disorders. The question which arises is whether early intervention can forestall the development of these more serious consequences in adolescence. The aim of this study is to examine adolescents who had been diagnosed with SDLD in childhood and who had attended during their preschool years an Early Intervention Programme (EIP) within a Community Mental Health Centre. These adolescents' outcomes are compared with those of adolescents who had also been diagnosed with SDLD, but who had not complied with therapy. The experimental group (N=44), now have a mean age of 13 years, whereas the control group (N=52), who had not accepted therapy, have a mean age of 14 years. The parameters which were investigated were school achievement, social and emotional adjustment, behaviour, language skills, and their parents' attitudes. Statistical analysis shows that although some of the treated adolescents now exhibit learning difficulties, those who began their therapy before the age of 5 are presently showing significantly better concentration and behaviour than all the other groups. In conclusion, early intervention seems to be effective for children with SDLD and may restrict the appearance of more serious social adjustment and behavioural problems in adolescence.

**Keywords:** social, behavioural, academic outcomes, SLI, early intervention, adolescence.

## INTRODUCTION

Although specific developmental language disorders, or specific language impairments as they are broadly known, have been studied extensively in childhood, in recent years there has been considerable interest in their persisting impact on adolescents and adults. Many studies have now shown that, in adolescence, children diagnosed with these disorders have an increased risk of exhibiting behaviour disorders [1-4], as well as social and emotional impairments [5-11, 4]. Moreover, in adulthood, many longitudinal studies have indicated an association between early language disorders and behaviour disorders, as well as other more severe psychiatric disorders [12-16].

With regard to literacy skills, as might be expected the association between specific language impairments and subsequent literacy difficulties is very strong, although the nature of this association is still under empirical scrutiny [17-20]. Academic attainments for this population, however, depends on a number of variables [21]. Other studies have found that in the long-term, these children have decreased IQs [22], poor working memory [23] and social integration difficulties [24].

These studies have contributed a considerable body of information on this subject, while raising a number of important questions concerning the effectiveness of different interventions for this population of children. On the other hand, the wide variety of parameters contributing to each child's profile, as well as the different pathological phenotypes, indicate that the homogeneity amongst the different experimental groups may be under question, resulting in considerable difficulty in making adequate prognoses for these children [25, 26]. Furthermore, the impact of intervention on the long-term outcome of these children, as well as the role of the parents' contribution to this intervention has not been established [27]. Even less is known about what would be the natural history of these children or their outcome, if they did not receive any therapy. This latter issue is theoretically interesting, since, for instance, it would contribute to knowledge concerning the effectiveness of different therapy techniques and could possibly point to various characteristics on which therapy could focus at an early phase.

The present study is part of longitudinal research at the University of Athens 1st Psychiatric Clinic, where an Early Intervention Programme (EIP) has been functioning for over 25 years. The aim is to compare

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long-term outcomes of adolescents who had completed therapy at the EIP during their preschool years, with adolescents who had not received therapy for their language disorder. It was hypothesized that untreated adolescents would have more severe social, behavioural and academic problems, as well as persisting language difficulties, than the group treated at the EIP.

Furthermore, factors which lead to parents' non-acceptance of therapy were also investigated, as well as parents' attitudes to their child's therapy, and their cooperation with the Service, since it is hypothesized that these factors contribute to the long-term outcome of these disorders [28-30].

### Setting

The Early Intervention Programme is one of the services of the Community Mental Health Centre of Byron-Kessariani, which is part of the University of Athens, 1st Department of Psychiatry. Pre-school children, aged between 2 and 6 years old, with specific developmental disorders [31] are usually treated at the EIP, which offers these children and their families intensive, systematic, interdisciplinary therapeutic intervention, consisting of speech therapy and occupational therapy for the child as well as counseling and psycheducational intervention for the parents.

## METHODS

### Participants

The participants were all adolescents whose parents had applied to our Service regarding their child's development at a pre-school age. They consisted of all the cases who had received a diagnosis of specific developmental language disorder over a seven-year period. At the time of diagnosis, the children were aged between 1;6 and 7 years. All participants completed the full diagnostic procedure conducted by the mental health professionals at our Service. DSM-III-R [32] criteria were used at the time to classify all of the disorders diagnosed at our Service.

The participants were divided into two groups: a) adolescents who had received therapy at our Service's EIP and b) adolescents whose parents had not accepted our recommendations for intervention and had not received therapy at our Programme. None of the participants in either group had since that time received speech therapy at any other setting.

