

Article



# **Teacher Monitoring of Students with ASD and Their Families During Lockdown: A Comparison Between Spain and Mexico**

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Abstract: Since the establishment of the State of Alarm resulting from the current COVID-19 pandemic, lockdown, and quarantine have been imposed in most countries, with serious health, social, economic, and educational consequences. The health emergency caused by COVID-19 led to the closure of schools, forcing students from all over the world to stop attending schools and compromising the quality of care offered to students with autism spectrum disorder (ASD). In order to examine how teachers supervised students with ASD virtually during the lockdown period, and to determine whether families considered the support provided by teachers to be adequate, a cross-cultural study design was adopted. An ad hoc questionnaire was administered to 415 families in Spain and Mexico in April 2020. We calculated frequencies and carried out descriptive analyses, parametric inferential analyses, and correlations. Families reported that educational monitoring and contact with the family member with ASD during home lockdown was scarce, despite the provision of activities appropriate to their needs. Significant differences were found as a function of country, age of participant, age of family member with ASD, type of ASD, type of schooling, and length of lockdown. This study highlights the need to train teachers in inclusive digital education and to establish effective protocols for communication and follow-up with the families of students with ASD.

Keywords: autism spectrum disorder; lockdown; families; teacher; education; school

## 1. Introduction

The coming of COVID-19 and the pandemic represented a before and after in our way of life and living together in society. From the end of 2019, when the health emergency exploded in China [1,2], infections increased around the world, resulting in serious consequences in the health, economic, social, and education outlook. During the first quarter of 2020, people were ordered into home lockdown in most countries with 10,458,102 global coronavirus cases at that time (according to the coronavirus case map-COVID-19, 2022).

In terms of education, many countries felt obliged to close schools [3–8], redirecting daily work and in-person classes to new learning scenarios in which education became based on various Information and Communication Technologies (ICTs). These new modalities shine a spotlight on the work of teachers, demanding that they deal with and shift to a virtual form of education based on digital tools that is both synchronous and asynchronous. Technology has thus been the "great ally" of all the social restructuring that



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Copyright: © 2025 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/ licenses/by/4.0/). has taken place up until now [9]. This new scenario brought about by the pandemic has resulted in a proliferation of studies concerning COVID-19 [10–12], with many focusing mainly on how to overcome the new barriers in student learning in the face of this new situation [13–16], as well as on the impact on different levels of primary, secondary, or higher education [9,17–22].

#### Attending to Students with Special Educational Needs During COVID-19

Given the proliferation of studies in the field of education and effects on learning, it comes as a surprise that there are barely any on the difficulties students with Special Educational Needs (SENs) may have faced during this period of lockdown due to the stress and fatigue entailed by the shift from in-person to virtual teaching [15]. In this regard, Peña et al. [23] indicated that COVID-19 had considerable consequences for inclusive education, highlighting how the lack of resources in South America reduced access to quality inclusive education. Rodríguez [21] argues that the pandemic and virtual education have made it possible to see the inexcusable lack of consideration given to students with functional diversity by educational institutions. The current situation has made the importance of family–school communication even clearer [24], particularly with regard to students with functional diversity.

Faccioli et al. [25] have demonstrated how families wish for greater attention to be paid by schools to their children with disabilities. Schuck and Lambert [24] state that schools have not received sufficient training or preparation to be able to attend to them on an academic level, reporting insufficient support and contact [26,27]. This situation highlights a significant gap between the actual needs of families with children with disabilities and the ability of schools to respond adequately. The explicit desire of families for greater support underscores the urgency of strengthening the training and preparation of educational staff to provide inclusive and effective academic assistance. Furthermore, the recognition by studies such as those by Schuck and Lambert [24] of insufficient training and limited contact with these families indicates that, beyond goodwill, there are structural and training barriers that must be addressed to ensure equitable and quality education for all students.

More specifically, studies bear witness to the educational care that the children with autism spectrum disorder (ASD) have received during the period of home lockdown, along with the support perceived by the families. ASD is characterized by the presence of deficits in social communication and social interaction across multiple contexts, with restricted, repetitive patterns of behaviour, interests, or activities [28]. Before the pandemic, the needs of children with ASD were presumably covered and cared for by schools and specific associations, which offered psychological support and specialized therapy. However, with lockdowns and quarantines, attendance at these institutions was reduced or removed altogether. Echevarría et al. [29] assert that the lockdowns disrupted the routine of these children, forcing them, in a single day, to change to living with new habits and rules that they were not familiar with and depriving them of support in terms of psychological care, education, and personalized medical care [30].

