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Evaluation of the Level of Knowledge of Infant and Primary School Teachers with Respect to the Attention Deficit Hyperactivity Disorder (ADHD): Content Validity of a Newly Created Questionnaire

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1. Introduction

ADHD is a universal disorder which began to be researched more than a century ago but about which there remain many questions regarding its etiology, evolution and effective treatment (Moreno, 2008b). Without doubt this is, in part, due to the fact that people with ADHD are a heterogeneous group with varied symptoms and not all cases have all the symptoms and features which have been described as characteristic of this disorder. In general terms it can be stated that people with ADHD suffer from an inappropriate development of the mechanisms that regulate attention, reflexivity and activity (Miranda, Jarque & Soriano, 1999).

In spite of the fact that so much remains unknown about the disorder, ADHD is one of the most common psychological problems in childhood and adolescence (Brown, 2003; Barkley, 2004) and produces significant negative consequences for those who suffer from it. As Barkley (1998) pointed out, the importance of ADHD derives not only from its direct effects but also from the contribution it makes to increasing the vulnerability of the person suffering from it to other problems and difficulties. Although it is not possible to construct a unitary profile which would bring together all those affected by the condition because of the heterogeneous nature of the symptoms they suffer from, the majority of children with ADHD suffer from, as well as the central symptoms of the disorder, other associated problems which make the prognosis of the disorder even more difficult. The most common associated problems are usually disruptive behavior and problems at school, cognitive and social difficulties, emotional disorders, physical problems and associated disorders, particularly oppositional defiant disorder, conduct disorder, anxiety disorders and learning disorders (Moreno, 2008b).

Currently ADHD is one of the conditions that generates most research in the scientific community but even so, in the words of Barkley (2005), it continues to be largely unknown

and misunderstood. Teachers, along with the family, are one of the most important agents of socialization during infancy so they are one of the groups most suited for training and awareness raising with regard to ADHD. As will be pointed out in the following section, a significant percentage of teachers have false ideas or gaps in their knowledge regarding ADHD, which leads them to act in a mistaken fashion in the classroom. Children with ADHD require more attention than other students, a series of organizational and structural changes, and more involvement by teachers. Thus it has been observed that special training for teachers on how to deal with this issue and a positive predisposition on their part can have very positive results for children with ADHD.

1.1 ADHD and teachers

The amount of research into teachers' knowledge of ADHD has grown considerably in recent years due to the important role this group plays in the academic, personal and social success of students with ADHD. According to Pfiffner (1999), the teacher is the decisive element in the success of the child with ADHD.

Basing our view on the existing literature, we believe that infant and primary school teachers should have specific and general knowledge of ADHD for six fundamental reasons. Firstly, it must be borne in mind that ADHD is one of the most common psychological disorders among children. The American Psychiatric Association (APA, 2000) claims that between 3% and 5%, approximately, of schoolchildren have ADHD, that is to say, it is estimated that there is an average of 1 child with ADHD in every classroom of 25 children (Barkley 1999; Moreno & Servera, 2002; Moreno, 2008a). Thus, general education teachers in infant and primary schools may encounter an average of one child with these characteristics per school year while specialist teachers of physical education, foreign languages, music or special needs may encounter more than one child in their classrooms with ADHD per school year.

Secondly, it has been shown that the majority of children with ADHD exhibit behavior significantly different in many respects from that of their peers during their pre-school years (Miranda, Roselló & Soriano, 1998) and that these differences become more evident in the early years of primary education when academic and social demands increase (Parellada, 2009). In both these stages teachers are in a good position to identify possible cases of ADHD. They can pretty accurately distinguish between what is normal development and what is not, which leads to their being the professionals who most commonly make initial referrals for specific evaluations of whether children have ADHD (Jarque, Tárraga & Miranda, 2007; Vereb & DiPerna, 2004). Until recent years pre-school teachers preferred to wait, thinking that the typical symptoms of ADHD were transitory in nature and would disappear with the passage of time. It is fortunate that nowadays more and more of these teachers are aware that ignoring these early indications could constitute a serious error because it could lead to vital time for treatment being lost (Miranda et al., 1998). Thus, increasing teachers' awareness of ADHD could facilitate, among other things, the early detection of the disorder and the provision of appropriate treatment for it (Jarque et al., 2007; Ohan, Cormier, Hepp, Visser & Strain, 2008).

Thirdly, it must be recalled that the role of the teacher is also essential in the establishment of the diagnosis. The teacher's assessment of the behavior of the student, along with that of

his or her parents and the results of the rest of the tests administered to the child, forms part of the data that allow the evaluator to establish the diagnosis (Jarque et al., 2007; Sciutto, Terjesen & Bender, 2000; West, Taylor, Houghton & Hudyma, 2005).

Fourthly, it should be noted that teachers play an important role in the implementation, evaluation and support of the treatment of children with ADHD (Ohan et al., 2008). Their support is needed for the results of the treatment received by the student to be successful, and their views and opinions about ADHD have a profound effect on the treatment's efficacy (Sherman, Rasmussen & Baydala, 2008). In this context it has been demonstrated that teachers' knowledge of effective treatment for ADHD has an effect on the support they provide for those treatments (Ohan et al., 2008). In general it has been found that teachers prefer treatments that have positive consequences for students, are easy to implement and require little time (Graczyk et al., 2005). In any case, the research that has been carried out indicates that the knowledge teachers have about the design and implementation of treatment is frequently deficient (Arcia, Frank, Sánchez-LaCay & Fernández, 2000; Sciutto et al., 2000; West et al., 2005).

A fifth reason for teachers to be trained about ADHD arises from the direct contact that they have with the parents of the children concerned. Various authors have found that teachers make recommendations to parents -both correct and mistaken- about ADHD and the parents tend to follow them (Kos, Richdale & Hay, 2006; Ohan et al., 2008). This does not constitute a problem in cases in which the teachers are well informed and well trained regarding the condition, but the advice given by untrained or inadequately trained teachers can be very damaging for the children and their families.

A sixth and final reason arises from the fact that the teacher's knowledge of ADHD has an effect on his or her conduct and attitudes towards the children affected by this condition (Barkley, 2006). Better informed teachers have more positive attitudes and conduct towards students with ADHD (Bekle, 2004; Ghanizadeh, Bahredar & Moeini 2006; Kos et al., 2006). Knowledge of ADHD, which is mainly acquired from specific training focused on the condition and previous exposure to children with it, seems to be associated with the level of confidence teachers have in their own abilities to respond to the needs of their students with ADHD (Bekle, 2004; Graczyk et al., 2005; Jarque et al., 2007; Kos et al., 2006). Bandura (2001) holds that this self-confidence, or self-efficacy is learned and is principally acquired by way of vicarious learning and by direct practice. Furthermore, Graczyk et al. (2005) state that this self-confidence, or self-efficacy is associated with the knowledge the teacher has about the treatments that can be applied to children with ADHD and that educators usually show little confidence in their abilities when it comes to responding to the needs of students with ADHD. This claim by Graczyk et al. (2005) is interesting when we recall that in research into teachers' knowledge of ADHD one of the weak points of the majority of the members of this group is their knowledge of the treatment of ADHD (Jarque et al., 2007; Ohan et al., 2008; Sciutto et al., 2000; Vereb & DiPerna, 2004; West et al., 2005). This lack of knowledge could lead to these teachers not having confidence in their abilities and so have more negative behavior and attitudes towards students with ADHD. As was pointed out by Bekle (2004), teachers must be aware that students with ADHD suffer from serious disadvantages in the classroom and they also have to have appropriate knowledge of the condition in order not to exert a negative influence on them. This same author holds that teachers with little or no knowledge of the disorder demand less from students suffering from it and approach them and praise them less, as well as criticize them more than other students.

