

Expectation as a factor of influence on the success of use of hearing aids in elderly individuals

A expectativa como fator de influência no sucesso com o uso de próteses auditivas, em indivíduos idosos

Larissa Cristina Schuster¹, Maristela Julio Costa², Isabela Hoffmeister Menegotto³.

1) Master. Clinical Phonoaudiologist.

2) Doctoral in Riots of the Human Being Communication for the Federal University of São Paulo. Professor of the Program of After-Graduation in Riots of the Human Being Communication of the UFSM.

3) Doctoral in Riots of the Human Being Communication for the Federal University of São Paulo. Professor of the Department of Phonoaudiology of the UFCSPA.

Institution: Federal University of Saint Maria - UFSM.
Santa Maria / RS - Brazil.

Mailing address: Larissa Cristina Schuster - Fernando Abott Street, 270/508 - Center - Santa Cruz do Sul / RS - Brazil - Zip-code: 96810-072 - Telephone: (+55 51) 3056-2709 - E-mail: larissa.schuster@gmail.com

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SUMMARY

Introduction: Auditory prosthesis is distinguished in function of the lesser technologies that become them each time, more powerful and efficient. The marketing can generate unreal expectations how much to the results with the amplification use, mainly in inexperienced individuals.

Objective: To verify the relation between expectations and success of the process of election and adaptation of auditory prosthesis in aged.

Method: Clinical and experimental study, 16 aged, inexperienced individuals with the amplification use, the election and adaptation of auditory prosthesis had been evaluated 15 days before and after. Questionnaire for evaluation of the expectations of aged the adult individual was used “/, new user of auditory prosthesis”, Hearing Handicap Inventory will be the Elderly/Screening Version, for evaluation of the perception of the restriction of participation and the International Questionnaire - Device of Amplification Sonora Individual (QI-AASI), to verify the subjective benefit with the use of the auditory prosthesis. The Percentile Index of Recognition of Sentences in Silence was determined (IPRSS), by means of the test Lists of Sentences in Portuguese to verify the objective benefit of the adaptation. The data had been analyzed by means of not-parametric test, with level of significance of 5%.

Results: The entire sample presented positive expectations. Subjectively benefit for the reduction of the perception of the participation restriction and for the positive evaluation of the adaptation, evidenced for the QI-AASI was verified. Objective the improvement of the IPRSS with the use of auditory prosthesis also evidenced benefits.

Conclusion: The expectation how much to the results with the amplification use, it was factor of negative influence in the success of the process of election and adaptation of auditory prosthesis, in the subjective scope.

Keywords: assistant of hearing, aged, whitewashing of deficient auditory, questionnaires, only system of health.

RESUMO

Introdução: Próteses auditivas destacam-se em função das tecnologias que as tornam cada vez menores, mais potentes e eficientes. O marketing pode gerar expectativas irreais quanto aos resultados com o uso de amplificação, principalmente em indivíduos inexperientes.

Objetivo: Verificar a relação entre expectativas e sucesso do processo de seleção e adaptação de próteses auditivas em idosos.

Método: Estudo clínico e experimental, 16 indivíduos idosos, inexperientes com o uso de amplificação, foram avaliados 15 dias antes e após a seleção e adaptação de próteses auditivas. Utilizou-se “Questionário para avaliação das expectativas do indivíduo adulto/idoso, novo usuário de próteses auditivas”, Hearing Handicap Inventory for the Elderly/Screening Version, para avaliação da percepção da restrição de participação e o Questionário Internacional - Aparelho de Amplificação Sonora Individual (QI-AASI), para verificar o benefício subjetivo com o uso das próteses auditivas. Determinou-se o Índice Percentual de Reconhecimento de Sentenças no Silêncio (IPRSS), por meio do teste Listas de Sentenças em Português para verificar o benefício objetivo da adaptação. Os dados foram analisados por meio de teste não-paramétrico, com nível de significância de 5%.

Resultados: Toda a amostra apresentou expectativas positivas. Subjetivamente verificou-se benefício pela diminuição da percepção da restrição de participação e pela avaliação positiva da adaptação, evidenciada pelo QI-AASI. Objetivamente a melhora do IPRSS com o uso de próteses auditivas também evidenciou benefício.