The number of cases with a diagnosis of SDLD was 96, however only 78 were located at follow-up. The number of participants who were not located was approximately 20% (18 participants).

*Group A* (N=44) consisted of adolescents who had undergone the diagnostic procedure, had received a DSM-III-R classification of specific developmental language disorder, had not received intervention before and had completed their therapy at our Programme. The mean age of this group at commencement of therapy was 4;5 years (SD 1.1, range 1;10-6;0 years). They had received from 20 to 308 sessions (Mean 61.8, SD 63.8) with a maximum duration of three years. The adolescents had completed their therapy at least five years prior to the study.

*Group B* (N=52) consisted of adolescents who had undergone the diagnostic procedure, had received a DSM-III-R classification of specific developmental language disorder, had not received intervention before and had been offered therapy at our Early Intervention Programme. At that time, their mean age was 5;2 years (SD 1.1, range 2;4-6;10 years). However, their parents had not accepted the therapy proposal made by our Service and these children were not treated. Furthermore, these participants had not received therapy at any other setting or at any other time.

### Data

Data was collected from a) the participants' medical file and b) by questionnaire administered to their parents at the present time.

*Data from the Participant's File Consisted of*:

Participant's gender; age at intake; presenting problem; parents' socioeconomic status, occupation and educational status; family situation (marital status); diagnosis and assessment of speech and language difficulties (articulation, phonology, syntax, semantics, presence or absence of dyspraxia, verbal comprehension score, according to the Reynell Developmental Language Scales); general communication skills; concomitant difficulties (gross/fine motor, visual perception, spatial skills, ear infections, hearing loss, neurological findings); laterality; intellectual functioning; emotional and behavioural evaluation; parents' attitude towards child and his/her therapy (parents' views on child, parent-therapist cooperation, parents' views about therapy); genetic and familial information (possible hereditary

factors); prenatal and perinatal factors; developmental history (language and motor development, feeding history, general health).

If the participant was in Group A, who had been treated, type and duration of therapy, the number of sessions, therapy outcome, and parental cooperation with the Service were recorded.

*Data from the follow-up questionnaire* addressed to the parents concerned: participant's school progress to date (repeating a year, attendance at special class); diagnosis of learning disorder; study habits; grades; participant's behaviour, concentration, communication skills, speech and language; his/her social skills (whether s/he has friends, enjoys going to school, extracurricular activities and hobbies); parents' attitude towards their child and what they believe are his/her strengths and weaknesses. Parental satisfaction with the services they had received was also investigated. The questionnaire consisted of both categorical (yes-no) questions and scaled questions on a five-point scale. These were supplemented by open questions, through which the interviewer was able to procure qualitative information. An independent reviewer confirmed all data and reached a consensus with the research team on the coding of the qualitative data.

### Procedure

By consulting the participant's file and reviewing language assessments, psychological profiles and medical records, the diagnosis of SDLD was verified by the interdisciplinary team. The team's speech therapist reviewed and classified each participant's speech and language profile and data was recorded from the participant's medical files on the Record form.

The follow-up questionnaire was given to the parents at least five years after the participants had terminated their cooperation with our Service. Parents were interviewed by a member of the research team at a time and place of their convenience. In 90% of cases, the informant was the mother. The interviewers were randomly allocated to each case, but were not blinded as to group. Informed consent had been appropriately obtained according to legal requirements and research ethical guidelines.

### Statistical Analysis

Data measured on a numerical scale, such as ages, were compared between two groups using Student's t test or the non-parametric Mann-Whitney test in cases where the assumptions underlying the t test were not met.

Comparisons between more than two groups were made using one-way ANOVA. Categorical data were compared between groups using the chi-squared test (with Yates' correction for tests with one degree of freedom) or Fisher's exact test in cases where expected frequencies were very low. The $X^2$ test for trend was also used when categories were ordered.

Logistic regression analyses were carried out to examine a binary dependent variable in relation to several predictors simultaneously. This was done with dependent variable (a) the parents' acceptance of therapy, (b) whether or not the family was found in the follow up, and (c) for each of the outcome variables recorded at follow up. Backward elimination of non-significant predictors by likelihood ratio tests was employed to identify the statistically significant predictors.