Various studies have shown that teachers, in general, have a moderate level of knowledge of ADHD and that it is necessary that this level of knowledge be increased (Ghanizadeh et al., 2006; Grazyk et al., 2005; Jarque et al., 2007; Kos, Richdale & Jackson, 2004; Sciutto et al., 2000; West et al., 2005; White et al., 2011). Results vary depending on the research consulted. For example, some studies have shown the average number of correct answers by teachers answering questionnaires about ADHD to be 80% (Barbaresi & Olsen, 1998; Bekle, 2004; Jerome, Gordon & Hustler, 1994; Jones & Chronis-Tuscano, 2008; Ohan et al., 2008), while other studies show the average percentage of correct answers as not exceeding 53% (Jarque et al., 2007; Kos et al., 2004; Sciutto et al., 2000; Stacey, 2003; West et al., 2005). These differences are probably due to the different methodologies used in the studies. The pioneering studies of teachers' knowledge of ADHD (Barbaresi & Olsen, 1998; Jerome et al., 1994) had an average of 24 questions to be answered on a True or False basis. Another series of authors (Bekle, 2004; Jones & Chronis-Tuscano, 2008; Ohan et al., 2008) used similar measurement instruments with the objective of their studies being as similar as possible to the earliest research on this matter. However, the results obtained from questionnaires with dichotomous response formats can be deceptive as they invite participants with doubts to opt for one or other possible answer and this contributes to an increase in the proportion of correct answers due to the divination effect (Jarque et al., 2007; Kos et al., 2006; Sciutto et al., 2000).

Sciutto et al. (2000) established the beginning of a new stage by creating a questionnaire with 36 items which included 3 dimensions and an answer format with three options: "True", "False" and "I don't know". It was also the first tool for measuring the knowledge of teachers of ADHD which had its indices of reliability and validity published. This tool has been a source of inspiration for more recent studies (for example, Guerra, 2010; Jarque et al., 2007; Stacey, 2003; West et al., 2005) which found more moderate levels of knowledge among teachers than those found in the earliest research. The increase in the number of questionnaire items with respect to the number used in the pioneering studies had an impact on the reduction of the number of right answers by respondents but it was the introduction of the three option response format which allowed for the obtaining of more exhaustive information, allowing the areas where the teachers had the most knowledge, the areas where they had the least and the areas where respondents made the most mistakes to be identified (Jarque & Tárraga., 2008; Kos et al., 2006; Sciutto et al., 2000). Another series of studies used either a Likert format with 5 options (Snider, Busch & Arrowood, 2003) or multiple choice questions (González-Acosta, 2006; Niznik, 2005; White, 2011) and the results obtained were similar to those found by three option format questionnaires.

To summarize, the differences found in the results of research into educators' knowledge of ADHD can be explained by the following factors: 1) at the world level there exist a fair number of studies of educators' level of knowledge of ADHD, nevertheless there is a shortage of instruments with which to accurately measure that knowledge; 2) the differences in the number of items making up the various questionnaires and their contents led to a variance in the number of right answers in the studies; 3) the response formats used were different; 4) the breadth of the sample varied considerably from one study to another, with some studies having a large number of participants while other had relatively few; and 5) although they were not taken into account in all the studies, such socio-demographic variables as the previous training received by the teachers with respect to ADHD or their

previous experience in teaching children with this condition, had a significant influence on the results obtained. All of these factors must be taken into account when it comes to interpreting, comparing and generalizing the results obtained from these studies.

What emerges from these studies is that the teachers had limited training with regard to ADHD. It must be pointed out that many teachers suffer from either a lack of knowledge or false beliefs regarding the consequences, causes and treatment of ADHD (Pfiffner, 1999). Given this fact, Moreno (2008a) considers that in order to properly deal with students with ADHD, teachers should acquire information about the characteristics, implications and effective methods for dealing with this disorder. In the same way, Arcia et al. (2000) indicates that teachers need more rigorous training with regard to the causes of ADHD, the identification of its characteristics and the employment of strategies to deal with it that are effective in the classroom. Furthermore, arising from the weaknesses identified, in the bulk of the research the teachers involved explicitly expressed a desire to receive more information regarding ADHD (Bussing, Gary, Leon & Garvan, 2002; Jerome et al., 1994; Sciutto et al., 2000).

Today anyone who cares to look for it can find a wide variety of information about ADHD because of the large number of specialist publications and websites that deal with it. However, as Moreno (2008a) points out, it would be appropriate for teachers to develop their knowledge in a more formal and regulated manner such as by attending relevant lectures at congresses, symposiums, etc. and/or participating in courses, workshops and seminars that deal with the disorder. Furthermore, turning to work colleagues for advice and information can be a risky strategy as these colleagues might provide insufficient or false information. As Kos et al. (2006) have shown, those teachers who consider their level of knowledge of ADHD to be optimal do not search for additional information about it. Those who believe themselves to be ignorant about this topic, by contrast, do seek information about it. For this reason it is important for educators to be aware of their real level of knowledge regarding ADHD as well as the possible consequences of gaps in their knowledge and/or false beliefs about this disorder.

According to Sherman et al. (2008), the relevant variables that distinguish the teacher specially trained to assist and support students with ADHD are patience, knowledge of effective intervention techniques, the ability to collaborate with a multidisciplinary team, the use of gestures to communicate with students and a positive attitude towards children with special educational needs. In the same vein authors such as Pfiffner (1999) and Cooper and Bilton (2002) highlight two teacher factors that are key to the success of students with ADHD: knowledge and education about the disorder, and a positive attitude towards and perception of the recommended psychological and educational interventions. However, as noted by Kos et al. (2006), this line of research is relatively recent and, so far, it has produced few relevant studies in this regard. It is to be hoped that future studies will provide more clues about the characteristics that teachers ought to have in order to facilitate the academic success of children with ADHD.

Leaving aside the personal characteristics of teachers and focusing on the level of knowledge they possess on ADHD, several studies suggest that a significant percentage of teachers hold false beliefs and have gaps in their knowledge regarding ADHD and that, in addition, on many occasions they express negative attitudes towards children with this

condition (for example, Barbaresi & Olsen, 1998; Jarque et al. 2007; Sciutto et al., 2000). As we have already indicated, change is possible through training. The problem is that there are few studies that examine programs designed to increase teachers' knowledge of ADHD and the bulk of those that exist have not analyzed the effectiveness of these programs or their methodological rigor. Barbaresi and Olsen (1998) pioneered the evaluation of training programs for teachers on ADHD. They developed a 27 item questionnaire with a dichotomous response format and administered it to a group of 44 teachers from the same school, both before they participated in a training program on ADHD and one month after its completion. The results of the study show that teachers' knowledge increased considerably after the intervention. However, it must be pointed out that Barbaresi and Olsen's (1998) study suffers from some methodological problems. In fact, the psychometric properties of the instrument used to measure knowledge of teachers were not adequate. Furthermore, the study was carried out in a single school and with a very small number of teachers.

