Friendship and Autism Spectrum Disorder (ASD): Correlation Between Friendships of Students with ASD High Function (AHF) and Educational Practices in the Context of Inclusion in Primary Education

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ARTICLE INFO	ABSTRACT
	Friendship contributes to mental well-being, is a protective factor in victimization and a challenge for children and adolescents with High Functioning Autism (HFA). The quantity and quality of their friendships depends on the quality of interventions in their environment. This study aims to investigate the quantity and quality of friendships between children with (AHF) and their peers in primary school, and the relationship between friendships and inclusive educational practices. The research sample consisted of 143 teachers of students with AHF in primary school. The qualitative approach used the Autism Inclusion Questionnaire (AIQ), while the quantitative approach used the Questionnaire on friendships between children with AHF and peers. Inferential statistics, i.e., the use of the x2 correlation test and Pearson's coefficient, was used to investigate the association and type of association between friendship practices with AHF and educational, behavioral practices. Results showed that 35% of teachers believed that children with ASD tended to have no friends and were surrounded by loneliness. Only one third of them had a good friend. However, these friendships could not be considered meaningful as they were not characterized by reciprocity and common interests. 19 out of 37 educational inclusion practices were linked to the development and improvement of friendships. They can be useful for educators, practitioners and families at this age stage.

1. Introduction

Autism[1] is currently a critical issue for the scientific community due to its increasing presence (Steinbrenneret al., 2020). Few studies have explored the issue of students with high-

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functioning autism (AHF)[2] separately from students with autism spectrum disorder (ASD) in primary education (Brady et al., 2020; Iovannone et al., 2003; McCoy et al., 20116). From the body of research findings, it is concluded that students with ASD could meet the contemporary challenge of school and achieve social inclusion from an early stage (Chang & Dean, 2022). School integration in mainstream schools and learning are significantly dependent on friendships and the quality of interpersonal relationships in the school environment (Cook et al., 2016). Several contemporary studies on this point out the weaknesses and difficulties of ASD students in social skills, which affect the quality of friendship, their position in social networks and are contributing factors to their victimization in the school environment (Baird et al., 2012; Hu et al., 2019; Locke et al., 2010; van Schalkwyk et al., 2018). Friendships are an important factor in the social well-being and the social development of AHF students as well as a protective factor against their victimization, loneliness and depression (Chang & Dean, 2022; Dunn, 2014). Friendship and HFA students are a neglected area of research despite said clinical and theoretical affirmations of its importance (Brady et al., 2020).

The present study aims to fill the research gap and contribute to the discussion on the HFA-Friendship group-educational inclusion practices, which is a completely unexplored area.

Contemporary scholars acknowledge it as a neglected research area (Brady et al., 2020; Chang & Dean, 2022) and draw the need for studies that explore evidence-based social inclusion practices for the special category of HFA students in the mainstream, general education school setting (Bardy et al., 2020; Chang & Dean, 2022; Yu et al., 2020). In addition, it is advantageous to focus on elementary school HFA students at the specific undeveloped stage, childhood and beginning of adolescence. This parameter meets the qualitative research criteria of focusing on a specific age group, (Chang et al., 2022; Iovannone et al., 2003) of HFA students, who could benefit from specific, evidence-based inclusion practices (Stadnick et al., 2019; Steinbrenner et al., 2020).

Subsequently, this study poses the following research questions: Do HFA students have friends? How many; - In what quality; - What inclusive educational practices foster the development of friendly relationships? The utility of this study through its results highlights the inclusive educational practices, through which HFA students develop friendships, communication, social skills, and promote their personal development and social well-being in the school environment.

2. Literature Review

2.1. Characteristics of the Friendships of Students with High-Functioning Autism (AHF)[2]

The friendships of AHF students are characterized by complexity. In particular, it was reported (Calder et al., 2013) that when adolescents with AHF were asked what makes a friendship "important and good" to them, their responses were completely devoid of emotion. They cited the characteristics of a good friendship as companionship, shared interests, long-term acquaintance, traits and a common way of coping with situations (Daniel & Billingsley, 2010). People with AHF manage to form friendships, in smaller numbers and less frequently (Dean et al, 2014). One of the most important characteristics of friendships is reciprocity and these individuals have significant difficulties in this area (Baird et al., 2012).

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[2] Autistic High Functioning students (AHF)

Some other research suggests that the friendships of students with AHF are characterized by a lack of intimacy, attempts to impose lack of trust on others, feelings of jealousy and rivalry (Pouw et al., 2013). These individuals consider lack of trust to be a key feature of the friendships they form (Daniel & Billingsley, 2010) and note that they are often taken advantage of (Donnelly et al., 2000). Contrary to the aforementioned, research results of other studies support that AHF individuals can and do form quality and meaningful friendships characterized by help, support, companionship, protection, communication bridges, etc (Rossetti, 2011). It appears that regardless of the skills and abilities that people with AHF have, the quality of the friendships they develop depends on the environment in which they interact and the quality of the intervention to which they have been subjected (Donnelly et al., 2000).

2.2. Variables Affecting the Friendships of People with High-Functioning Autism (AHF)

The type and quality of friendships of AHF individuals depends on several variables, such as age, gender, IQ, severity of symptoms, etc. The younger children with AHF form higher-quality friendships (Bauminger et al., 2008; Gkatsa, 2023). Girls with AHF form higher-quality relationships than boys (Head et al., 2014). Higher IQ has been associated with higher-quality friendships (Bauminger et al., 2010). The more non-typical behaviors a person with AHF exhibits (stereotypes, obsessions, etc.), the lower the quality of the friendships they form (Lyons et al., 2011).

