





Do labels matter? Analysis of teachers' self-efficacy towards the autism spectrum disorder depending on the diagnostic label used (ASD or Asperger's)

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Changes in the classification of autism and Asperger's syndrome led to changes in social perception of ASD. Since last criteria, studies indicate higher levels of stigma towards ASD than towards Asperger's. These prejudices are barriers to inclusive education. Thus, it is relevant (1) to evaluate pre-service teachers' self-efficacy towards the label of ASD; (2) to evaluate pre-service teachers' self-efficacy towards the label of Asperger's and (3) to compare those results to analyse whether the use of different diagnostic labels brings about different levels of self-efficacy. One hundred and eighty-six primary education pre-service teachers participated in the current study. Two adaptations of the Autism Self-Efficacy Scale for Teachers (ASSET) were used: a version with the label of 'ASD' (n = 96) and another for 'Asperger's' (n = 90). The scores obtained by the group asked about ASD were high according to the ASSET score range, while the scores obtained by the group asked about Asperger's were medium. After comparing the results, participants asked about the label ASD showed higher levels of self-efficacy than participants asked about Asperger's. These results could be a consequence of the consolidation of the ASD diagnosis among society and the higher presence of children with ASD in schools and cultural products, among other factors.

Introduction

Autism spectrum disorder and Asperger's syndrome

The Diagnostic and Statistical Manual of Mental Disorders (DSM) (American Psychiatric Association [APA], 2013) is one of the main international references

for the psychological and clinical diagnosis of mental conditions. This manual underwent substantial changes in 2013 with the publication of DSM-5 when the umbrella category of Pervasive Developmental Disorders (PDD) (APA, 2002) was removed and Asperger's syndrome, among other diagnoses, disappeared and was met into the unique dimension of autism spectrum disorder (ASD) (APA, 2013).

Asperger's syndrome was described in DSM-IV (APA, 2002) as one of the PDD and characterised by a severe and persistent alteration in social interaction with restrictive and repetitive behaviour patterns, interests and activities. While according to the diagnostic criteria in (APA, 2013), ASD is a neurodevelopmental disorder characterised by persistent deficits in social communication and social interaction in several contexts, along with restrictive and repetitive patterns of behaviour, interests, or activities. Depending on the degree of support each one needs, the level of autonomy varies from 1 to 3, being 1 the least affected.

Difficulties in communication domains affect the development of students with ASD, such as their interactions with peers, teachers and other educational staff and suppose challenges in the school setting (Chung, Edgar-Smith, Palmer, et al., 2015). In this case, the core characteristics of the disorder subordinate stigmatisation (Liao, Lei, and Li, 2019). People with ASD can have maladaptive behaviour, even though they show a typical physical appearance (Gray, 1993). So, teachers should be able to identify the threats of this disorder in order not to have prejudices when teaching children with ASD.

The World Health Organization (2019) has also assumed this change in categorization from PDD to ASD in the last edition of the International Classification of Diseases. In this sense, previous research focused on the idea that

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until 2012, people diagnosed with 'autistic disorder' or Asperger's received a different diagnostic label. However, since then, the ASD category encompasses Asperger's, developmental disorders not specified and autistic disorder (APA, 2013; King, Navot, Bernier, et al., 2014).

Parallely to the changes in labelling, the prevalence of ASD has increased. It is around 1/160 (World Health Organization, 2019). The growing rates of ASD are translated into growing rates in their presence in schools. The rising incidence of ASD and the more common presence of children with ASD labels in mainstream schools should focus on teachers and their self-efficacy to educate children with this diagnosis. Furthermore, researchers have shown that teachers' beliefs and the learning outcomes of students with ASD are positively correlated. Their views are crucial to the appropriate implementation and make possible positive outcomes in inclusion (Burack, Root, and Zigler, 1997; Segall and Campbell, 2014).

