Department for Education

Experiences of Education, Health and Care plans: a multivariate analysis

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Executive summary

An Education, Health and Care (EHC) plan details the education, health and social care support that is to be provided to a child or young person aged 0-25 years who has Special Educational Needs or a Disability (SEND). It is drawn up by the local authority after an EHC needs assessment of the child or young person, in consultation with relevant partner agencies, parents and the child or young person themselves.

EHC plans and the accompanying needs assessment process were introduced as part of the Children and Families Act 2014. The Act, along with an accompanying SEND Code of Practice, sets out how local authorities must ensure the delivery of EHC plans.

In 2016, a national survey commissioned by the Department for Education (DfE) found variations in how EHC plan recipients experienced the EHC planning process across different local authorities.[1] Based on these results, DfE commissioned two further research projects: a qualitative investigation of user experiences of the EHC planning process, and this multivariate analysis of factors affecting satisfaction with the EHC planning process.

This multivariate analysis detailed in this report presents the links between:

- three outcome measures of satisfaction with the EHC planning process:
  (1) whether survey respondents agreed that the outcomes set out in the plan were likely to be achieved
  (2) whether survey respondents agreed that the EHC plan process was a positive experience for the child or young person receiving the plan
  (3) overall satisfaction with the process of getting an EHC plan as reported by the survey respondent (young person with SEND or parent/carer of child or young person with SEND)
- the characteristics of young people with an EHC plan put in place in 2015 (e.g. age of child/young person, gender, ethnicity, deprivation of respondent's locale)
- aspects of the EHC plan service process (e.g. duration of process, who initiated the process, whether the respondent was included in the development of the EHC plan)

Data from the original survey was analysed using binomial logistic regression, an analytical technique that allows the relationships between single variables and outcome measures to be identified and their strength assessed by controlling for other variables within the analysis. Essentially, binomial logistic regression measures how different variables affect the probability of an outcome measure being one thing or another. For

[1] The survey examined the experiences of 13,643 young people and parents of children/young people who received an EHC plan in 2015.

example, one outcome measure in this paper is ‘overall satisfaction with the process of getting an EHC plan’: binomial logistic regression is used to indicate how different variables (characteristics of the child/young person or aspects of the service process) affect the probability that respondents are or are not satisfied.

Key findings

A total of three models were fitted, resulting in one model for each of the key outcome variables. The following variables were found to have a significant relationship to the satisfaction variables of interest:

- **Age** – where the child was aged under 5 years, or between 5 and 10 years, their parent or carer was more likely to agree that support set out in the EHC plan would achieve the stated outcomes. They were also more likely to be satisfied with the EHC process as a whole compared to other age categories.

- **Ethnicity** – non-white respondents were more likely to be positive about the EHC plan process than white respondents.

- **Deprivation** – respondents living in the most deprived 10% of neighbourhoods were less likely to give positive responses for all three outcome measures than respondents not in the 10% most deprived neighbourhoods[2].

- **Duration of the EHC plan process** –the shorter the process of receiving an EHC plan, the higher the likelihood of satisfaction. Perceptions of those who waited the longest (over 10 months) for their plan were used as a reference point and other shorter durations were compared against it. This showed that those receiving a plan within 20 weeks recorded the most positive perceptions of outcomes, experiences and overall satisfaction'.[3]

- **Different services (such as health, care and education) working together** – respondents who agreed that different services worked together during the EHC plan process were more likely to agree that their experience of the process was positive, that their EHC plan would achieve its outcomes and that, overall, they were satisfied with the EHC plan process.

- **Child/young person's wishes and opinions were included** - respondents who agreed that the child/young person's wishes and opinions were included in the development of their EHC plan were more likely to report positive service components for both the 'outcomes' and 'positive experience' models, highlighting the importance of including the child or young person in the process.

- **Personal circumstances taken into account in the process** - respondents who agreed that the child, young person or family's personal needs and circumstances

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[2] *Level of deprivation per local authority, calculated using the 2015 English Indices of Deprivation data (English Indices of Deprivation (2015).*

[3] To put this in context, just under half of all parents and young people responding to the survey stated that the whole process of getting an EHC plan took longer than 20 weeks (44%) and just over a quarter (27%) gave a timeframe within 20 weeks. Parents and young people who reported the process taking longer than 20 weeks (five months) most commonly reported that it took between 21 and 24 weeks, or approximately 6 months (18%); a slightly smaller proportion stated that it took more than 10 months (14%).

were taken into account in the process were more likely to agree that their experience of the EHC plan process was positive, that their EHC plan's outcomes would be achieved and that, overall, they were satisfied with the EHC plan process.

- **Easy for the child or young person to understand** – respondents who agreed that it was easy for the child or young person to understand their EHC plan were more likely to report that the child or young person found the process to be a positive experience and to report overall satisfaction with both the process and the plan itself.

- **EHC plan has led to the child/young person getting the support that they need** – respondents who stated that the EHC plan has led to the child or young person getting the support that they need were more likely to report overall satisfaction with the EHC plan.

Key considerations for Local Authorities based on these findings

- The length of the EHC plan process is an important consideration for Local Authorities. Higher levels of satisfaction with the process are reported when the process takes less than 20 weeks.
- (Respondents for) 16-25 year olds are less likely to agree that their EHC plan will achieve its agreed outcomes. Local authorities may want to consider how the EHC plan process can ensure that plans reflect achievable outcomes for young people.
- Local Authorities should ensure that children, young people and parents/carers are listened to during the EHC plan process and that their wishes and opinions form a part of the EHC plan. When respondents agreed that the child/young person was listened to during the process, they were significantly more likely to:
    - feel that the EHC plan would achieve its goals
    - feel that the EHC plan process had been a positive experience
    - feel satisfied with the overall process
- It is important that Local Authorities maintain clear communication, ensure that services work together to develop the EHC plan, and take applicants' personal circumstances into account while developing the EHC plan. These elements of service provision were consistently related to:
    - reporting that the EHC plan would achieve its goals
    - reporting that the EHC plan process was a positive experience
    - reporting overall satisfaction with the process

1. Introduction

An Education, Health and Care (EHC) plan details the education, health and social care support that is to be provided to a child or young person aged 0-25 years who has special educational needs (SEN) or a disability. It is drawn up by the local authority (in consultation with relevant partner agencies) after an EHC needs assessment of the child or young person has determined that an EHC plan is necessary. EHC plans, and the assessment process through which they are created, were introduced as part of the Children and Families Act 2014. The Act, and an accompanying SEND Code of Practice, sets out how local authorities must ensure the delivery of EHC plans.