2.3. Motivation and Criteria for Making Friends in People with High-Functioning Autism (AHF)

Motivation and friendship criteria encourage AHF students to take this action. Typically, the relationships they develop arise through shared activities and special interests, which for others are considered obsessions (Causton et al., 2009). Although people with AHF, like the majority of all people with ASD, choose loneliness (Calder et al., 2013), this does not mean that they are not interested in what is going on around them or that they do not enjoy a few moments with friends (Cohn et al., 2006). However, difficulty in understanding and applying social skills often makes friendships difficult (Causton et al., 2009).

2.4. Educational Practices and Inclusion of Students with Autism

The success of an inclusion program in mainstream schools depends on the interventions/teaching approaches and their effectiveness (Cassady, 2011). In the field of autism, there are basic, fundamental interventions for writing successful educational programs for ASD students. Simpson et al. (2005) recognizes as effective practices to be those that are systematically and objectively tested, implemented accurately and adapted to meet the needs of students. Thirty-five interventions and treatments were evaluated and categorized by Simpson et al. (2005) and classified into four categories: i) Scientifically evidence-based: proven to provide support and had empirically significant effectiveness; (ii) Promising practices: effective but needed further objective evidence; (iii) Limited support: with potential and effective benefits, but lacking objective, evidence-based support; (iv) Not recommended: lacking effectiveness and potentially harmful if end (Simpson, 2005), (Annex, Table 1).

For this study, the Autism Inclusion Questionnaire (Segall &; Campbell, 2007) is used. It includes 38 interventions, 14 of which are included in the list of 27 practices in the Documented Practices, according to the National Professional Development Center for Autism Spectrum Disorder (NPDC, 2014). Including the interventions listed above (Annex, Table 2), the

practices in this questionnaire are categorized into the following skill areas they aim to develop (Simpson, 2005).

Synchronous studies focus on interventions for ASD students that involve educational practices either through direct instruction to ASD students (Kasari et al., 2011) or through modeling (Chang et al., 2022; Brady et al., 2020) and focus on discussing social skills with peers, teaching routine activities such as greetings, responses (Barry. et al, 2003), or use advanced communication in friendships, or social drama activities to parody social motivation in the natural school environment (Kang et al., 2021; Lerner et al., 2011) or assistive technology. Central to the interventions are social skills, routines, and peer mediation (Bardy et al., 2020 et al., 2020). But what are the most appropriate of the already systematized educational practices for the special group of HFA students with advanced language and cognitive abilities?

The present study aims to fill the gap by highlighting the quantity and quality of AHF students' friendships as well as the educational inclusion practices that contribute to the development of friendships among AHF students attending mainstream, primary schools.

3. Method

3.1. Purpose

This study aimed to answer the following research questions:

1) What quantity and quality of friendships and interpersonal relationships do AHF students have with their peers in elementary school?

2) Is there a correlation between AHF children's friendships with their peers and the educational practices implemented in co-teaching?

3.2. Population

The study sample consists of 143 general and special education teachers, in primary schools, in four regions (Achaia, Ioannina, Kozani and Aitoloakarnania) of Greece, in the school year 2022-2023. Information was requested on specialty, demographic data, gender and age for the survey sample (Table 1a).

Table 1a.
Frequency

Teacher specialty		Frequency	Percent	Valid Percent
Valid	English	18	12,8	12,8
	General Education	29	20,6	20,6
	Physical Education	20	14,2	14,2
	Special Education	25	17,7	17,7
	Theatrical Education	14	9,9	9,9
	Music	17	12,1	12,1
	Information Technology	18	12,8	12,8
	Total	141	100,0	100,0
Gender of the sample		**Frequency**	**Percent**	**Valid Percent**
Valid	Man	48	34,0	34,0
	Woman	93	66,0	66,0
	Total	141	100,0	100,0
Age of sample		**Frequency**	**Percent**	**Valid Percent**
Valid	20-30	21	14,9	14,9
	31-40	38	27,0	27,0
	41-50	48	34,0	34,0

51-60	34	24,1	24,1
Total	141	100,0	100,0

3.3. Measures

Data collection was based on a single questionnaire, which was derived from the synthesis of two valid self-report questionnaires. It contained closed-ended questions rated on the Likert scale. Three questions with demographic and professional information about teachers were also included.

The first questionnaire was the Autism Inclusion Questionnaire for Students with Autism (AIQ), (Segall & Campbell, 2007), which was developed to investigate teachers' experiences, knowledge, attitudes and practices regarding the inclusion of students with ASD in the general classroom. It has been used in several studies (Segall & Campbell, 2012; Segall & Campbell, 2014). In Greece, it has been translated, used and weighted (Scipitari, 2016).

The second questionnaire explores ASD students' friendships with their peers and deficits according to the theory of mind and victimization (Belidou, 2017). It is based on previous questionnaires as reported in Belidou's (2017) research (Goodman 1997; Olweus, 1993; Russell, 1980; Soffronoff, 2011; Solberg & Olweus, 2003).

Initially, the reliability of the questionnaire for friendships was found to be unsatisfactory (0.63). This was followed by a second validity check that led to the removal of question 12 (How often will he tell his friends about the bullying he has suffered?), question 18 (he is a loner and tends to play alone.) and question 19 (He gets along better with adults than with their classmates). As a result, the reliability index increased (Cronbach's Alpha: 0.77) and was deemed satisfactory (Table 1b).

Table 1b.
Reliability Statistics

	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Autism Inclusion Questionnaire (AIQ)	,969	,969	38
Questionnaire of Friendship (FQ)	,766	,762	10

3.4. Data Collection Process

Research data collection was conducted during the school year 2022-2023. In February 2023, a phone call was made to the Educational and Counseling Support Centers of the four regions of Greece (Ioannina, Patras, Kozani and Aitoloakarnania), requesting the distribution of the electronic questionnaires to the primary schools which children with ASD attend. Due to the protection of the personal data of AHF pupils, the questionnaires were administered through the Educational and Counselling Support Centers to the headteachers and then to the teachers of the schools attended by AHF pupils. The request was granted in March. The questionnaire was distributed electronically through a Google online platform. The questionnaires were accompanied by an information letter. The Statistical Package for Social Sciences (SPSS) 22.0 was used for statistical analysis.

