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Children's Language Ability and Psychosocial Development: A 29-Year Follow-up Study

AQ: A

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AQ: B

WHAT'S KNOWN ON THIS SUBJECT: Childhood receptive language skills are associated with social, emotional, and behavioral problems, although there has been little research on whether these problems persist into adulthood.

WHAT THIS STUDY ADDS: Using a large scale longitudinal cohort study, we investigate to what extent variations in childhood receptive language skills are linked to later psychosocial outcomes and adult mental health.

abstract

OBJECTIVES: Little is known on the psychosocial adult outcomes of children's early language skills or intervening circumstances. The aim of this study was to assess the longitudinal trajectory linking childhood receptive language skills to psychosocial outcomes in later life.

METHODS: The study comprised 6941 men and women who participated in a nationally representative Birth Cohort Study. Direct assessment of language skills were made at age 5. The sample was studied again at age 34 to assess psychosocial outcomes and levels of adult mental health. Characteristics of the family environment, individual adjustment, and social adaptation in the transition to adulthood were assessed as potential moderating factors linking early language skills to adult mental health.

RESULTS: In early childhood, cohort members with poor receptive language experienced more disadvantaged socioeconomic circumstances than cohort members with normal language skills and showed more behavior and psychosocial adjustment problems in the transition to adulthood. At age 34, cohort members with poor early language skills reported lower levels of mental health than cohort member with normal language. After adjustment for family background and experiences of social adaptation, early language skills maintained a significant and independent impact in predicting adult mental health.

CONCLUSIONS: Early receptive language skills are significantly associated with adult mental health as well as psychosocial adjustment during early childhood and in later life. The needs of children with language problems are complex and call for early and continuing provision of educational support and services. *Pediatrics* 2010;126:e000   AQ:C-D

Success as an adult depends in part on the learning and development that occur in infancy and early childhood. Language skills, in particular, are critical to children's adjustment in school and in later life. There is evidence to suggest that children with language problems may develop social, emotional, and behavioral problems.[1–5] Up to now, there has been little research on whether these problems persist, to what extent they are associated with early language difficulties, or whether such problems are mainly a function of associated family circumstances.[6–9] Follow-up studies of children with early language problems suggested that mental health problems tend not to resolve but rather to increase with entry into adolescence,[1,2,10–12] although there might be different trajectories for different behavioral, emotional, or social problems. There is also evidence to suggest that children with developmental language problems are at an increased risk for psychiatric disorder and impaired social adaptation.[6,7,13,14] The samples used in these studies make up a heterogeneous population, including different types of language impairments and ages, although individual samples mostly involved small and relatively homogeneous samples of children with clinical levels of language problems.

We used a large-scale longitudinal study to investigate the extent to which variations in childhood receptive language ability are linked to later psychosocial outcomes. Drawing on data collected for the 1970 British Cohort Study, we assessed family circumstances as well as psychosocial functioning of children with poor language skills in early childhood and linked these to adult psychosocial outcomes. First, we assessed the direct association between early language skills and adult mental health. Then we examined to what extent this association can be explained through family circumstances rather than the presence of language problems. We differentiated between family sociodemographic characteristics and the psychosocial family environment, following the assumption that these tap into different aspects of childhood experience (eg, family socioeconomic resources, parent–child interactions).[15–17] We also tested whether adult mental health is influenced by social and behavioral difficulties in childhood, through social adaptation problems in the transition to adulthood, or a combination of all of these factors.

This study is 1 of the first to link childhood language ability to later psychosocial adjustment in a nationally representative sample. Moreover, we accounted for gender differences in long-term outcomes, because there is persistent evidence to suggest that adult psychosocial adjustment differs for men and women.[18–20]

METHODS

Data

The 1970 British Cohort Study is a large-scale longitudinal study of 16 571 individuals who were born in Great Britain in a week in April 1970. Follow-up studies were conducted at ages 5, 10, 16, 26, 30, and 34. In 2004, at 34 years of age, 9665 cohort members took part in the follow-up survey; for 6941 cohort members, we have complete data for key variables that were collected at ages 5 and 34 (72% of those who completed the questionnaire at age 34). The sample is largely representative of the general UK population of that age, although there is a trend toward underrepresentation of male individuals and the less educated.[21] We used multiple imputation to address the issue of missingness and selective dropout.

