Age and learning. A study in English negation

CRISTINA ALONSO-VÁZQUEZ
Dpto. Lenguas Modernas UCLM

ABSTRACT: In this paper we discuss a study of the relationship between age and the learning of English negatives by nine native Spanish speakers in their first year studying English as a foreign language (FL). The study focuses on the syntax of negation, and proceeds by means of a quantitative approach, which we have termed consolidated learning. Firstly, this article will outline the concept of consolidated learning, in which the students have systemised and automated the target structures. As opposed to observed learning, consolidated learning is not affected by what we may call unforeseen circumstances. Rooted in that concept, we have defined the speed of learning. Both concepts are found and measured through the linear least-squares regression. Secondly, by means of consolidated focus, we have evaluated the learning process of English negation by our nine participants. Our findings suggest that there is no clear relationship between age and the learning process as different age groups excelled at learning and using different negative forms. A second conclusion is that throughout the learning process, the skills gap of the participants in the field of negation increased amongst participants.

Key words: Age, learning, process, English negation, consolidated learning.

RESUMEN: En este artículo abordamos el estudio de la relación entre el factor edad y el rendimiento en el aprendizaje de la negación inglesa en nueve sujetos hablantes de español en su primer año de estudio de inglés como lengua extranjera. El artículo se centra en la sintaxis de la negación, y utiliza un nuevo enfoque cuantitativo, que hemos denominado *aprendizaje consolidado*. En primer lugar, se explica el concepto de *aprendizaje consolidado*, que representa lo que los estudiantes han sistematizado y automatizado de las estructuras en estudio. Al contrario del aprendizaje observado, el *aprendizaje consolidado*, no se ve afectado por factores ocasionales. A través del enfoque consolidado, hemos definido *la velocidad de aprendizaje*. Ambos conceptos han sido obtenidos y cuantificados a través de la regresión de mínimos cuadrados. A continuación, basándonos en el enfoque consolidado, hemos evaluado el proceso de aprendizaje de la negación inglesa de nuestros nueve participantes. Los resultados sugieren que no existe una clara relación entre edad y aprendizaje, de modo que en cada una de las diferentes formas negativas han sido sujetos de diferentes edades los que han mostrado un aprendizaje más eficiente. Una segunda conclusión es que, a lo largo del aprendizaje la destreza relativa de los sujetos en el dominio de la negación muestra tendencia a aumentar.

Palabras clave: Edad, rendimiento en el aprendizaje, la negación en inglés, aprendizaje consolidado

1. INTRODUCTION

The study of the relationship between age and the learning process of English as a second language (L2) has attracted the attention of researchers for many years. Approaches to this area have been diverse (Birdsong, 1999), and have often been related to the Critical Period Hypothesis (Odlin, 2004).

One line of investigation in this area has been through phonetics. Long (1990), for example, concluded that the critical period ends at around the age of 6, although these findings have been questioned (Bongaerts, 1999; Flege, 1999). A second research line has concentrated on morphology and syntax. The majority of authors have put forward hypotheses which maintain, in one form or another, the existence of a critical period, (Gleitman and Newport, 1995; Danessi, 1994; Schachter, 1990; Patowski, 1980, 1994; Johnson and Newport, 1991). However, there are also studies which indicate the opposite, (Espein, Flynn and Matahondo, 1996; White and Genevese, 1996; Bongaerts, Planken and Schills, 1995; Ioup, Boustagui, Tigi and Mosell, 1994; Birdsong, 1992). Many of these studies were carried out on participants in L2 immersion contexts, where they had considerable knowledge of the language being studied, some being practically bilingual. Some studies may also have suffered from poor research design.

In this article we present a study of the relationship between age and the learning process, in the context of a Foreign Language (FL), with beginner level EFL participants. Our focus is on the learning process involved in constructing specific forms of negation in English, and given that this is typically an area of difficult for Spanish speakers, our results illustrate the different levels of progress of each participant.

In this study the hypothesis that there is an inverse relationship between age and success in the learning process was tested. This implies that children should progress more quickly than adolescents, and adolescents more quickly than adults.

2. NEGATIVE TYPOLOGY AND DATA OBTAINED FROM OUR STUDY

In our study about negation, we have referred to the following regular typology, (Cancino, 1978), by cataloguing the various negative devices (no, don't, can't, isn't, hasn't, doesn't, didn't, etc.) into four groups. We limited our analysis to proposition negating utterances. We obtain the following results.

- *no V* construction: 'I *no* understand', 'I *no* can see', 'They *no* have water'.
- *don't V* forms: 'We *don't* like it', 'I *don't* can explain', 'I *don't* have a woman'.
- *auxiliary - negative* forms, in which the negative is placed after the auxiliary. The first auxiliary to be negated in this way were *is*, *can* and *have*: 'It's *not* dangerous', 'He *can't* see'. 'I *haven't* seen all of it'.
- *analysed forms of don't*: (*do not, doesn't, does not, didn't, did not*): 'I *didn't* even know', 'One night I *didn't* have the light'.

And apart from these four negative forms, the study considers a fifth variable:

- *avoidance*. It has not been included in many studies of second language acquisition (SLA), but it is a relevant strategy used by the students, so we opted for including

it. Avoidance is the cognitive strategy of process that the speaker uses when they substitute the initial plan of expression for another, due to a lack in necessary linguistic resources (Duskova, 1969; Faerch and Kasper, 1983). *Avoidance*, so defined, is in the maximum neighbourhood to the L1 of any subject. As a matter of fact, in our study, *avoidance* includes affirmative answers and other devices that avoid negation, including silences (Alonso-Vazquez, 2004a) and almost every third response is answered by using this strategy. We consider the following to be of special interest:

1. We found a significant number of subject responses which incorporate *Avoidance of the topic*, as they either simply do not reply or do so with affirmative structures.
   Adult 3. Q: Did you go to swim yesterday?
             R: It is winter.
   Child 1. (Exercise of transformation into negative).
             Q: There are two helicopters.
             R: There are one helicopter.
   Child 3. Q: Did you think about it?
             R: ———— (silence).
   In all cases we checked that the subjects had understood the questions. More than half of the subjects responded by using avoidance in these ways.