Responses were collected and numerically coded in Excel and transferred to be analyzed in SPSS. In descriptive statistics, we present the demographic characteristics of the sample, and the quantity, and quality of friendships. Moreover, methods of inductive statistics were used to test the two research hypotheses: H0: The friendships and interpersonal relationships created by students with high-functioning ASD are independent of the use of any educational inclusion

practice. H1: The friendships and interpersonal relationships created by high-functioning ASD students depend on the use of any educational inclusion practice. In particular, to test the relationship between categorical, qualitative variables, the Crosstabs procedure and the Chi-square test of independence were used, as all conditions were met. The Spearman coefficient was used to investigate the type of correlation between two categorical.

4. Results

4.1. Friendly and Interpersonal Relationships of Autistic High Function (AHF) Students with their Peers
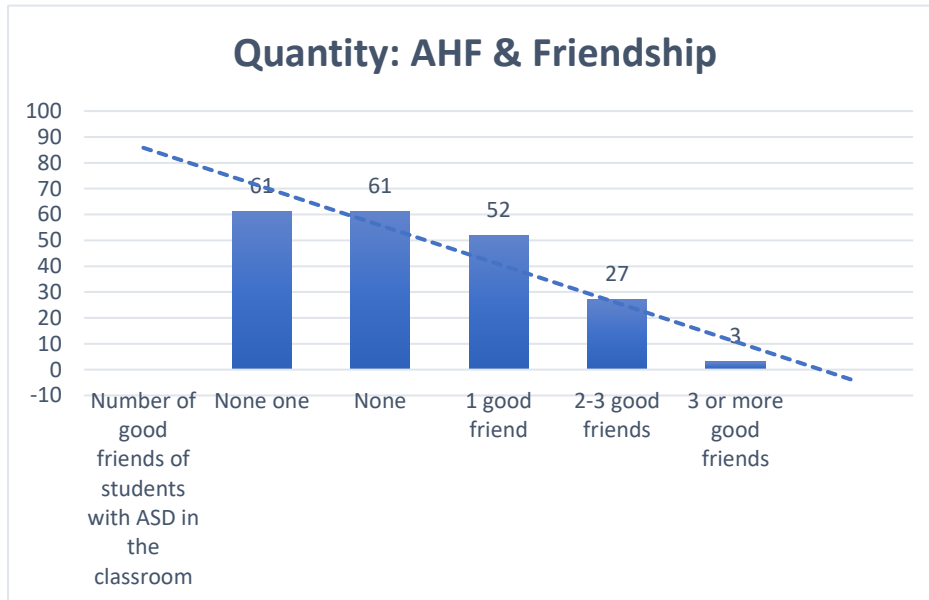
From the data obtained from teachers, 42.7% of students diagnosed with AHF have no friends in class, while 36.4% say they have only one friend (Table 2), (Figure 1).
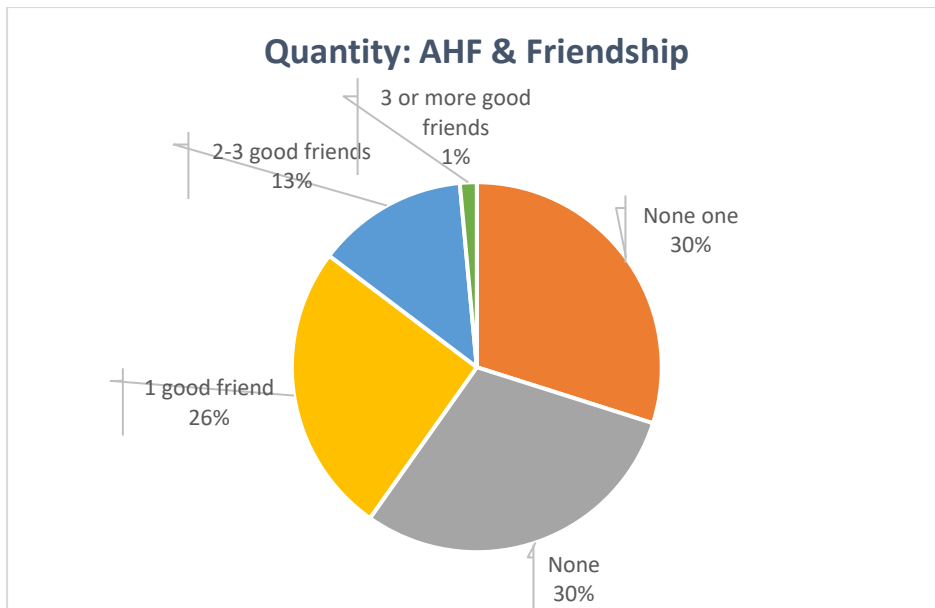
Table 2:
Distribution of data regarding friendships of children with ASD High Function (AHF)

Variables	N	%
Number of good friends of students with ASD in the classroom.		
None	61	42,7%
1 good friend	52	36,4%
2-3 good friends	27	18,9%
3 or more good friends	3	2,1%
No one	**61**	**42,7%**
He is generally well-liked by other children.		
I completely disagree	28	19,6%
I disagree	47	32,9%
Neither agree nor disagree	**49**	**34,3%**
Agree	17	**11,9%**
Strongly agree	2	**1,4%**
Having things in common with other children around him (interests, ideas).		
I completely disagree	23	16,1%
I disagree	49	34,3%
Neither agree nor disagree	**51**	**35,7%**
Agree	19	**13,3%**
Strongly agree	1	**0,7%**
Strongly disagree	23	16,1%
There is someone he can turn to for help.		
I completely disagree	29	**20,3%**
I disagree	**45**	**31,5%**
Neither agree nor disagree	29	20,3%
Agree	37	25,9%
Strongly agree	3	2,1%
In his friendships the gain (emotional, moral support, entertainment, etc.) is equally distributed and mutual for both children.		
I completely disagree	25	17,5%
I disagree	**50**	**35,0%**
Neither agree nor disagree	34	23,8%
Agree	33	**23,1%**
Strongly agree	1	**0,7%**
There is someone who will protect and defend him if he is victimized.		
I completely disagree	36	**25,2%**
I disagree	**44**	**30,8%**