Conclusão: a expectativa quanto aos resultados com o uso de amplificação, foi fator de influência negativa no sucesso do processo de seleção e adaptação de próteses auditivas, no âmbito subjetivo.

Palavras-chave: auxiliares de audição, idoso, reabilitação de deficientes auditivos, questionários, sistema único de saúde.

INTRODUCTION

Auditory prosthesis are in evidence in the current society, presenting itself as the possibility of improvement of the quality of life of carrying individuals of auditory loss. In recent years these equipment has been sufficiently divulged and the constant renewal of the lesser technological resources that also become them each time, more powerful and efficient (1,2) gains the media.

It is noted, however, that a series of intrinsic difficulties to the election process and adaptation of auditory prosthesis, frequent it is omitted by the marketing and, most of the time, it does not arrive at the knowledge of the interested greater, the patient. Such situations make with that this believes some fancies involving the use of the auditory prosthesis and finishes creating unreal expectations and many excessively positive times (3). This occurs mainly with patients who had never had experience with the amplification use (4,5,6).

In accordance with literature, the expectation daily pre-amplification can influence the patient in the success of its process of auditory whitewashing. In this perspective, knowing the previous expectations of the individual would be possible to anticipate its probable results with the use of auditory prosthesis. Other authors also believe this relation (5,7,8).

Thus, it was objectified in the present study to verify of that it forms the expectation daily pre-amplification relates to the success of the process of auditory rehabilitation, measured in such a way from the subjective benefit, verified for the patient in auto-evaluation questionnaires, as of the objective benefit, verified for the performance in tests of recognition of speaks.

METHOD

This research is one subproject tied with the entitled "Research and Database in Auditory Health", registered project in the Cabinet of Projects under nº 019731 and approved by the Committee of Ethics in Research with certified nº 0138.0.243.000-06, in 05/12/2006. All the evaluated individuals had signed the Term of Assent Free and Clarified - TCLE, after clarifications.

For the election of the sample the following criteria of inclusion had been adopted: aged, carrying individuals of bilateral, symmetrical sensorineural loss auditory, classified as light, moderate or moderately-severe degree (9) with indication of use of auditory prosthesis bilaterally (10),

obligatorily without previous experience as using of such and absence of any cognitive impairment.

Aged individuals had been considered those with 60 years or more (11) and the audiologic standards, established by means of basic the audiologic evaluation.

For ends of evaluation of the cognitive conditions of the individuals to participate of the study used Mini-Examination of Mental State - MEEM (12), version adapted for the Portuguese (13). They had been considered scores between 13 and above of 26 points, in accordance with the time of study of each individual (13).

42 aged individuals had been evaluated initially. Of these, 26 could not have been part of the sample, mainly for not having symmetry between the ears. Thus, the final sample was composed of 16 individuals, with ages between 64 and 94 years.

The evaluations had occurred at two different moments: 15 days before and 15 days after the adaptation of the auditory prosthesis. The first phase of evaluations contemplated the survey of the expectations daily pre-amplification by means of the Questionnaire for evaluation of the expectations of the aged adult/, new user of auditory prosthesis (14), verification of the perception of the restriction of participation by means of the questionnaire Hearing Handicap Inventory will be the Elderly/Screening Version - HHIE/S (15) and of the communicative performance of the individual without the use of auditory prosthesis by means of the determination of the percentile index of recognition of sentences in silence (IPRSS), using the Test Lists of Sentences in Portuguese (LSP) (16).

The second phase consisted in the reevaluation of the perception of the restriction of participation by means of the HHIE/S and of the communicative performance of the individual making use of auditory prosthesis, by means of the LSP, beyond the measurement of the general, relative subjective benefit to the multiple dimensions that had part to suit of adaptation to the use of auditory prosthesis, by means of International Questionnaire - Device of Individual Sonorous Amplification - QI-AASI (17).

The Questionnaire for evaluation of the expectations of the aged/adult individual, new user of auditory prosthesis (14) was developed especially to make possible the measurement of the expectations daily pre-amplification (Attached 1). The instrument is composed for 7 questions that approach the expectation of the patient, how much to the results with the use of auditory prosthesis, in specific situations as: conversation in the family, social coexistence, conversation with strangers, understanding of speaks in the

Annex I. Questionnaire for evaluation of the expectations of the adult/aged* individual, new user of auditory prosthesis (SCHUSTER et al., 2011).