2. We noted a significant number of responses corresponding to the *Semantic Avoidance* category.
   Adult 1. Q: Was your mother sleeping when you arrived?
             R: She was at work.
   Adult 2. Q: Were those children singing a song?
             R: They not sing.
   Adult 3. Q: *Are those children going to Madrid?*
             R: They have no car.
   It is also noteworthy that the subjects who gave these responses were in general those who made the most rapid progress in English. We note that the avoidance strategy in this case was used to compensate for the absence of the correct negative form.

3. The *stopping mid-sentence* category was noted in responses such as:
   Child 1. (Exercise transformation into a negative sentence)
             Q. I usually catch the bus at 6:30.
             R. I am not...

4. The *asking for help* category was noted in the responses through attitudes towards looking for help by gestures, facial expressions or trying to guess what the interviewer was looking for. Often direct requests for help were made:
   Adolescent 2. 'In the picture there isn't a... ¿cómo se dice?'
                 Help: wheel
                 Adolescent: '¿Cómo?'
                 Help: wheel
                 Adolescent: 'In the picture two there isn't a wheel'
   Adolescent 3. 'The man don't ... no sé'
                 Help: a suitcase
                 Adolescent 3: '¡Ah, claro! The man don't have a suitcase'.

Adult 2. Q: 'Is this boy playing basket?'
                   R: 'He is playing.... ¿cómo se dice?'

5. The *change of language* category was used very frequently by our subjects:
   Adult 2. Q: 'Is Luis going home?'
                   R: 'a' Benidorm
   Adult 1. Q: 'Does Mr. Brown wear a hat?'
                   R: No, tiene un paraguas. (He doesn't have an umbrella).

Our participants especially used *avoidance of the topic, semantic avoidance, stopping mid-sentence category, asking for help and change of language*. Finally, *avoidance* was very frequent when subjects could have used the *don't V* and the *analyzed forms of don't*.

Adult 3. (Transforming into negatives). Q: 'The man wants to eat'
                   R: 'The man isn't want'[1]
Child 1. (Elicit a negative). Q: 'Some people sleep in hotels'.
                   R: 'No sleeping in the hotels'.
Adolescent 2. Q: 'Do you study on Sundays?'
                   R: 'I study in the college'.

3. METHOD

Nine native Spanish speakers participated in this longitudinal study (Neff, Liceras, & Diaz, 1998). They were interviewed and recorded in monthly sessions over a period of eight months. The participants were monolingual Spanish speaking residents living in the Madrid region.

The main consideration when selecting the subjects was their level of English proficiency. This was determined by a comprehensive-productive placement test made for the purpose. The subjects were all volunteers attending EFL classes at beginner level, and they were interviewed during their first year of English studies. All participants attended state schools.

Eight different tests were specially made in order to use a different one each month, thus avoiding a practice effect in the subject's answers. They included instructions and training exercises at the beginning of each task. The aim of the interviews was to elicit negative structures from the subjects at particular points in time. The interviews consisted of a number of tasks with at least ten different questions in each. The interview materials were based on three different types of tasks (Table 1): free production tasks, guided production tasks, and controlled ones, so that subjects' use of negative structures in various situations could be tested. All the pictures used to elicit data were easy to describe and kept in front of the subjects during the interview.

To meet the aims of the study longitudinal data was required from the earliest stages of their attempts to use the negative system. Therefore, data elicitation, in order to take into account the eventuality of the period of silence, began three months after the subject's first exposure to the target language structures. There were two reasons for this three month

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[1] We note that these answers were errors and conscious attempts to avoid the use of both negative forms.

Table 1. Types of tasks in the interviews

Free production tasks:	* Personal questions. * Tell your own story. * Description of pictures. * Spot the difference.
Guided production tasks:	* Questions based on stories. * Questions based on pictures.
Controlled production tasks:	* Drill: repetitions * Drill: transformations (positive to negative). * Complete the following sentences.

period, firstly, following Butterworth & Hatch (1978) it seemed a long enough period of time for subjects to make themselves familiar with the learning of English negative devices, and secondly, following Gibbons (1985) and Saville-Troike (1988) L2 learners –both children and adults- may go through a period of silence to prepare for the time they begin speaking the L2. This period is thought to take place during the initial three months.

Speech samples needed to be frequent enough to detect fairly small changes in the participants' rule system as manifested by their speech production. Therefore, subjects were interviewed once a month for eight months. All participants followed the same interview procedure in the same week, so their negation evolution could be compared. Each subject had a record sheet with the recorded date on it. To avoid strain on the participants interviews lasted no longer than fifteen minutes. For each interview the subjects sat individually at desks, facing the interviewer either at their school or at the interviewer's home. The interviews were later transcribed in traditional orthography. After this, the recorded sessions were collected in one record for each subject. These records were used as the main source of data.

Other information on the participants is given in table 2, in which we indicate the three different age groups; children, adolescents and adults.

Table 2. Cultural and demographic characteristics of participants.

Participants	Level of English	Age	Sex	Weekly hours of English lectures	Other contact with English	Level of studies
1. Child 1	Beginner	9	F	5	None	Primary
2. Child 2	Beginner	9	M	5	None	Primary
3. Child 3	Beginner	9	F	5	None	Primary
4. Adol. 1	Beginner	13	F	6	None	Second.
5. Adol. 2	Beginner	13	F	6	None	Second.
6. Adol. 3	Beginner	12	M	6	None	Second.
7. Adult 1	Beginner	49	F	4	None	Primary
8.Adult 2	Beginner	38	F	4	None	Primary
9. Adult 3	Beginner	21	F	4	None	Primary

They all received the same basic text book instruction, even though special attention was devoted to the negation system, both by the teachers and test makers. Our study, involving

eight interviews on nine subjects over a period of a year, is significantly larger than previous related research. For example, Cancino *et al.* (1978) was based on only six subjects over one month, Young (1988) carried out two interviews on twelve Chinese students, Tarone (1983) used three tests on six Arabic and Japanese students, and Larsen-Freeman (1975) was based on two interviews over six months on six Arabic, six Spanish and six Japanese students.