Variables	N	%
Neither agree nor disagree	19	13,3%
Agree	18	12,6%
Strongly agree	26	18,2%
He has superficial relationships with the other children.		
I disagree	16	11,2%
Neither agree nor disagree	32	22,4%
Agree	45	**31,5%**
Strongly agree	**50**	**35,0%**
The children are usually around him but not with him .		
I disagree	9	6,3%
Neither agree nor disagree	29	20,3%
Agree	**58**	**40,6%**
Strongly agree	47	**32,9%**
Disagree	9	6,3%
You would say that your student with ASD:		
Has no friends.	**50**	**35,0%**
He has a friendly relationship with a group of children.	42	29,4%
He is friends with someone in particular within a group.	26	18,2%
Has friends with mutual play and activities.	25	17,5%
Is friends with someone specifically within a group.	26	18,2%
Contribution of friendships to the potential victimization of the student with ASD		
A little	25	17,5%
Enough	42	29,4%
Very	**46**	**32,2%**
Very much	27	**18,9%**

a. *Quantity: AHF & Friendship*
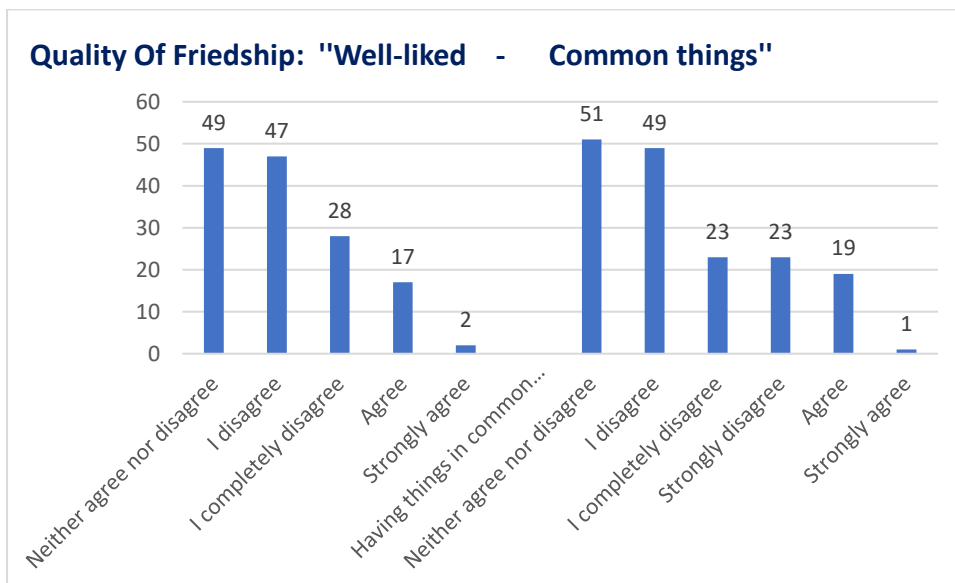
Quantity: AHF & Friendship

- 3 or more good friends 1%
- 2-3 good friends 13%
- None one 30%
- 1 good friend 26%
- None 30%

b. Quantity: AHF & Friendship

Quality Of Friedship: ''Well-liked   -   Common things''

Category	Value
Neither agree nor disagree	49
I disagree	47
I completely disagree	28
Agree	17
Strongly agree	2
Having things in common…	
Neither agree nor disagree	51
I disagree	49
I completely disagree	23
Strongly disagree	23
Agree	19
Strongly agree	1

c. Quality Of Friedship: ''Well-liked - Common things''