Authors such as Stenhoff et al. [31] refer to the complexity involved in providing appropriate education to students with ASD when faced with the situation brought about by COVID-19, stating that this crisis represents a potential trauma for families and children due to the sudden changes to their daily lives. Hurwitz et al. [5] show that teachers modified their teaching plans for students with autism, adjusting times and pre-established aims and starting individual learning programmes during the lockdown. Crane et al. [32] state that the PLASN (Pan-London Autism Schools Network) schools came up with creative and innovative solutions to support families weekly and to promote clear communication aimed at fostering learning in the home. However, Santo et al. [33] reveal the distrust

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families feel toward public institutions and the care of their children with autism, since offering interventions via telematic services is not ideal for children and adolescents with ASD [34] due to their idiosyncrasies. Despite this, currently, priority has been given to supporting parents on a social and academic level, ensuring that they have access to the right resources [30].

In this educational framework, Carmenate and Rodríguez [35] highlight the relevance the teacher has gained in this process of virtual education, in which the teacher needs to guide the families and offer feasible materials for a good pace of learning at home. However, Pellicano and Stears [36] show that, despite the efforts to maintain the services offered to people with ASD in education and therapy, it is unlikely that the experience based on online support is a truly positive one. One reason for this may be that the educator was unable to provide complete assistance and attention to children with difference capacities via virtual platforms [7]. As a result, Álvarez [37] suggests that reinforcements should be made to the teaching staff in schools so that, once there is a return to the classroom, the ability to attend to students with ASD is as robust as possible, and that adaptations should be made to the curriculum, adjusting it to the new and unexpected necessities of the current situation.

More specifically, the lockdown period highlighted weaknesses in the provision of quality education in Mexico. While studies such as that by García-Cedillo et al. [38] suggest that both students with special educational needs and those without faced similar challenges under the harsh conditions imposed by COVID-19—particularly regarding the lack of resources and personalized attention—not all research supports this view. Acuña-Gamboa and Pons [39] reported that students attending special education centres experienced greater barriers to learning and participation than those in mainstream schools. Teachers working in such centres had lower levels of digital competence to provide virtual support to students and their families during the lockdown. In addition, Lemus-Pool et al. [40] noted that special education centres were among those that implemented the fewest digital measures and made the least adaptations for virtual learning.

In the Spanish context, Figueredo and Lozano [41] pointed out disparities between the different autonomous communities, but indicated that, overall, not all of the inclusive education support strategies proposed by UNESCO [42] were considered. Martínez and Álvarez-Álvarez [43] revealed that families had to adapt to the challenges posed by the pandemic on their own and devise their own solutions. Although online support was provided by teachers, the available resources did not reach all families equally, particularly those with members with disabilities. In this regard, Armas-Alba and Alonso-Rodríguez [44] emphasized the need to improve digital competence among both teachers and families in order to adequately support students with special educational needs, as ICT played a crucial role during the period of home confinement.

Due to the characteristics and needs of students with ASD and the virtual support provided by schools to families and students during the COVID-19 lockdown, this study aims to discover the perception of families with children regarding the educational attention, teachers' monitoring, and communication. Given the authors' location in a European country, it was decided to conduct a comparison with another Spanish-speaking country in the Americas. In this case, the situation in Mexico was chosen for study. This research adopted a cross-cultural approach by comparing teaching practices in Mexico and Spain, since although both countries share a language and certain cultural aspects, they exhibit significant differences in their educational systems, available resources, and socioeconomic contexts. These differences can substantially affect the way virtual education was implemented and the support provided to students with ASD. Therefore, the cross-cultural analysis allowed for the identification of both common challenges and the unique characteristics of each country, providing a more comprehensive and enriched understanding of inclusive education in times of crisis. In relation to this, the following specific objectives were proposed:

- 1. Find out what online communication teachers have maintained with families and students with ASD in Mexico and Spain.
- 2. Determine whether the families consider that the activities set in Mexico and Spain are suitable and sufficient.
- 3. Examine the level of academic monitoring of children with ASD undertaken by teachers in Mexico and Spain and the level of satisfaction regarding it.
- 4. Determine teacher performance as a function of country, age of the family member and the person with ASD, type of ASD, modality of schooling, and duration of lockdown.

## 2. Materials and Methods

The study used an empirical, cross-sectional, non-experimental, descriptive, and inferential research design [45], developed under the premise of the quantitative methodological paradigm [46]. Likewise, this study follows a cross-cultural approach by comparing the educational situation during COVID-19 between Mexico and Spain.

#### 2.1. Participants

A total of 415 families of children with ASD (mothers, fathers, and other members who made up the family unit) from Mexico (n = 193) and Spain (n = 222) participated in the study, representing 46.5 % and 53.5 % of the sample, respectively. As the population size was unknown, we estimated 10,000 as the generic number assumed for each context. Thus, for both locations the margin of error was below the commonly accepted 5% (4.2% for Mexico and 3.9% for Spain), with a confidence interval of 95%. We used chain-referral opinion sampling [47], which somewhat lessens objectivity in education research.