Self-efficacy

Self-efficacy refers to individuals' judgements of their skills to front a specific environment (Bandura, 1997). Teachers' self-efficacy has been widely studied and identified as an important factor to get beneficial outcomes for teachers and students (Zee and Koomen, 2016). In the case of teaching, self-efficacy represents beliefs about one's abilities to deal with daily practices. Teachers' confidence influences student outcomes through teacher behaviours (Bandura, 1977; Klassen, Tze, Betts, et al., 2011). Specifically, teachers' self-efficacy towards children with special education needs influences teachers' attitudes towards inclusive education (Malinen, Savolainen, Engelbrecht, et al., 2013; Savolainen, Engelbrecht, Nel, et al., 2012), being more predisposed towards inclusion when self-efficacy rates are higher.

In this sense, teachers' self-efficacy depends on some variables. Segall and Campbell (2012) found that higher knowledge about ASD is associated with increased awareness. These authors also conclude that children's cognitive ability had an impact on participants' placement decision, but not diagnostic label. Having had contact with people on the spectrum also seems to promote better treatment for people with ASD (Dinecola and Lemieux, 2015). Some studies found higher levels of self-efficacy and increased confidence when there existed previous contact or exposure to disability (Symons, Morley, McGuigan, et al., 2014; Velonaki, Kampouroglou, Velonaki, et al., 2015).

Zee and Koomen (2016) reviewed 165 studies from 1970 to 2016 exploring the consequences of teachers' self-efficacy for the quality of classroom processes, students' academic adjustment and teachers' psychological well-being. Eight out of the 165 studies included in the review linked teachers' self-efficacy to students' achievement. However, although the review analysed an amount of 165

studies, and developed some issues from them, this review did not consider the association between teachers' self-efficacy and the achievement of students with special education needs.

Lastly, a recent study carried out by Devi and Ganguly (2022) interviewed eight pre-service teachers and eight recent teacher graduates to know their experiences and perceptions about the inclusion of students with ASD in mainstream schools. The authors considered participants' types of preparation (training at universities, prior experiences with ASD, support from school administration) and its impact on participants' self-efficacy. Results suggested that self-efficacy was associated to hands-on experience with people with ASD, guidance from mentor teachers, support from teacher-aides and/or school administration, contact with parents and professionals, building rapport with pupils and undertaking ASD-specific training courses.

What is fairly clear is that teachers' self-beliefs are likely to have a relevant impact on the teaching environment (from teachers' decisions to interactions with students; Love, Findley, Ruble, et al., 2020) and that when people think that they can meet the challenges in a specific environment, they are more willing to persevere in coping (Bandura, 1977).

The impact on the image of the spectrum after the change in the diagnostic criteria

On the one hand, some studies concluded that the change in categorization carried out negative consequences for people with Asperger's diagnoses since the label of Asperger's seems to be better rated than ASD (Katz, Nayar, Garagozzo, et al., 2020; Kite, Gullifer, and Tyson, 2013; Linton, 2014; Ruiz Calzada, Pistrang, and Mandy, 2012). Some studies reported that the term 'Asperger's' is not related to stigma (Linton, 2014; White, Arreto, Harrington, et al., 2020). So, some previous literature contended that the shift in the ASD diagnostic label would have contributed to stigmatising people who had previously been diagnosed with Asperger's (Kite, Gullifer, and Tyson, 2013; Linton, Kreck, and Sensui, 2014; Smith and Jones, 2020). All those people with these diagnoses now receive ASD diagnoses. ASD was related to prejudices and greater stigma than Asperger's (Cage, di Monaco, and Newell, 2019; Corrigan, 2007; Harrison, Bradshaw, Naqvi, et al., 2017; Harrison, Paff, and Kaff, 2019; Lu, Zou, Chen, et al., 2020; Obeid, Daou, DeNigris, et al., 2015; Pomeroy and Parrish, 2013; Stronach, Wiegand, and Mentz, 2019; Yu and Farrell, 2020; Yu, Stronach, and Harrison, 2020) because diagnoses of Asperger's did not include the term 'autism' in the label (Ben-Zeev, Young, and Corrigan, 2010; Harrison, Bradshaw, Naqvi, et al., 2017; Harrison, Paff, and Kaff, 2019; Obeid, Daou, DeNigris, et al., 2015; Stronach, Wiegand, and Mentz, 2019; Yu and Farrell, 2020; Yu, Stronach, and Harrison, 2020).