The work of Jones et al. (2008) marked a significant change in the degree of scientific rigor of studies of the effectiveness of programs to educate teachers about ADHD. It controlled for several variables and used a random sample. The sample consisted of 142 primary school teachers from 6 different schools and had a control and an experimental group. The training given by Jones et al. (2008) to the teachers included a general overview of ADHD (identification and diagnosis) as well as information on the evidence based treatment of ADHD (pharmacological and psychosocial) and the theory and implementation of specific strategies for behavior management in the classroom. The level of teachers' knowledge of ADHD was evaluated before receiving the training and one month after it started. The authors of the study drew up a questionnaire for this purpose. The results indicate that teachers increased their knowledge of the disorder in some small measure but were very satisfied with the training. However, the instrument employed by Jones et al. (2008) to measure teachers' knowledge did not have adequate psychometric properties and the response format used in the questionnaire was dichotomous, all of which placed limits on the results of the study.

Syed and Hussein (2009) also carried out research on the effectiveness of a training program on ADHD for teachers. They carried out a pilot study in which they gave training to 49 teachers over the course of a week with 10 teaching contact hours. The training dealt with various topics related to ADHD. The teachers' knowledge was measured before the program began, just after it finished and six months later. The teachers' knowledge increased significantly and remained relatively stable over time. However, the instrument employed by the authors to measure the knowledge of the teachers, the questionnaire of Jerome et al. (1994), has not been validated and the response format used was dichotomous, all of which, once again, placed limits on the results of the study.

On the basis of what we have just discussed the necessity to continue to examine the effectiveness of programs aimed at improving teachers' knowledge of ADHD can be seen. The starting point for achieving this objective is that teachers be involved in training programs. In principle, any training received by the teacher will be beneficial for students with ADHD, as long as the teacher is able to transfer what he or she has learned to the classroom.

In short, teachers play a crucial role with respect to children with ADHD. As pointed out by Arcia et al. (2000), teachers need to identify children with possible ADHD, refer them to an

appropriate specialist for evaluation, provide the specialist with valid and reliable reports about the skills, academic achievement and behavior of the children, and implement the necessary treatment strategies in the classroom. All this work could prove to be arduous if the teacher lacks previous knowledge of the matter. Thus, in order to examine the level of teachers' knowledge and offer appropriate training to address the problems detected, the following two lines of work need to be undertaken: the development and validation of instruments with appropriate psychometric properties able to accurately measure teachers' knowledge of ADHD, and the design, implementation and evaluation of training programs on ADHD for teachers.

1.2 The content validity of the questionnaires

When in social sciences or in any other discipline, a questionnaire is created with a specific goal, such as analyzing the level of infant and primary teachers' knowledge of ADHD, it is important to properly define exactly what is being evaluated. To obtain good results, that is to say, a good measurement of the construct, it is necessary to pay special attention to the first phase of the development of the instrument or, which amounts to the same things, to the content validity (for more on this concept such articles as those by McGartland, Berg-Weger, Tebb, Lee and Rauch, 2003 and McKenzie, Wood, Kotecki, Clark and Brey, 1999 can be consulted, or more technical pieces such as those by Haynes, Richard and Kubany, 1995 or Sireci, 1998).

Haynes et al. (1995) define content validity as the degree to which the elements of an assessment instrument are relevant and representative of the construct or concept to be evaluated. Following on from that description, content validity covers all elements of an instrument affecting the data collection, i.e. it includes aspects such as the content of the items, the form of presentation of the instrument, the instructions provided to participants, the estimated time for completion of the task, the codes of conduct during the application of the test, or the response format of the questionnaire.

The main steps to be taken in the creation of a new questionnaire in order to attain an appropriate degree of content validity are the following: 1) develop items based on the guidelines provided by expert researchers in the field; 2) achieve a format for the presentation of the questionnaire that is as neutral and agreeable as possible; 3) give clear and precise instructions to respondents, with no possibility of errors or dual interpretations; 4) develop tests whose estimated response times are short; 5) act in as neutral a manner as possible and without distracting the attention of the participants during the administration of the test; 6) select the answer format in accordance with the construct to be evaluated; 7) conduct an evaluation of the instrument by a panel of experts in the area and by a series of members of the population to whom the questionnaire is directed; and 8) make the relevant quantitative and qualitative analyses to enable the test to be refined and prepared for the next stage of validation.

Content validity is an indispensable prerequisite for the establishment of other types of validity. Any assessment instrument should pay special attention to content validity because it is a predictor of construct validity (Haynes et al., 1995) and serves as a preliminary analysis of factorial validity (McGartland et al., 2003).

As noted by Haynes et al. (1995), inferences derived from measurement instruments with unsatisfactory content validity must be doubted, even when other indicators of validity are satisfactory. In the case of questionnaires that have been developed to assess the level of knowledge of teachers regarding ADHD, little information regarding their content validity has been provided. There are few studies that mention this aspect of validity, and when it is mentioned, is made of it this occurs in the form of vague allusions to some of its component parts (drawing up of items and response format in particular). In general, most of the instruments have been constructed for the particular study itself and the strategy for their preparation has not been specified.

Throughout this chapter the process of drawing up the two language versions of a questionnaire created to measure the level of infant and primary teachers' knowledge of ADHD is described. This account has been prepared in accordance with the empirical evidence regarding ADHD and following the guidelines set for psychometric development and validation of questionnaires. In the case of the first study an initial version of the questionnaire was drawn up and contact then made with a group of experts in ADHD in order to provide the instrument with adequate content validity. In the case of the second study, the pilot test, a group of infant and primary school teachers, members of the group to which the questionnaire was aimed, completed it and evaluated it with the aim of carrying out a preliminary evaluation of the items which made it up.

2. Study 1: Drawing up the questionnaire

The aim of this first study was to establish the basis for the development of two language versions of the same questionnaire based on their content validity. This instrument was created to measure the level of knowledge of ADHD of teachers in infant and primary education. The questionnaire development process took into account the guidance of several experts regarding the content validity.

2.1 Method

2.1.1 Participants

The group of 16 (N=8 for each language version) experts who participated in the study was formed by four doctors of psychology, all of them university lecturers from different fields of knowledge (Personality, Evaluation and Psychological Treatment, and Developmental Psychology and Education), a university professor of pediatrics, two child and youth psychiatrists working in hospitals, two outpatient care pediatricians, three psychologists and a education expert who are members of various associations of families of children with ADHD, an educational psychologist in private practice and two educational psychologists working in schools.

2.1.2 Materials

A letter explaining the main aspects of the research and a questionnaire divided into 3 sections for the evaluation process by experts were drawn up. In the first section the experts were asked to evaluate the suitability of each of the 105 preliminary statements (75 positive and 30 negative) which had been drawn up to measure the knowledge of ADHD of infant

and primary school teachers using a Likert scale with 4 response options (1= Unsuitable, 2= Barely suitable, 3= Fairly suitable, and 4= Very suitable). The second section requested proposals for changes to the questionnaire, if changes were thought to be necessary. In the third and final section the experts had to assign each item to one of 4 categories: 1) General information, 2) Symptoms/Diagnosis, 3) Etiology, and 4) Treatment. Finally in this section, the experts were asked if they wished to add a new category or eliminate any of the existing categories.