In the Mexico sample, the participants had an age range of between 20 and 59 years old (M = 36.54, SD = 7.28), of whom 183 were women (94.82%) and 10 men (5.18%). The majority were married (61.10%), lived in a town with more than 300,000 inhabitants (39.90%), had studied university degrees (47.70%), with a main occupation of housework (31.1%), and a middling socio-economic level (52.80%). Most had been confined to the home for three weeks or more (52.8%).

With regard to Spain, the participants had an age range from 24 to 63 years old (M = 41.48; SD = 6.65), with 189 women (85.14%) and 33 men (14.86%). Most were married (68.00%), lived in towns with between 100,000 and 300,000 inhabitants (17.10%), had a university education (36.00%), worked in the private sector or were self-employed (36.90%), and had a middle socio-economic status (47.30%). Most were in lockdown for 4 weeks or more (55.00%).

Although the majority of the participants from both countries were women, it should be noted that there is no bias according to sex and/or gender, because studies in Social Science and Legal Science have a high predominance of women [48–50].

The socio-demographic data of the families with a member with ASD—provided by the participant family members—are shown in Table 1. It should be noted that although the DSM-5-TR [28] (APA, 2022) treats ASD as a disorder based on the supports that the person needs, not differentiating the different types of ASD (Autism, Asperger syndrome, Rett syndrome, Pervasive Developmental Disorder Not Otherwise Specified, and Childhood Disintegrative Disorder), as presented in previous manuals (DSM-IV) [51], in this study, this differentiation has been established, as adult diagnoses can be based on previous classifications.

|             |   | Mexico           | Spain            |
|-------------|---|------------------|------------------|
|             |   | M (SD), 1        | min–max          |
|             | Age (years)   | 7.04(4.07), 2–17 | 8.28(4.10), 2–17 |
|             | Variables   | N (%)            | N (%)            |
|             | Autism  | 112(58.0)        | 116(52.3)        |
| TE (        | Asperger's Syndrome   | 61(31.6)         | 68(30.6)         |
| Type of     | Rett Syndrome   | 1(0.5)           | 1(0.5)           |
| ASD         | Pervasive Developmental Disorder—Not Otherwise Specified          | 19(9.8)          | 37(16.7)         |
|             | Childhood Disintegrative Disorder                                 | 0(0)             | 0(0)             |
| Carr        | Male  | 165(85.5%)       | 186(83.3%)       |
| Sex         | Female  | 28(14.5%)        | 36(16.2%)        |
|             | Ordinary school   | 87(45.1)         | 90(40.5)         |
|             | School with support for students with Special Educational Needs   | 40(20.7)         | 71(32.0)         |
| Modality of | Ordinary school with preferential integration for people with ASD | 2(1.0)           | 35(15.8)         |
| Schooling   | Special Needs School specifically for people with ASD             | 15(7.8)          | 7(3.2)           |
| 0           | General Special Needs School                                      | 17(8.8)          | 8(3.6)           |
|             | Other   | 8(4.1)           | 3(1.4)           |

**Table 1.** Socio-demographic data of the children with ASD.

Note: *M* = Mean; *SD* = standard deviation; *min* = minimum; *max* = maximum.

#### 2.2. Instrument

Given the unprecedented nature of the educational challenge caused by the pandemic for the world population, currently, there are no instruments that allow one to assess how different groups have experienced the pandemic and how they have confronted it emotionally. Therefore, in order to gather data, we designed an ad hoc questionnaire titled, "Cuestionario para familias de personas con TEA ante la COVID-19" ("Questionnaire for families of people with ASD in the face of COVID-19") [52], which consisted of two parts (socio-demographic data and perception of the lockdown). In the socio-demographic data, the participants were asked general information about themselves (sex, gender, age, town or county size, country of residence, number of people who made up the family unit, civil status, level of education, and length of lockdown) and about their relatives with ASD (sex, age, type of diagnosis, and modality of schooling). We have dealt with these questions in the previous section.

The section addressing COVID-19 and lockdown comprised three segments: the psychological and emotional state of the participant and of the family member with ASD during lockdown, use of ICT, and teacher monitoring. For this study, and in relation to its aims, we have only focused on the last segment, which consisted of the following items: communication of the teacher with the family; contact of the teacher with the child with ASD; setting of activities suitable to their needs; volume and quantity of activities; and monitoring of academic progress by the teacher. To determine the reliability of this segment, we calculated Cronbach's alpha, with a very high result ( $\alpha = 0.885$ ).

#### 2.3. Procedure

In order to gather information, we administered the questionnaire at the end of April 2020. The procedure had two complementary parts. The first consisted of contacting ASD support associations via telephone and email, requesting their collaboration and explaining the study and its aims. As this is research with human beings, they were informed of our compliance with ethical rules and anonymity that was endorsed, following explicit prior request, by the Ethics Committee on Human Research (1808/CEIH/2020) of the Vice-Chancellor's Office for Research and Knowledge Transfer of the University of Granada. The second involved using the social networks of many associations both in Spain and in

Mexico to disseminate a link to Google Forms with the questionnaire—a medium that has been approved by many authors [53]. We proceeded in the following way:

- 1. Search and selection of private Spanish-speaking Facebook groups focused on ASD.
- 2. Making contact with the group administrator, presenting the subject area of the study and its aims. Request to enter into the study.
- 3. Acceptance of entrance and publication in 152 groups.
- Reminder and repetition of publication after a few days.