On the other hand, some studies found mixed results concerning the associations between labels and stigma (Giles, 2014; Katz, Nayar, Garagozzo, et al., 2020; Ohan, Ellefson, and Corrigan, 2015). For example, Linton (2014) concluded that while ASD diagnosis offers hope for people with previous autistic disorder diagnoses, it also means uncertain futures for people with old diagnoses of Asperger's regarding stigma. In other cases, studies comparing attitudes towards these two labels (Asperger's and ASD) did not find differences in stigmatisation between them (Brosnan and Mills, 2016; Giles, 2014; Linton, 2014; Ohan, Ellefson, and Corrigan, 2015; Parsloe and Babrow, 2016), neither in the general population (Corrigan, Bink, Fokuo, et al., 2015; Ohan, Ellefson, and Corrigan, 2015) nor pre-service teachers (Ohan, Ellefson, and Corrigan, 2015).

Overall, label ambiguity may result in higher discomfort than specific diagnoses, particularly in educational settings. In this line, some studies (Dinecola and Lemieux, 2015; Katz, Nayar, Garagozzo, et al., 2020; Love, Toland, Usher, et al., 2019) highlighted the need for education programs targeting the changes in ASD nosology. Education programs focused on ASD have been proven effective (Gardiner and Iarocci, 2014; Gillespie-Lynch, Brooks, Someki, et al., 2015; Love, Toland, Usher, et al., 2019) and could be more accurately modified to address changes in the new categorization of the disorder. In this sense mass media and cultural products, which are very important moderators of our beliefs, nowadays refer to ASD (Lacruz-Pérez, Tárraga-Mínguez, Pastor-Cerezuela, et al., 2020; Stern and Barnes, 2019). Previous studies analysed how the mass media depicts ASD (Nordahl-Hansen, Øien, and Fletcher-Watson, 2018; Tang and Bie, 2016). The image shown by main characters with ASD makes visible the spectrum and helps to shape an ordinary view of the condition (Tárraga-Mínguez, Gómez-Marí, and Sanz-Cervera, 2020).

Purpose of the study

Teachers' self-efficacy has been identified as an important predictor of positive teacher and students' outcomes. However, there are fewer studies analysing the association between teachers' self-efficacy and students with special education needs, as well as, the association between teachers' self-efficacy and the use of diagnostic labels.

Thus, taking all this information into account, we structured the study according to three specific objectives:

- To evaluate self-efficacy towards the label of ASD in a sample of pre-service teachers.
- To evaluate self-efficacy towards the label of Asperger's in another sample of pre-service teachers.
- To compare the results obtained in those evaluations to analyse whether the use of different diagnostic labels referring to the same condition brings about different levels of self-efficacy between both groups of pre-

service teachers (ASD_LABEL_GROUP and the ASPERGER's_LABEL_GROUP).

These objectives are valuable since the characteristics of children with a diagnosis of autism, Asperger's, or autism spectrum disorder coincide to a large extent and overlap since, in the end, we are referring to the same diagnostic picture, but denominated differently due to the evolution of the classification. What we vary is the term to refer to them. This label can be decisive in the education field, where the use of labels can determine teachers' expectations regarding inclusive education. These three objectives are also interesting because they evaluate teachers' self-efficacy, a relevant variable for inclusive education practices development. So, we find it necessary to know the effects on teachers when using a label of Asperger's or ASD.