We also note that all the studies of age and learning were longitudinal, and carried out as *"case-study"*, with the statistical validity of this type of research. Our conclusions are, therefore, at least as significant as those from the previously mentioned related studies.

4. CONSOLIDATED LEARNING

In our evaluation of the learning process of our participants during their first year of studying English, we consider that the data obtained directly from the practical tests could be subject to the effects of fluctuations due to unforeseen circumstances. For example, a recent explanation by the teacher or the answer to a question posed by a pupil in front of the whole class on the day of a test, can have an effect on the students answer path, which will have disappeared and have been forgotten by the time of the next test. In order to obtain less ambiguous results, we attempted to eliminate distorting effects caused by unforeseen circumstances, leaving us with only those results of what we may call consolidated learning (CL), where participants have automated and systemised their learning (Alonso-Vázquez, 2004b).

This approach involves transforming the observed zigzagging lines of the evolution of learning for each participant and for each form, (e.g., graph 1 obtained directly from tests), into the straight lines[2] (graph 2) which represent consolidated learning. The lines (equations) representing consolidated learning allow us to make comparisons between the evolution of the learning process of the different participants without the possible effects that could interfere in the subjects' performance.

By studying the evolution of the learning processes, we move towards analysing the five forms for each of the nine participants. The comparison of their performances will be made in three different ways: (a) Initial moment, which corresponds to test 1, (ignoring the three month period of silence) (Saville-Troike, 1988). (b) Learning speed, defined as the gradient of the straight line for consolidated learning which is the variation of the level of usage of each form between two consecutive tests. (c) Final moment, corresponding to test 8. The learning efficiency of each participant for each form of negation will depend on these three stages.

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[2] It can be shown that these lines are straight lines fitted by ordinary least-squares method. They are linear equations of the form, being CL: consolidated learning, 'a': parameter representing the initial usage, 'b': parameter representing the learning speed, and 't' stands for time of the tests, t=1,2,..,8. Our approach is mainly quantitative (Chaudron, 2000). We could have fitted non-linear functions of the type, $CL = a + bt + ct^2$, which would report a better adjustment (R^2 would be larger), but it would not alter conclusions, and would make the speed of learning analysis much more difficult.

V. THE LEARNING PATH FOR *NO V (No+V)*

The following equations, obtained by a least-squares linear[3] regression to data from tests, represent the learning paths for the nine participants with regard to this form:

Children equations	Adolescents equations	Adults equations
CL (Child 1) = 32,9 + 0,7 t	CL (Adoles 1) = 24,2 + 2,6 t	CL (Adult 1) = 66 - 0,8 t
CL (Child 2) = 44,6 - 1,6 t	CL (Adoles 2) = 39,6 + 0,6 t	CL (Adult 2) = 32,8 - 4,9 t
CL (Child 3) = 40,4 - 2,6 t	CL (Adoles 3) = 40,7 - 2,8 t	CL (Adult 3) = 57,8 + 0,1 t

These equations are represented by graph 2.

- Initial usage
  -*Children*. Child 1 and 3 started off with an initial use of around 30%, whereas child 2 used it for around 45%. The average usage for all three children was 40%.
  -*Adolescents*. The adolescents began the learning process with a usage of between 24% and 41% for *no V*. The average for this group was 34.8%.
  -*Adults*. Adults 1 and 3 were the participants who most resorted to this form. Their initial usage was 66% and 57.8%, whereas adult 2 used it only 32.8% of the time. This is still a relatively high value. The adults used this 52.2% on average.
- Learning Speed.
  -*Children*. Children 2 and 3 have shown negative learning rates but, as *no V* is a transitional form, it highlights the fact that learning is taking place. Child 3 advanced rapidly, and had a high learning rate of −2.6. Child 1 deteriorated slightly, showing a positive learning rate (+ 0.7). The average learning rate for the children is −1.2.
  -*Adolescents*. Adolescents 1 and 2 regress in their learning, especially adolescent 1 at a very high rate (+ 2.6). However, adolescent 3 improves with a learning rate of -2.8. The average for the adolescents for this form remains almost stationary (0.1).
  -*Adults*. Two of the adults, 1 and 2, improve, with adult 2 being the participant who shows the highest learning rate of *no V* of all the participants. Adult 3 remains stationary (0.1). Their average learning rate is −1.9.
- Final Usage

Table 3. Final usage of no V for all nine subjects

Child 1	Child 2	Child 3	Adol. 1	Adol. 2	Adol. 3	Adult 1	Adult 2	Adult 3
38,5	31,8	51,2	45	44,4	18,3	59,6	-6,4	58,6

[3] Had we adjusted polynomial functions, they will be
Residuals of adjustment would be shorter, but it would not pay for the difficulty.
$CL(1) = -3.7t^2 + 33.9t - 22.5**CL(2) = -1.6t^2 + 12.7t + 20.8**CL(3) = -0.8t^2 + 4,8t + 28$
$CL(4) = -0.1t^2 + 3.8t - 22.2***CL(5) = -0.5t^2 + 12.7t + 5.1t + 32***CL(6) = -0.6t^2 - 8t + 49.4$
$CL(7) = 1.3t^2 - 11.7t + 84.2**CL(8) = 1.1t^2 - 15.3t + 50.2***CL(9) = 2.9t2 - 26.3t + 101$

The majority of the participants have ended their first year of learning with a high use of this form, and age doesn't seem to be a significant factor here. Child 3, adolescents 1 and 2, and adults 1 and 3 have shown a specially high usage, whereas adolescent 3 and especially adult 2 show a better development. The rest of the participants, two children, 1 adolescent and 1 adult, show intermediate developments.