### 2.4. Design and Data Analysis

The data were treated with the SPSS statistical package version 24.0 for Windows. In order to find out the distribution of the results, we calculated the descriptive statistics (mean, standard deviation, and mode) and frequencies. After testing the normality of the data and the homoscedasticity of their variances (with the Kolmogorov-Smirnov test), and the reliability of the subscale, we carried out an analysis of intra-factorial correlations using Pearson's correlation coefficient (r) and inferential analyses through parametric tests. For the dichotomous variables of country, sex, and gender of the family members and the child with ASD, and the time spent in lockdown, we used Student's t and Cohen's d. For the variables of various values, age of the child with ASD, age, studies, profession, and socio-economic level of the families, we calculated the ANOVA of one factor and subsequent Tukey's HSD post hoc tests, along with the homogeneous subsets and eta squared. To analyze the influence of the variables, disorder type (Autism, Asperger's Syndrome, Rett Syndrome, Pervasive Developmental Disorder—Not Otherwise Specified) and schooling modality (ordinary school, school with support for students with Special Educational Needs, ordinary school with preferential integration for people with ASD, Special Needs school specifically for people with ASD, and general Special Needs school), as well as their interaction, we calculated MANOVA tests and factorial MANOVA, along with their statistical power through G\*Power (version 3.1.9.7).

For these inferential analyses, we set a significance level of p < 0.05. Likewise, for the effect size we considered the three habitually accepted states: (a) small; (b) medium; and (c) large.

## 3. Results

The descriptive results on the participants' perception of how the virtual teaching was carried out with their family members with ASD during lockdown are presented in Table 2. As we can see, most stated that the teacher "somewhat" ( $M_o = 3$ ) maintained contact with them online and that this contact was even less ( $M_o = 1$ ) with the child with ASD. In general, the family members considered that the activities set by the teachers were "sufficiently" ( $M_o = 4$ ) adapted to the needs of the child with ASD, and the quantity also seemed adequate ( $M_o = 4$ ) to them. However, the academic monitoring by the teacher was rated as limited ( $M_o = 1$ ).

The analysis of correlations (Table 3) showed that there was a positive relationship, between moderate and strong (from 0.476 to 0.748) and significant (p < 0.01), between the responses of the participants in all items. The strongest associations occurred in the adaptation of activities to the needs of the child with ASD and the quantity of activities (r = 0.748) and between the responses concerning the contact maintained by the teacher with the family and with the child with ASD (r = 0.704).

|    | Virtual Teaching  |      | CD   | 14 | %    |      |      |      |      |  |  |
|----|---|------|------|----|------|------|------|------|------|--|--|
|    |   |      | 5D   | Mo | 1    | 2    | 3    | 4    | 5    |  |  |
| 1. | The teacher of my family member with ASD has maintained online contact with the family. | 2.95 | 1.33 | 3  | 18.7 | 19.4 | 25.1 | 21.8 | 15.0 |  |  |
| 2. | The teacher has maintained online contact with my family member with ASD.               | 2.52 | 1.39 | 1  | 36.0 | 14.2 | 22.0 | 17.4 | 10.4 |  |  |
| 3. | The teacher has set activities adapted to their needs.                                  | 3.13 | 1.37 | 4  | 17.4 | 16.6 | 21.5 | 25.1 | 19.4 |  |  |
| 4. | The quantity of activities seems appropriate.   | 2.94 | 1.35 | 4  | 19.7 | 19.7 | 21.5 | 24.7 | 14.4 |  |  |
| 5. | The teacher has monitored the academic progress of my family member with ASD.           | 2.80 | 1.47 | 1  | 29.5 | 14.5 | 18.9 | 20.7 | 16.3 |  |  |

**Table 2.** Measures of central tendency and dispersion on the perception of virtual teaching given to children with ASD during lockdown (N = 415).

Note: M = mean; SD = standard deviation;  $M_0$  = mode; % = percentage.

Table 3. Pearson correlation analysis between the subscale items.

|    |  | 1        | 2        | 3        | 4        | 5 |
|----|--|----------|----------|----------|----------|---|
| 1. | Online contact with the family                   | 1        |          |          |          |   |
| 2. | Online contact with my family member with ASD    | 0.704 ** | 1        |          |          |   |
| 3. | Activities adapted to their needs                | 0.569 ** | 0.562 ** | 1        |          |   |
| 4. | Appropriate quantity of activities               | 0.522 ** | 0.476 ** | 0.748 ** | 1        |   |
| 5. | Academic monitoring of my family member with ASD | 0.574 ** | 0.613 ** | 0.650 ** | 0.636 ** | 1 |

Note: \*\* The correlation is significant at level 0.01 (two tailed).