2.1.3 Procedure

First, the questionnaire items were developed. Based on the scientific literature it was decided that these statements should evaluate 4 categories: 1) General information (about the nature, prevalence, evolution and the problems associated with ADHD), 2) Symptoms/Diagnosis (the different symptoms that may occur in children with ADHD, as well as information on the process of diagnosing the disorder), 3) Etiology (cause or possible causes that influence the occurrence of ADHD), and 4) Treatment (the different types of interventions carried out with children with ADHD). On the basis of these categories and on guidelines provided by Barbero (2003), Moreno, Martínez and Muñoz (2004, 2006) and Hernández, Fernández-Collado and Baptista (2006) for the construction of items, 105 preliminary propositions were drawn up, 75 positive and 30 negative. The items were created from a comprehensive review of the literature on ADHD. Furthermore, in the light of the linguistic reality of the target population, the questionnaire was created in the two official languages of the Autonomous Community of the Basque Country: Spanish and Basque, so that each teacher could select either of the two languages to answer it.

Regarding the response format of the questionnaire, it was decided to use three-option response format. The criteria for selection can be found in the following section.

Once the items and response format had been decided on, the experts were contacted by telephone and asked about their availability for collaborating with the study. The experts who agreed to participate were sent an explanatory e-mail about the study along with the questionnaire, which has been described in the section on materials. They were given a period of two weeks to fill out the three sections of the questionnaire.

2.2 Results

An initial selection was made of the propositions considered to be "Very suitable" or "Fairly suitable" by at least 80% of the experts and "Unsuitable" by no more than 6% of them. This initial selection produced 64 items among which, at the suggestion of the experts, 7 were redrafted.

It should be noted that some experts suggested the elimination of the negative items or those that included information about the etiology and treatment of ADHD. These suggestions were not acted on. In fact, based on the literature on questionnaires that measure teachers' knowledge of ADHD, it seems that the presence of true and false statements may be desirable to avoid response tendencies or repetitions, which would lessen the validity and reliability of scores (Sciutto et al., 2000; West et al., 2005). Expressed

in another way, the use of both negative and positive propositions is recommended to avoid both acquiescence bias (the tendency to agree with what is stated in an item, regardless of its content) and affirmation bias (the tendency to give the answer the participant thinks the researcher wants to receive) (Martínez Arias, Hernández Lloreda & Hernández Lloreda, 2006). In addition, based on the evidence that teachers play a key role in identifying and treating children with ADHD (Jarque et al. 2007; Ohan et al., 2008; Snider et al. 2003; Vereb & DiPerna, 2004) it was considered important that this group have sufficient knowledge of the etiology and treatment of this disorder. For these reasons and in spite of the contrary opinion of some experts, it was decided to include 12 items in various categories, principally "General information" and "Etiology" of which 3 were true and 9 false.

As a result of the selection process outlined above, a questionnaire with 76 propositions was obtained. The fundamental criteria employed for assigning each of the propositions to one of the four dimensions was the following: that at least 70% of the experts had placed that item in that category. Thus the distribution of items by category turned out as follows: the "General information" category received 23 items, the "Symptoms/Diagnosis" category received 30 items, the "Etiology" category received 7 items and, finally, the "Treatment" category received 16 items. Of the 76 propositions 59 were positive and 17 negative.

With regard to the response format, it has already been mentioned that most studies that have analyzed the level of knowledge of teachers regarding ADHD have used questionnaires with two possible answers (True, False) or with three response options (True, False, I don't know). The pioneering studies of teachers' knowledge of ADHD opted for the two response options format, True or False. However, the scores obtained using this format are usually distorted because participants have a high probability of getting the correct answer by chance, that is, participants are obliged to have to select one of the two options provided, which increases the level of correct answers obtained by guessing (Jarque et al. 2007; Martínez Arias et al. 2006; Sciutto et al., 2000). The fundamental problem that arises from this is that it produces an increase in the error variance of the scores and so reduces the reliability and validity of the questionnaire (Martínez Arias et al., 2006).

This limitation involved in dichotomous response format was dealt with by the introduction of the three-option response format: True, False, I don't know. The existence of a third option allows for more reliable information to be obtained about teachers' knowledge of ADHD (Jarque et al., 2007; Kos et al., 2006; Sciutto et al., 2000), given that in the case of doubt, the participant is not obliged to choose between a negative and positive response.

As was pointed out by Muñiz (2001), the quality of questionnaires improves as the number of response alternatives is increased, because the increase reduces the probability of getting the right answer by chance. Thus, the three-format options, by comparison with the two option ones, increase the probability that participants' responses will accurately reflect their knowledge and not the divination effect, and also allow participants to express their position more precisely, as well as providing a higher degree of reliability. For these reasons and for those previously set out, in this study it was decided to use a three-option response format (True, False, I don't know). A response format with an uneven number of options was chosen, that is, one with an intermediate point, because it was considered necessary that the format reflect the gaps in teachers' knowledge of ADHD, as well as their knowledge of and false ideas regarding it.

3. Study 2: Pilot study

This second study was designed to improve the questionnaire created in the first study conducting a pilot application of the instrument to the target population. The aim was to obtain preliminary information about the functioning of items and a revision of the formal aspects of the questionnaire.

3.1 Method

3.1.1 Participants

166 teachers participated in this study ($N=68$ for the Spanish version and $N=98$ for the Basque version), 136 women and 30 men. These teachers worked at 17 infant and primary schools in the Autonomous Community of the Basque Country and Navarre. The average age of participants was 41, though the ages of teachers covered a wide range between 21 and 61. The teachers had an average of 16 years ($SD=11$) in the profession (3 teachers did not provide this information) and had an average of 53 students each in the current school year ($SD=80$), although it should be noted that in this respect there was great variability because some of the teachers taught several groups of students. Most of the teachers were working in one specialized area but a few were specialists in various areas. Thus, 50% worked as teachers in primary education, 30% in infant education, 10% were special educational needs teachers, 8% were foreign language teachers, 6% were music education teachers and the remaining 6% were physical education teachers.

49% stated that they had not received any specific training regarding ADHD, while 51% had received some. Among those who had received training, the average duration of such training was 14.6 hours ($SD=19.35$), however, there was great variability in the total duration of the training received by teachers. The data collected indicated that most of the teachers who had received specific training on ADHD had received it at conferences (29%), followed by a course forming part of a teacher training studies (19%), continuing education courses (15%), from associations of families of children with ADHD (12%) and postgraduate or master's degree courses (4%). In addition, 85% of the teachers confirmed having received some information about ADHD from various sources. These sources of information included the media (46%), people around the teacher (family, friends, coworkers, etc.) (40%), professionals from outside the schools (31%), books (27%), scientific or professional journals (20%) and associations of families of children with ADHD (17%). It should be pointed out that 62 people did not specify the exact source through which they had received information about ADHD.

58% of the teachers recognized having had a child diagnosed with ADHD in their classroom at some point, adding up to an average of approximately 2 children ($SD=5.8$) per teacher over the course of their professional careers. Moreover, 40% of the participants claimed to know someone with ADHD outside their workplace. Furthermore, on a scale of 1 to 10 points, the teachers placed their level of knowledge of, and teaching ability with regard to ADHD at an average of 4 and 4.26 respectively ($SD=1.73$ and $SD=1.86$). On this scale 1 corresponded to the lower end, which means that the teacher had no knowledge regarding ADHD and did not feel prepared to appropriately teach a child with ADHD, while 10 corresponded to the upper end, which implies that the teacher had an excellent knowledge regarding ADHD and felt fully prepared to appropriately teach a child with ADHD.