Measures

Receptive Language at Age 5

English language development at age 5 was assessed directly by using the English Picture Vocabulary Test, an adaptation of the American Peabody Picture Vocabulary Test.[22] The test has good reliability of 0.96.[23] It consists of 56 sets of 4 different pictures with a particular word associated with each set of 4 pictures. The child is asked to indicate the 1 picture that corresponds to the given word, and the test proceeds with words of increasing difficulty until the child has made 5 mistakes in a run of 8 consecutive items. Children who scored at least 1 SD below the average performance score were identified as having poor receptive language skills. A group with "normal" language development included all others.

Family Demographics

The following demographic variables were collected:

- teenage mother (0 = no, 1 = yes);
- single (never married) mother at birth (0 = no, 1 = yes);
- mother's education (0 = additional education, 1 = mother left full-time education at minimum age);
- father's education (0 = additional education, 1 = father left at minimum age);
- social class from father's occupation (or mother's if single; 0 = nonmanual or skilled manual, 1 = semiskilled or unskilled manual); and
- income from employment (0 = yes, 1 = no income).

Psychosocial Family Environment During Childhood

The following information about the psychosocial family environment during childhood was collected:

- Maternal depression: At age 5, mothers were assessed with the Rutter Malaise Inventory, a self-

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completion instrument that measures depression, anxiety, and psychosomatic illness.[24] A score of ≥ 8 from the 24 items indicates increased rates of psychological distress (0 = no distress, 1 = distress).

- Parents read to child: At age 5, parents were asked how often they read to their child in a week (0 = read to child, 1 = did not read to child).

- Parental interest in child's education: At age 10, the child's teacher was asked to report how interested the child's parents were in the child's education. A total of 58.8% of parents were reported to be "very or moderately" interested and 9% to show "little interest" or be "uninterested." For 31.2% of parents, teachers believed that they "could not say" what interest they held. We differentiated between parents who were interested in their child's education (0), those who were reported to be uninterested or to have little interest (1), and those for whom the teacher could not report on parental interest (2).

Own Psychosocial Adjustment During Childhood

The following information on one's own psychosocial adjustment during childhood was collected:

- Behavioral adjustment at age 5 was measured by using maternal report on 29 items of the Rutter "A" Scale. Subscores for "neurotic" and "antisocial" behavior problems were obtained following the approach outlined by Rutter et al.[24]

- Self-esteem was directly assessed at age 10 by using 7 items from the pupil questionnaire[25,26] (eg, "Do you think that other children often say nasty things about you?" "Do you often feel sad because you have nobody to play with at school?"). Cohort members with summary

scores >1 SD below the mean were identified as having low self-esteem at age 10.

Social Adaptation in the Transition to Adulthood

The following information on social adaptation in the transition to adulthood was collected:

- age left full-time education (0 = additional education, 1 = left school at age 16);

- timing of parenthood (1 = teenage parenthood; 2 = not a parent by 34; 0 = parent between 20 and 34 [reference category]);

- lives with parents at age 34 (0 = no, 1 = yes); and

- unemployment (0 = no unemployment, 1 = unemployed 1–12 months, 2 = ≥ 13 months unemployed).

Adult Mental Health

We operationalized adult mental health as a syndrome of indicators that reflect the presence or absence of positive feelings and functioning[27] at age 34 by using 4 dichotomized measures:

- A shortened version of the Rutter Malaise Inventory of 9 items was used as a screening tool for adult depression.[28] A score of ≥ 4 was used to indicate psychological distress (0 = no distress, 1 = distress).