This report details multivariate analysis of data from a survey of children and young people with an EHC plan created in the calendar year 2015 (Adams et al, 2017[4]). The survey was commissioned by the Department for Education, and aimed to assess whether users' perceptions and experiences of the delivery of the EHC needs assessment and planning process and the resultant EHC plans reflected the intentions set out in the Children and Families Act 2014 and the accompanying SEND Code of Practice.

The survey fieldwork was carried out from July to November 2016, with a total of 13,643 parents and young people taking part. Parents completed the survey on behalf of children under 16, while young people aged 16 and over were able to choose whether to have someone complete the survey on their behalf. Of the surveys returned, 78% were completed by parents/carers (n = 10699) and 22% by young people (n = 2943). The target population of the survey was children and young people with an EHC plan created in the calendar year 2015. This meant that respondents had had their EHC plan in place for long enough to be able to give their views on what effects it had had so far, but that the EHC needs assessment process also remained recent enough for parents and young people to remember it clearly. The survey only collected data from families who had an EHC plan in place in 2015, and did not include those who had requested an EHC plan but been unsuccessful in obtaining one (a review of arrangements for disagreement resolution (SEND) has recently been published (Cullen et al, 2017 [5]) along with the government's response to this review[6]).

Following the survey, an initial report (Adams et al, 2017) used bivariate analyses to investigate aspects of respondent attributes, aspects of the service process and satisfaction with the EHC plan and its process.

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[4] To access the full report by Adams et al. (2017) please use the link below http://dera.ioe.ac.uk/28758/1/Education__health_and_care_plans_parents_and_young_people_survey.pdf

[5] Please use this link to access the report by Cullen et al. (2017) on the process and outcomes of disagreement with the EHC plan outcome https://www.gov.uk/government/publications/send-disagreement-resolution-arrangements-in-england-review

[6] Please use this link to access the response by the government to the report by Cullen et al. (2017) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/606740/Government_report_on_CEDAR_review.pdf.

Selected key findings from the main report

- Two thirds of parents and young people (66%) were satisfied with the overall process of getting an EHC plan.
- Two thirds of parents and young people (66%) agreed that the EHC plan would achieve the agree outcomes.
- Half of parents and young people (50%) reported that the EHC plan process was easy while one quarter (25%) reported that the process was difficult.
- Three quarters of respondents (75%) agreed that the EHC plan led to the young person getting the help and support they need.

This subsequent report details further multivariate analysis of the original survey data in order to present the links between outcome measures of satisfaction with the EHC plan process and resultant plans, the characteristics of the child/young person receiving the plan and various aspects of the EHC plan process. The analytical approach and details of the variables included are set out in Section 2, below.

2. Analytical approach

The following section provides a summary of the analytical approach used for this report. More detailed information is provided in the Appendix.

This report details the multivariate analysis of the results of the national EHC plan survey conducted in 2016. The main survey report (see Adams *et. al* 2017) conducted several bivariate analyses to better understand how outcome measures varied based upon respondent characteristics and service process differences. The multivariate analysis presented in this report, meanwhile, attempts to identify the statistically significant factors influencing satisfaction with the EHC plan experience by focussing on three key outcome measures:

(4) whether survey respondents agreed that the outcomes set out in the plan were likely to be achieved

(5) whether survey respondents agreed that the EHC plan process was a positive experience for the child or young person receiving the plan

(6) overall satisfaction with the process of getting an EHC plan as reported by the survey respondent (young person with SEND or parent/carer of child or young person with SEND)

The analysis explores the extent to which the answers to these outcome variables were predicted by respondents' background characteristics (demographics) and their experience of the EHC plan service process. A binary logistic regression method was chosen: in this method, a single dependent variable (e.g. "whether respondent was satisfied or dissatisfied with the whole experience") is predicted from one or more independent variables (e.g. age of child/young person, length of process).

How to interpret these analyses

The analyses present results as odds ratios for each category within a variable compared to a reference category within that same variable. These odds ratios represent the likelihood of an outcome being observed in relation to a reference group. An odds ratio of more than 1 indicates an increased chance of experiencing the outcome, and an odds ratio less than 1 indicates a decreased chance compared to the reference group. The actual number indicates how many more (or less) times an outcome is likely to be observed; for example, if the odds ratio is 2.15 then the outcome is 2.15 times more likely to be observed.

Sample size

These analyses are based on a reduced sample size of 4,652 and not the complete 13,643 sample, as all 'don't know', 'prefer not to say' and 'not applicable' responses were coded as missing and removed from the dataset (details of non-response data is

provided in the Appendix). This reduced sample is pooled from surveys completed by young people (n=897, 19%) and by parents/carers (n=3755, 81%). For the dataset the item non-response rate is 1.5% based upon the variables of interest and a useable total of 13,643 respondents. The percentage of respondents answering all questions is 28.6%. The largest proportion of cases with at least one missing variable did not respond to only one (26%) key variable. The average sum of missing variables is 1.81 (1.89 standard deviation) variables per respondent. Chi square tests were conducted in order to determine whether there were significant differences between age groups, gender, ethnicity and primary SEN and whether a respondent was included in the model. There were significant differences between age groups, ethnicity and primary SEN and whether a respondent was included in the analysis.[7] The exclusion of these respondents was necessary but leads to reduced sample size and therefore the loss of statistical power. However, since the overall sample size is still over 3,900 it is assumed this is large enough for the analyses to produce meaningful results[8].