6. THE LEARNING PATH FOR *DON'T V*

The following equations represent the learning path for our nine participants with regard to this form:

Children equations	Adolescents equations	Adults equations
CL (Child 1) = 15,1 - 2,1 t	CL (Adoles 1) = 25,9 - 2,8 t	CL (Adult 1) = 0
CL (Child 2) = 2,3 + 0,3 t	CL (Adoles. 2) = 9,8 - 1,2 t	CL (Adult 2) = 27,6 - 2,6 t
CL (Child 3) = 1,6 + 0,6 t	CL (Adoles. 3) = 3,2 - 0,1 t	CL (Adult 3) = 7,5 - 0,9 t

These equations are represented by graph 3.

- Initial Usage.
  -Children. Child 1 is the only one to have begun with a significant usage, with the other two children starting off using it almost 0%. The average usage of this form for this group was very low (6.3%).
  -Adolescents. Adolescent 1 used this form fairly frequently, whereas the other two hardly ever used it. The average usage for this group was 13%.
  -Adults. Initially, adult 2 used *don't V* the most of all the participants, whilst the other two adults hardly ever used it. The average usage for the adults was 11.7%.
- Learning Speed.
  The learning speed for seven of the nine participants resulted in being negative or zero, and only two, children 2 and 3, improved their usage of this form.
  -Children. Children 2 and 3 learnt slowly, whereas child 3 reduced usage rapidly. The average rate for this group was negative (-0.4).
  -Adolescents. Two of the adolescents reduced their usage, whilst the other remained almost stationary. The adolescents have an average use of −1.4.
  -Adults. The adults have shown a similar learning rate to that of the adolescents. One of the adults has remained at a level of 0, whilst the other two have a highly negative rate. The average learning rate for this group was −1.2.
- Final Usage.

Table 4. Final usage of don't V *for all nine subjects.*

Child 1	Child 2	Child 3	Adol. 1	Adol. 2	Adol. 3	Adult 1	Adult 2	Adult 3
-1,7	4,7	6,4	3,5	0,2	2,4	0	6,8	0,3

Table 4 shows interestingly that the nine participants finished their first year of learning with a usage of practically zero for this form.

7. THE LEARNING PATH FOR AUXILIARY-NEGATIVE (AUX-NEG) FORMS

The following equations represent the learning path for our nine participants with regard to this form:

Children equations	Adolescents equations	Adults equations
CL (Child 1) = 5,3 + 4,9 t	CL (Adoles.1) = 5,2 + 2,2 t	CL (Adult 1) = 1,3 + 0,6 t
CL (Child 2) = 27,3 - 1,3 t	CL (Adoles.2) = 16 + 0,7 t	CL (Adult 2) = 5 + 8,4 t
CL (Child 3) = 20,9 + 3 t	CL (Adoles.3) = 27,7+ 3,7 t	CL (Adult 3) = 7,3 + 0,9 t

These equations are represented by graph 4.

- Initial usage.
  -Children. Children 2 and 3 begun with a high use of this form (27.3 and 20.9), whereas child 1 hardly ever used it. The average for this group was 17.8.
  -Adolescents. The adolescents present a similar structure to that of the children. Adolescents 2 and 3 began with considerable usage (16 and 27.7), whilst adolescent 1 had a very low usage (5.2). On average the adolescents had an initial usage of 16.3.
  -Adults. The adults had a low usage of this form, an average of 4.5.
- Learning Speed.
  -Children. Children 1 and 3 showed a high learning speed (4.9 and 3), whilst child 2 had a negative rate (-1.3). On average, the children improved, with a learning speed of 2.2.
  -Adolescents. The three adolescents improved over all. Two of them, adolescents 1 and 3 had rates of 2.2 and 3.7. On average, the learning speed of the adolescents improved notably, to a rate of 2.2.
  -Adults. Adult 2 showed a very high learning speed (8.4), whereas the other two adults had a lower speed. On average, the adults improved to a rate of 3.3.
- Final Usage.

Table 5. Final usage of auxiliary-negative forms *for all nine subjects.*

Child 1	Child 2	Child 3	Adol. 1	Adol. 2	Adol. 3	Adult 1	Adult 2	Adult 3
44,5	37,7	44,9	22,8	21,6	57,3	6,1	72,2	14,5

The children ended with a high final usage of *auxiliary-negative forms* (aux-neg), in fact with a usage that is higher than is syntactically correct, 33.3%. Meanwhile, adolescents 1 and 2 ended with a low knowledge of this form, and adolescent 3 with a very high usage. The difference is even higher still with the adults. Adults 1 and 3 ended with a lower usage whilst adult 2 has the highest usage of all nine participants.

8. LEARNING PATH FOR THE *ANALYSED FORMS OF DON'T* (*ANALYZED DON'T*)

The following equations represent the learning path for our nine participants with regard to this form:

Children equations	Adolescents equations	Adults equations
CL (Child 1) = 12,3 - 0,9 t	CL (Adoles.1) = 19,9 - 2,4 t	CL (Adult 1) = 0
CL (Child 2) = 3,2 + 0,1 t	CL (Adoles.2) = 6,6 - 0,4 t	CL (Adult 2) = 3,2 + 0,6 t
CL (Child 3) = 3 + 0,6 t	CL (Adoles.3) = 6,4 + 0,5 t	CL (Adult 3) = 3,5

These equations are represented by graph 5.

- Initial Usage.
  - *-Children.* Child 1 is the only one to present a significant initial usage (12.3). The average usage for this group was very low (6.1).
  - *-Adolescents.* Only adolescent 1 began the test with a significant usage (19.9), whilst the other two adolescents hardly used it. On average, these participants had an initial usage of 11.
  - *-Adults.* None of this group presents a relevant initial usage.
- Learning Speed.
  - *-Children.* Child 2 has shown a stationary evolution, whilst child 3 has increased usage (0.6), and child 1 has decreased (-0.9). The learning rate of this group is negative (-0.2).
  - *-Adolescents.* Adolescent 3 shows a slightly increasing rate (0.5), whilst the other two adolescents have a negative rate, especially adolescent 1, who started off with a high initial usage. On average, this group had a relevant negative learning speed (-0.8).
  - *-Adults.* Two of the adults, 1 and 3, remained stationary whilst the other adult, slowly improved (0.6). The average learning rate for this group was 0.2.
- Final usage.

Table 6. Final usage of the analysed forms of don´t for all nine subjects.