- General life satisfaction was measured on a 10-point scale (0 = extremely unsatisfied to 10 = completely satisfied). The median score was 7. A total of 22.1% scored between 0 and 6, indicating low life satisfaction (0 = satisfied, 1 = low satisfaction).

- Feeling of control over one's life was measured with a forced choice question: "I usually have a free choice and control over my life" (0 = control, 1 = no control).

- A measure of self-efficacy was based on another forced choice question: "I usually get what I want out of life" (0 = yes, 1 = no).

Adults who reported 3 or 4 indicators of negative functioning were identified as having poor mental health, those reporting 1 or 2 indicators were assumed to be moderately mentally healthy, and those who reported no problems were considered to have good mental health.

Control Variables: Indicators of Biological Risk

The following control variables were assessed:

- birth weight (0 = ≥ 2515 g, 1 = ≤ 2515 g) and

- gestation (0 = ≥ 259 days, 1 = <259 days).

Analytic Strategy

We ran a series of logistic regression models by using adult mental health as the outcome. To account for missingness between data sweeps, we used multiple imputations by chained equations as implemented in Stata 10[29] as a best effort technique.[30] Five replicates of the data were created. Model estimates were averaged across these 5 analyses, with their SEs calculated according to Rubin's rule.[31] All descriptive analyses were also conducted in Stata 10, and relevant statistical comparisons were made using χ^2 tests at the 0.001, 0.01, and 0.05 levels. All models were controlled for indicators of biological risk (low birth weight and gestation) to account for associated medical conditions.

RESULTS

Table 1 compares the characteristics and background data for men and women separately. At age 5, more girls than boys showed poor receptive language skills. Although gender differences in the development of language

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TABLE 1 Descriptive Statistics of Variables Included in Analysis