From our three aims, and according to previous literature, we expose three hypotheses as follows:

- Firstly, we hypothesize that pre-service teachers' self-efficacy towards ASD will be acceptable. However, punctuation will not be high according to the score range of the instrument used, because the term 'autism' (included in 'autism spectrum disorder or ASD') has been traditionally related to prejudices and stigma (Ben-Zeev, Young, and Corrigan, 2010; Harrison, Bradshaw, Naqvi, et al., 2017; Harrison, Paff, and Kaff, 2019; Obeid, Daou, DeNigris, et al., 2015; Stronach, Wiegand, and Mentz, 2019; Yu and Farrell, 2020; Yu, Stronach, and Harrison, 2020).
- Secondly, we assume that pre-service teachers' self-efficacy towards Asperger's will be acceptable, but not high according to the score range of the instrument used, since although previous literature suggested that this label is not associated with stigma or prejudices (Linton, 2014; White, Arreto, Harrington, et al., 2020), according to the APA (2013), the diagnostic label is not given anymore.
- Thirdly, we believe that pre-service teachers' self-efficacy will be more favourable when the diagnostic label is Asperger's and not ASD due to the settlement and accustoming process of the term Asperger's, and the stigma related to the term 'autism' included in the 'autism spectrum disorder' diagnostic label (Katz, Nayar, Garagozzo, et al., 2020; Kite, Gullifer, and Tyson, 2013; Linton, 2014; Ruiz Calzada, Pistrang, and Mandy, 2012).

Method and materials

Participants

The sample of this study included 186 primary education pre-service teachers who were enrolled in the second year of the Teacher Training degree at the University of Valencia. At this point in the training program, the students had not received any specific training on autism at university.

Participants were chosen for convenience (Pineda, Alvarado, and Canales, 1994). These are pre-service teachers who will play their role in schools where, taking into account the high prevalence rates of the spectrum, they will teach students with ASD.

Pre-service teachers, therefore, represent a unique figure. They still do not have the specific experience with students with ASD that determines, according to the literature (Devi and Ganguly, 2022; Symons, Morley, McGuigan, et al., 2014; Velonaki, Kampouroglou, Velonaki, et al., 2015), levels of teacher self-efficacy. In fact, some authors have argued that as years of experience increase, self-efficacy towards ASD decreases (Klassen and Chiu, 2010).

However, they do have initial training. Therefore, it was decided to survey pre-service teachers. There was no previous literature that had focused its study on pre-service teacher self-efficacy towards students with ASD – except for a recent study by Devi and Ganguly (2022). In this aspect, it is a group of participants little addressed by previous studies.

In addition, this study measures self-efficacy towards ASD but using two labels ('ASD' and 'Asperger's'). In this sense, it was more interesting to survey pre-service teachers than in-service teachers, since in-service teachers will have had students with two diagnoses in school, while pre-service teachers do not have hardly any experience with students with ASD or Asperger's, or with specific training on ASD, at least in the degree, so the levels of self-efficacy they report will be limited to their ideas shaped by experiences outside the training in the degree.

Table 1 includes demographic information about the participants.

Measures

The instrument used in this study is an adaptation of the Autism Self-Efficacy Scale for Teacher (ASSET, Ruble, Toland, Birdwhistell, et al., 2013). It is a 30-item self-report measure intended to assess teachers' self-efficacy when teaching pupils with ASD. More specifically, participants rate their efficacy to face assessment, intervention and classroom practices regarding the needs of students with autism. The items are rated on a 100-point Likert-type scale ranging from 0 (cannot do at all) to 100 (highly certain can do).

Some adaptations were made to better accurate the scale to the sample and the purpose of the study. First, the questionnaire was translated into Spanish by a native Spanish translator. Later, it was retranslated into the original scale language by a native English translator. Both forward and backward translations were carried out taking into consideration cultural nuances. The differences

Table 1: Sociodemographic information of participants

	ASD group (n = 96)	ASPERGER's group (n = 90)
Gender		
Male	16 (16.7%)	13 (14.4%)
Female	80 (83.3%)	77 (85.6%)
Mean age (SD)	19.85 (2.6)	19.79 (2.1)
SPECIFIC TR.	4 (4.2%)	3 (3.3%)
METH.	13 (13.5%)	2 (2.2%)
EXP.	19 (19.8%)	11 (12.2%)

Notes: EXP: experience with people with ASD or Asperger's; METH: knowledge about methodologies used with children with ASD or Asperger's; SD: standard deviation; SPECIFIC TR: specific training in ASD or Asperger's.

between the two translations were resolved by consensus between the two translators.