Instructions: This questionnaire consists in an instrument that allows the audiologist to know what it waits aged/adult patient, candidate to the use of device of individual sonorous amplification, with regard to its whitewashing. The same it possess 12 questions, divided in two scales or dimensions, of which one is referring to the expectations and another one to the concerns of these patients, approaching the main involved aspects at the moments that precede the first experience with device of individual sonorous amplification. The instrument will have to be applied by the responsible professional, being that all the questions must be chores and explained the patient, whenever necessary. For all the questions only one option of reply is possible.

Expectations

With the use of the devices of individual sonorous amplification, Mr, ou Ms.:

1. Do you wait to understand more easily the people with who coexists?
() NOT () PERCHANCE/I DO NOT KNOW () YES
2. Do you wait that the coexistence with its family, friends or fellow workers improves, therefore goes to obtain to understand them more easily?
*Do you wait that the coexistence with its family and friends improves, therefore goes to obtain to understand them more easily?
() NOT () PERCHANCE/I DO NOT KNOW () YES
3. Do you wait to feel more the will to talk with strangers and to frequent commercial establishments and of services in general?
*Wait to feel more the will to talk with strangers and/or more independent to frequent commercial establishments in general and of services, without companion?
() NOT () PERCHANCE/I DO NOT KNOW () YES
4. Do you wait to understand the people in noise places better as meetings, restaurants, parties, religious cults?
() NOT () PERCHANCE/I DO NOT KNOW () YES
5. Do you wait to understand better to the telephone?
() NOT () PERCHANCE/I DO NOT KNOW () YES
6. Do you wait understand better the TV or the radio with the lowest volume?
() NOT () PERCHANCE/I DO NOT KNOW () YES
7. Do you wait to listen as listened before having hearing problem?
() NOT () PERCHANCE/I DO NOT KNOW () YES

noise, understanding of speaks to the telephone, audibility in leisure situations and expectation how much to the recovery of the hearing. The presented alternatives of reply are NOT, MAYBE/NOT KNOW and YES, where: NOT = 1 point, MAYBE/NOT KNOW = 2 and YES = 3 points. The total punctuation is gotten by the addition of the points, in accordance with the reply of each question. Of this form, they consist as possible minimum and maximum punctuations 7 and 21 points respectively, where 7 represent positive expectations and 21 little, total positive expectations how much to the results with the use of auditory prosthesis.

The success of the process of auditory rehabilitation considering the subjective benefit with the use of auditory prosthesis was evaluated by means of questionnaires HHIE/S, having searched an analysis of the improvement of the performance of the individual in terms of reduction of restriction of social participation and emotional difficulties happened of auditory loss, and QI-AASI, searching a ampler perspective in terms of dimensions of performance change.

As already related, the application of the HHIE/S occurred at two distinct moments, under different conditions (without and with the use of auditory prosthesis), allowing the analysis of the subjective benefit for the comparison of the results gotten at the two moments (18). The QI-AASI is part of the form of Election and Adaptation of Devices of Individual Sonorous Amplification (Ordinance SAS/MS #587, of 07/10/2004) (10) for validation of the intervention, and it was applied only after 15 days of use of the amplification, having been considered the version in Portuguese of the instrument (19).

Moreover, the LSP (16) for evaluation of the communicative performance of the individual in silence was used, from the determination of the IPRSS. This initially was established in the condition without auditory prosthesis, in a fixed intensity, which was used later for the determination of the IPRSS with auditory prosthesis. The comparison of the results gotten in both the conditions searched evidences of a possible relative objective benefit to the communicative performance.

The data had been analyzed by means of software Statistical Package for Social Science 15,0 (SPSS), using not-parametric tests of Correlation of Spearman. The results had been considered significant where $p \leq 0,05$.

RESULTS

The sample was constituted of 16 individuals, being ten of the masculine sort, with ages between 64 and 94 years.

The Picture 1 presents the results individually gotten, for each question that composes the Questionnaire for evaluation of the expectations of aged/adult individual, new user of auditory prosthesis. One also presents the average of punctuation of each question and the total expectation measured by individual, which represents the addition of the punctuation of each one of the questions.