Parameter	Men ($n = 3328$), %			Women ($n = 3613$), %			Overall ($n = 6941$), %		
	Poor	Normal	All	Poor	Normal	All	Poor	Normal	All
Distribution language skills at age 5	9.6	90.4		15.0	85.0		12.4	87.6	
Family demographics (birth)									
Child's mother ever a teenage mother	22.1[a]	15.2	15.9	23.4[a]	14.4	15.8	22.9[a]	14.8	15.8
Child's mother left school at minimum age	78.5[a]	61.6	63.2	78.9[a]	61.2	63.8	78.8[a]	61.4	63.5
Child's father left school at minimum age	77.8[a]	63.2	64.6	78.6[a]	61.0	63.6	78.3[a]	62.1	64.1
Child's father in semiskilled or unskilled manual job	33.0[a]	17.8	19.2	31.6[a]	17.0	19.2	32.1[a]	17.2	19.1
Psychosocial family environment (ages 5 and age 10)									
Mother depressed	24.7[a]	14.0	15.0	24.7[a]	14.3	15.9	24.4[a]	13.9	15.2[d]
Parents show little interested in child's education	17.4[a]	7.4	8.4	14.3[a]	5.6	6.9	15.4[a]	6.5	7.6[d]
Teacher reports "cannot say" whether parents have interest in child's education	35.8[a]	27.5	28.3	37.1[a]	29.7	30.8	36.6[a]	28.6	29.6[d]
Parent did not read to child	32.0[a]	16.6	18.1	27.9[a]	15.9	17.7	29.4	16.3	17.9
Child's behavior/self-esteem (ages 5 and 10)									
Neurotic (Rutter)	2.5	2.8	2.7	5.2[b]	3.7	4.0	4.2[b]	3.2	3.4[d]
Antisocial (Rutter)	15.0[a]	7.0	7.7	8.3[a]	4.0	4.7	10.8[a]	5.5	6.1[d]
Low self-esteem	18.5[a]	12.6	13.2	25.8[a]	19.0	20.0	22.0[a]	15.9	16.6[e]
Social adaptation (ages 16–34)									
Left education by 16	66.4[a]	49.6	51.2	58.7[a]	39.5	42.4	61.5[a]	44.5	46.6[e]
Teenage parent	4.7	2.3	2.6	14.4[a]	6.7	7.9	10.8[a]	4.5	5.3[e]
Not a parent by 34	46.9	46.4	46.5	27.9	31.2	30.7	34.9	38.7	38.3[e]
Lives with parents at age 34	18.6[a]	9.4	10.3	5.0[b]	3.2	3.5	10.0[a]	6.3	6.7[e]
Never lived with a partner by age 34	23.3[b]	18.5	19.0	13.8[b]	10.1	10.6	17.3[b]	14.3	14.6[e]
Unemployed 1–12 mo	17.6	15.8	15.9	11.4	11.1	11.2	13.7	13.4	13.5[e]
Unemployed ≥13 mo	20.1[a]	10.5	11.5	7.8[c]	5.4	5.8	12.3[a]	7.9	8.5[e]
Adult mental health (age 34)									
Never get what want out of life	31.1[a]	18.0	19.2	24.2[a]	14.3	15.8	26.7[a]	16.1	17.4[e]
Has no control over life	14.8[a]	6.5	7.3	12.9[a]	6.3	7.3	13.6[a]	6.4	7.3
Has low life satisfaction	35.5[a]	20.7	22.2	23.1[a]	17.0	17.9	32.0[a]	20.7	22.1[e]
Depressed (malaise)	20.4[a]	11.0	11.9	29.9[a]	20.6	22.0	22.1[a]	14.0	15.0[e]
Poor mental health (3–4 indicators of 4)	14.8[a]	6.9	7.7	13.8[a]	7.7	8.6	14.2[a]	7.3	8.1
Moderately mentally healthy (1–2 indicators of 4)	36.2[a]	24.9	26.0	32.1[a]	25.2	26.2	33.6[a]	25.0	26.1
Good mental health	49.1[a]	68.2	66.4	54.1[a]	67.2	65.2	52.2[a]	67.7	65.8

Statistical significance between English Picture Vocabulary Test groups: [a] $P < .001$, [b] $P < .01$, [c] $P < .05$; Statistical significance by gender: [d] $P < .05$, [e] $P < .001$.

skills are generally in favor of girls,[32] there is evidence of task-specific differences.[33–36] The format in which the test items are presented to the children, requiring no expressive language skills but asking the child to point to 1 of 4 pictures, might be more in favor of boys, who may have an advantage when it comes to visual tasks that require scanning.

Our findings suggest that boys and girls with poor receptive language are more likely to grow up in relatively disadvantaged family circumstances than children with normal language skills and are more likely to show problematic behavior and social adaptation problems (Table 1). Men and women with poor early language skills felt less satisfied with their lives and less in

control and were more likely depressed than those with normal language skills. More women than men reported that they get what they want out of life and are more satisfied with their lives, yet we also found that more women than men reported high levels of distress.

Predicting Adult Mental Health

In a next step, we ran a series of logistic regressions to assess the risk for poor adult mental health among cohort members with poor language skills at age 5 and whether this risk is moderated by earlier experiences. We first assessed the direct association between early receptive language problems and adult mental health (model 1), controlling for biological

risk. Second, we examined the role of family socioeconomic circumstances (model 2) and then, in model 3, the role of the psychosocial family climate in moderating the risk. Fourth, we assessed the effect of the child's characteristics (behavior adjustment and self-esteem; model 4). Fifth, we assessed experiences of social adaptation during the transition to adulthood (model 5). In the final model, we included all variables simultaneously. All models were run separately for men and women to account for gender-specific experiences in the transition to adulthood.[18–20]

Table 2 gives the results of the multivariate logistic regression models for women. Model 1 suggests that differences in adult mental health were sig-