Child 1	Child 2	Child 3	Adol. 1	Adol. 2	Adol. 3	Adult 1	Adult 2	Adult 3
5,1	4	7,8	0,7	3,4	10,4	0	8	3,5

All nine subjects show a similar characteristic in that their final usage is close to zero. Only participant 3 continues at a high level of 10%.

9. THE LEARNING PATH FOR *AVOIDANCE*

The following equations represent the learning path for our nine participants with regard to this form:

Children equations	Adolescents equations	Adults equations
CL (Child 1) = 34,3 – 2,2 t	CL (Adoles.1) = 24,7 + 0,3 t	CL (Adult 1) = 32,7 + 0,1 t
CL (Child 2) = 22,8 + 2,5 t	CL (Adoles.2) = 28 + 0,3 t	CL (Adult 2) = 31,3 – 1,5
CL (Child 3) = 34,1 – 1,6 t	CL (Adoles.3) = 21,8 – 1,3 t	CL (Adult 3) = 23,8 – 0,1 t

These equations are represented by graph 6.

- Initial usage.
  -*Children*. Children 1 and 3 present a very high usage (34.4 and 34.1), whilst child 2, was slightly lower (22.8). The average usage rises to 30.4.
  -*Adolescents*. The three adolescents have shown a high usage (24.7, 28 and 21.8) with an average of 24.8.
  -*Adults*. The adults present a similar picture to that of the children. Two of them, adults 1 and 2, present a very high usage (32.7 and 31.3) while the third is slightly lower. The average usage is 29.3.
- Learning Speed.
  -*Children*. Children 1 and 3 decreased their usage of this form at a considerable rate (-2.2 and –1.6) whilst child 2 increased their usage at an also very considerable rate (2.5). On average, the children improved in their usage of this form at a very low rate of –0.4.
  -*Adolescents*. Adolescents 1 and 2 slowly increased their usage of this form, 0.3, whilst adolescent 3 stopped using it at a very significant rate of –1.3. On average the adolescents present an extremely low rate (–0.2).
  -*Adults*. Adult 1 had a slight decrease (-0.1) and adult 3 a slight increase (0.1), therefore remaining almost stationary. As for adult 2, they reduced their usage of *avoidance* at a rate of –1.5. On average, the adults slowly decreased their use of this form to –0.5.
- Final usage

Table 7. Final usage of avoidance by all nine subjects.

Child 1	Child 2	Child 3	Adol. 1	Adol. 2	Adol. 3	Adult 1	Adult 2	Adult 3
16,7	42,7	21,37	27,1	30,4	11,4	33,6	19,3	23

The children ended with a learning curve of avoidance which fluctuates between 16% and 43%, and the same is true for the adolescents who used it between 11% and 27%, and for the adults who used it between 19% and 33%. Consequently, a vast difference can be seen in the levels of usage within each age group.

10. AGE AND LEARNING

This study seems to indicate the non-existence of common characteristics among the members of each age group. Therefore, we can establish a primary conclusion that no relationship between age and learning seems to exist. In this section we shall look at this more closely.

The most appropriate usage of *no V* came from adult 2, who began with a very low use and had stopped using it by the end. This was followed by child 2, and adolescent 3. The lowest performance came from adults 1 and 3 and adolescent 1. So from this evidence, the usage of this form in the learning process does not indicate any relationship between age and learning.

In the case of *don't V,* all the participants were in a similar situation by the end. However, one adolescent, one adult and one child showed slight improvements in their usage of it over the others. So again, age does not seem to be a differentiated factor in the learning process of this particular form.

In the case of *auxiliary-negative forms*, adolescent 3, adult 2, and children 1 and 3 excelled in this area compared to the other participants. Deficiencies were notable in the learning processes of adults 1 and 3, and child 2. So for this form, again, there does not seem to be a relationship between age and learning.

The learning process of *analysed forms of don't,* showed deficiencies for all nine participants but adolescent 3, child 3 and adult 2 were those who showed a better grasp of this construction. We conclude here too, that age does not seem to have any influence on the learning process of this form.

The learning process for avoidance was highest for adolescent 3, child 2 and adult 2, whereas the worst grasp of this area came from child 2, followed by adult 1 and adolescent 2, so age does not seem to be a factor.

All of the above results of our nine participants learning the five negative forms conform our statement that no relationship between age and learning exists.

11. THE LEARNING PROCESS OF CHILDREN, ADOLESCENTS AND ADULTS

In sections V to IX, we studies each subject. In section X we concluded that no relationship between age and learning seemed to exist. In this section, we will try to support our conclusions

by focusing on the three age groups, children, adolescents and adults instead of singling subjects, with regard to each one of the forms.

- **11.1.** *No V*

The equations for the learning process in this construction are[4]:

Children learning process: CL = 39,2 - 1,1 t

Adolescents learning process: CL = 34,8 + 0,1 t

Adults learning process: CL = 52,3 - 1,9 t

These equations are represented by graph 7.

It can be seen that the three age groups began the learning process resorting often to using this form. The greatest usage of this form was by the adult group (52.2) followed by the children (39.2), leaving the adolescents with the lowest usage (34.8). Learning speeds have also been very high for two of the three groups. The adults have shown the most adequate usage (-1.9) followed by the children (-1.2), with the adolescents showing the lowest grasp (0.1), and surprisingly increasing their use of the form.

At the end of the first year of learning, the usage of *no V* by the three age groups (table 3), is very high. The best performance was by the children, followed by the adolescents, with the adults, despite their improvements, last.

Table 8. Usage of no V *by the three age groups in the end*

Children	Adolescents	Adults
30,4	35,6	37

- **11.2.** *Don't V.*

The equations for the learning process in this construction are:

Children learning process: CL = 6,3 - 0,5 t

Adolescents learning process: CL = 13 - 1,3 t

Adults learning process: CL = 11,7 - 1,1 t

These equations are also represented by graph 8.

The three age groups began the learning process with a very low usage of this form. The three age groups showed a negative learning rate, the adolescents the most negative, -1.4, followed by the adults, -1.2, and then the children, -0.4.