The Picture 2 presents a comparative degree of before scores gotten in the evaluation of the perception of the restriction of participation (HHIE/S initial) and after the adaptation of auditory prosthesis (final HHIE/S), the differences computed between the two evaluations (initial HHIE/S - final) for each individual, as well as the average for each one of these aspects, on the basis of n=16.

In turn, Picture 3 displays scores gotten individually and for each one of the questions in the evaluation of the general subjective benefit (QI-AASD), together with the calculated averages, considering n=16.

The Picture 4 presents the results of the evaluation of the communicative performance (IPRSS without and with the use of auditory prosthesis), the found difference enters the two evaluations (IPRSS with - without auditory prosthesis) for each individual and the averages of the results of each evaluation, considering n=16.

Finally, consist in Table 1, the averages of the variable “pre-amplification expectation”, “specific subjective benefit (HHIE/S initial-end)”, “general subjective benefit (QI-AASD)” and “objective benefit” (IPRSS with - without auditory prosthesis). In this table they are presented, also, the results of the test Coefficient of Correlation of Spearman.

DISCUSSION

In accordance with Picture 1, the pre-amplification expectation presented high scores for all the individuals and in all the evaluated situations, exactly that potentially most problematic one (6): the understanding of speaks in the noise. However, some particularities with regard to the general punctuation for each question had been evidenced.

It was observed that questions 1, 2 and 3, which had approached the expectations how much to the situations conversational in the family, social coexistence in general and conversation with strangers, they had presented unanimity in the standard of answers, being the expectation how much to these aspects total positive for all the sample. Questions 4 and 6, that they approach the understanding of says in the noise and the audibility in the leisure

Picture 1. Results of the application of the Questionnaire for evaluation of the expectations of aged the adult individual/, new user of auditory prosthesis, considering the answers of each individual, for each one of the evaluated aspects.

Question	Q.1	Q.2	Q.3	Q.4	Q.5	Q.6	Q.7	Expectative Total
Person								
1	3	3	3	3	3	1	2	18
2	3	3	3	3	3	3	3	21
3	3	3	3	3	3	3	1	19
4	3	3	3	3	3	3	3	21
5	3	3	3	3	3	3	1	19
6	3	3	3	3	3	3	1	19
7	3	3	3	3	3	3	3	21
8	3	3	3	3	3	3	2	20
9	3	3	3	3	3	3	2	20
10	3	3	3	3	3	3	3	21
11	3	3	3	3	3	3	2	20
12	3	3	3	3	3	3	3	21
13	3	3	3	2	3	3	2	19
14	3	3	3	3	1	3	2	18
15	3	3	3	3	1	3	3	18
16	3	3	3	3	1	3	3	18
Average	3,00	3,00	3,00	2,93	2,62	2,87	2,25	19,56
Average(%)	100	100	100	97	87	95	75	93

Subtitle: Q.1 - conversational situation in the family - social coexistence Q.2 - conversational situation with strangers - understanding of speaks in the noise - understanding of speaks to the telephone - audibility in situations of leisure - expectation how much to the recovery of the hearing.

Picture 2. Comparative degree of them you prop up totals gotten in the evaluations of the perception of the participation restriction (HHIE/S), initial and end, and difference between the two results.

Person	HHIE/S initial(%)	HHIE/S final(%)	HHIE/S initial - final(%)
1	15	5	10
2	75	10	65
3	75	5	70
4	65	45	20
5	80	5	75
6	70	5	65
7	90	15	75
8	90	60	30
9	80	25	55
10	45	10	35
11	65	25	40
12	35	25	10
13	70	5	65
14	90	0	90
15	100	20	80
16	90	0	90
Avarange	70	16	54

Picture 3. Results gotten for individual for each one of the aspects evaluated for the QI-AASI and found average values. (n= 16).

Question Person	Q.1	Q.2	Q.3	Q.4	Q.5	Q.6	Q.7	Score Total
1	5	4	5	5	5	5	5	34
2	4	4	4	4	5	5	4	30
3	5	4	5	5	5	5	5	34
4	4	3	3	5	4	4	3	26
5	4	5	5	5	5	5	4	33
6	4	4	5	5	4	5	4	31
7	4	4	4	4	5	5	5	31
8	4	3	3	4	3	3	4	24
9	5	4	4	4	3	4	4	28
10	5	4	4	3	4	5	3	28
11	4	2	3	2	3	5	2	21
12	4	3	4	3	4	4	3	25
13	5	3	4	5	3	5	5	30
14	5	5	5	5	5	5	5	35
15	5	5	4	4	5	5	5	33
16	5	4	4	4	5	4	4	30
Average	4,50	3,81	4,12	4,18	4,25	4,62	4,06	29,56

Subtitle: Q.1 – daily use Q.2 - Q.3 benefit - residual limitation of the Q.4 activity - Q.5 satisfaction - residual limitation of the Q.6 participation - impact in other Q.7 - quality of life.