As a function of country (Table 4), there were significant differences in the contact maintained by the teacher both with the families (t(384) = 4.04, p = 0.000), with a medium effect size, and with the child with ASD (t(384) = 2.67, p = 0.008), although with a small effect. The Spanish participants considered these two forms of contact to be more frequent than the Mexican participants. There were also differences in the appropriateness of the quantity of activities set by the teachers (t(384) = 1.96, p = 0.049). Thus, the Mexican participants told of less suitability in comparison with the Spanish participants.

Table 4. Results of Student's t test on the virtual teaching during lockdown as a function of country.

|    |   |      | Cou      |        |           |          |      |
|----|---|------|----------|--------|-----------|----------|------|
|    | Virtual Teaching  |      | n = 222) | Mexico | (n = 193) | t        | d    |
|    |   | M    | SD       | М      | SD        |          |      |
| 1. | The teacher of my family member with ASD has maintained online contact with the family. | 3.19 | 1.26     | 2.66   | 1.35      | 4.04 *** | 0.41 |
| 2. | The teacher has maintained online contact with my family member with ASD.               | 2.69 | 1.40     | 2.31   | 1.37      | 2.67 **  | 0.27 |
| 3. | The teacher has set activities adapted to their needs.                                  | 3.24 | 1.34     | 2.99   | 1.40      | 1.84     | 0.18 |
| 4. | The quantity of activities seems appropriate.   | 3.07 | 1.35     | 2.80   | 1.33      | 1.96 *   | 0.20 |
| 5. | The teacher has monitored the academic progress of my family member with ASD.           | 2.88 | 1.48     | 2.70   | 1.45      | 1.25     | 0.12 |

Note: M = mean; SD = standard deviation; t = Student's t; d = Cohen's d; \*\*\* p < 0.001, \*\* p < 0.01, \* p < 0.05.

Taking the socio-demographic variables of the family members of the child with ASD into consideration, we did not find any significant differences as a function of sex, gender, civil status, studies, profession, or socio-economic level. Thus, only age proved to be discriminant (Table 5). The youngest participants ( $\leq$ 24 years) considered that there was less contact maintained by the teacher both with them and with their family member with ASD, in comparison with the other age groups. They also rated the set activities as more inappropriate and the academic monitoring as lower, when compared to the oldest adult group of  $\geq$ 50 years.

|                     |  | Age Groups (Years) |      |       |      |       |      |           |      |          |          |
|---------------------|--|--------------------|------|-------|------|-------|------|-----------|------|----------|----------|
| Dependent Variables |  | ≤24                |      | 25-39 |      | 40–49 |      | $\geq$ 50 |      | F        | $\eta^2$ |
|                     |  | M                  | SD   | M     | SD   | M     | SD   | M         | SD   |          |          |
| 1.                  | Online contact with the families                 | 2.25               | 1.20 | 2.93  | 1.33 | 3.01  | 1.30 | 2.95      | 1.30 | 5.65 **  | 0.04     |
| 2.                  | Online contact with my family member with ASD    | 1.75               | 1.05 | 2.42  | 1.36 | 2.70  | 1.40 | 3.00      | 1.54 | 6.37 *** | 0.05     |
| 3.                  | Activities adapted to their needs                | 2.81               | 1.41 | 3.01  | 1.36 | 3.19  | 1.40 | 3.74      | 1.08 | 3.47 *   | 0.02     |
| 4.                  | Appropriate quantity of activities               | 2.61               | 1.42 | 2.85  | 1.36 | 3.07  | 1.29 | 3.21      | 1.39 | 1.839    | 0.01     |
| 5.                  | Academic monitoring of my family member with ASD | 2.22               | 1.2  | 2.69  | 1.46 | 2.99  | 1.50 | 3.09      | 1.40 | 3.47 *   | 0.02     |

 Table 5. Results of the ANOVA on the virtual teaching as a function of age group.

Note: M = mean; SD = standard deviation; F = univariate Snedecor's F;  $\eta^2$  = partial eta squared; \*\*\* p < 0.001, \*\* p < 0.01, \* p < 0.05.

As a function of the age of the child with ASD, differences are only observed in the teacher's monitoring of progress: F(2) = 3.84, p = 0.022,  $\eta^2 = 0.020$ . The Tukey's post hoc comparisons and the tests of the homogeneous subsets revealed that, according to the family members, the teachers carried out better academic monitoring of the adolescents (M = 3.12, SD = 1.55), as opposed to the youngest children (M = 2.57, SD = 1.44).