## RESULTS

### Between Group Analysis at Intake

The male to female ratio across groups was 2:1, but there was no significant difference between groups (see Table **1**). No significant difference was found between the two groups with regard to their intellectual abilities, birth weight and other developmental factors, such as, toilet training, feeding habits, general health, vision and hearing. Furthermore, no difference was found between the two groups with regard to their laterality: in both groups approximately 30% of the participants were either left-handed or had not yet established laterality. There was a significant difference between the two groups with regard to birth weight, Group A having lower birth weight (p=0.012). These children also had a tendency for more frequent episodes of otitis media (p=0.08) and were more likely to have delayed or immature motor development (p=0.047). Furthermore, the children in Group A were younger at intake (M=4;5 years) than those in Group B (M=5;2 years) (p=0.001). Parents of children in Group A, at intake, were more likely to request a speech and language assessment as they were concerned about their children's language development (p=0.033) (see Table **1**).

Diagnostic procedure at the time showed that both groups had similar verbal comprehension scores, according to the Reynell Developmental Language

**Table 1: Comparison of Baseline Measures between Groups at Intake**

| | Group A: treated (N=44) | Group B: untreated (N=52) | p* |
|---|---|---|---|
| Age | Mean 4;5 yrs (SD 1.1) | Mean 5;2 yrs (SD 1.1) | t=3.39, p=0.001* |
| Female<br>Male | 34.1%<br>65.9% | 30.8%<br>69.2% | $X^2_1$=0.02, p=0.90 |
| Initial request by parents:<br>Speech/language delay | <br>86.4% | <br>65.4% | $X^2_1$=4.53, p=0.033* |
| Toilet trained | 82.5% | 89.4% | $X^2_1$=0.38, p=0.54 |
| Normal feeding habits | 82.9% | 89.4% | $X^2_1$=0.03, p=0.86 |
| Good general health | 70.5% | 66.7% | $X^2_1$=0.03, p=0.86 |
| Normal vision | 90.7% | 91.5% | $X^2_1$=0.06, p=0.81 |
| Normal hearing | 85% | 92.5% | $X^2_1$=0.50, p=0.48 |
| Laterality: Right<br>Left<br>Bi/Other | 63.4%<br>14.6%<br>21.9% | 73.8%<br>14.6%<br>11.9% | $X^2_2$=1.57, p=0.46 |
| No history of ear infections | 80.5% | 95.3% | $X^2_1$=3.12, p=0.08 |
| Normal motor development | 63.4% | 84.4% | $X^2_1$=3.94, p=0.047* |
| Weight at birth | Mean 3100 gr<br>SD 700 | Mean 3400 gr<br>SD 500 | $t_{87}$=2.57, p=0.012* |
| Intellectual abilities | Mean IQ 91.9<br>(SD 10.4) | Mean IQ 92.0<br>(SD 9.7) | t=0.07, p=0.95 |
| First words | Mean 19.3 mths<br>(SD 8.7) | Mean 16.5 mths<br>(SD 7.2) | M-W, z=1.39, p=0.16 |
| Sentences | Mean 28.5 mths<br>(SD 7.7) | Mean 28.3 mths<br>(SD 7.6) | $t_{50}$=0.12, p=0.91 |
| First steps | Mean 13.7 mths<br>(SD 3.3) | Mean 13.3 mths<br>(SD 3.3) | $t_{92}$=0.63, p=0.53 |

Note: P-value for t-test (Mann-Whitney for "first words") or $X^2$ test between groups.

Scales, showing at least a one year lag (see Table **2**). Group A, however, had more articulation problems, over and above their other language problems (p=0.007) and a tendency for more severe syntactic disorders (trend=4.33, p=0.037), than the children in Group B. In fact, when diagnosis was divided into 'mild' (phonological) and 'moderate/severe' (complex language deficits), it was found that children in Group A had significantly more problems than those in the Group B (x2=4.93, p=0.026). Nevertheless, with regard to other concomitant difficulties: fine and gross motor skills, visual perception and neurological findings, no significant differences were found between the two groups (see Table **2**).

Although family situation was similar between groups, the mothers' occupational status was found to be significantly different between the two groups (p=0.024): mothers of the children who were in Group A were more likely to be in employment, whereas those of Group B were more likely to be housewives (see Table **3**).

Children in Group A were more likely to have another member of the family with a speech and learning difficulty (p=0.003).

Logistic regression was carried out to examine simultaneously the factors that predicted acceptance of therapy. Statistically significant at p=0.05 were the diagnosis of an articulation disorder, the initial request having been because of a speech or language delay, and the mother working outside the home. Low birth weight was marginally significant (p=0.06).