Table I. Average of the expectation daily pay-amplification, specific subjective benefit for social and emotional difficulties (HHIE/S initial-end), general subjective benefit (QI-AASI) and objective benefit (auditory IPRSS with-without prosthesis), and result of the analysis statistics.

Variables	Average	Expectancy Average (n= 16)	p-value	Coef. of correlation (r)
Specific Subjective Benefit	0,54	19,56	0,054	- 0,490
General Subjective Benefit	29,56	19,56	0,006*	- 0,654
Objective Benefit	0,23	19,56	0,192	- 0,212

Used statistical test: Coefficient of Correlation of Spearman. *Statistical significant value (p ≤0,05).

situations, also had shown a trend for positive expectations, presenting little variability of answers. On the other hand, the question of number 7, referring to the expectation of recovery of the auditory conditions was the one that presented greater variability of answers, with at least a

Picture 4. Comparative degree of the results of the IPRSS without and with auditory prosthesis (initial and final IPRSS) for each individual, the difference enters the results of the two evaluations (IPRSS end-initial) and the averages for each evaluation, considering itself n= 16.

Person	IPRSS Initial (%)	IPRSS final (%)	IPRSS final-initial (%)
1	20	50	30
2	40	70	30
3	50	80	30
4	20	70	50
5	60	60	0
6	80	90	10
7	0	10	10
8	20	20	0
9	90	100	10
10	40	70	30
11	30	30	0
12	40	60	20
13	60	70	10
14	60	90	30
15	40	100	60
16	40	80	40
Average	43,12	65	22,5

reply of each type; in this aspect the expectations had also been positive, however not in the same way as for excessively.

The expectation pre-amplification average of the sample was of 19,56 (of a maximum of 21 points). This sample that, of general form, the individuals waited resulted sufficiently positive with the use of the auditory prosthesis, especially in the situations that had approached the aspect social and that they had involved the quality of the communication in the interpersonal relations. Of this form, it is observed that the individuals wait to solve with the use of auditory prosthesis most of its resulting difficulties of the auditory problems.

Similar findings to the presents in relation to the pre-amplification expectations are also described in literature (4,6). A study in particular (4), in the same way that the gift, observed that the presence of high expectations is more frequent in individuals without previous experience with the amplification use.

The benefit with the use of auditory prosthesis is a question that involves diverse variable, but that it can be evaluated of satisfactory form with the aid of appropriate instruments and the accompaniment of the patient. In the

present study, the benefit with the use of auditory prosthesis was evaluated in such a way subjective as objective. Of subjective form, the involved restriction of participation, specifically, and multiple dimensions in the process of election and adaptation of auditory prosthesis had been analyzed; the objective benefit was measured by the change in the standard of recognition of sentences without and with the amplification.

As it can be seen in Picture 2, the evaluation of the perception of the restriction of initial participation using the HHIE/S evidenced the presence of significant levels of difficulties in this scope for great part of the sample, which had been reduced in the final evaluation. These findings point with respect to the presence of benefit derived from the use of auditory prosthesis, specifically as for the social and emotional difficulties, for all the individuals of the sample.

The social difficulties raised by the initial HHIE/S and that they had probably given to origin to the positive pre-amplification expectations (Picture 1), however, had been only in surpassed part with the use of auditory prosthesis. The perception of participation restriction total was surpassed for only two individuals (12.5%), showing that for the majority of the individuals I benefit in this scope so was probably not raised how much its expectations.

In the same way, the results gotten from the application of the QI-AASI (Picture 3) had evidenced total scores that had demonstrated a positive evaluation of the experience with the use of auditory prosthesis (17) on the part of the entire sample. The example of what it occurred specifically for the participation restriction, these findings also point benefit with the amplification use, now in a general way, when being considered the diverse aspects that are party to suit of adaptation to the use of auditory prosthesis. Similar findings had been described in diverse studies (20, 21, 22).