Variables used in the models

The demographic variables and service variables that are explored in the analysis are detailed in Table 1 overleaf. Frequencies for the following variables are available in the Appendix. The variables below were selected because previous analyses (both descriptive and bivariate) had shown them to be both appropriate for the tests to be run and to have significant relationships with the dependent variables.

Terminology used in the report

The survey was completed by parents or carers when the individual with SEND was under 16. However, for those individuals with SEND who were 16 or over, the survey may have been completed by the individual themselves or by their parents or carers. Throughout this report, the term ‘respondent’ is used to refer to both the parents/carers and young people who completed the original EHC plan survey.

[7] The Chi square tests compared those who had prefer not to say/not applicable/don’t know data (and were therefore removed from the analysis) against those who did not (and were retained for the analysis) against gender, ethnicity, age groups and primary SEN. The tests revealed that there were differences in the number of individuals who had and did not have prefer not to say/not applicable/don’t know data in different ethnic, age and primary SEN groups. That is to say it appeared that some of these groups were more likely than others to have this data and therefore be excluded. The full set of chi square test output can be seen in the Appendix.

[8] The sample size provides enough cases for the multivariate analyses to be run without the risk of reporting a false-negative finding (Type II error) becoming too great and with a justifiable level of statistical significance, statistical power, estimate of effect size and representativeness of the data.

Table 1: Demographic and service variables included in the analyses

Demographic variables	Description
Age group	Under 5, 5-10, 11-15 and 16-25
Gender	Child/young person identified as male or female
Ethnicity	Child/young person identified as white or non-white
Deprivation (Indices of Multiple Deprivation, IMD)	Whether child/young person lives in the most deprived 10% of neighbourhoods as measured by the indices of multiple deprivation (IMD).
Primary SEN[1]	Child/young person's primary SEN or disability
SEN statement	Whether the child/young person had a statement of SEN
Experience of the EHC plan service variables	**Description**
Time	Length of time the EHC plan process took
Involvement of other services	Whether different services such as health, care and education worked together to make the plan
Child/young person's wishes	Whether 'the child/young person's wishes were included in the plan'
Personal circumstances	Whether 'the child/young person's and family's personal circumstances were taken into account in the process'
Understand child/young person	Whether 'effort was made to listen to the child/young person and understand their opinion'
Child/young person able to understand the EHC plan	Whether 'it was easy for the child/young person to understand'
Communication	Whether 'communication was clear throughout the process'
Support	Whether 'the EHC plan has led to the child/young person getting the support that they need'

[1] This variable asked the young people or parents to identify just one category of SEN to describe their primary SEN or disability. Eight percent of respondents did not provide this information.

3. Outcomes

This section presents the findings from the multivariate analyses run to establish which demographic and service experience variables were best able to predict the three outcome measures:

(1) whether survey respondents agreed that the outcomes set out in the plan were likely to be achieved

(2) whether survey respondents agreed that the EHC plan process was a positive experience for the child or young person receiving the plan

(3) overall satisfaction with the process of getting an EHC plan as reported by the survey respondent (young person with SEND or parent/carer of child or young person with SEND)

In each case the model which best fitted the data is reported with a brief discussion of how the model was arrived at. Results of the statistical analyses are presented in tabular form and interpreted within the text.

i. 'Agreement that the help/support described in the EHC plan will achieve the outcomes'

Parents and young people were asked for their views on whether the EHC plan would achieve the agreed outcomes set out in their plan. A number of demographic and service experience variables were significantly related to this (see Table 2). The first fit model used both demographic characteristics and service experiences to determine whether respondents agreed that the EHC plan was likely to meet the agreed outcomes. This model led to several demographic variables being classed as insignificant and removed (including gender, ethnicity and deprivation level). The second model, which was the best fit, retained the demographic variables of primary SEN and the age of child/young person. This model accounts for 31.6% of the variance within the data: that is, together the selected factors accurately predict the outcome almost one third of the time. Findings from the model can be seen in Table 2 and show the odds for each variable whilst all other variables are held constant (controlled for). They suggest that:

- Respondents for whom the EHC plan process took less than 20 weeks were more likely than those whose process took longer to agree that the outcomes set out in the EHC plan would be achieved (1.43 greater odds than the reference group of those whose process took more than 10 months).
- Respondents completing the survey for children in younger age groups were more likely to agree that the EHC plan would achieve the agreed outcomes than respondents for older children/young people. Respondents completing the survey on behalf of a child under 5 were the most likely to agree with this outcome

measure, with 7.64 greater odds than the oldest group of young people aged 16-25.

- Respondents with a reported social, emotional or mental health (SEMH) primary SEN were less likely than all other types of primary SEN to agree that the help and support described in the EHC plan would achieve the outcomes set out (0.72 odds compared to the reference group of respondents with Autistic Spectrum Disorder).
- Respondents who stated that their personal circumstances were taken into account were more likely (1.81 greater odds) than those who disagreed with this statement to agree that the help and support described in the EHC plan would achieve the agreed outcomes.
- Respondents who stated that the different services (education, health and care) worked together to produce the EHC plan were more likely (2.50 greater odds) than those who did not to agree that the help and support described in the EHC plan would achieve the agreed outcomes.
- Respondents who stated that effort was made to listen to the child/young person and to understand their opinion were more likely (1.53 greater odds) to agree that the help and support described in the EHC plan would achieve the agreed outcomes than those who reported that the child/young person was not listened to and understood.
- Respondents who agreed that communication was clear throughout the process were more likely (2.42 greater odds) to agree that their EHC plan would achieve the agreed outcomes than those that did not agree that communication was clear throughout the process.
- Respondents who stated that the wishes and opinions of the child/young person were included in the process were more likely (3.22 greater odds) to agree that the help and support described in the EHC plan would achieve the specified outcomes than those that did not agree that the child or young person’s wishes and opinions were included. This variable had the highest odds ratio of all the service process components entered into the model.