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TABLE 2 Multiple Logistic Regression Predicting Poor Adult Mental Health for Women at Age 34

Parameter	Model 1	Model 2	Model 3	Model 4	Model 5	Final Model
Receptive language (age 5)						
EPVT poor	2.20 (1.65–2.93)[a]	1.88 (1.40–2.53)[a]	1.71 (1.25–2.35)[b]	2.03 (1.51–2.74)[a]	1.85 (1.36–2.50)[a]	1.46 (1.05–2.03)[c]
EPVT normal	1.00	1.00	1.00	1.00	1.00	1.00
Demographics (birth)						
Child's mother ever a teenage mother		1.35 (0.99–1.84)				1.10 (0.78–1.55)
Child's mother left school at minimum age		1.11 (0.82–1.49)				0.87 (0.63–1.21)
Child's father left school at minimum age		1.68 (1.23–2.30)[b]				1.39 (0.99–1.94)
Child's father in semiskilled or unskilled manual job in 1970		1.47 (1.10–1.96)[c]				1.24 (0.91–1.70)
Psychosocial environment (ages 5 and 10)						
Mother depressed (8+ malaise)			2.07 (1.53–2.78)[a]			1.70 (1.23–2.36)[b]
Teacher reports parents have little interest in child's education			4.62 (3.11–6.87)[a]			3.23 (2.11–4.94)[a]
Teacher reports "cannot say" whether parents have interest in child's education			1.65 (1.22–2.24)[b]			1.37 (0.99–1.90)
Parent did not read to child			1.34 (0.99–1.81)			1.22 (0.89–1.69)
Child's behavior/self-esteem (ages 5 and 10)						
Neurotic (Rutter)				1.78 (1.01–3.13)[c]		1.62 (0.88–2.97)
Antisocial (Rutter)				3.29 (2.12–5.11)[a]		2.22 (1.33–3.71)[b]
Low self-esteem				2.05 (1.49–2.81)[a]		1.77 (1.25–2.51)[b]
Social adaptation (ages 16–34)						
Left education by 16					1.67 (1.29–2.16)[a]	1.25 (0.94–1.66)
Teenage parent					3.03 (2.08–4.42)[a]	2.15 (1.41–3.28)[a]
Not a parent by 34					1.05 (0.77–1.42)	1.12 (0.81–1.55)
Lives with parents at age 34					3.34 (1.87–5.99)[a]	3.69 (1.98–6.88)[a]
Never lived with a partner by 34					1.05 (0.68–1.61)	0.99 (0.63–1.56)
Unemployed 1–12 mo					1.59 (1.10–2.3)[c]	1.51 (1.02–2.22)[c]
Unemployed ≥13 mo					3.57 (2.39–5.32)[a]	3.25 (2.11–5.02)[a]

Data are odds ratios (95% confidence interval), controlling for biological risk. EPVT indicates English Picture Vocabulary Test.
Statistical significance: [a] $P < .001$, [b] $P < .01$, [c] $P < .05$.

nificantly associated with early receptive language skills. The odds for poor mental health among women with poor early language skills were ~2 times higher than those among women with normal language skills. Adjusting for sociodemographic characteristics of the family (model 2) reduced the odds for poor mental health in adulthood significantly (15%) yet did not eliminate the gradient. Adjusting for the psychosocial family environment experienced during childhood (model 3) brought an even greater reduction in the gradient (25%). The association between early receptive language problems and adult mental health remained significant, however. Adjusting for indicators of early behavior problems and low self-esteem (model 4) also reduced the odds ratio, but not as strongly as models 2 and 3. Adjusting for experience of social ad-

aptation between ages 16 and 34 (model 5) brought again a significant reduction in the risk for poor adult mental health among women. Taking into account all variables simultaneously reduced the association between early language problems and poor adult mental health by 34% but did not remove it. In addition and above the direct influence of early language problems on adult mental health, we found an independent significant effect from maternal depression, lack of parental interest in the child's education, conduct disorder, low self-esteem, and indicators of social adaptation in the transition to adulthood, such as teenage parenthood, living with parents, and experience of unstable employment, suggesting that these are key factors that undermine positive mental health among women with poor early language skills.