Equally Between Friends

d. Equally Between Friends
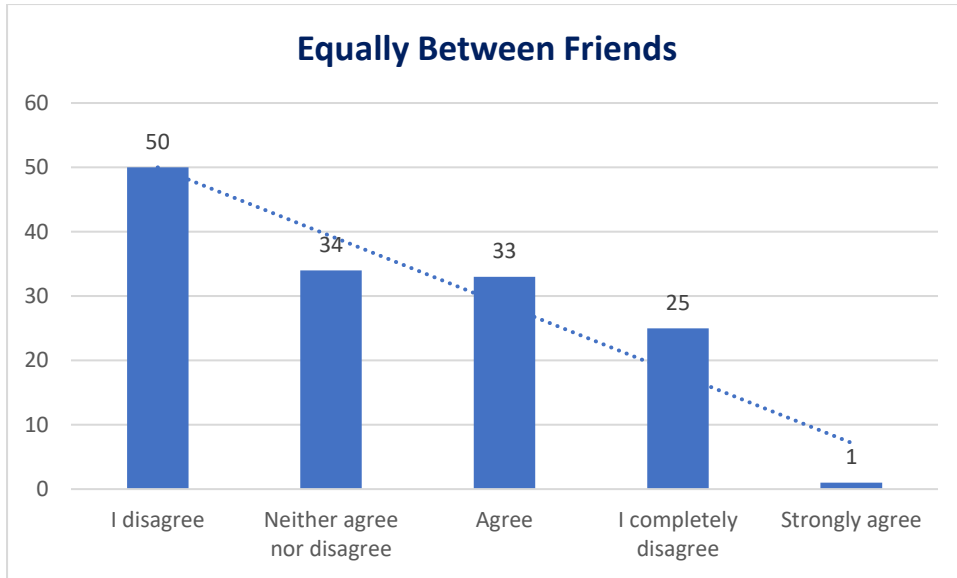
Friendship & Protection of Victimization
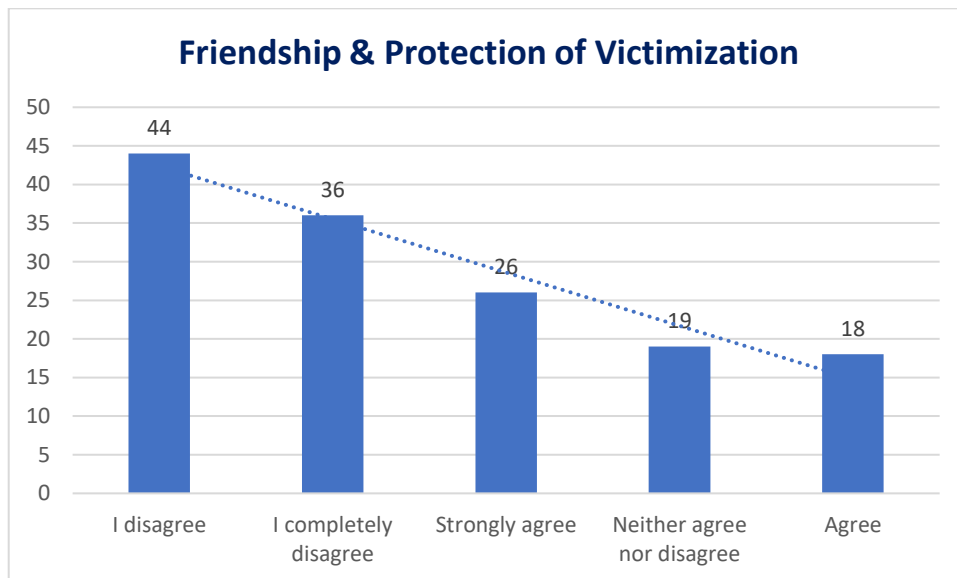
e. Friendship & Protection of Victimization

Figure 1. Quantity & Quality of AHF' Friendship

More specifically, the general impression shows that, according to their teachers, a large percentage of ASD students have no friends (35%), while most of them have a friendly relationship with a group of children (29.4%). A very small percentage maintain friendships with whom they play together. Overall, according to 32.9% of teachers, a large percentage of students with ASD are not liked by their peers. However, a very small percentage (11.9%) indicates that students with ASD are liked by other students.

In the friendships developed by the ASD child, the benefits (emotional, moral support, entertainment, etc.) do not seem to be evenly and mutually distributed for both categories of children. In particular, the largest proportion of the sample (n=50, p=35%) disagrees with the equal distribution of friendship benefits for both children. The x2 test revealed that these benefits affect the friendships they will develop with their peers. ($\chi2$ (12, n=143) = 26.07, p>0.001).

Also, 35% of teachers (n = 50) reported that children with AHF have superficial relationships with all students. This is evidenced by the fact that in most cases their peers do not want to be around them (n = 58, p = 40.6%). Furthermore, children with AHF do not seem to have common interests with other children around them. This can be seen from the teachers' statements, the majority of whom claim that there is no common ground between them (n = 49, p = 34.3%). Furthermore, the majority of the sample observes that there is no person they can turn to for help (n = 45, p = 31. 5%). In case of victimization, there is no one to protect them (n=44, p=30.8%). In terms of victimization, the majority of participants consider that friendship contributes significantly to their potential victimization (n=46, p=32.2%).

4.2. Correlation of Educational Inclusion and Friendship Practices of AHF Students with their Peers

The second research question refers to the extent to which friendships and interpersonal relationships formed by AHF students are dependent on educational inclusion practices. The x^2 statistical test was used to test this research question. To examine the type of correlation, Spearman's correlation coefficient was applied according to the results obtained from the Crosstabs procedures (Table 3), (Figure 2).

Table 3.
x2 and Spearman results regarding the correlation between educational practices of inclusion of ASD students and friendships of students with AHF

Strategy	Results x2	Spearman results	
1. Applied Behavior Analysis, (ABA)	0,179		
2. Therapy through art	**0,002**	**Correlation Coefficient**	,268**
		Sig. (2-tailed)	,001
3. Assistive Technology	**0,046**	**Correlation Coefficient**	,162
		Sig. (2-tailed)	,053
4. Augmentative and Alternative Communication, (AAC)	0,264		
5. Behaviour contract	0,441		
6. Decision-making	0,118		
7. Direct teaching of social skills	**0,043**	**Correlation Coefficient**	,098
		Sig. (2-tailed)	,243
8. Discrete Trial Training, (DTT)	**0,011**	**Correlation Coefficient**	,103
		Sig. (2-tailed)	,219
9. Support through food	**0,001**	**Correlation Coefficient**	,034
		Sig. (2-tailed)	,686
10. Education of typically developing pupils on ASD	**0,006**	**Correlation Coefficient**	,072
		Sig. (2-tailed)	,391
11. Extra time to complete tasks	**0,045**	**Correlation Coefficient**	,082
		Sig. (2-tailed)	,328
12. Facilitated Communication, (FC)	**0,028**	**Correlation Coefficient**	,165*
		Sig. (2-tailed)	,050
13. Floor time	**0,001**	**Correlation Coefficient**	,294**
		Sig. (2-tailed)	,000
14. Functional Behavior Assessment/Analysis, (FBA)	0,143		
15. Gentle Teaching	0,588		
16. Incidental Teaching	0,537		
17. Joint Action Rutines, (JARs)	0,750		
18. Peer initiation	0,262		
19. Peer teaching	0,658		
20. Picture Exchange Communication System, (PECS)	**0,040**	**Correlation Coefficient**	,106
		Sig. (2-tailed)	,206