3.1.2 Materials

Teachers who participated in this study completed a questionnaire divided into three sections. In the first section, referring to socio-demographic data, teachers had to provide certain information about themselves: age, gender, professional specialty, specific training received on ADHD or personal experience with individuals with ADHD, etc. The second section aimed to assess the knowledge level of teachers in infant and elementary schools with respect to ADHD and had 76 items, 59 of which were positive and 17 negative, with a three-option response format (T= True, F= False, DK= I don't know). The third and final section of the questionnaire asked participants their personal opinion on the following issues: Their understanding of the instructions, the wording of the items, the response format, the length and duration of the questionnaire and their general opinion of the test they had just completed. The three sections of the questionnaire were identical for the two language versions. The average time stipulated for completing the questionnaire was 20 minutes.

3.1.3 Procedure

The managements of the 38 schools that were selected to participate in research were contacted by telephone. Each center was provided with general information about the project and offered the opportunity to participate in it. Of the 38 schools selected, 17 chose to involve themselves in the study. One of the members of the research group visited each center and explained the procedure for the application of the questionnaire. The member of the research group also provided the school management with a dossier containing all the information regarding the project, an informative letter addressed to each teacher with an informed consent declaration attached and two copies of the questionnaire, one in Spanish and one in Basque, for each teacher, so that it would be the teacher him or herself who would choose in which language to respond. Also, all the teachers were informed of the voluntary nature of their participation in the project and the confidential nature of their responses.

Each school had a period of between a week and 15 days for the application and collection of the test from the teachers. At the end of this period a member of the team went back to each school to collect the completed tests.

The schools were also informed that once the data were analyzed the research team would again contact the schools that had participated in the study to inform them of the global results of the study.

3.2 Results

In the first place, quantitative analysis of the items was carried out. In order to obtain a group of statements that maximized the variance of the questionnaire and to increase the internal consistency of each category, we selected those clauses with high discriminatory power (with values equal to or greater than 0.30 in the corrected correlation coefficient between the score on each of the 76 items and the total score in the category to which they belonged), and a considerable standard deviation. As a result of this analysis 25 of the statements were removed.

After eliminating items that had a low correlation with other items of the same category, it can be seen that the four categories proposed in the questionnaire had generally acceptable Cronbach's alpha coefficients for the two language versions of the test, with coefficients ranging between 0.55 and 0.85 for the Basque version and between 0.67 and 0.84 for the Spanish version. Table 1 shows the descriptive statistics and Cronbach's alpha coefficients of the categories and of the entire questionnaire for each language version. It should be noted that with SPSS 18.0 software, the correct answers were coded with 1 point and the wrong ones and the gaps in knowledge with 0.

As can be seen in Table 1, the alpha coefficients are generally better for the Spanish version. This difference is especially noticeable in the “Etiology” category, a dimension that has a moderate Cronbach's alpha coefficient for the version in Basque. We believe that this difference in the alpha coefficient values between the different language versions may be due to an error in the wording of the items in the Basque version, since both versions were, in theory identical.

Questionnaire Categories	Basque Language Version N=98		Spanish Language Version N=68	
General Information (13 items)	M	7.64	M	8.63
	SD	3.12	SD	3.27
	Alpha	0.77	Alpha	0.81
Symptoms/Diagnosis (21 items)	M	15.28	M	16.90
	SD	4.17	SD	3.81
	Alpha	0.85	Alpha	0.84
Etiology (4 items)	M	1.40	M	2.16
	SD	1.20	SD	1.52
	Alpha	0.55	Alpha	0.76
Treatment (13 items)	M	9.55	M	10.63
	SD	2.61	SD	2.07
	Alpha	0.76	Alpha	0.67
TOTAL (51 items)	M	33.88	M	38.32
	SD	8.93	SD	8.76
	Alpha	0.90	Alpha	0.91

Table 1. Descriptive statistics and Cronbach's alpha for the two language versions of the questionnaire.

In order to know different opinions about the design and clarity of the questionnaire items, we proceeded to the qualitative analysis of the contributions of members of the target population. After examining the views of teachers, it was decided to change the wording of 8 statements, 6 in the version in Basque and 2 in the Spanish version. Respondents to the version in Basque indicated that there was an ambiguous term repeated in four of the items “Etiology” category, something which had not happened in the Spanish version. The word that caused the problem was “eragin”, which in Basque can mean both “cause” and “influence”. Therefore, it was decided to reformulate those four statements in the Basque version of the questionnaire. Moreover, it was also decided to change the wording of two sentences in both versions of the questionnaire because a significant percentage of teachers who participated in

the study reported having difficulties understanding two items in the categories “Symptoms/Diagnosis” and “Treatment”. More specifically, a significant percentage of the teachers reported that they were unable to understand the following statement, “Children with ADHD have difficulties in delaying the receiving of rewards”, particularly the phrase “delaying the receiving of rewards”. The teachers also had difficulty understanding this statement, “Behavior modification techniques are one of the most common treatments for children with ADHD”, particularly the phrase “behavior modification”. These two problems were considered and the two items, from the “Symptoms/Diagnosis” and “Treatment” categories, were revised and reformulated for both language versions of the questionnaire.

The final distribution of items by category was as follows: the “General information” category had 13 items, the “Symptoms/Diagnosis” category had 21 items, the “Etiology” category had 4 items and the “Treatment” category had 13 items. The definitive version of the questionnaire had 51 randomly distributed items with not more than two consecutive items from the same category.

In the final version of the questionnaire 45 of the items were positive and 6 were negative. Thus, the possible scores ranged from 0, for the minimum level of knowledge, to 51, for the maximum level.

Table 2 presents the versions of the questionnaire in Basque and Spanish as well as their English translation. All the items are located in their corresponding categories.

General Information (13 items)	
B	AGHNa duten mutil eta nesken proportzioa antzerakoa da.
S	La proporción de varones y mujeres con TDAH es similar.
E	The proportion of men and women with ADHD is similar.
B	AGHNa duten gazteek, gainerako gazteek baino maizago utzi ohi dituzte ikasketak.
S	Los/as jóvenes con TDAH abandonan los estudios con una mayor frecuencia que el resto de jóvenes.
E	Young people with ADHD drop out of school more frequently than others.
B	AGHNa oso estresagarria da haurrarekin bizi diren pertsonentzat.
S	El TDAH resulta muy estresante para las personas que conviven con el/la niño/a.
E	ADHD is stressful for the people living with the child suffering from it.
B	Normalean, familiartekoei, irakasleek eta ikaskideek AGHNa duen haurraren jokabide negatiboak eskaintzen diete arreta eta gutxitan positiboak.
S	Normalmente, los familiares, maestros/as y compañeros/as suelen prestar atención a las conductas negativas del/a niño/a con TDAH pero raras veces a las positivas.
E	Typically, family members, teachers and classmates tend to pay attention to negative behaviors of the child with ADHD but rarely to positive behaviors.
B	AGHNa duten hurrek autoritate irudiekiko (gurasoak, irakasleak, e.a.) jokabide bihurria eta etsaitasuna aurkeztu dezakete.
S	Los/as niños/as con TDAH pueden presentar un comportamiento rebelde y hostil hacia las figuras de autoridad (progenitores, maestros/as, etc.).
E	Children with ADHD may behave in a rebellious and hostile manner towards authority figures (parents, teachers, etc.).