Among men (Table 3), we also found a significant association between early receptive language problems and adult mental health (model 1). Taking into account the sociodemographic characteristics of the family environment (model 2), we found a reduction in the gradient by 12%, although the association between early language skills and adult mental health remained significant. Adjusting for characteristics of the family environment (model 3) also reduced the odds, as did the consideration of the child's behavior and self-esteem (model 4). Taking into account indicators of social adaptation between ages 16 and 34 (model 5) reduced the gradient by 23%, yet the association between early language problems and poor adult mental health remained significant. Including all variables simultaneously (final model) led to a reduction of the

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TABLE 3 Multiple Logistic Regression Predicting Poor Adult Mental Health for Men at Age 34

Parameter	Model 1	Model 2	Model 3	Model 4	Model 5	Final Model
Receptive language (age 5)						
EPVT poor	2.94 (2.06–4.20)[a]	2.58 (1.79–3.71)[a]	2.20 (1.47–3.28)[a]	2.70 (1.88–3.89)[a]	2.27 (1.54–3.34)[a]	1.77 (1.15–2.72)[b]
EPVT normal	1.00	1.00	1.00	1.00	1.00	1.00
Demographics (birth)						
Child's mother ever a teenage mother		1.20 (0.85–1.70)				1.16 (0.78–1.73)
Child's mother left school at minimum age		1.12 (0.81–1.54)				1.04 (0.73–1.49)
Child's father left school at minimum age		1.77 (1.24–2.51)[b]				1.26 (0.85–1.86)
Child's father in semiskilled or unskilled manual job in 1970		1.18 (0.85–1.63)				1.06 (0.73–1.54)
Psychosocial environment (ages 5 and 10)						
Mother depressed (8+ malaise)			1.54 (1.08–2.20)[c]			1.27 (0.86–1.86)
Teacher reports parents have little interest in child's education			2.90 (1.68–5.01)[a]			2.22 (1.15–4.28)[c]
Teacher reports "cannot say" whether parents have interest in child's education			1.75 (1.29–2.38)[a]			1.54 (1.11–2.14)[c]
Parent did not read to child			1.24 (0.85–1.79)			1.35 (0.91–2.01)
Child's behavior/self-esteem (ages 5 and 10)						
Neurotic (Rutter)				2.52 (1.33–4.77)[b]		1.95 (0.93–4.08)
Antisocial (Rutter)				1.89 (1.24–2.88)[b]		1.34 (0.82–2.20)
Low self-esteem				1.72 (1.19–2.48)[b]		1.56 (1.03–2.34)[c]
Social adaptation (ages 16–34)						
Left education by 16					1.68 (1.26–2.24)[a]	1.32 (0.95–1.82)
Teenage parent					1.05 (0.45–2.45)	0.95 (0.38–2.40)
Not a parent by 34					1.20 (0.87–1.65)	1.38 (0.99–1.94)
Lives with parents at age 34					3.41 (2.32–5.01)[a]	3.05 (2.03–4.58)[a]
Never lived with a partner by 34					1.20 (0.83–1.75)	1.17 (0.80–1.72)
Unemployed 1–12 mo					1.72 (1.20–2.47)[b]	1.63 (1.11–2.38)[c]
Unemployed ≥13 mo					4.67 (3.28–6.68)[a]	4.02 (2.76–5.85)[a]

Data are odds ratios (95% confidence interval), controlling for biological risk. EPVT indicates English Picture Vocabulary Test.
Statistical significance: [a] $P < .001$, [b] $P < .01$, [c] $P < .05$.

gradient by 40%, suggesting that positive mental health can be promoted by improving the psychosocial characteristics of the early family environment (especially parental interest in the child's education) and by supporting social adaptation during young adulthood, in particular through prevention of long-term unemployment and facilitation of independent living.