Table 2: Binomial logistic regression of 'agreement that the help/support described in the EHC plan will achieve the outcomes' service components and demographics model

Variable *n=4,431*[2]	Coefficient	Odds ratios	95% C.I. for Odds ratio	
			Lower	Upper
Primary SEN or disability (Autistic spectrum disorder)				
Learning Difficulty	0.08	1.08	0.88	1.32
Speech, language and communication	0.05	1.05	0.80	1.37
Hearing, visual or multi-sensory	0.40	1.50	0.97	2.32
Physical disability	-0.03	0.97	0.70	1.36
Social, emotional and mental health	-0.33	0.72**	0.56	0.92
Other difficulty/disability or SEN support but no assessment of type of need	-0.11	0.90	0.59	1.36
Age groups (16 to 25 years old)				
Under 5 years old	2.03	7.64***	4.79	12.20
5-10 years old	1.44	4.20***	3.33	5.29
11-15 years old	0.69	1.20***	1.62	2.46
Length of time process took (More than 10 months)				
Up to 20 weeks	0.36	1.43**	1.14	1.78
Around 6 months	0.14	1.15	0.90	1.45
Around 7 months	-0.19	0.83	0.60	1.13
8-10 months	0.21	1.24	0.92	1.67
Your/your child's wishes and opinions were included (Disagree)				
Agree	1.17	3.22***	2.53	4.10
Neither/nor	0.40	1.49**	1.15	1.93
Your/your child's and your family's personal circumstances were taken into account in the process (No) Yes	0.60	1.81***	1.46	2.26
Different services (i.e. education, health and care) worked together to make the plan (No) Yes	0.92	2.50***	2.03	3.09

[2] Unweighted base: 4390

Communication was clear throughout the process (No) Yes	0.88	2.42***	1.99	2.93
Effort was made to listen to you/your child and understand their opinion (No) Yes	0.42	1.53***	1.24	1.89
Nagelkerke R Square :0.316				
Model Chi-square: 1070.01, **df**: 19, **p**=> 0.00				

Note: *p<0.05, **p<0.01, ***p<0.001. Odds ratio>1 indicates higher odds of agreement that the help/support described in the EHC plan will achieve the outcomes, compared to other responses, and odds ratio<1 indicates lower odds for each category compared to the reference category in bold and brackets.

ii. Agreement that 'overall, taking part in getting an EHC plan was a positive experience for the child or young person'

This model explores how respondents' demographic characteristics and their service process experiences were associated with whether they agreed that taking part in the EHC plan process was a positive experience for the child/young person receiving the plan.

The demographic variables that remained in the model were primary SEN, age of child/young person and ethnicity of the child/young person. Gender was deleted from the model during the stepwise process. The model accounts for 46% of the variance found in the data. Findings from the model can be seen in Table 3 and show the odds for each variable whilst all other variables are controlled for. They suggest that:

- Respondents for children aged 5-10 years and 11-15 years were more likely to agree (1.40 greater odds) that taking part had been a positive experience than respondents for the oldest age group of 16-25 years. No significant differences were found between respondents completing the survey on behalf of a child under 5 and respondents for young people 16-25.
- Non-white respondents were more likely to agree (1.89 greater odds) that taking part in the EHC plan process had been a positive experience for the child or young person receiving the plan than respondents that were white.
- Respondents for whom the EHC plan process took less than 20 weeks were more likely than those whose process took longer to agree the process was a positive experience for the child/young person (1.69 greater odds than the reference group of those whose process took more than 10 months).
- Respondents who stated that their personal needs and circumstances were taken into account in the process were more likely to agree (1.41 greater odds) that taking part in the EHC plan process was a positive experience for the child/young person than those that who reported that their personal needs and circumstances were not taken into account.
- Respondents who agreed that the different services (education, health and care) worked together to produce the EHC plan were more likely (2.29 greater odds) to agree that taking part was a positive experience for the child/young person than those who did not agree that different services worked together.
- Respondents who agreed that the plan was easy for the child/young person to understand were more likely (2.29 greater odds) than those who did not to agree that taking part was a positive experience for the child/young person
- Respondents who agreed that effort was made to listen to the child/young person and understand their opinion were more likely (3.52 greater odds) than those who

did not to agree that taking part in the process was a positive experience for the child/young person

- Respondents who stated that the child/young person’s wishes and opinions were included in the plan were more likely (5.34 greater odds) to agree that taking part in the process was a positive experience than those that reported that these wishes and opinions were not included in the plan. This was the strongest service variable for this model.
- Respondents for a child/young person with a learning difficulty or speech, language or communication SEN were the most likely to agree that the EHC process had been a positive experience for the child/young person (1.60 and 1.40 greater odds respectively than the reference group of those with Autistic Spectrum Disorder).

Table 3: Binomial logistic regression of 'agreement that overall taking part in getting your/their EHC plan was a positive experience' service components and demographics model

Variable *n= 4,054*[3]	B	Odds ratios	95% C.I. for Odds ratio	
			Lower	Upper
Primary SEN or disability (Autistic spectrum disorder)				
Learning Difficulty	0.47	1.60***	1.30	1.98
Speech, language and communication	0.34	1.40*	1.08	1.83
Hearing, visual or multi-sensory	0.26	1.29	0.86	1.94
Physical disability	0.23	1.26	0.90	1.76
Social, emotional and mental health	-0.02	0.98	0.76	1.27
Other difficulty/disability or SEN support but no assessment of type of need	0.16	1.18	0.77	1.80
Age groups (16 to 25 years old)				
Under 5 years old	0.38	1.47	0.93	2.30
5-10 years old	0.36	1.43**	1.12	1.83
11-15 years old	0.38	1.45***	1.16	1.82
Ethnicity (White) non-white	0.64	1.89***	1.54	2.34
If a child had a statement prior to getting an EHC plan (No) Yes	0.22	1.24*	1.04	1.49
Effort was made to listen to you/your child and understand their opinion (No) Yes	1.26	3.52***	2.79	4.45
Length of time process took (More than 10 months)				
Up to 5 months (20 weeks)	0.53	1.69***	1.34	2.13
Around 6 months	0.36	1.44**	1.12	1.84
Around 7 months	0.27	1.31	0.93	1.85