Second, following Ruble's study (Ruble, Toland, Birdwhistell, et al., 2013), the Likert-type scale was modified: participants had to answer the items according to a 6-point Likert scale: 0 (any self-confidence) to 5 (absolute self-confidence). In addition, two models of the scale were performed. On the one hand, we maintained the meaning of the items and conducted that version in a group of pre-service teachers (ASD version). On the other hand, another group of pre-service teachers was asked about the same items but regarding Asperger's syndrome (Asperger's version). The reliability (Cronbach's Alpha) of the scale in our study was .96. Finally, the score range of the questionnaire ranged from 0 (minimum self-efficacy value that could be obtained) to 150 (maximum self-efficacy value).

Third, a Demographic Information Questionnaire was developed by the authors of the study to ask participants about their gender, age, specific training about ASD or Asperger's, knowledge about methodologies to work with students with ASD or Asperger's, and experience working with people with ASD or Asperger's.

This research has been carried out following the international ethical criteria contained in the Declaration of Helsinki. The participants involved were aware of the objectives of the research as well as of their nature, before starting to fulfil the questionnaire. They accepted the informed consent to process their responses. They agreed to collaborate voluntarily, without receiving any type of coercion or compensation, and being aware that the results would be totally anonymous and purely for scientific purposes, according to the confidentiality commitment.

Data collection procedure

To select the participants, the authors of the study contacted professors who were teaching the subject of

Special Education Needs in the second year of the Teacher Training degree at the University of Valencia during the academic year 2020–2021. These professors administered the questionnaire in one of their lessons. This took place before teaching the pre-service teachers any content related to autism. The students gave consent to take part in the study and completed the questionnaire afterward. Therefore, participating students did not receive any compensation, and their participation was voluntary and disinterested.

Data analysis procedure

The analyses were performed with the SPSS.26 statistical package for Windows.

First, to check whether there were significant associations between variables gender, age, specific training in ASD or Asperger's, knowledge about methodologies used with children with ASD or Asperger's, and experience with people with ASD or Asperger's, according to the group (ASD_LABEL_GROUP and the ASPERGER's_LABEL_GROUP), we carried out the corresponding statistical tests.

Thus, Pearson chi-square tests were carried out for all these variables excepting age, where a nonparametric statistical test, specifically a Mann–Whitney test for independent samples, was carried out, after verifying that data did not meet the assumption of normality.

Second, descriptive statistics for self-efficacy were calculated for each group (ASD_LABEL_GROUP and the ASPERGER's_LABEL_GROUP). Last, a Mann–Whitney test for independent samples was carried out to analyse if there were statistically significant differences in teachers' self-efficacy between the two groups (ASD_LABEL_GROUP and the ASPERGER's_LABEL_GROUP). The eta square value was also calculated to determine the effect size.

Results

We structured the results section according to our three-fold purpose. First, the results obtained for the Pearson chi-square statistic for each of the variables that characterise the sample, according to the group (ASD_LABEL_GROUP and the ASPERGER's_LABEL_GROUP), were not statistically significant in any case. All Cramer's V values scored below 0.3. The result obtained for the Mann–Whitney *U* statistic for the variable age was also not statistically significant.

Teachers' self-efficacy in ASD_LABEL_GROUP

According to the first objective involving 96 pre-service teachers, the mean score for their self-efficacy towards the label of ASD was 91.03 (SD = 22.94). The mean is high above the mean score of the questionnaire score range (75 in a 0–150 score range). The actual range obtained was 38–128. Indeed, the score of the

ASD_LABEL_GROUP was slightly higher than the third quintile, standing in the fourth quintile.