Table 9. Usage of don't V *by the three groups in the end*

Children	Adolescents	Adults
3,1	1,8	2,2

Table 9 shows that the three age groups ended their first year of learning with an almost coincident and close to zero usage.

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[4] It should be noted that these equations are the average of those of previous sections. They were calculated by taking the age average of the data of the tests.

- **11.3.** *Auxiliary-negative* **forms**

The equations for the learning process in this form are:

Children learning process: CL = 17,8 + 2,2 t
Adolescents learning process: CL = 16,3 + 2,2t
Adults learning process: CL = 4,5 + 3,3 t

These equations are represented by graph 9.

It appears that the children and the adolescents started off at similar levels and progressed at the same rate, whereas the adults began at a lower level but progressed at a faster rate.

Table 10. Average usage of auxiliary-negative *forms by all three groups in the end.*

Children	Adolescents	Adults
35,4	33,9	30,9

Table 10 shows that the final usage by the three groups is very similar, with around one in three answers from each group constructed with this form.

- **11.4.** *Analysed forms of don't.*

The equations for the learning process in this form are:

Children learning process: CL = 6,1 - 0,1 t
Adolescents learning process: CL = 10,9 - 0,7 t
Adults learning process: CL = 2,2 + 0,2 t

These equations are represented by graph 10.

The highest initial usage was by the adolescents, followed by the children, and lastly by the adults. However, it is the adults who have shown the highest learning speed, whereas the children and adolescents have shown negative rates.

Table 11. Average usage of analysed don´t *by all three groups in the end.*

Children	Adolescents	Adults
4,5	4,6	3,8

The final figures (table 11) show a very infrequent final usage, almost equal for all three age groups.

- **11.5.** *Avoidance*

The equations for the learning process in this form are:

Children learning process: CL = 30,4 - 0,4 t
Adolescents learning process: CL = 24,8 - 0,2 t
Adults learning process: CL = 29,3 - 0,4 t

These equations are represented by graph 11.

There was a similar initial usage by the children and adults, and a slightly lower one for the adolescents. The highest learning speed was for the adults, followed by the children and then the adolescents, but all three had similar low values.

Table 12. Average usage of avoidance by all three groups in the end

Children	Adolescents	Adults
27,2	23,2	25,3

The final usage values for all three age groups (table 12), point to a high usage of this form, and are practically equal for all three groups.

12. AGE AND THE LEARNING PROCESS BY AGE GROUP

In box 1 we summarise the analysis of the previous section, showing the area that each age group occupied in the initial phase, in the learning speed and their placement in the final phase, for each negative form.

Box 1. Evaluation of the learning process by age groups.

Learning process of *No V*			Learning process of *Don't V*		
Initial	Learning speed	Final	Initial.	Learning speed.	Final.
1. Adoles	1. Adults	1.Children	1. Adolesc	1. Children	1. Children
2. Children	2.Children	2. Adolesc	2. Adults	2. Adults	2. Adults
3. Adults	3. Adoles.	3. Adults	3. Children	3. Adolesc	3. Adolesc

Learning process of *Aux-Neg*			Learning process of *Anal. Don't*		
Initial	Learning speed.	Final	Initial.	Learning speed.	Final.
1.Children	1. Adults	1.Children	1. Adolesc	1. Adults	1. Adults
2. Adoles	2. Adoles.	2. Adolesc	2. Children	2. Children	2. Adolesc
3. Adults	3.Children	3. Adults	3. Adults	3. Adolesc	3.Children

Learning process of *Avoidance*		
Initial	Learning speed	Final
1. Adoles	1. Adults	1. Adolesc
2. Adults	2.Children	2. Adults
3. Children	3. Adoles.	3,Children

In this box we see a wide range of efficiency in the learning process. When learning *No V*, the first place in the initial phase corresponded to the adolescents, whilst the adults took first place in the learning speed and the children in the final usage. In the case of the *Don't V* form, the adolescents showed a better initial usage, whilst the children had a higher learning speed and the best final position. For *auxiliary-negation (Aux-Neg)*, the best usage of this form, in both the initial and final tests, came from the children. For the *analysed forms of*

don't (*Anal. Don't*) form, the best initial position was for the adolescents, with the adults having the best learning speed and final position. Finally, for *avoidance*, the initial and final best position was by the adults, whereas the highest learning speed came from the adults.

The three age groups acquired all varieties of positions. Therefore, it appears from our nine participants that no type of relationship exists between age and the learning process with regard to constructing and using negation in English.

In general, it seems that the adolescents were those who began the process in the most satisfactory way. However, this was not so for the learning speed, as the adults, followed by the children, progressed at the greatest rate. At the end of the first year of learning, the children were the best in three areas[5], the adolescents in one area and the adults in another.

Our study also shows that the adults progressed throughout the whole year, but they started very slowly, exactly the opposite of the adolescents, who seemed to begin with a very high comprehension but showed slower progress. The children have an intermediate position.

We conclude our analysis by emphasising that different age groups have shown better performances than the others in each of the stages of using the five forms. Therefore, we confirm our conclusions of section XI. It seems we can reject the hypothesis that there is a clear relation between the ages of our subjects and the efficiency of their learning.

13. THE LEARNING PATH

If we examine the graphs (equations) for our nine participants, we see that the usage in the initial tests for the five different forms, was far less disperse than in the final test. Therefore, it seems that during the learning process, the nine participants, regardless of age, have increased the distance between their levels of knowledge.

In order to confirm this hypothesis, which has stemmed from our previous analysis, we refer to table 13, which gives us the variances of the initial and final usage.

Table 13.Variance of initial and final usage by the nine subjects for each form of negation.

	No V	*don't V*	*aux-neg*	*anal. don't*	*avoidance*
Initial	181,2	108	105	37,4	25,7
Final	380	9	494,8	11,9	90,2

The three forms, *no V, auxiliary-negation* (*aux-neg*) and *avoidance*, had a larger variance at the final point than at the initial moment. This implies that the differences in knowledge between the different participants have risen significantly during the eight months of tests. However, in the forms which were used least, *don't V* and *analysed forms of don't* (*anal. don't*), the outcome was the opposite, producing a decrease in the different levels between all of the participants.