[3] Unweighted base: 4012

8-10 months	0.38	1.46*	1.07	2.01
Your/your child's wishes and opinions were included (Disagree)				
Agree	1.67	5.34***	4.37	6.52
Neither/nor	0.19	1.21	1.00	1.48
Your/your child's and your family's personal circumstances were taken into account in the process (No) Yes	0.34	1.41**	1.09	1.82
Different services (i.e. education, health and care) worked together to make the plan (No) Yes	0.83	2.29***	1.80	2.92
It is easy for you/your child to understand (Disagree)				
Agree	0.92	2.50***	1.88	3.33
Neither/nor	-0.51	0.60**	0.43	0.85
Nagelkerke R Square: 0.46				
Model Chi-square: 1691.22, **df**: 22, **p**=> 0.00				

Note: *p<0.05, **p<0.01, ***p<0.001. Odds ratio>1 indicates higher odds of agreement that the help/support described in the EHC plan will achieve the outcomes, compared to other responses, and odds ratio<1 indicates lower odds for each category compared to the reference category in bold and brackets.

iii. Overall satisfaction – ‘satisfaction with the whole experience of getting an EHC plan’

Respondents were asked whether they were satisfied with the whole experience of getting an EHC plan.

This model accounts for both respondents’ demographic characteristics and their service experiences to determine associations with their satisfaction with the overall process of getting an EHC plan. This model included age of child/young person, ethnicity and a binary variable indicating whether the respondent lives in one of the most deprived 10% of neighbourhoods[9]. As a result of fitting the model through a stepwise process, gender and primary SEN category were removed from the model. The best fit model is presented in Table 4 and shows the odds for each variable whilst controlling for all other variables. It suggests that:

- Respondents living in the most deprived 10% of neighbourhoods were less likely (0.59 odds) to be satisfied with the whole experience of getting an EHC plan than those not in the most deprived 10% of neighbourhoods.
- Those responding on behalf of children in the younger age groups of under 5 years, 5-10 years and 11-15 years were all more likely to be satisfied with the whole experience of getting an EHC plan than respondents for the oldest age group of 16-25 years. Respondents completing the survey on behalf of a child under 5 were the most likely to agree with this outcome measure, with 2.19 greater odds than the oldest group of young people aged 16-25.
- Non-white respondents were more likely (1.82 greater odds) to be satisfied with the whole experience of getting an EHC plan than respondents who were white.
- The shorter the duration of the process, the more satisfied respondents were with the overall process of getting an EHC plan. The highest odds ratio was reported for those whose process took the shortest time of less than 20 weeks (7.10 greater odds than the reference category of ‘more than 10 months’).
- Respondents who felt that the child/young person’s wishes and opinions were included in the plan were more likely (2.24 greater odds) to be satisfied with the overall process of getting an EHC plan than those that reported that these wishes and opinions were not included in the plan.
- Respondents who stated that their personal needs and circumstances were taken into account in the process were more likely (3.15 greater odds) to be satisfied with the whole experience of getting an EHC plan than those that did not.
- Respondents who stated that the different services (education, health and care) worked together to make the EHC plan were more likely (2.89 greater odds) to be

[9] *Level of deprivation per local authority, calculated using the 2015 English Indices of Deprivation data (English Indices of Deprivation (2015).*

satisfied with the whole experience of getting an EHC plan than those that did not think that the different services worked together.

- Respondents who stated the EHC plan had led to the child/young person getting the support they needed were more likely to be satisfied with the whole experience of getting an EHC plan than those that did not think the plan had led to the necessary support. This variable had the highest odds ratio (9.12 greater odds) found for this model.

Table 4: Binomial logistic regression of 'satisfaction with the whole experience of getting an EHC plan' service components and demographics model

Variable *n=4,630*[4]	B	Odds ratios	95% C.I. for Odds ratio	
			Lower	Upper
Indices of multiple deprivation binary (10% most deprived) Other deciles	0.52	0.59***	0.44	0.80
Age groups (16 to 25 years old)				
Under 5 years old	0.78	2.19***	1.41	3.40
5-10 years old	0.74	2.09***	1.62	2.68
11-15 years old	0.42	1.52***	1.20	1.93
Ethnicity (White) non-white	0.60	1.82***	1.46	2.27
Effort was made to listen to you/your child and understand their opinion (No) Yes	0.62	1.86***	1.48	2.33
Length of time process took (More than 10 months)				
Up to 5 months (20 weeks)	1.96	7.10***	5.62	8.98
Around 6 months	1.39	4.00***	3.14	5.11
Around 7 months	0.86	2.37***	1.70	3.31
8-10 months	0.77	2.15***	1.61	2.89
Your/your child's wishes and opinions were included (Disagree)				
Agree	0.81	2.24***	1.72	2.92
Neither nor	-0.06	0.94	0.71	1.24
Your/your child's and your family's personal circumstances were taken into account in the process (No) Yes	1.15	3.15***	2.49	3.99

[4] Unweighted base

Different services (i.e. education, health and care) worked together to make the plan (No) Yes	1.06	2.89***	2.29	3.65
EHC plan has led to you/your child getting the support you/they need (Disagree)				
Agree	2.21	9.12***	6.97	11.94
Neither/nor	0.54	1.72***	1.24	2.39
Nagelkerke R Square :0.46				
Model Chi-square: 1691.22, **df**: 22, **p**=> 0.00				

Note: *p<0.05, **p<0.01, ***p<0.001. Odds ratio>1 indicates higher odds of agreement that the help/support described in the EHC plan will achieve the outcomes, compared to other responses, and odds ratio<1 indicates lower odds for each category compared to the reference category in bold and brackets.