Teachers' self-efficacy in ASPERGER's_LABEL_GROUP

Secondly, according to the second objective involving a sample of 90 pre-service teachers, the mean score for their self-efficacy towards the label of Asperger's was 79.74 (SD = 26.95). This mean is slightly above the mean score of the questionnaire score range (75 in a 0–150 score range). The actual range obtained in this group was 23–126. The mean score stands in the third quintile.

Comparison of teachers' self-efficacy between the ASD_LABEL_GROUP and the ASPERGER's_LABEL_GROUP

Thirdly, the results obtained for the Mann–Whitney *U* statistic to compare self-efficacy between the ASD_LABEL_GROUP and the ASPERGER's_LABEL_GROUP were statistically significant (see Table 2). ASD_LABEL_GROUP scored significantly higher than the ASPERGER's_LABEL_GROUP, resulting in quasi medium effect size.

Discussion

The purpose of the current study was three fold: (1) to evaluate teachers' self-efficacy towards the label of ASD in a sample of pre-service teachers; (2) to evaluate teachers' self-efficacy towards the label of Asperger's in another sample of pre-service teachers; (3) to compare the results obtained in those evaluations to analyse whether the use of different diagnostic labels referring to the same condition brings about different levels of self-efficacy between the two groups of pre-service teachers.

We evaluated and compared the mean scores obtained in an adaptation of ASSET (Ruble, Toland, Birdwhistell, et al., 2013). From these results, we conclude that our first hypothesis was not supported. Self-efficacy towards ASD rated high (fourth quintile), according to the ASSET (Ruble, Toland, Birdwhistell, et al., 2013) 0–150 score range, although we had hypothesized that it would be lower because of the stigma associated with 'autism' or 'ASD' (Ben-Zeev, Young, and Corrigan, 2010; Harrison, Bradshaw, Naqvi, et al., 2017; Harrison, Paff, and Kaff, 2019; Liao, Lei, and Li, 2019; Obeid, Daou, DeNigris, et al., 2015;

Table 2: Average ranges (AR) and Mann–Whitney *U*-test statistic value obtained for measure of self-efficacy, depending on the used label

	ASD group (n = 96) AR	ASPERGER's group (n = 90) AR	Mann–Whitney <i>U</i>	<i>P</i>	η^2_U
Self-efficacy	104.61	81.65	3253.5**	<0.001	0.045

Notes: AR: average range; ***P* < 0.01.

Stronach, Wiegand, and Mentz, 2019; Yu and Farrell, 2020; Yu, Stronach, and Harrison, 2020).

We could not get evidence to support our second hypothesis, because self-efficacy for the group with the label Asperger's scored medium punctuation (standing in the third quintile). We had hypothesized that scores for this label would be higher because previous literature explained that Asperger's was not related to prejudices (Butler and Gillis, 2011; Linton, 2014; White, Arreto, Harrington, et al., 2020).

As well as, we could not support our third hypothesis. Although previous literature contended that the label of ASD engendered a higher level of stigma than the label of Asperger's, despite the same symptoms (Butler and Gillis, 2011; Cage, di Monaco, and Newell, 2019; Corrigan, 2007; Harrison, Bradshaw, Naqvi, et al., 2017; Harrison, Paff, and Kaff, 2019; Kite, Gullifer, and Tyson, 2013; Linton, Kreck, and Sensui, 2014; Lu, Zou, Chen, et al., 2020; Obeid, Daou, DeNigris, et al., 2015; Pomeroy and Parrish, 2013; Ruiz Calzada, Pistrang, and Mandy, 2012; Smith and Jones, 2020; Stronach, Wiegand, and Mentz, 2019; White, Arreto, Harrington, et al., 2020; Yu and Farrell, 2020; Yu, Stronach, and Harrison, 2020), our findings set new standards in the studies developed until today. Recent studies did not report differences when comparing the use of both labels (Brosnan and Mills, 2016; Corrigan, Bink, Fokuo, et al., 2015; Giles, 2014; Linton, 2014; Ohan, Ellefson, and Corrigan, 2015; Parsloe and Babrow, 2016). None of them have pointed out a better perception of ASD than Asperger's. In our study, the group of pre-service teachers asked about ASD showed higher levels of self-efficacy than the group of pre-service teachers asked about Asperger's. Concern that the ASD label will increase negative perceptions, at least among the sample of this study, is not supported (Ohan, Ellefson, and Corrigan, 2015).