We conducted a multivariate analysis of variance (MANOVA 4 x 5), using the "type of disorder" and the "modality of schooling" as variables, and the subscale virtual teaching and the independent variables (type × modality). The multivariate comparison revealed significant differences according to the disorder type (Roy's largest root = 0.04; *F* (5.348) = 3.20, p < 0.01; 1-  $\beta = 0.88$ ,  $\eta^2 = 0.04$ ), and as a function of the schooling modality (Roy's largest root = 0.03, *F*(5.349) = 2.37, p < 0.05; 1-  $\beta = 0.75$ ,  $\eta^2 = 0.03$ ). The tests of inter-subject effects only reveal significant differences according to the disorder type in the contact maintained by the teacher with the child with ASD (*F*(3) = 3.13, p < 0.05,  $\eta^2 = 0.03$ ). As Table 6 shows, greater contact was maintained with the children with Pervasive Developmental Disorder—Not Otherwise Specified compared to those who had autism.

Regarding the schooling modality (Table 7), the tests of the inter-subject effects only produced significant differences in the appropriateness of the quantity of activities ( $F(4) = 2.60, p < 0.05, \eta^2 = 0.03$ ), with the ordinary schools being those that presented the least degree of appropriateness in comparison with the ordinary schools with preferential integration for people with ASD.

|    |  | ]                           | Гуре of | Disor                         | der on | the Au                  | tism Sp | pectrun                 | n    |        |
|----|--|-----------------------------|---------|-------------------------------|--------|-------------------------|---------|-------------------------|------|--------|
|    | Dependent Variables                              | Autism<br>( <i>n</i> = 207) |         | Asperger<br>( <i>n</i> = 126) |        | Rett<br>( <i>n</i> = 2) |         | PDD<br>( <i>n</i> = 51) |      | F      |
|    |  | M                           | SD      | M                             | SD     | M                       | SD      | M                       | SD   |        |
| 1. | Online contact with the families                 | 2.89                        | 1.29    | 2.88                          | 1.35   | 3.50                    | 0.71    | 3.35                    | 1.37 | 1.17   |
| 2. | Online contact with my family member with ASD    | 2.37                        | 1.37    | 2.66                          | 1.40   | 2.50                    | 2.12    | 2.78                    | 1.43 | 3.13 * |
| 3. | Activities adapted to their needs                | 3.09                        | 1.39    | 3.10                          | 1.35   | 2.00                    | 1.41    | 3.37                    | 1.36 | 1.87   |
| 4. | The quantity of activities seems appropriate     | 2.89                        | 1.41    | 2.93                          | 1.22   | 2.50                    | 2.12    | 3.20                    | 1.34 | 0.30   |
| 5. | Academic monitoring of my family member with ASD | 2.64                        | 1.46    | 2.90                          | 1.44   | 4.50                    | 0.71    | 3.12                    | 1.51 | 4.16   |

**Table 6.** Inter-subject effects according to disorder type.

Note: M = mean; SD = standard deviation; PDD = Pervasive Developmental Disorder—Not Otherwise Specified; F = univariate Snedecor's F; \* p < 0.05.

|                     |  |                         |      |                             | Тур  | e of S                    | chool | ing                        |      |                          |      |        |
|---------------------|--|-------------------------|------|-----------------------------|------|---------------------------|-------|----------------------------|------|--------------------------|------|--------|
| Dependent Variables |  | OS<br>( <i>n</i> = 184) |      | SSSSEN<br>( <i>n</i> = 110) |      | OSASD<br>( <i>n</i> = 37) |       | SNSASD<br>( <i>n</i> = 19) |      | GSNS<br>( <i>n</i> = 22) |      | F      |
|                     |  | M                       | SD   | M                           | SD   | M                         | SD    | M                          | SD   | M                        | SD   |        |
| 1.                  | Online contact with the families                 | 2.90                    | 1.31 | 2.99                        | 1.30 | 3.41                      | 1.17  | 3.11                       | 1.29 | 2.86                     | 1.61 | 1.39   |
| 2.                  | Online contact with my family member with ASD    | 2.55                    | 1.41 | 2.45                        | 1.26 | 2.84                      | 1.48  | 2.53                       | 1.50 | 2.41                     | 1.65 | 1.89   |
| 3.                  | Activities adapted to their needs                | 3.05                    | 1.38 | 3.12                        | 1.35 | 3.62                      | 1.04  | 3.42                       | 1.22 | 3.27                     | 1.55 | 1.70   |
| 4.                  | The quantity of activities seems appropriate     | 2.81                    | 1.32 | 3.06                        | 1.27 | 3.27                      | 1.36  | 3.21                       | 1.27 | 3.23                     | 1.63 | 2.60 * |
| 5.                  | Academic monitoring of my family member with ASD | 2.83                    | 1.44 | 2.67                        | 1.45 | 2.97                      | 1.54  | 3.16                       | 1.21 | 2.91                     | 1.71 | 0.86   |

Table 7. Inter-subject effects according to the schooling modality.

Note: M = mean; SD = standard deviation; OS = ordinary school; SSSSEN = School with support for students with Special Educational Needs; OSASD = Ordinary school with preferential integration for people with ASD; SNSASD = Special Needs School specifically for people with ASD; GSNS = General Special Needs School; F = univariate Snedecor's F; \* p < 0.05.