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[5] In two of them, *don't V and analysed forms of don't*, differences are very small.

14. CONCLUSIONS

In this article we have discussed a study of the learning process of English negation by Spanish speakers, in relation to their ages. Comparison to many previous studies (the norm being to use participants who have a very wide and accurate knowledge of English in an L2 context), we looked at the first year of the learning process in an EFL context.

We used the concept of consolidated learning with the aim of eliminating the effects of accidental and unforeseen circumstances, which may distort the analysis and conclusions of the study.

We suggest that the most adequate way of studying the relationship between age and learning is to consider all of the learning process instead of concentrating on the final moments. Thus, we compared the learning process of the participants of different ages, (children, adolescents and adults), in the initial instance, (3 months after starting the study, which can be classed as a period of silence), the learning speed, and final instance after a year.

This study has lead us to the conclusion that based on our subjects, there is no detectable relationship between age and efficiency of the learning process. We found that the most efficient performances were sometimes shown by subjects in the children group, in other cases by the adolescents, and in others by the adults.

We categorise our conclusions in the groups of authors that seem to be inclined towards the non-existence of a relationship between age and the learning process. However, we need to take into account our study was carried out in an EFL context with beginners in the study of the English language. Apart from this, we have only considered the syntaxes of negation, without totally considering the phonetical aspects[6] of the language.

We have also shown the different learning path for our nine participants was more homogeneous among the participants at the beginning of the learning process than at the end. This fact highlights the vast differences in the learning process by the nine participants, which appears to be caused not by age but by other factors.

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[6] Even when we have studied the oral production, we have not taken into account the phonetics.

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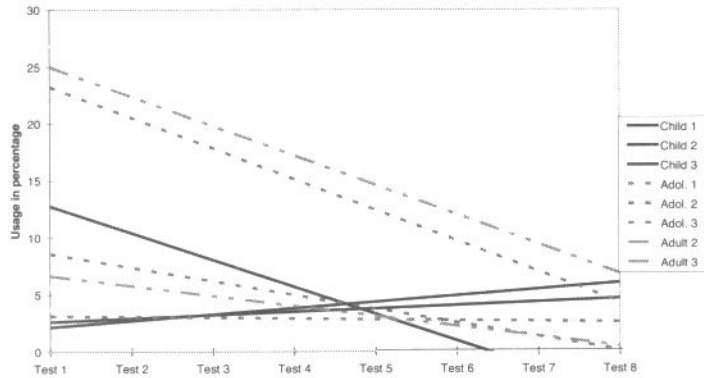
APPENDIX

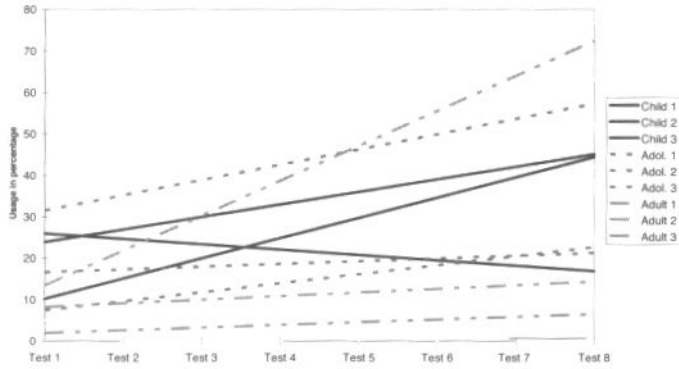GRAPH 1. EVOLUTION OF THE OBSERVED LEARNING PROCESS OF *NO+V* IN NINE
SUBJECTS.
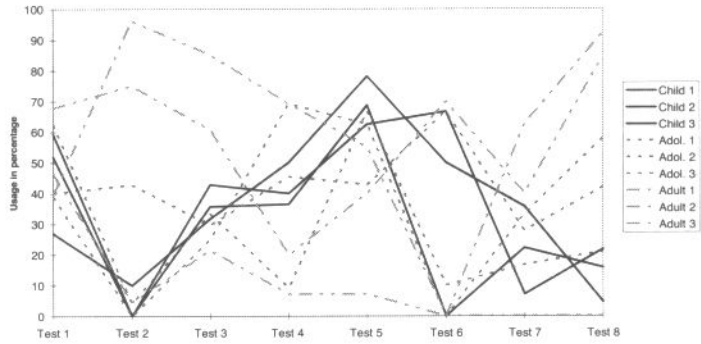
GRAPH 2. EVOLUTION OF THE CONSOLIDATED LEARNING OF *NO+V* IN NINE
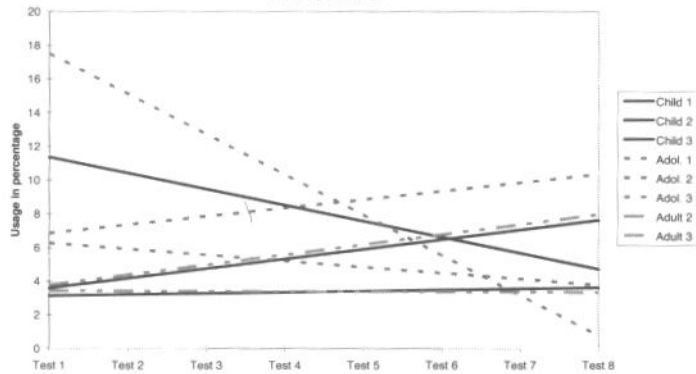SUBJECTS.
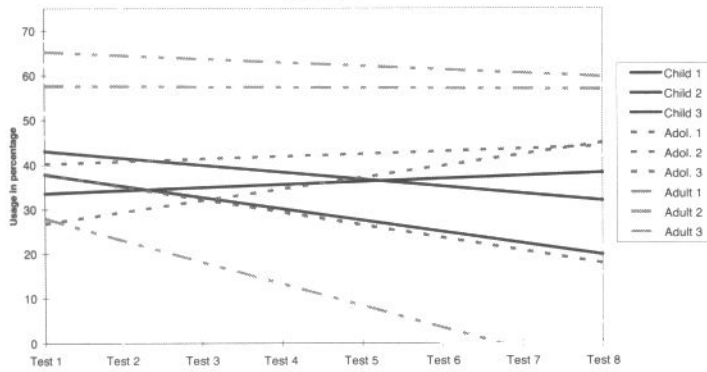
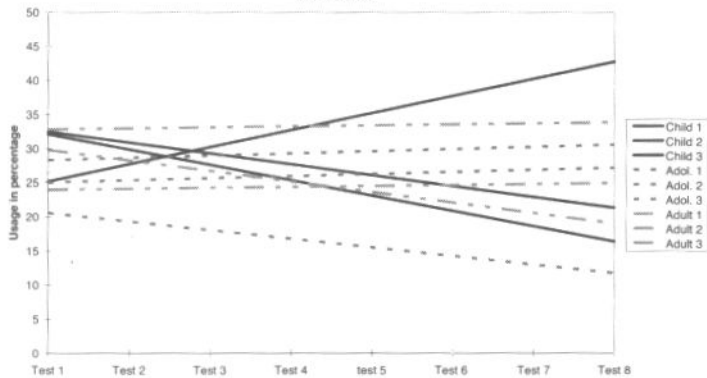GRAPH 3. EVOLUTION OF THE CONSOLDATED LEARNING OF *DON'T V* IN NINE
SUBJECTS.