The fact that self-efficacy in this study is higher for the label of ASD than for the Asperger's one could be explained because the studies concluding that the term Asperger's was related to less stigma than ASD (Ben-Zeev, Young, and Corrigan, 2010; Katz, Nayar, Garagozzo, et al., 2020; Segall and Campbell, 2012) were carried out before (or just one year after) the last edition of the publication of DSM (APA, 2013). This new edition reflected a change in the terminology used to describe the diagnosis (King, Navot, Bernier, et al., 2014). It is understandable that people showed more reticence or even more negative feelings towards the diagnosis of ASD than Asperger's during the first years after the new diagnostic criteria since Asperger's had been considered a diagnosis with lower grades of severity than ASD until then (APA, 2002).

Nowadays the situation has remarkably changed. Studies carried out since 2015 (Brosnan and Mills, 2016; Katz, Nayar, Garagozzo, et al., 2020; Ohan, Ellefson, and

Corrigan, 2015) outlined that participants showed similar feelings when referring to ASD or Asperger's label, as we mentioned. According to our results, the passage of time may have helped the consolidation of the new term used to refer to the same reality, or with fairly common symptomatology, that is ASD.

Other reasons to support this change in perceptions towards ASD in a positive way and that support the results in the current study could be the higher presence of people with a diagnostic label of ASD in the schools and the cultural products that have facilitated that the stigmatised vision towards the ASD disappears (Tárraga-Mínguez, Gómez-Marí, and Sanz-Cervera, 2020). Particularly, mass media show an overcoming image of people with ASD (Lacruz-Pérez, Tárraga-Mínguez, Pastor-Cerezuela, et al., 2020). Television series also give voice to (Tárraga-Mínguez, Gómez-Marí, and Sanz-Cervera, 2020) and introduce in a natural and normalised way the autism spectrum disorder suggesting that they are ordinary people with specific characteristics fully adaptable to society (Stern and Barnes, 2019). In this sense, a focus on how characters with ASD are portrayed in cultural products is important (Nordahl-Hansen, Øien, and Fletcher-Watson, 2018) and necessary to understand in which extent media help to make visible the spectrum.

Since 2013, all children diagnosed with this disorder have received an ASD label (APA, 2013; King, Navot, Bernier, et al., 2014). So, this is another possible reason to explain our results: even though there are still people with Asperger's, this diagnosis has become obsolete and shadowed in the whole school environment. More and more, Asperger's seems to be an old-fashioned term in educational settings. Teachers training programs in Spain follow the new classifications of DSM (APA, 2013) and the International Statistical Classification of Diseases (World Health Organization, 2019) and tend to include overall information related to ASD, and not to Asperger's, as prior studies suggested (Dinecola and Lemieux, 2015; Gardiner and Iarocci, 2014; Gillespie-Lynch, Brooks, Someki, et al., 2015; Katz, Nayar, Garagozzo, et al., 2020; Love, Toland, Usher, et al., 2019; Segall and Campbell, 2012; Stronach, Wiegand, and Mentz, 2019). Although our sample have not received specific training at university yet, they keep in touch with educational community, who nowadays are more used to ASD (Gillespie-Lynch, Brooks, Someki, et al., 2015). This fact could contribute to breaking barriers and leaving aside prejudices about the label of ASD.