**Between Group Analysis at the Present Time**

From Group A, 38/44 families (86.4%) were located in the follow up and 40/52 (76.9%) from Group B (p=0.36). There were no statistically significant

**Table 2: Linguistic and Non-Linguistic Diagnoses in Both Groups**

| | Group A: treated (N=44) | Group B: untreated (N=52) | P |
|---|---|---|---|
| Language age: comprehension | Mean 3;7 yrs (SD 0.2) | Mean 4;0 yrs (SD 1.0) | t= 0.83, p=0.41 |
| Phonological disorder: | | | |
| None | 4.7% | 5.9% | $X^2_2$=1.34, p=0.51 |
| Mild | 23.3% | 33.3% | |
| Severe | 72.0% | 60.8% | |
| Syntactic disorder: | | | |
| None | 29.5% | 53.1% | $X^2_2$=5.27, p=0.07 |
| Mild | 27.3% | 18.4% | (trend=4.33, p=0.037*) |
| Severe | 43.2% | 28.5% | |
| Semantic disorder: | | | |
| None | 7.0% | 18.0% | $X^2_1$=5.14, p=0.16 |
| Mild | 11.6% | 22.0% | |
| Severe | 81.4% | 60% | |
| Articulation disorder: | | | |
| None | 53.7% | 73.9% | $X^2_1$=9.99, p=0.007* |
| Mild | 17.1% | 21.7% | |
| Severe | 29.2% | 4.4% | |
| Dyspraxia: No | 92.5% | 95.6% | Fisher Exact, p=0.59 |
| Yes | 7.5% | 4.4% | |
| Gross motor immaturity | 41.4% | 23.7% | $X^2_1$=2.08, p=0.15 |
| Fine motor immaturity | 61% | 61.6% | $X^2_1$=0.06, p=0.97 |
| Visuo-spatial disorder | 64.1% | 51.4% | $X^2_1$=0.80, p=0.37 |
| Visual perception disorder | 46.2% | 47.2% | $X^2_1$=0.02, p=0.89 |
| Neurological findings: | | | |
| Yes | 6.8% | 2.1% | Fisher Exact, p=0.55 |

Note: *trend test.

**Table 3: Socio-Economic Data of Both Groups***

| | Group A:treated (N=44) | Group B: untreated (N=52) | P |
|---|---|---|---|
| Family functioning: normal situation | 92.9% | 94.2% | Fisher Exact, p=1.00 |
| Father's occupation: | | | |
| High | 18.2% | 20.0% | $X^2_2$=1.89, p=0.39 |
| Medium | 45.5% | 32.0% | |
| Low | 36.3% | 48.0% | |
| Mother's occupation: | | | |
| High | 9.1% | 3.9% | $X^2_1$=5.09, p=0.024* |
| Medium | 22.7% | 9.8% | (housewife vs. other) |
| Low | 13.6% | 7.9% | |
| Housewife | 54.5% | 78.4% | |

*Data analyzed according to Greek National Centre for Social Research [39].

differences between children and families who were and were not located in the follow up (data not shown).

There was a significant difference (p=0.021) in the ages between the participants of the two groups at the time of the present study: in Group A the mean age

was 12;7 years, whereas in Group B the mean age was 14;0 years. Time lapse between their last visit to our Centre and the present was also significant between the two groups (p=0.001): for Group A it was a mean of 7;5 years (SD=1.7), whereas for Group B it was a mean of 8;8 years (SD=2.1). No significant differences in performance were found between girls and boys.

Approximately 20% of the participants from both groups had repeated a class. This was either the first class of primary school or first class of secondary school. Untreated Group B children showed significantly more behaviour problems (p=0.049), which were mainly presented as shy or withdrawn behaviour (see Table **4**).

With respect to concentration (see Table **4**), 32.4% of participants in Group A and 42.5% in Group B still have problems according to their parents, but there was no significant difference between groups.

As for language abilities, five (13.2%) of the participants in Group A still have difficulties, whereas 8 (20%) of those in Group B are reported as still having difficulties (p=0.078). With respect to their general academic skills, that is, written language and math skills, there are no significant differences between the two groups: approximately one in four adolescents in both groups shows 'unsatisfactory' performance in these areas. However, a positive association was found between school achievement and parents' education in Group B (F4,46=3.20, p=0.021 for mothers; F4,46=2.54, p=0.052 for fathers).

Further analysis was carried out to examine whether the child's age at intake affected the outcomes in Table **4**. Logistic regression was used with the dependent variable the outcome, and predictors: the group, age at first contact, diagnosis of a problem and the interaction between age and group. The existence of a significant interaction implies that the difference in outcome between groups depended on the intake age.