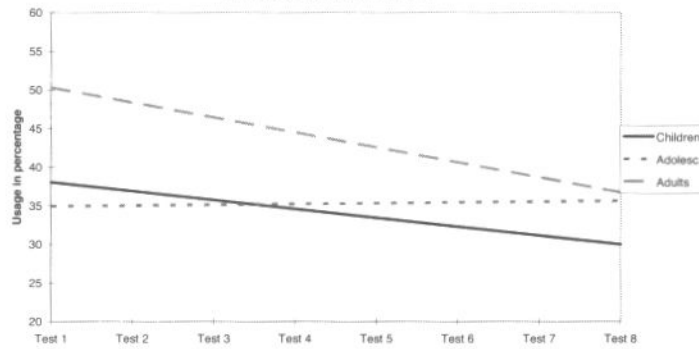GRAPH 4. EVOLUTION OF THE CONSOLIDATED LEARNING OF *AUX-NEG* IN NINE SUBJECTS.

GRAPH 5. EVOLUTION OF THE CONSOLIDATED LEARNING OF *ANALYZED DON'T* IN NINE SUBJECTS.
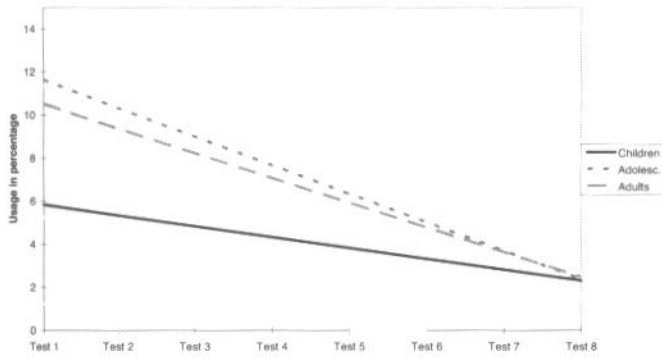

GRAPH 6. EVOLUTION OF THE CONSOLIDATED LEARNING OF *AVOIDANCE* IN NINE SUBJECTS
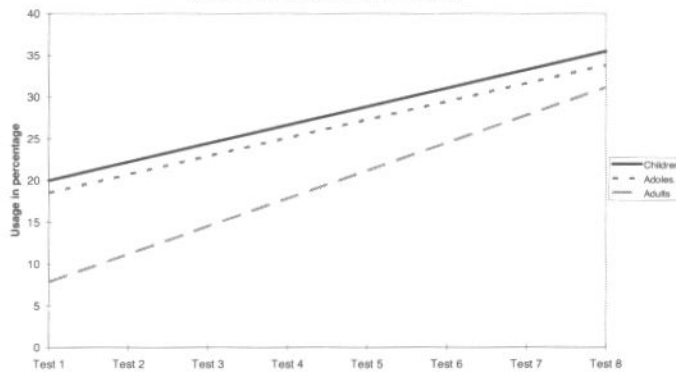
GRAPH 7. EVOLUTION OF THE CONSOLIDATED LEARNING OF *NO+V* IN CHILDREN,
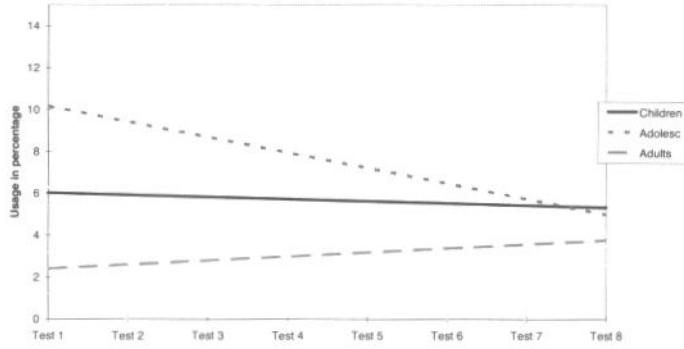ADOLESCENTS AND ADULTS.

GRAPH 8 . EVOLUTION OF THE CONSOLIDATED LEARNING OF *DON'T V* IN
CHILDREN, ADOLESCENTS AND ADULTS

GRAPH 9. EVOLUTION OF THE CONSOLIDATED LEARNING OF *AUX-NEG* IN
CHILDREN, ADOLESCENTS AND ADULTS.

GRAPH 10. EVOLUTION OF THE CONSOLIDATED LEARNING OF *ANALYZED DON'T* IN CHILDREN, ADOLESCENTS AND ADULTS.

GRAPH 11. EVOLUTION OF THE CONSOLIDATED LEARNING OF *AVOIDANCE* IN CHILDREN, ADOLESCENTS AND ADULTS.