Similarly, there were interaction effects between the two independent variables (type × modality) (Roy's largest root = 0.05; F(8.350) = 2.11, p < 0.05;  $1 - \beta = 0.84$ ,  $\eta^2 = 0.05$ ); although, the tests of the inter-subject effects only showed significant differences in the contact maintained with the families of the child with ASD (F(7) = 2.07, p < 0.05,  $\eta^2 = 0.04$ ). Thus, the family members of children with autism who went to ordinary schools with preferential integration for people with ASD were those who stated that there was greater contact by the teacher (M = 3.20, SD = 1.18), as opposed to those who went to ordinary schools (M = 2.87, SD = 1.24). Likewise, the family members of children with Asperger's Syndrome who attended ordinary schools with preferential integration for people with a family members of children with those at ordinary schools (M = 2.85, SD = 1.29). Lastly, the family members of children with Pervasive Developmental Disorder Not Otherwise Specified who went to ordinary schools with preferential integration for people with ASD reported greater contact (M = 3.63, SD = 1.06) compared with those who attended general special needs schools (M = 1.33, SD = 0.58).

The length of time the participants spent in lockdown when they answered the questionnaire only influenced their opinion on the academic monitoring (t(381) = -1.99,

p = 0.047) (Table 8). The family members who spent less time in lockdown (up to 3 weeks) considered that the teacher carried out less academic monitoring.

|    |  |      | Time in I     |               |                             |         |      |
|----|--|------|---------------|---------------|-----------------------------|---------|------|
|    | Dependent Variables                              |      | Weeks<br>223) | More<br>Month | than a<br>( <i>n</i> = 161) | t       | d    |
|    |  | M    | SD            | М             | SD                          | -       |      |
| 1. | Online contact with the families                 | 2.87 | 1.35          | 3.04          | 1.30                        | -1.24   | 0.13 |
| 2. | Online contact with my family member with ASD    | 2.47 | 1.41          | 2.58          | 1.38                        | -0.72   | 0.08 |
| 3. | Activities adapted to their needs                | 3.14 | 1.35          | 3.11          | 1.40                        | 0.23    | 0.02 |
| 4. | Quantity of activities seems appropriate         | 2.88 | 1.33          | 3.03          | 1.36                        | -1.10   | 0.11 |
| 5. | Academic monitoring of my family member with ASD | 2.67 | 1.42          | 2.97          | 1.52                        | -1.99 * | 0.21 |

Table 8. Results of Student's t test on the virtual teaching as a function of time in lockdown.

Note: M = mean; SD = standard deviation; t = Student's t; d = Cohen's d; p < 0.05.

#### 4. Discussion

The COVID-19 pandemic brought about a change in the current model of education and continues to do so today. Despite the relevance of the teacher's role in the process of virtual education [35], and their support in learning at home, we have been able to show that the academic monitoring of students with ASD and families' perceptions have not proven wholly satisfactory either in Mexico or Spain. This concurs with Faccioli et al. [25], who allude to parents' wishes for better home support from schools.

The contact maintained during lockdown by the teacher with parents proved to be insufficient, as was discerned in Thorell et al. [26], revealing the lack of direct attention being given to students with ASD. However, the families expressed that they were set activities and tasks that were suitable to the development of teaching at home on a regular basis. These results are in agreement with Pellicano and Stears [36], who demonstrate that, in spite of the efforts made in attending to people with ASD in terms of education and therapy, in practice, the experience is not such a positive one. Telematic education is not optimal for children and adolescents with ASD [34]. In this regard, authors such as Stenhoff et al. [31] stress the complexity of continuing to provide an adapted and suitable educational model to students with ASD, linking this with the trauma brought about by the change in their teaching routines and habits.

The comparison between countries has revealed differences to the detriment of the Mexican families, who report a lower level of teacher contact with them and their family member with ASD, and a lower degree of adaptation of proposed activities. These statements are also seen in Peña et al. [23], showing a lessening of resources given to inclusion and to quality of education in Latin America, thus causing serious academic and emotional effects, such as stress and fatigue, in the shift from the classroom to virtual teaching [15]. These results undeniably show how the pandemic has highlighted the lack of attention given to those students with functional diversity [21] and, more specifically, those with ASD.

The age of the families produced differences, since the younger families received less contact from teachers than older ones. The same occurred according to the age of the child with ASD, whereby the adolescents received more attention and support during lockdown compared with younger children. There were also differences as a function of the

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type of disorder. Those students with Pervasive Developmental Disorder—Not Otherwise Specified received greater support from the teacher than those with other types of ASD, such as students with autism. The differences observable in terms of age and type of ASD cannot be compared with previous studies due to the exceptional nature of the current situation and the lack of studies on the influence of COVID-19 according to the evolutionary stage of children with ASD.