DISCUSSION

Early receptive language problems are a significant risk factor for adult mental health and well-being. The childhood of cohort members with poor early language is characterized by relative social disadvantage, because they are more likely born to a teenage mother or to parents with only minimum education and low occupational status than cohort members with normal language skills. Their mothers reported increased levels of psychological distress, and their parents showed less interest in their education and were less likely to read regularly to their child. Children with poor early language skills are more likely to manifest behavioral problems and report lower levels of self-esteem than children with normal language; they also encounter more social adaptation difficulties in the transition to adulthood. The risk presented by early language problems for adult mental health is partly moderated by characteristics of the family environment, as well as individual psychosocial adjustment. After controlling for family demographics, the psychosocial family environment, the cohort member's behavior and self-esteem, and the cohort member's social adaptation experiences in the transition to adulthood, the association between early language skills and adult mental health could be significantly reduced yet not be removed.

The findings suggest different mechanisms in the psychosocial adaptation of men and women with early receptive language problems. There is a stronger association between early language problems and adult mental health among men than among women, suggesting that men with poor receptive language skills are relatively more at risk for mental health problems than women. Women with early receptive language problems are possibly to some extent protected from potential risk for adult mental health problems when they are raised by a mentally stable mother and by parents who show an interest in their education; when they show no signs of antisocial behavior in early childhood and

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avoid early school leaving, teenage parenthood, and long-term unemployment; and when they make the move away from the parental home to set up their own household. Among men, parental interest in their education also moderates the association between early language problems and adult affective disorder, as does the manifestation of antisocial behavior during childhood, low self-esteem, and the experience of social adaptation problems in the transition to adulthood.

Generally, the social adaptation of individuals with poor early receptive language was impaired compared with cohort members with normal language. This was evidenced in lower levels of behavioral adjustment and self-esteem in early childhood, as well as regarding employment, family formation, and independent living. The findings suggest that early language problems are associated with difficulties in social functioning,[6,7] which in turn can result in socially restricted lives, characterized by long-term unemployment, problems in establishing and maintaining intimate relationships, and difficulties in making the step into independent living. The experience of social adaptation problems suggests a lack of opportunities for attachment and participation in a supportive social environment, such as work or family life, which in turn is associated with reduced mental health.[37]

In interpreting the findings, some limitations of the study have to be considered. The data used in the analysis were collected >30 years ago, reflecting theoretical and methodologic concerns at that time. As with all secondary analysis, we had to make the best of the available data. Another concern is missing data as a result of survey loss or incomplete response. There is some indication that the most socially disadvantaged, in particular men, are also most likely to drop out of longitudinal studies.[21] We used multiple imputation methods to address the issue of missingness and selective dropout of the study, a method recommended as a "best effort" technique for dealing with this problem.[38] Nonetheless, the estimates might be underestimates of the population effects because of the slight underrepresentation of the most disadvantaged. On the positive side, the strengths of this study lies in its size, resulting in high statistical power; its longitudinal nature; the direct assessment of early language skills; information on socioeconomic circumstances and psychosocial adjustment in the transition to adulthood; and following the lives of children with poor early language skills and comparing their experiences with those of normal ability. Future studies should examine in more detail the role of generalized versus more specific language skills[6,7] to confirm the role of early language as an independent predictor of adult social functioning and mental health.

CONCLUSIONS

The psychosocial consequences of early receptive language problems are pervasive and continue into adult life. The needs of children with early language problems are complex, and increased awareness should be paid to the persisting social and psychological difficulties that these children may go on to experience. The data presented here identify characteristics of the family and the individual, such as lack of parental interest in the child's education and low self-esteem, that could be addressed to promote positive mental health among those with poor early language skills.

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