Thus, it is possible that our sample has benefited from the viral processes of the term ASD in media (Stern and Barnes, 2019), in social networks (Tárraga-Mínguez, Gómez-Marí, and Sanz-Cervera, 2020), among the educational community members (Burack, Root, and Zigler, 1997; Gillespie-Lynch, Brooks, Someki, et al., 2015), the growing prevalence and presence in schools, and, in

general, our participants may could benefit from the increased ASD general culture of citizenship. This expansion of the autistic world could have led to less stigma and less fear of the unknown, more knowledge about the disorder and, therefore, better self-efficacy to educate students with ASD. It is important to point out that this label was related to stigma in the past, as a consequence of lack of knowledge, which compromised self-efficacy (Bandura, 1997).

Our results can be read positively since nowadays children are diagnosed with the label ASD and pre-service teachers (the teachers of the future) show higher levels of self-efficacy towards the ASD than the Asperger's. Those positive beliefs can be translated into better outcomes for the implementation of inclusion since pre-service teachers' self-efficacy will play a relevant role in the education of children with disabilities (Burack, Root, and Zigler, 1997; Malinen, Savolainen, Engelbrecht, et al., 2013; Savolainen, Engelbrecht, Nel, et al., 2012; Segall and Campbell, 2014; Zee and Koomen, 2016).

Practical implications

As practical implications, on the one hand, it is important to point out that the word used and the diagnostic label used can greatly influence teachers. For example, this does not mean that labels are automatically the cause of the stigma and negative connotations. Labels are not positive or negative. What matters is how we use them and what they are for. A label can act as a pathway for teachers to accommodate sessions to the type of students they have. The most important thing is to be aware of the labels and not use them for stigmatisation or, in the opposite case, undervaluation. On the other hand, the increasing presence on media and social networks of characters with ASD and the growing presence of students with the disorder in mainstream schools must not lead to underestimating ASD. We must be aware that this presence has a double side because we cannot fall into the myth that anyone can educate without training a student with ASD. The label is what it is and we must train pre-service teachers so that they can adapt their teaching practices, make the condition visible and normalise the student with ASD and its characteristics.

Limitations

Among the limitations extracted from this study, we focus on the local sample. The participants are pre-service teachers from a Spanish faculty. We do not think that it influenced the results much, but it is important to highlight it. We also noted that the study analysed the quantitative perspective. In addition, we evaluated a sample with any previous specific training in ASD at university.

Future lines of research

From these limitations, derive some possible future lines of research. It should be great to re-evaluate self-efficacy

towards autism spectrum disorder after a specific training in ASD or after finishing a university degree to analyse in which extent programs at universities prepare pre-service teachers to take care of the needs of children with ASD. Finally, it would be positive when analysing interviews and focus groups through qualitative tools and not only quantitative ones.

Conclusions

Different results were obtained depending on the label with which we refer to the same diagnostic picture (ASD or Asperger's). In this study, pre-service teachers showed higher levels of self-efficacy towards ASD than towards Asperger's. We can do a positive reading of these results because it is no longer diagnosed with Asperger's, but with the ASD label. It is just an increasing disorder in our society and, therefore, current in the classrooms.

These results break with prior studies. Changes in classification, the spread of the term ASD, and the media, among other reasons, may have helped to unstigmatize this label. It is necessary to analyse how stigmas are breaking down, taking into account the characteristics and needs of the condition, without underestimating the disorder. In this sense, labels, far from constituting a storm of stigmas and negative connotations, must be perceived as a condition that must be considered to include the person in front of us.

Author contributions

I.G-M. and R.T-M. involved in conceptualization; G.-P-C. and R.T-M. involved in methodology and formal analysis; I.G-M., I.L-P. and R.T-M. involved in investigation; I.G-M. and R.T-M. involved in data curation; I.G-M. involved in the original draft preparation; I.G-M., I.L-P., G.P-C. and R.T-M. involved in review and editing; I.G-M. acquired the fund. All authors have read and agreed to the published version of the manuscript.

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Conflict of interest

The authors declare no conflict of interest.

Ethics statement

This research has been carried out following the international ethical criteria contained in the Declaration of Helsinki.

Informed consent

Informed consent was obtained from all subjects involved in the study.

Data availability statement

The data obtained for this study are available from the corresponding author [I. G-M.], upon reasonable request.

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