B	AGHNa duen haur bat izateak, familia baten bizitza soziala mugatu dezake.
S	Tener un hijo o una hija con TDAH puede limitar la vida social de una familia.
E	Having a son or a daughter with ADHD can limit the social life of a family.
B	AGHNa duten hurrek ez dute azterketetan benetan dakitena erakusten.
S	Los/as niños/as con TDAH no suelen reflejar en los exámenes lo que realmente saben.
E	The examination results of children with ADHD usually do not reflect their real level of knowledge.
B	AGHNa duten mutilek, neskek baino hiperaktibitate-inpultsibitate maila handiagoa aurkeztu ohi dute.
S	Los varones con TDAH suelen presentar un mayor grado de hiperactividad-impulsividad que las mujeres.
E	Boys with ADHD tend to have a greater degree of hyperactivity-impulsivity than girls.
B	AGHNa duten hurrek, irakurketa, idazketa eta kalkuluarekin zailtasunak izaten dituzte.
S	Los/as niños/as con TDAH suelen tener dificultades con la lectura, la escritura y el cálculo.
E	Children with ADHD often have difficulty with reading, writing and arithmetic.
B	AGHNa duten hurrek, gainerako hurrek baino istripu, erortze eta lesio gehiago izaten dituzte.
S	Los/as niños/as con TDAH tienden a sufrir más accidentes, caídas y lesiones que el resto de niños/as.
E	Children with ADHD are more prone to accidents, falls and injuries than other children.
B	AGHNa duten hurrek euren guraso eta irakasleengandik maiz jasotzen dituzte kritikak, mehatxuak eta zigorrak.
S	Los/as niños/as con TDAH suelen recibir críticas, amenazas y castigos frecuentes por parte de sus progenitores y maestros/as.
E	Children with ADHD often receive criticism, threats and punishments from their parents and teachers.
B	AGHNa duten hurren kopuru garrantzitsu batek kideekin harreman txarrak izaten dituzte.
S	Un número importante de niños/as con TDAH suele tener malas relaciones con los/as compañeros/as.
E	A significant number of children with ADHD tend to have bad relations with their classmates.
B	Oro har, nerabezaroan gehiegizko aktibitatea gutxitu egiten da, baina inpultsibitatea eta arreta-zailtasunak mantendu egiten dira.
S	En general, en la adolescencia disminuye el exceso de actividad, aunque la impulsividad y las dificultades atencionales se mantienen.
E	In general, excessive activity reduces in adolescence, though the impulsiveness and difficulties with attention remain.

Symptoms/Diagnosis (21 items)	
B	AGHNa duten hurrek besteen ekintzak eteten dituzte edota horietan sartzen dira.
S	Los/as niños/as con TDAH interrumpen o se inmiscuyen en las actividades de otros/as.
E	Children with ADHD interrupt or intrude on the activities of others.
B	AGHNa duten hurrek gauzak maiz ahazten dituzte.
S	Los/as niños/as con TDAH suelen olvidarse de las cosas frecuentemente.
E	Children with ADHD often tend to forget things.
B	AGHNaren oinarritzko sintomak dira gehiegizko aktibitatea, arreta-zailtasunak eta inpultsibitatea.
S	Los síntomas básicos del TDAH son el exceso de actividad, los problemas de atención y la impulsividad.
E	The core symptoms of ADHD are excessive activity, attention problems and impulsiveness.
B	AGHNa duten hurrek badirudi ez dutela entzuten hitz egiten zaienean.
S	Los/as niños/as con TDAH parece que no escuchan cuando se les habla.
E	Children with ADHD seem not to listen when spoken to.
B	AGHNa duten hurrek, egiten dituzten ekintzengatik berehala sarituak izatea dute gustuko, horrela izan ezean erraz desmotibatu daitezke.
S	A los/as niños/as con TDAH les gusta ser recompensados/as de forma inmediata por sus acciones, de lo contrario pueden desmotivarse con facilidad.
E	Children with ADHD like to be immediately rewarded for their actions and any delay in receiving the reward tends to demotivate them.
B	AGHNa duten hurrek euren ekintzen ondorioetan pentsatu gabe jarduten dute.
S	Los/as niños/as con TDAH actúan sin pensar en las consecuencias de sus acciones.
E	Children with ADHD act without thinking through the consequences of their actions.
B	AGHNa duten hurrek gelako arauak eta arau sozialak errespetatzeko zailtasunak izaten dituzte.
S	Los/as niños/as con TDAH presentan dificultades para respetar las normas del aula y las normas sociales.
E	Children with ADHD have difficulty complying with the rules of the classroom and social norms.
B	AGHNa duten hurrek denboraren antolaketa eta banaketarekin zailtasunak izaten dituzte: lehentasunak finkatzea kosta egiten zaie, zereginak amaitzeko denbora falta izaten dute, hitzorduetara berandu iristen dira, e.a.
S	Los/as niños/as con TDAH suelen tener dificultades de organización y distribución del tiempo: les cuesta establecer prioridades, les falta tiempo para acabar las tareas, llegan tarde a las citas, etc.
E	Children with ADHD usually have problems with organization and distribution of time: They have difficulties in establishing priorities, they don't have time to finish their tasks, arrive late for appointments, etc.
B	AGHNaren diagnostikoa prozesu konplexua da eta, ahal bada, medikuntza, psikologia eta hezkuntza bezalako ezagutza arlo desberdinetako profesionalek osatutako ekipo batek egin beharrekoa.

S	El diagnóstico del TDAH es un proceso complejo que debe ser realizado, preferiblemente, por un equipo de profesionales de distintos ámbitos como la medicina, la psicología y la educación.
E	The diagnosis of ADHD is a complex process that must be performed by a team of professionals from various fields such as medicine, psychology and education.
B	AGHNa duten hurrei kosta egiten zaie hasi dituzten lanak amaitzea.
S	A los/as niños/as con TDAH les cuesta finalizar las tareas que han iniciado.
E	Children with ADHD have trouble completing the tasks they have started.
B	AGHNa duten hurrek euren txanda itxaroteko zailtasunak dituzte.
S	Los/as niños/as con TDAH tienen dificultades para guardar su turno.
E	Children with ADHD have difficulty awaiting their turn.
B	AGHNa duten hurrek gehiegizko aktibitatea eta mugimendua aurkezten dute lasaitasuna eskatzen duten egoeratan: eserlekutik altxatzen dira, esku eta hankak mugitzen dituzte, korrika egiten dute, salto egiten dute, e.a.
S	Los/as niños/as con TDAH presentan un exceso de actividad y movimiento en situaciones que requieren calma: se levantan de su asiento, mueven manos y pies, corren, saltan, etc.
E	Children with ADHD suffer from an excess of activity and movement in situations that require calm: they get up from their seats, move their hands and feet, run, jump, etc.
B	AGHNa duten hurrek, arropa, eskola-materiala, jostailuak, eta antzerako beste objektuak maiz galtzen dituzte.
S	Los/as niños/as con TDAH pierden frecuentemente objetos como ropa, material escolar, juguetes, etc.
E	Children with ADHD often lose items such as clothing, school supplies, toys, etc.
B	Arreta-gabezia sintomak bakarrik aurkezten badira, zailagoa da AGHNa detektatzea.
S	Es más difícil detectar el TDAH si se presentan exclusivamente los síntomas de falta de atención.
E	It is more difficult to diagnose ADHD if the only symptoms presented relate to lack of attention.
B	AGHNa duten zenbait hurrek gehiegi hitz egiten dute.
S	Algunos/as niños/as con TDAH hablan en exceso.
E	Some children with ADHD talk too much.
B	AGHNa duten hurrak ez dira gaizki portatzen apropos, gertatzen dena da kosta egiten zaiela beraien jokabidea kontrolatzea.
S	Los niños/as con TDAH no se portan mal deliberadamente, lo que sucede es que les cuesta controlar su conducta.
E	Children with ADHD do not misbehave deliberately, what happens is they have difficulty controlling their behavior.
B	AGHNa duten hurrek euren emozioak kontrolatzeko zailtasunak izaten dituzte, batez ere haserrea.
S	Los/as niños/as con TDAH suelen tener dificultades para controlar sus emociones, sobre todo la rabia.