4. Conclusion

Overall, the findings of the multivariate analyses support the results of the bivariate analysis in the main report (Adams et al, 2017) and provide further evidence of the associations between the background characteristics of children and young people and their/their parent's experiences of service components within the process of getting an EHC plan.

Key Variables

Age: parents/carers of children in the under 5 and 5-10 age groups were more likely to agree that the help/support set out in the plan would achieve the outcomes agreed and were more likely to be satisfied with the overall experience than those in the older age groups (however, it should be noted that respondents from these older age groups included both parents/carers and the young people themselves).

Ethnicity: non-white respondents were consistently more likely to be positive about their experience of the EHC process (for each of the 3 outcome measures of satisfaction) than those that were white.

Duration of the process: the duration of the EHC plan process was consistently significant across the models. Those whose process took less than 10 months reported more positive perceptions of outcomes, experiences and satisfaction overall, with this being particularly true for those whose process took the shortest time of less than 20 weeks. This variable recorded the second highest odds ratio from the analyses (the strongest being whether the plan actually led to the right support being received).

Communication and personalisation: 'a child's wishes and opinions were included in the plan' and 'different services, such as health, care and education, worked together to make the plan' showed odds ratios above 1 for each model and as such were associated with more positive experiences of the process for the child/young person, greater overall satisfaction and a stronger belief the plan would achieve its intended outcomes. This highlights the importance of co-production of the EHC plan with all stakeholders, and in particular with the child or young person and their family. The variable that identified that 'their child's and their family's personal circumstances were taken into account in the process' was also consistently reported with a higher than 1 odds ratio for each model, emphasising the need for personalisation of EHC plans.

These findings support those demonstrated across a large number of studies and meta-analyses of work looking at transition programming for those with SEN in the USA. This literature consistently demonstrates that individuals with SEN are more likely to experience a successful transition from school into the community and on to further education, training, employment or self-employment when they, their families and the key bodies work together in a client focussed manner (e.g. Kohler, 1993, 1996; Test et al,

2009). This has also been found in the U.K: for example, Spivack et al. (2014) conducted an evaluation of the EHC planning pathway for families new to the system and reported that where a family centred way of working was used it could lead to better quality plans by enabling professionals to develop a stronger understanding of the child as an individual. Further to this, the Lamb Inquiry (Lamb, 2009) identified a range of conditions that gave parents more confidence in the SEN system including a stronger voice for parents, the facilitation of greater participation of the child or young person, and collaboration between services to reduce demand on parents to navigate and co-ordinate communication across them. Corrigan (2010) likewise found that where parents and professionals had experienced a more personalised approach that included regular communication, collaboration across agencies and the full participation of the parents, it was a satisfying process for all involved.

Key Considerations for Local Authorities

In this section each outcome variable is presented with the key variables/actions that lead to it being achieved. The variables/actions are listed in order of importance according to the odds ratios from the statistical output as an indication of what Local Authorities might usefully focus on.

In order to produce EHC plans that the parents/carers or young people feel **will meet their agreed outcomes** it is important to:

1. Include the wishes and opinions of the parents/carers, children and young people
2. Ensure the different services involved in the EHC plan work together
3. Ensure that communication is clear throughout the EHC plan process
4. Ensure that parents/carers, children or young person believe they are being listened to
5. Consider the personal circumstances of the individual receiving the plan and their family/carers
6. Consider the age of the applicants, as aspects of the process may differ between younger applicants and older applicants.

In order to ensure that children and young people have a **positive experience** of the EHC plan service it is important to:

1. Ensure that the parents/carers, children or young people’s wishes and opinions are included when producing the EHC plan
2. Ensure that effort is put in to the parents/carers, children or young people being listened to

3. Ensure that the EHC plan is easy to understand
4. Ensure that the process takes no more than the statutory 20-week period; the shorter the time the process takes the better
5. Ensure that the different services work together
6. Consider the ethnic background of the parents/carers, children or young people
7. Consider the personal circumstances of the parent/carer, children or young person when producing the EHC plan
8. Consider the age of the applicants, as aspects of the process may differ between younger and older applicants.

In order to ensure that the parents/carers or young people are, overall, **satisfied** with the process and the EHC plan, it is important to:

1. Ensure that the plan actually leads to the child/young person actually receiving the support they need
2. Ensure that the process takes 20 weeks or less; the shorter the time taken the better
3. Ensure that the personal circumstances of the child/young person and family/carers are taken into consideration
4. Ensure that the different services involved work together
5. Ensure that the wishes and opinions of the parents/carers, children or young people are included
6. Ensure that effort is put into listening to the parents/carers or young people
7. Consider the ethnic background of the parents/carers or young people
8. Consider the age of the applicants, as aspects of the process may differ between younger and older applicants.

In summary, key considerations for local authorities are that:

- The EHC plan needs to be seen to lead to the right support being made available
- The EHC plan process should as short a time as possible
- Parents/carers, children or young people feel listened to and feel their wishes, opinions and personal circumstances are taken into account
- The services involved in each EHC plan are seen to work together.

- Those involved in the process are sensitive to ethnic background and are aware that younger and older applicants may differ markedly both in how they perceive the process and in what they require from it.

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Appendix

Technical details

Binomial logistic regression uses odds ratios to predict the probability of a dependent variable (with two categories) from one or more independent variables that can be either continuous or categorical. This approach has been carried out to explore the associations between demographic characteristics, aspects of the service process experience (i.e. duration of process) and three key outcome questions about satisfaction: whether the outcomes set out in the plan are likely to be achieved, whether the process was a positive experience for the child/young person receiving the plan, and overall respondent satisfaction with the process of getting an EHC plan.