Strategy	Results x2	Spearman results	
21. Pivotal Response Training, (PRT)	**0,035**	**Correlation Coefficient**	-,031
		Sig. (2-tailed)	,712
22. Strategies adapted to the game	0,235		
23. Position by preference	**0,032**	**Correlation Coefficient**	,254**
		Sig. (2-tailed)	,002
24. Preparation strategies	**0,440**		
25. Motivation strategies (e.g., verbal, visual, imitation, physical, etc.)	**0,021**	**Correlation Coefficient**	,196*
		Sig. (2-tailed)	,019
26. Relaxation strategies	**0,034**	**Correlation Coefficient**	,082
		Sig. (2-tailed)	,331
27. Provision of a list of changes to the school program for a school day	0,060		
28. Providing a list of expected behaviors in the classroom	0,323		
29. Relationship Development Intervention, (RDI)	0,090		
30. Scenarios (e.g., cognitive scenarios)	**0,007**	**Correlation Coefficient**	,120
		Sig. (2-tailed)	,152
31. Sensory Integration, (SI)	0,10		
32. Social Stories	**0,005**	**Correlation Coefficient**	,036
		Sig. (2-tailed)	,672
33. Structured teaching (TEACCH method)	0,062		
34. Exchangeable remuneration system (Token Economies)	**0,047**	**Correlation Coefficient**	,036
		Sig. (2-tailed)	,670
35. Differential Reinforcement of alternative, opposite or other behavior	0,666		
36. Verbal reinforcement-praise	0,125		
37. Visual program of activities	**0,002**	**Correlation Coefficient**	,184*
		Sig. (2-tailed)	,027
38. The thematic approach Van Dijk	**0,034**	**Correlation Coefficient**	,170*
		Sig. (2-tailed)	,042

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

<u>YES</u>

Facilitated Communication, (FC)	1,65
Scenarios (e.g., cognitive scenarios)	1,2
Extra time to complete tasks	0,82
Education of typically developing pupils on ASD	0,72
Support through food	0,34
Floor time	0,294
Therapy through art	0,268
Position by preference	0,254
Direct teaching of social skills	0,243
Motivation strategies (verb, vis, imit, phys)	0,196
Visual program of activities	0,184
The thematic approach Van Dijk	0,17
Assistive Technology	0,162
Picture Exchange Communication System, (PECS)	0,106
Discrete Trial Training, (DTT)	0,103
Relaxation strategies	0,082
Social Stories	0,036
Exchangeable remuneration system (Token Economies)	0,036
Pivotal Response Training, (PRT)	-0,031

<u>NOT</u>

|	
Applied Behavior Analysis, (ABA)	0
Augmentative and Alternative Communication, (AAC)	0
Behaviour contract	0
Decision-making	0
Functional Behavior Assessment/Analysis, (FBA)	0
Gentle Teaching	0
Incidental Teaching	0
Joint Action Rutines, (JARs)	0
Peer initiation	0
Peer teaching	0
Strategies adapted to the game	0
Provision of a list of changes to the school program	0
Providing a list of expected behaviors	0
Relationship Development Intervention, (RDI)	0
Sensory Integration, (SI)	0
Structured teaching (TEACCH method)	0
Differential Reinforcement	0
Verbal reinforcement-praise	0
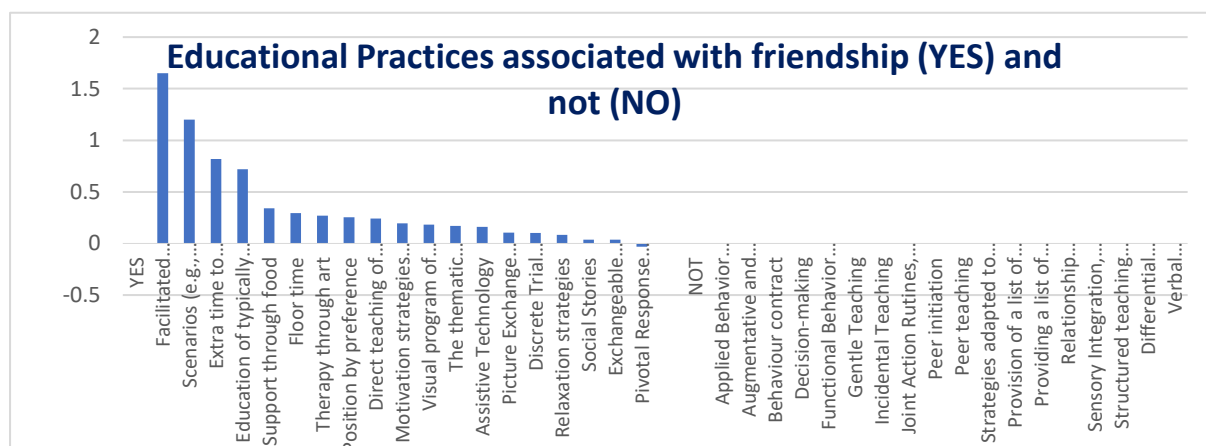
Figure 2. Educational Practices associated with friendship (YES) and not (NO)

From the results of the above table, it can be seen that the educational inclusion practices related to the friendships of children with AHF with their peers are as follows: Therapy through art, Assistive Technology, Direct social skills instruction, Discrete Trial Training (DTT), Support through food, ASD education for typically developing students, Extra time to complete tasks, Facilitated Communication (FC), Floor time, Picture Exchange Communication System (PECS), Teaching Key Skills, Positioning by preference, Relaxation strategies, Motivation strategies (e.g. verbal, visual, imitation, physical, etc.), Scenarios (e.g. cognitive scenarios), Social Stories, Token Economies, Visual Activity Program, The Van Dijk Thematic Approach. It is noteworthy that all practices are positively correlated with the formation of friendly and interpersonal relationships among students with AHF, considering the results of the Spearman correlation in (Table 3). Furthermore, based on the results of Spearman coefficient, it is found that all the educational practices are positively correlated with the phenomenon of victimization of students with AHF.