E	Children with ADHD often have difficulty controlling their emotions, especially anger.
B	AGHNa duten hurrek galdera amaitu baino lehen erantzuten dute.
S	Los/as niños/as con TDAH responden antes de que se les haya terminado de formular la pregunta.
E	Children with ADHD start to answer before their interlocutor finishes asking the question.
B	AGHNa duten hurrek buru-esfortzu jarraitua eskatzen duten lanak egin behar dituztenean kexatu egiten dira edota horiek egitea saihesten dute.
S	Los/as niños/as con TDAH se quejan cuando tienen que realizar tareas que requieren un esfuerzo mental continuo o evitan realizarlas.
E	Children with ADHD complain when they have to perform tasks that require sustained mental effort or try to avoid doing them.
B	AGHNa duten hurrek barne-mintzairaren garapenean atzerapenak izaten dituzte, beraien burutik pasatzen den guztia hitzez adierazteko joera dute eta eskolako lanak egiterakoan ozenki hitz egiteko joera dute.
S	Los/as niños/as con TDAH muestran un retraso en el desarrollo del lenguaje interno, acostumbran a verbalizar todo lo que pasa por su cabeza y suelen hablar cuando hacen los trabajos escolares.
E	Children with ADHD display a delayed development of inner speech, tend to verbalize everything that goes through their minds and talk while doing their schoolwork.
B	Irakasleek funtzio oso garrantzitsua betetzen dute AGHNaren detekzioan.
S	Los/as maestros/as juegan un papel muy importante en la detección del TDAH.
E	Teachers have a very important role in the detection of ADHD.
Etiology (4 items)	
B	Egungo bizitza erritmo estresagarriaren ondorioz hurrek AGHNa izan dezakete.
S	En los/as niños/as, el TDAH puede deberse al estrés generado por el actual ritmo de vida.
E	In children, ADHD may be caused by the stress generated by the current pace of life.
B	Gurasoen heziketa estilo autoritario eta kritikoaren ondorioz hurrek AGHNa izan dezakete.
S	Un estilo educativo autoritario y crítico por parte de los progenitores puede originar el TDAH.
E	A critical and authoritarian style of education by parents can lead to ADHD.
B	Gurasoen dibortzioa edo anai-arreba baten jaiotza bezalako gertaera estresagarrien ondorioz hurrek AGHNa garatu dezakete.
S	Sucesos estresantes, tales como el divorcio de los progenitores o el nacimiento de un/a nuevo/a hermano/a, pueden ser la causa del TDAH.
E	Stressful events such as divorce of parents or the birth of a new brother or sister may be the cause of ADHD.
B	Hezkuntza txarra edo familia-giro kaotikoaren ondorioz hurrek AGHNa izan dezakete.

S	Una mala educación o un ambiente familiar caótico pueden ser la causa del TDAH.
E	ADHD can be caused by a bad education or a chaotic home environment.
Treatment (13 items)	
B	AGHNauren tratamenduak urteak irauten ditu.
S	El tratamiento del TDAH se prolonga durante años.
E	ADHD treatment continues over a period of years.
B	AGHNa duen haurraren sintomak urteak pasa ahala eta inolako tratamendurik gabe hobera egingo dutela uste izateak, etorkizunean izan ditzakeen aukerak murrizten dizkio.
S	Esperar a que los síntomas del/a niño/a con TDAH mejoren con el paso de los años sin aplicarle ningún tratamiento, supone restarle oportunidades de futuro.
E	Waiting for the symptoms of ADHD to improve over the years, without any kind of treatment implies, means taking away opportunities for the child's future.
B	AGHNa duten hurrek espezialitate desberdinetako profesionalen laguntza behar izaten dute.
S	Los/as niños/as con TDAH necesitan ser atendidos/as por profesionales de distintas especialidades.
E	Children with ADHD need to be cared for by professionals from various specialties.
B	AGHNa duen haurraren guraso eta irakasleek teknika psikologikoen aplikazioan aktiboki parte-hartu behar dute.
S	Los progenitores y los/as maestros/as del/a niño/a con TDAH han de participar activamente en la aplicación de las técnicas psicológicas.
E	Parents and teachers of children with ADHD need to actively participate in the application of psychological techniques.
B	AGHNa duen ikaslea, irakaslea erraztasunez iritsi daitekeen ikasmahai batean kokatzea komeni da.
S	Conviene situar al alumno/a con TDAH en un pupitre de fácil acceso para el/la maestro/a.
E	It is appropriate to locate children with ADHD in desks to which the teacher has easy access.
B	Jokabidea aldatzeko teknikak (errefortzu positiboa, puntu sistema, denbora kanpora, e.a.) AGHNa duten hurrekin gehien erabiltzen diren esku-hartze tekniketako bat dira.
S	Las técnicas de modificación de conducta (refuerzo positivo, sistema de puntos, tiempo fuera, etc.) constituyen una de las intervenciones más utilizadas en niños/as con TDAH.
E	Behavior modification techniques (positive reinforcement, point system, timeout, etc.) constitute one of the most commonly used treatments for children with ADHD.
B	Ikasle-talde handian edota ikasle-talde txikian lan egin arren, AGHNa duten haurren eskola-errendimendua antzerakoa izaten da.
S	El rendimiento académico de los/as niños/as con TDAH suele ser similar cuando trabajan en grupos grandes de alumnos/as que cuando trabajan en grupos reducidos.

E	The academic performance of children with ADHD is usually similar when they work in big groups of students to what it is when they work in small groups.
B	AGHNari buruzko informazio orokorra jasotzeak, irakasle, familiarteko eta ikaskideek haur horiekiko dituzten jarrerak hobetzea dakar.
S	Recibir información general sobre el TDAH mejora la actitud de los/as profesores/as, familiares y compañeros/as hacia estos/as niños/as.
E	Receiving general information about ADHD improves the attitudes of teachers, parents and classmates towards children who suffer from it.
B	AGHNa duen haurraren eskola-errendimendua eta eskola-egokitzapena hobetu daitezke baldin eta bere irakasleek nahaste horri buruzko heziketa zehatza badute.
S	El rendimiento y la adaptación escolar del/a niño/a con TDAH pueden mejorar si sus maestros/as tienen formación específica en este trastorno.
E	The performance and school adjustment of children with ADHD may improve if teachers have specific training in this disorder.
B	AGHNa duten haurren arreta-gaitasuna hobetzeko teknika eta programa zehatzak existitzen dira.
S	Existen técnicas y programas específicos para mejorar la capacidad atencional de los/as niños/as con TDAH.
E	There are specific techniques and programs to improve the attention span of children with ADHD.
B	Irakasleak AGHNa duen ikaslea jasotzen ari den tratamenduan parte-hartzeak, terapiaren emaitzetan eragina du.
S	La colaboración del/a maestro/a en el tratamiento que está recibiendo el/la alumno/a con TDAH influye en los resultados de la terapia.
E	The collaboration of the teacher with the treatment being received by the child with ADHD has an influence on the result of that treatment.
B	Irakasleak AGHNa duen haurrari aukerak eskaini behar dizkio gehiegizko mugimendua bideratu dezan.
S	El/la maestro/a ha de ofrecer oportunidades para que el/la alumno/a con TDAH pueda canalizar el exceso de movimiento.
E	The teacher must provide opportunities for the student with ADHD to channel their excessive movement.
B	Autoaginduen teknikek (haurrak bere jokabidea bideratzeko bere buruari ematen dizkion jarraibide eta aginduak) AGHNa duten haurren inpułtsibitatea gutxitzea ahalbidentzen dute.
S	Las técnicas de autoinstrucciones (instrucciones u órdenes que el/la niño/a se da a sí mismo/a para dirigir su conducta) permiten reducir la impulsividad de los/as niños/as con TDAH.
E	Self-instruction techniques (instructions that the child gives to him or herself to direct his or her behavior) can reduce the impulsiveness of children with ADHD.