The analysis presents results as odds ratios for each category within a variable compared to a reference category within that same variable. An odds ratio more than 1 indicates an increased chance of experiencing the outcome, and an odds ratio less than 1 indicates a decreased chance, whilst holding all other variables constant. For example, when examining overall satisfaction with the EHC plan process (as the dependent variable), an odds ratio of 2 for the variable category males (where gender is an independent variable) would indicate that males have twice the odds (i.e. were more likely) to be satisfied with the EHC plan process compared to females. The odds ratios are reported alongside an upper and lower confidence interval, at the 95% level[5]. It is also possible to compare odds ratios between variables to get a sense of which factors are more important.

A Wald backward method (this is a backwards stepwise method) was selected in SPSS as this provides more replicability of results with other statistical software than the default entry method approach. This is a stepwise method whereby all independent variables entered into the model are assessed by the programme based on the t-statistics of their estimated coefficients and may be removed at different stages of the regression analyses. The final model therefore does not always contain all variables that were manually inputted. Probability thresholds have also been reduced to 0.01 for variable entry (POUT) and 0.05 for removal from the model (PIN). This ensures that the most parsimonious models are produced because stepwise methods use
both PIN and POUT as criteria - if the criterion for entry (PIN) is less stringent than the criterion for removal (POUT), the same variable can cycle in and out until the maximum number of steps is reached.

Assumption testing has been carried out to ensure that this approach is suitable for the data and appropriate diagnostics have been run to test correlations, VIF statistics and casewise diagnostics to ensure that there is no multicollinearity or influential outliers

[5] If repeated samples were taken and the 95% confidence interval was computed for each sample, 95% of the intervals would contain the population mean. A 95% confidence interval has a 0.95 probability of containing the population mean. 95% of the population distribution is contained in the confidence interval.

within the data. The diagnostics revealed no bivariate correlations higher than 0.3 between all dependent and independent variables. The results of the VIF statistics for all dependent and independent variables were all between 1 and 2 indicating no or only moderate correlation, thus multicollinearity was not considered to be present in any of the models presented.

Frequencies

A series of tables listing frequency descriptive data for key predictor variables is below. This data is included to allow the reader to see the number of individuals falling into the different categories used across the analyses.

Table 5: Frequency of agreement that the help/support set out in the EHC plan will help to achieve outcomes

		Frequency	**Percent**	**Valid Percent**
Valid	Other responses (disagree, neither agree nor disagree)	1175	25.3	26.8
	Agree	3215	69.1	73.2
	Total	4390	94.4	100
Missing		261	5.6	
Total		4652	100	

Table 6: Frequency of agreement that the young person/child thought that taking part was a positive experience

		Frequency	**Percent**	**Valid Percent**
Valid	Other responses	1755	37.7	43.7
	Agree	2257	48.5	56.3
	Total	4012	86.2	100
Missing		640	13.8	
Total		4652	100	

Table 7: Frequency of satisfaction with overall experience of getting an EHC plan

		Frequency	Percent	Valid Percent
Valid	Other responses	1352	29.1	29.5
	Satisfied	3226	69.3	70.5
	Total	4577	98.4	100
Missing		74	1.6	
Total		4652	100	

Table 8: Frequency of age groups

		Frequency	Percent	Valid Percent
Valid	Under 5	226	4.9	4.9
	age 5-10	1809	38.9	38.9
	age 11-15	1730	37.2	37.2
	16-25	886	19.1	19.1
	Total	4652	100	100

Table 9: Percentage of respondent type/age group

Respondent	<5	5-10	11-15	16-25
Parent/carer	4.9%	38.9%	37.2%	6.0%
Young person	0%	0%	0%	13.0%

Table 10: Frequency of Ethnic Groups

	Frequency	Percent	Valid Percent
White	3666	78.8	78.8
Non White	985	21.2	21.2
Total	4652	100	100

Table 11: Frequency of primary SEN

	Frequency	Percent	Valid Percent
Learning difficulty	1353	29.1	29.1
Speech, language and communication needs	627	13.5	13.5
Hearing, visual or multi-sensory impairment	197	4.2	4.2
Physical disability	308	6.6	6.6
Social, emotional and mental health	647	13.9	13.9
Other difficulty/disability or SEN support but no assessment of type of need	192	4.1	4.1
Autistic spectrum disorder	1327	28.5	28.5
Total	4652	100	100

Table 12: Frequency of deprivation groups

	Frequency	Percent	Valid Percent
10% most deprived	526	11.3	11.3
Other deciles	4126	88.7	88.7
Total	4652	100	100

Table 13: Frequency of Child/young person having a statement of SEN

	Frequency	Percent	Valid Percent
Yes	2772	59.6	59.6
No	1880	40.4	40.4
Total	4652	100	100

Table 14: Frequency of responses to duration of process

	Frequency	Percent	Valid Percent
Up to 20 weeks	1865	40.1	40.1
Between 21 and 24 weeks / around 6 months	1140	24.5	24.5
Around 7 months	337	7.3	7.3
Around 8-10 months	454	9.8	9.8
More than 10 months	855	18.4	18.4
Total	4652	100	100

Table 15: Frequency of responses to ‘effort was made to listen to the child/young person during the process’

	Frequency	Percent	Valid Percent
Yes	3365	72.3	72.3
No	1287	27.7	27.7
Total	4652	100	100

Table 16: Frequency of responses to ‘child/young person’s and family’s personal needs and circumstances were taken into account during the process’

	Frequency	Percent	Valid Percent
Yes	3946	84.8	84.8
No	706	15.2	15.2
Total	4652	100	100

Table 17: Frequency of responses to ‘different services (i.e. education, health and care) worked together to make the plan’

	Frequency	Percent	Valid Percent
Yes	3922	84.3	84.3
No	729	15.7	15.7
Total	4652	100	100

Table 18: Frequency of responses to ‘communication about the EHCP was clear throughout the process’

	Frequency	Percent	Valid Percent
Yes	3622	77.9	77.9
No	1029	22.1	22.1
Total	4652	100	100

Table 19: Frequency of responses to ‘it is easy for the child/young person to understand’

	Frequency	Percent	Valid Percent
Agree	1601	34.4	34.4
Neither/nor	1035	22.3	22.3
Disagree	2015	43.3	43.3
Total	4652	100	100

Table 20: Frequency of responses to ‘the child’s/young person’s wishes and opinions were included in the plan’

	Frequency	Percent	Valid Percent
Agree	3172	68.2	68.2
Neither/nor	654	14.1	14.1
Disagree	826	17.8	17.8
Total	4652	100	100

Table 21: Frequency of responses to ‘the EHCP has led the child/young person to get the help/support that they need’

	Frequency	Percent	Valid Percent
Agree	3619	77.8	77.8
Neither/nor	462	9.9	9.9
Disagree	571	12.3	12.3
Total	4652	100	100

Table 22: Frequency of people responding to ‘Did you/your child have a SEN statement?’