5. Discussion

Regarding the friendships and interpersonal relationships of AHF students, it is observed that AHF children tend to have no friends, none (42.7%) or one friend (36.4%) and the majority of them are mainly characterized by loneliness. According to teachers' statements, only one-third of these students had a good friend. Moreover, only 17.5% had a friend with whom interaction was reciprocal either in games or activities. These results are similar and consistent with the findings of the study by Kasari et al, (2011), who argued that 20% of children with AHF have mutual friendships and high social networking. They show a limited percentage of friendships that could be considered meaningful, as surface relationships are high (31.5% & 35%), not governed by reciprocity (23.1% & 0.7%), common interests (13.3% &; 0.7%), sympathy (11.9% & 1.4%) and other children are around but not with him (40.6% & 32.9%). It is confirmed from the above that the majority of high-functioning autistic students seek friendly relationships with their peers, but only a small percentage achieve this with social success (Kasari et al., 2011).

According to the results, the majority of students 42.7% have no friends. These findings are consistent with the results of a previous study, which reported that AHF students are characterized by high levels of loneliness compared to their typically developing peers (Bottema-Beutel et al., 2019) and low quality of friendships (Locke et al., 2010). These findings confirm that friendship is an important area of difficulty for AHF children, characterized by less frequent social interaction and fewer close friendships than the typically developing students, as well as feelings of loneliness (Bauminger and Kasari's, 2000; Locke et al., 2010). A low level of friendship has adverse effects in adolescence, as it has been linked to school exclusion, isolation and loneliness (Sumiya et al., 2018). Although little is known about the effects of loneliness on individuals with autism of any age, it is almost certainly the case that a lack of quality friendships exacerbates communication and social interaction difficulties (Umagami et al, 2022). A deficit in preparing for social interaction at a critical stage of development is a major cause of low rates of quality friendships (Chang & Dean, 2022), social skills deficits, loneliness, depression, and suicidal ideation (Tantam, 2000). In the long term, the same disability results in limited social integration and (limited) employment in adulthood, far less than other categories of people with disabilities (National Statistics Corp., 2021). This assumption of impact brings to the fore the need for greater support for their social skills in school inclusion settings and the promotion of quality friendships in the earliest age stages (Chang & Dean, 2022; Myers et al., 2015). The 13 friendship interventions identified in a recent, systematic review focus on promoting social skills through adult mediation in school and at home (Chang & Dean, 2022).

Furthermore, the results of the present study suggest that friends could prevent potential victimization by providing help. The findings of previous studies are similar, as they suggest that victimization is negatively related to the quality of friendships (Bollmer et al., 2005; Gkatsa & Antoniou, 2024). The interpretation of this lies in the fact that victimization is an additional aggravating risk that prevents and suppresses the preparation and development of communication and friendship skills that underpin psychosocial and physical health (Tantam, 2000) and in the long term impede the occupational, social well-being (Anderson et al., 2018).

Therefore, the findings of the study in relation to the first research question highlight the limited reciprocity and quality of friendships between AHF students and their peers that is additionally hindered and suppressed by the lack of support for victimization. The results of the second research question regarding appropriate educational practices that could aptly and systematically contribute to the improvement and development of friendly relationships address the gap of this difficulty. These are educational practices that cultivate social skills, and through this, develop and promote the quality of friendly relationships. In particular, with regard to educational practices, the statistical analysis showed that 19 of them out of 38 in total

correlated with friendships and the prevention of victimization of students with ASD in the school environment. The correlated educational practices with friendship belonged to all categories of the Simpson ranking: Scientifically Documented, Promising, Limited and Non proposed practices. This confirms the necessity of implementing educational practices for Autism in the educational system as a public health priority, as all inclusive educational practices could foster communication skills, behavior, thinking, adaptation and prepare ASD students for inclusion in the complex social world (Iovannone et al, 2003) - provided that teachers can meet these professional skills (Wilkinson et al.,2016). This implies that reduced use of educational inclusion practices hinders the development of communication skills for ASD students (Sam et al., 2021). However, the form and type of practices chosen for each situation depends on the characteristics and needs of the individual students (Iovannone et al., 2003). In cases of students on the autism spectrum who have reached a functional level, such as high-functioning students attending mainstream primary school, more specific strategies/educational inclusion practices may be needed, and a small sample of these are described by the results of this research (Iovannone et al., 2003).

Specifically, results showed that 19 of 38 HFA inclusion educational practices were positively correlated with friendship. They are intended to meet specific categories of needs (Simpson, 2005)-Basic, Interpersonal relationships, Cognitive, Modifications, Social skills, Training techniques or Other (Treatment through Arts).

Specifically, statistical analysis showed the *Facilitated Communication, (FC)* as the most highly correlated practice and in the same category the *Direct teaching of social skills*, both intended to develop key components of HFA students' deficits (Iovannone et al, 2003), communication and social skills. The finding is entirely consistent and consistent with two recent, systematic reviews (Chang & Dean, 2022; Brady et al., 2020) as well as with most studies (Hassan et al., 2021;) that explored intervention programs aimed at developing friendships of ASD students, as all fundamentally focus on social skills development and behavior.

Another category of educational practices associated with the development of HFA student friendship, educational practices are the *Scenarios* (e.g., cognitive scenarios), the *Social Stories* and the *Visual program of activities*, *The thematic approach Van Dijk* which are grounded in the principles of cognitive and social cognitive theory, respectively, are associated with the development and improvement of friendly relationships of HFA students. They are key therapeutic interventions applied in interventions and programs for ASD children, such as visually supported Theory of Mind and social skills intervention (Waugh & Peskin, 2015), effectiveness of teaching social cognitive (Crooke et al.,2008).