Those students attending ordinary schools received a lower level of adaptation of activities set by their teacher compared to those at ordinary schools with preferential integration for people with ASD, showing how the modality of schooling was relevant in the setting of tasks more or less adapted to the characteristics of the students. These findings match those described by Crane et al. [32], who show how the special needs schools for students with ASD in London came up with solutions to provide clear and regular communication to families and children. Nevertheless, these authors also stress the need for the rest of schools, both ordinary and special needs, to implement solutions to overcome the barriers caused by the lockdown. Along these lines, the students with autism and Asperger's from ordinary schools with preferential integration for people with ASD received more contact from teachers than those enrolled in ordinary schools. Something similar occurred with those students with Pervasive Developmental Disorder Not Otherwise Specified at ordinary schools with preferential integration for people with ASD, receiving more attention than those at general special needs schools.

When interpreting the results obtained, it is essential to consider the contextual differences between Mexico and Spain. In the Spanish case, the presence of more established policies on educational inclusion and greater availability of technological resources may have contributed to a slightly more positive perception of school support during lockdown. In contrast, Mexican families reported more limited contact with teaching staff and less adaptation of educational activities, which may be linked to structural inequalities in access to digital resources and a more uneven distribution of educational support. Likewise, cultural conceptions regarding the roles of the family and the school in supporting students with ASD may have influenced how the measures adopted during the pandemic were experienced and evaluated.

By way of conclusion, there were differences between the support perceived by the families in Mexico compared to those in Spain. Although both declared that there was insufficient contact with them and even less with their children, the Mexicans revealed less attention from teachers during the lockdown months. In this regard, this study, as highlighted by others [40,44], reveals the need to provide training in digital technologies for both trainee teachers and those already in service. Equally essential is the strengthening of the family–school relationship in order to ensure continuous and tailored educational support for individuals with ASD, particularly in emergency contexts. In addition to the above, a key recommendation would be to improve communication channels between teachers and families, as well as to ensure that teaching staff receive adequate training in adapted online education.

Regarding future research, it would be interesting to examine how the "new normality" has been experienced in the home in the new shift from a wholly virtual education in lockdown to the current in-person or partly in-person education. It would be worthwhile to discover how this new change in routine has affected the development of children with ASD and how the teacher has adapted their teaching to the new needs of students and families. In line with this, Massaguer et al. [54] explore post-COVID education and the adaptations required for students with special educational needs. In their study, they conduct interviews with both teachers and students, reflecting on the difficulties related to

accessibility in online classes and the inclusiveness of virtual classrooms, as well as the lack of social and emotional support provided to the most vulnerable learners.

Some of the limitations we have found are mainly connected with the characteristics and differences in the education system between the two countries, as well as the technological resources available in the classrooms and homes of teachers and students. We should also point out the difficulty of gaining access to a larger sample, due to the nature of the study and the demographic situation of the participants, based on the fact that the data collection took place with the global population in home lockdown and, in most cases, lacking sufficient human, material, and digital resources. It should also be noted that the information collected is based on the perceptions of families, which may introduce subjective bias in the assessment of teacher contact and the suitability of the activities, without being contrasted with objective data from the schools themselves or the teaching staff involved. Additionally, the diversity within the autism spectrum has not been explored in sufficient depth, as differences between the various ASD profiles may have influenced both the educational needs and the way in which families experienced the lockdown.

## 5. Conclusions

The advent of COVID-19 and home lockdown meant a shift from face-to-face to virtual education throughout the world. Prior to this, the basic needs of educational care and psycho-pedagogical therapy for people with ASD were supposedly covered, but COVID-19 hindered their continuity. In this regard, it has been observed that although teachers provided activities and tasks appropriate to the needs of their students, the contact they maintained during the weeks of lockdown was scarce. This gives us cause to reflect on the care received by people with ASD and their families during the home lockdown and on how the lack of resources and coordination between teachers may have hindered continuity in their educational and psycho-pedagogical routines. Fortunately, families reported that, during those weeks and months, their family members with ASD were set adequate activities and tasks in terms of quality and quantity. However, they also indicated that they received insufficient monitoring from their teacher.

Despite the digital and training barriers that may have been encountered during this pandemic, it has been possible to detect the existing weaknesses and where to improve them in order to provide full attention to people with ASD and their families. In this regard, this study has highlighted the importance of implementing educational policies that address the needs of all students in unforeseen situations, such as the outbreak of COVID-19. Although policies and regulations of this kind have already been designed—as reflected in the recommendations issued by UNESCO [42]—it is essential that teaching staff are aware of the challenges faced by families and individuals with special educational needs, as well as the importance of ensuring that their needs continue to be met with the quality they deserve, even in emergency situations.

#### 6. Patents

The questionnaire used in this research is registered in the Intellectual Property Registry of the Government of Andalusia, Spain (Ministry of Culture and Sport) with the following registration number: 04/2020/1617 and the following application number: RTA-00967-2020.

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