**Table 4: Present State of Both Groups**

| | Group A: treated (N=38) | Group B: untreated (N=40) | P |
|---|---|---|---|
| Behaviour: | | | |
| Normal | 78.4% | 57.5% | $X^2_1$=3.89, p=0.049* |
| Aggressive | 10.8% | 12.5% | (normal vs. the rest) |
| Withdrawn | 2.7% | 15.0% | |
| Overactive | 8.1% | 10.0% | |
| Other | 0 | 5.0% | |
| Speech/Language: | | | |
| Good | 60.5% | 72.5% | $X^2_2$=5.11, p=0.078 |
| Moderate | 26.3% | 7.5% | |
| Unsatisfactory | 13.2% | 20.0% | |
| Concentration: | | | |
| Good | 67.6% | 57.5% | $X^2_1$=0.46, p=0.50 |
| Unsatisfactory | 32.4% | 42.5% | |
| Written language: | | | |
| Good | 31.6% | 25.0% | $X^2_2$=0.89, p=0.64 |
| Moderate | 39.5% | 50.0% | |
| Unsatisfactory | 28.9% | 25.0% | |
| Math Skills: | | | |
| Good | 45.9% | 40.0% | $X^2_2$=0.53, p=0.77 |
| Moderate | 29.7% | 37.5% | |
| Unsatisfactory | 24.3% | 22.5% | |
| Study skills: | | | |
| Good | 75.7% | 74.4% | $X^2_1$=0.02, p=0.89 |
| Unsatisfactory | 24.3% | 25.6% | |
| Enjoys school: | | | |
| Yes | 75.7% | 57.5% | $X^2_1$=2.08, p=0.15 |
| No | 24.3% | 42.5% | |

Statistically significant interactions were found for concentration (p=0.030) and behaviour (p=0.023). To illustrate these results, we compared the two groups separately for children below 5 years of age at first contact and those aged at least 5 years. There was a significant difference in outcomes between groups in favour of Group A among the younger children but not among the older. Consequently, intervention appeared to help the behaviour and concentration of children who were younger at intake but not the older ones.

## DISCUSSION

This study aims to provide evidence concerning the long term outcome of language disordered children in adolescence, by comparing them with a similar group of adolescents who had been diagnosed at our service, but had not been treated. In order to comprehend the difficulties this population is faced within the long term, data concerning the natural history of these disorders is vital, but it is ethically unacceptable to design studies of this sort prospectively. Our study is a retrospective study and furthermore involves children who had all completed the same diagnostic procedure at our Service, whilst some of the children were treated at the Early Intervention Programme and others did not accept our recommendations and consequently remained untreated. None of the children had received therapy at any other service, so one could maintain that this latter group represents the 'natural history' of these disorders.

Specific developmental disorder has been charted by many researchers into adolescence and early adulthood. These longitudinal studies indicate that generally children with these disorders continue to have problems as they grow older. These problems may be academic, social, behavioural, emotional or occupational, that is, they exhibit learning difficulties, problems in relationships with their peers, behaviour problems, mood and emotional disorders, difficulties in social relationships and work-finding [11, 14-16, 33]. Some of these disorders may be aetiologically linked to early language disorders, and yet others, such as the more severe psychiatric difficulties some of this population exhibit in adulthood, do not appear to be inherently linked to the early language disorder [cf 14].

In our study, we attempt to address all of these parameters, that is, those concerning the adolescents' adaptive behaviours, as well as their academic achievements. By comparing adolescents who had received therapy with those who had not, it may be possible to discern the impact of early intervention. Can it protect children from developing learning disorders? What, if any, is its effect on other important areas, such as social adjustment and behaviour? By studying a group of untreated children, it is possible to view the nature of language impairment, its transformations over time and the consequences throughout a person's lifetime.

In our study, through investigation of the developmental histories, family characteristics and pathological profiles of the two groups, our initial observation is that the two groups do not seem to be homogenous from the outset. For instance, children who received therapy at our Service had a different initial profile from untreated children. They were on the whole younger at intake, and had generally more patent problems, that is, slower motor development, more ear infections and lower birth weight. With respect to their speech and language problems, although both groups had similar verbal comprehension scores, their speech and language output was more impaired, that is, they exhibited semantic-syntactic disorders with articulation disorders more often than children who had not accepted treatment. This latter group were more likely to exhibit milder phonological disorders.