B: Basque; S: Spanish; E: English.

Table 2. Distribution of the questionnaire items by category in Basque and Spanish, with English translation.

In summary, the quantitative and qualitative analyses that were conducted suggested the modification of several components of the content validity proposed by Haynes et al. (1995). Changes were made in the drafting of eight items (two in the Spanish version and six in the Basque version) and, by eliminating 25 of the preliminary questionnaire items, the test duration was reduced significantly. Furthermore, it was decided to highlight the relevant information to which the participants had to respond, with the objective of reducing the number of missing values. However, the questionnaire instructions and the response format did not change because they were valued very positively by most participants.

4. Conclusions

Content validity is an essential element in the preparation of any research instrument. Authors such as McGartland et al. (2003) have stated that content validity is subjective, but fortunately it can be provided with objectivity by following a rigorous two-phase process (Beck & Gable, 2001; Lynn, 1986). The first phase deals with those issues that need to be taken into account to propose a first version of the instrument. In other words, it requires a precise conceptualization of the construct to be studied, the identification of its dimensions or categories, the generation of a sufficiently large and representative battery of items for each of the dimensions or categories, care in the presentation of the items, the writing of simple and precise instructions, a decision on the response format and an estimate of the time necessary to complete the test. The second phase consists of employing a panel of experts to obtain appropriate information in order to review the research instrument. The proper selection of experts is essential in this regard, as is care in the wording of the instructions given to them. Although some researchers downplay this two-step process, it often occurs that in cases where it is not used, the instrument turns out to be invalid once its psychometric properties have been analyzed. In order for this not to occur, content validity of needs to be given high priority in the process of developing a research instrument (Beck & Gable, 2001).

Usually, a well-crafted plan to ensure content validity leads to the obtaining of reliable results. However, despite the fact that content validity is one of the most critical steps in the preparation of any research instrument, it does not usually receive the attention it deserves. Polit and Beck (2006) assert that, in general, in studies on the development of research instruments, there is a need for greater transparency with regard to content validity. Something similar happens with the instruments that have been developed to assess the level of teachers' knowledge of ADHD. In recent decades many instruments have been developed for this purpose, however, a large portion of them have not been validated, and those instruments with acceptable psychometric properties show evidence of limited content validity.

In this context, the main objective of the present research was to develop a preliminary questionnaire with appropriate content validity. To do this, first, we took into account the definition of content validity proposed by Haynes et al. (1995) and a study was carried out to provide objectivity for the content validity process. The final result of first study was satisfactory, due in part to the participation of a considerable number of qualified experts. Secondly, a pilot study was conducted that enabled the research instrument to be refined. Through the carrying out of the pilot study it was possible to assess the functioning of items

and discard or reformulate some of them. In addition, this preliminary study was useful for making adjustments in the socio-demographic data section of the questionnaire, and helped to identify difficulties that might arise during the administration of the questionnaire to a large and representative sample of the target population.

The authors of this chapter consider the work they have carried to be new in terms of its area of application. The level of teachers' knowledge of ADHD is a relatively recent field of research and most of the instruments created to assess this level of knowledge have shown evidence of limited content validity. Due to the importance of content validity, it is necessary place more focus on it, something we tried to do in this phase of the construction of our questionnaire.

As noted by Pfiffner (1999), many teachers lack knowledge or have false beliefs about the nature, course, consequences, causes and treatment of ADHD. Currently, KADDS (Knowledge of Attention Deficit Hyperactivity Disorder) (Sciutto et al., 2000) is one of the best and most widely used tool for the analysis of teachers' knowledge regarding ADHD. However, this questionnaire only measures three areas of knowledge related to ADHD: 1) Symptoms/Diagnosis of ADHD, 2) General information about the nature, causes and outcome of ADHD, and 3) Treatment of ADHD. The instrument that we have presented in this chapter covers a broader spectrum of teachers' knowledge of ADHD, as it proposes four categories for evaluation: 1) General information about ADHD, 2) Symptoms/Diagnosis of ADHD, 3) Etiology of ADHD, and, 4) Treatment of ADHD. With this instrument it is expected to be possible to obtain more detailed information about teachers' knowledge of ADHD.

Given that teachers play an important role in the academic success, and personal and social development of children with ADHD, and their level of knowledge regarding the disorder affects their behaviors and attitudes toward children who have this condition, we consider it necessary to have an assessment instrument that measures this level of knowledge in a rigorous way. We also believe that this instrument may be useful in detecting which aspects of the universe of ADHD teachers lack knowledge about or with regard to which they have false beliefs. The information so produced could form the basis for designing training materials and programs aimed at this group. In this regard it should be noted that in many cases the training offered to teachers is based on the intuition of the trainers. Consequently, the development and subsequent use of an instrument with adequate psychometric properties to assess the level of teachers' knowledge of ADHD can provide objective data that will permit the provision a response tailored to the actual training needs of teachers.

Furthermore, we believe that the results obtained from the instrument we are developing could also have a positive effect on the upgrading of undergraduate university studies in infant and primary education. Rigorous scientific contributions about one of the most common disorders among children may well be incorporated into the training curricula for future teachers.

Finally, it should be noted that instrument presented throughout this chapter is currently under a validation process. The validation of the instrument being developed requires the obtaining of different kinds of evidence of validity with a broad sample of participants. In order to do this, during its application phase the questionnaire will be administered to 1000

infant and primary school teachers in approximately 100 schools and teaching centers in the Basque Country. Factorial analysis will be carried out to determine its dimensionality. Furthermore, evidence of validity based on the relationship between the scores obtained in the questionnaire and socio-demographic variables such as specialities of the teachers, their general or specific training with regard to ADHD and their previous experience with students with ADHD, will be provided. The convergent validity of the instrument will be analyzed by examining the correlation between its scores with those obtained from the Spanish version of Knowledge of Attention Deficit Hyperactivity Disorder (KADDS) (Sciutto et al., 2000; Spanish version by Jarque et al., 2007). The reliability of the instrument will also be examined by an analysis of its internal consistency and temporal stability. All of this will serve to improve the instrument by modifying or eliminating those items which negatively affect its psychometric properties. It will also serve as the base for the design of a training program related to ADHD aimed at infant and primary school teachers in the Autonomous Community of the Basque Country.

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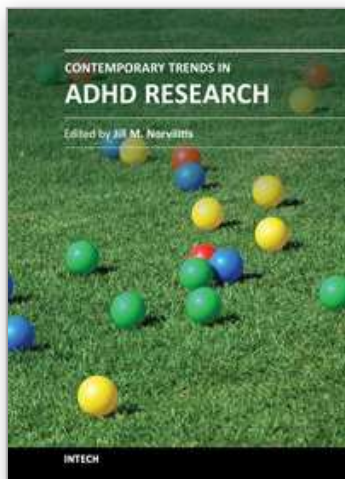
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