	Frequency	Percent	Valid Percent
Yes	8567	62.8	62.8
No	4335	31.8	31.8
Don't know	665	4.9	4.9
Prefer not to say	76	.6	.6
Total	13642	100.0	100.0

Item non-response analysis

Table 23. One-way ANOVA of key demographic variables based upon selection for analysis in models

Variable	Mean (standard deviation)	F statistic	Sig.
Gender			
Male (n=9816)	0.35(0.48)	1.157	0.282
Female (n=3772)	0.34(0.47)		
Ethnicity			
White (n=9837)	0.37(0.48)	77.623	0.00**
Non White (n=3405)	0.29(0.48)		
Primary SEN category			
Learning difficulty (n=3904)	0.35(0.48)	98.470	0.00**
Speech, language and communication needs (n=1701)	0.37(0.48)		
Hearing, visual or multi-sensory impairment (n=531)	0.37(0.48)		
Physical disability (n=765)	0.40(0.49)		
Social, emotional and mental health (n=1568)	0.41(0.49)		
Other difficulty/ disability or SEN support but no assessment of type of need (n=543)	0.35(0.48)		
Autism spectrum disorder (n=3404)	0.39(0.49)		

- For the dataset the item non-response rate is 1.5% based upon the total of 12 relevant (questions) variables and a total of 13,642 respondents used in the analysis. The percentage of respondents answering all questions and not responding ‘don’t know’ or ‘prefer not to say’ was only 28.6%.

- The largest proportion of cases with at least one missing variable did not respond to only one (26%) key variable. The average sum of missing variables is 1.81 (1.89 standard deviation) questions per respondent. Many cases did not respond to variables that enquired about later stages of life transition presumably because they were not relevant, but a significant percentage (21%) did not know or did not respond to questions asking whether they understood the purpose of the EHC plan. Two other questions regarding whether the respondent believed the staff they had worked on the plan with to be knowledgeable and had put adequate time and work into producing the plan also had significant levels of missing data or ‘don’t know’ responses (21.6%).

- 16.7% of respondents did not answer two questions. 11% of respondents did not answer three questions. 8% did not answer four questions and 9.2% did not answer 5-11 questions.

- Two respondents in the dataset did not answer any of the relevant questions.

The findings of the non-response analysis were not considered prohibitive for the multivariate analysis presented in this report.

Chi Square Analysis Output

Ethnicity

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Sample Ethnicity * 0 is not selected for analysis 1 is selected for analysis	13294	97.4%	348.069	2.6%	13642.069	100.0%

Sample Ethnicity * 0 is not selected for analysis 1 is selected for analysis Crosstabulation				
		0 is not selected for analysis 1 is selected for analysis		Total
		not in the model	in the model	
Sample Ethnicity	White	6802	3078	9880
	Non White	2585	829	3414
Total		9387	3907	13294

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	57.731[a]	1	.000		
Continuity Correction[b]	57.400	1	.000		
Likelihood Ratio	59.196	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	57.726	1	.000		
N of Valid Cases	13294				

Gender

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Gender * 0 is not selected for analysis 1 is selected for analysis	13641	100.0%	1.069	0.0%	13642.069	100.0%

		0 is not selected for analysis 1 is selected for analysis		Total
		not in the model	in the model	
Gender	Male	7007	2845	9852
	female	2727	1062	3789
Total		9734	3907	13641

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.965[a]	1	.326		
Continuity Correction[b]	.924	1	.336		
Likelihood Ratio	.967	1	.325		
Fisher's Exact Test				.331	.168
Linear-by-Linear Association	.965	1	.326		
N of Valid Cases	13641				

Primary SEN

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Primary SEN reorder so Autistic is last category * 0 is not selected for analysis 1 is selected for analysis	12414	91.0%	1228.069	9.0%	13642.069	100.0%

		0 is not selected for analysis 1 is selected for analysis		Total
		not in the model	in the model	
Primary SEN reorder so Autistic is last category	Learning difficulty	2777	1126	3903
	Speech, language and communication needs	1182	519	1701
	Hearing, visual or multi-sensory impairment	351	180	531
	Physical disability	507	258	765
	Social, emotional and mental health	1030	537	1567
	Other difficulty/disability or SEN support but no assessment of type of need	395	148	543
	Autistic spectrum disorder	2314	1090	3404
Total		8556	3858	12414

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	26.346[a]	6	.000
Likelihood Ratio	26.357	6	.000
Linear-by-Linear Association	7.502	1	.006
N of Valid Cases	12414		

Age Group

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Age groups * 0 is not selected for analysis 1 is selected for analysis	13644	100.0%	0	0.0%	13642.069	100.0%

		0 is not selected for analysis 1 is selected for analysis		Total
		not in the model	in the model	
Age groups	Under 5	923	172	1095
	5-10	3528	1433	4961
	11-15	3168	1508	4676
	16-25	2117	795	2912
Total		9736	3908	13644

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	122.113[a]	3	.000
Likelihood Ratio	132.677	3	.000
Linear-by-Linear Association	24.112	1	.000
N of Valid Cases	13644		

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