Still in accordance with the findings presented in Picture 3, the auditory prosthesis had been evaluated as total satisfactory for only one individual (6.25%; individual 14), being that for the remain of the sample some difficulties in the use of individual sonorous amplification had still existed, although the reported benefit. It was observed, that in the same way that specifically for the participation restriction, the evaluation of the general subjective benefit also was not so favorable how much the expectations previously raised.

In relation to the improvement in the recognition of it says with the use of auditory prosthesis, the results of the tests had also evidenced benefit with the use of auditory prosthesis for the majority of the evaluated individuals, being that only three of the same ones (18.75%) had not

presented improvement of the IPRSS. Amongst that they had not presented improvement, it was observed that the performance was equally low in both evaluations (with and without prosthesis) e, therefore, was also not evidenced the worsening of the results (Picture 4). Considering that too much individuals with overhead in the initial evaluation had the same presented better resulted with the use of sonorous amplification, it is possible that for this minority without improvement other aspects beyond the audibility are involved in the determination of its communicative performance.

Another study also it evaluated the communicative performance by means of the determination of IPRSS (23) e, in the same way, observed improvement of this in the presence of the amplification, as the observed one in the present work.

The analysis described statistics in Table 1 pointed different relations between the expectation and each one of the excessively changeable ones. How much to a specific subjective benefit for social and emotional difficulties, the marginal value ($p=0,054$) and the negative coefficient of correlation ($r=-0,490$) found had evidenced a trend to the influence of negative character of the expectation on this aspect, that is, for the studied individuals, the more positive they had been the pre-amplification expectations, minors the possibilities of will tell I benefit specific relative to the participation restriction.

In what it says respect to the general subjective benefit, was verified significance statistics in absolute values ($p=0,006$) and also negative coefficient of correlation ($r=-0,654$). Being thus, it had a negative correlation between the pre-amplification expectation and the related subjective benefit to the diverse involved dimensions in the process of adaptation of auditory prosthesis. Findings indicate that, for the studied, the more positive the presented expectations, lesser sample were the told general benefit. In this aspect, found similar they had been related in at least one another study (4).

How much to the measured objective benefit, did not have significance statistics ($p=0,192$) in the correlation between this and the pre-amplification expectations of the individuals, determining the absence of relation between the two variable, what it agrees to the findings to literature (24,25).

On the other hand, it was told in the literature that high pre-adaptation expectations could yes be related to the biggest benefit of the individual in the period after-adaptation (26). Opposing the gotten results and the studies cited until then, other authors had after discarded any relation between the pre-amplification expectations

and the general subjective benefit of the individual the adaptation (25).

Still on the relation between pre-amplification expectation and the benefit related, diverse studies relate that the pre-amplification expectation can be associated with the number of hours of use of the amplification per day (5,7,8,27,28). This sends to the question of the effective use of the auditory prosthesis, which is of basic importance for the learning of the use of the new auditory information, available through the amplification and the improvement of the abilities of understanding of the individual (29,30), being able, in the long run, to result in bigger perception of the benefit. This point of view reaffirms the influence of the pre-amplification expectation on the benefit with the use of the auditory prosthesis, a time that also exerts influence on the habits of use of the same ones, in the daily one of the patient.

Therefore, a positive expectation in the pre-adaptation period nor always can be seen as a probable negative factor in the process of adaptation of auditory prosthesis, as they can suggest the results of the present study. Strengthening this idea, some authors (31) relate that the pledged patient in the process of adaptation of the auditory prosthesis finishes contributing for the accomplishment those fine adjustments throughout the accompaniment, what he is positive for the process as a whole.

Knowing the involved previous expectation in the process of election and adaptation of auditory prosthesis can assist in the choice of the form of individual boarding to be used throughout the related process, making with that the perception of the future results, with the use of the amplification, either most positive possible.

CONCLUSION

It was concluded, from this study, that the pre-amplification expectation of aged patients was factor of negative influence on benefits it subjective, measured by means of questionnaires, especially in relation to the evaluated global benefit by means of the punctuation of the QI-AASI. The same was not observed with regard to the objective benefit, evaluated by means of the speech tests, which did not have influence on the part of the pre-amplification expectation.

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