Further differences were found with respect to the family profiles of the two groups. The parents of treated children were generally better educated, professional people, who had a specific request from our Service regarding their concern about their child's speech and language difficulties. Interestingly, these families also had other family members who had speech or learning disorders, which may account for their readiness to acknowledge their child's disorder, which it turn allowed them to accept and complete our therapy programme.

Looking at all the contributing factors simultaneously, however, it appears that those that are predictive concerning the parents' acceptance of therapy are the diagnosis of an articulation disorder, the parents' initial request being due to a speech or language delay and the mother being occupied outside the home, with low birth weight being marginally significant.

In adolescence, our findings with respect to academic outcomes appear initially discouraging, in that both groups appear to be having academic problems at the present time. However, results should be interpreted in the light of their initial profiles.

Children who had received therapy had more severe initial speech and language problems.

Although academic achievement is obviously an important issue, since these adolescents are still undergoing compulsory education, their social skills will be all the more important prospectively and will contribute to a better quality of life. With regard to this aspect, untreated adolescents seem to be having problems already, as their parents report their concern about their adolescents' behaviour problems and in particular with their withdrawn behaviour. Research by Wadman, Durkin and Conti-Ramsden [34] show similar findings in adolescents with a history of SLI. On the whole, adolescents in our study who did not receive therapy do not like school and have poor concentration and study skills. These results for the 'natural history' group compare with those of Brownlie *et al.* [35], as well as Conti-Ramsden and Botting [24]. In fact, these latter researchers went on to investigate emotional health issues in adolescents with a history of SLI and found that they had higher rates of anxiety and depression symptoms than normally developing peers [10]. It is important to note, however, that in our study these untreated children achieve better at school if their parents' educational background is higher, which seems to imply that environmental factors play an important role in the prognosis of these disorders.

In contrast, adolescents who commenced therapy at our Service before the age of 5 years do not appear to have secondary behavioural or emotional problems at present: they enjoy school, have friends and hobbies and better study skills. Their concentration and behaviour are on the whole not causing concern to their parents. These findings imply that early intervention has a positive impact on social and behavioural outcomes. Other researchers have shown similar results which may be interpreted in this light [36].

## CONCLUSION

This study has focused on some of the domains which may be affected as children with specific developmental language disorders grow older. In adolescence, educational, social, behavioural and emotional abilities are important for adjustment. Our results show that children who have not received therapy for their speech and language problems at an early age may later exhibit more severe impairments in adolescence, particularly in the social and behavioural domains which could be a negative prognostic factor for their later development and quality of life. Our study also highlights the fact that although children who have received therapy may exhibit academic problems in adolescence, their behaviour and concentration are better than their untreated peers particularly if their therapy begins before the age of 5 years, which is an important argument for early intervention.

In this study, factors which reflect parental compliance with therapy may also be seen. For instance, our service concluded that parents were more likely to accept therapy if their children had more 'patent' speech articulation difficulties, or if there was a previous experience in the family of learning or speech disorder. This type of information may be used when designing preventive activities in the community and in order to modify certain aspects of service delivery.

In conclusion, it appears that academic skills are just one of the facets that may be affected as a child with specific developmental language disorders grows older. Social and behavioural skills, as well as emotional well-being, are probably more important for adjustment as one progresses through life and these appear to be precarious for children with developmental language disorders, particularly for those who have not received any form of therapeutic intervention at the appropriate time. Markham and Dean [37] note that it is these themes in particular which therapists must pay particular attention to in their interventions.

## LIMITATIONS

Our study investigates the outcomes of clients of a specific early intervention programme, which has an inherent limitation in that all of the subjects were diagnosed and treated by the same interdisciplinary clinical team, who later conducted the follow-up interviews with the parents. Subjects were not randomly assigned to intervention and the interviewers were not blinded to the adolescents' treatment histories, as the conditions at the setting did not allow this. Another important limitation of the study concerns the lack of standardized tests in the Greek language at the time: thus, much of the clinical data was drawn from detailed clinical observation, criterion-referenced tests and informal testing.

In this study it was not deemed necessary to have a normal language development control group as the comparison was between treated and untreated individuals. However it must be noted that this must be taken into account when interpreting the results.

Finally, even though parent report measures and proxy reports are considered valid and widely used techniques in child and adolescent assessment, their reliability is always under question when this information is not corroborated by direct testing. This research team proposes to continue investigating these issues in future studies with the use of direct testing and furthermore, to investigate how the adolescents perceive themselves, their therapy outcome and the intervention they received [38].

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