Also, the practices *Extra time to complete tasks*, *Support through food, Play on the floor, Motivation strategies (e.g., verbal, visual, imitation, physical, etc.)* that were linked to the development and maintenance of friendships in a grouping effort could be sub-strategies of practices that focus on individuality and its particular needs relate to the individual need for rest, food, relaxation and motivation. The focus of interventions on individuality, according to Iovannone et al, (2003) is the first of six key components that should underpin ASD interventions. The same principle underlies *Play on the floor*, as Wieder & Greenspan, (2003) argue, individual development is founded in the context of the individual's biological process and its interaction with family and context (Wieder & Greenspan, 2003). These practices focus on addressing sets of autism symptoms such as eating, and sleeping difficulties (Yu et al., 2020).

In addition, one of these positively correlated practices with friendship is *Art Therapy*. The use of the educational practice of art therapy is negatively associated with incidents of victimization

with HFA (Gkatsa & Antoniou, 2024), but is positively associated with the friendships of students with HFA. According to recent research literature, performing arts are therapeutic and are included in art therapy educational practices. This category includes music therapy, dance-movement, psychotherapy and theatre games with therapeutic effects. They play an important role in improving social skills, social behaviour and enhancing social interaction of children with ASD (Aithal et al, 2021; Pater et al, 2021). By analyzing the therapeutic nature of art interventions, it is recognized to activate the anxiety reduction mechanism associated with social skills deficits. Furthermore, the present study confirms that *Assistive Technology* is an effective practice for friendship development; it is relatively confirmed by other studies that it provides support by promoting development in some of the key deficits of individuals with autism, such as communication skills, emotional awareness, expression and friendship development (Gallup & Serianni, 2017). In the debate on the use of assistive technology, current literature points to its crucial role in contemporary Behavioural and Social Skills interventions and teaching social skills through computer programs rather than video modelling (MoCoy et al., 2016). In addition, contemporary studies draw attention to virtual reality interventions, recommending more rigorous design and accurate application of knowledge in order to increase their effectiveness (Malinverni et al., 2017; Yeung et al., 2021).

In parallel, the educational practices of inclusion of HFA students *Picture Exchange Communication System/PECS* (Manual program that guides children in communication and is based on exchange), *Discrete Trial Training/DTT* (Direct and systematic method of teaching, the child is taught and practiced until he/she learns to break down each communication element into individual units), *Pivotal Response Training/PRT* (Teaching is conducted in the environment and focuses on Structure - Goal. The child is practiced until he/she learns to apply in his/her environment, in the game his/her action according to the understanding of the Structure-Target model) were linked to the promotion of friendly relationships. In addition, it was linked to friendship and practice, *Exchangeable remuneration system /Token Economies* (in this case reinforcement strategy where generalized reinforcers (tokens) are exchanged for something the student wants). All the above four educational practices are based on the Applied Behavior analysis Method. A recent meta-analysis that explored the effectiveness of evidence-based practices, focusing on Applied Behavior Analysis, Picture Exchange Communication System/PECS, Discrete Trial Training/DTT, and Pivotal Response Training/PRT did not reach any conclusions, but notes that additional studies are needed to specifically clarify the areas of deficits and symptoms that each practice method affects (Yu et al., 2020). In an overall assessment, it is noted that their limited use becomes a barrier to improving social skills and Interaction of students with AHF.

The strength of the present study is acknowledged to focus on the relationship between educational inclusion practices and friendship HFA students. Limitations of the study concern not using random sampling for reasons of difficulty. In addition, due to privacy concerns, we do not know the exact number of AHF students to whom the research data refer.

6. Conclusion

The discussion of the study's findings concludes that developing friendships is feasible for a proportion of students with ASD in primary school. However, developing friendships is an important factor of social well-being and a prerequisite for their development. The findings of this study highlighted nineteen evidence-based inclusion practices that could support the development and maintenance of friendships and be key to interventions to develop communication, social and friendship skills (Chang &; Dean, 2022) and reduce victimization (Bollmer et al., 2005).

Considering the recent international literature, the findings and the limitations of the present study, there is a need to further investigate the impact of educational practices on the friendship-making of students with ASD in general education (Yu et al, 2020). Future studies could test the effectiveness of practices in building friendships and explore the individual therapeutic mechanisms mediated by these practices, as well as "how", "why" and "when" they are effective, "which" individual temperamental conditions contribute to the outcome (Malinverni et al., 2017), and whether outcomes affect the symptoms or deficit areas of AHF students (Lerner et al., 2022; Yu et al., 2020).

Conflict of Interest

On behalf of all authors, it is declared that there is no conflict of interest.

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Annex

Table 1.
Classification of interventions and treatments for ASD (Simpson, 2005)

Scientifically documented practices	Promising practices	Limited support	Non-proposed practices
Applied Behavior Analysis	Assistive Technology	Art therapy	Facilitated Communication
Discrete Trial Training	Play-oriented Strategies	Floor time	Holding therapy
Pivotal Response Training	Augmentative and Alternative Communication	Gentle Teaching	
Learning Experiences: An Alternative Program for Preschoolers and Parents	Sensory Integration	Relationship Development Intervention	
	Incidental Teaching	Music therapy	
	Social Stories	Option method	
	Joint Action Rutines	Pet/animal therapy	
	TEACCH Method	Fast ForWord	
	(Picture Exchange Communication System	Cognitive scripts	
	Social decision making strategies	Power cards	
	Cognitive Behavioral Modification	Thematic approach Van Dijk	
	Cognitive learning strategies	Auditory Integration Training	
		Treatment with herbs, minerals and other food supplements	
		Cartooning (the use of cartoons)	
		Irlen method (scotopic sensitivity syndrome: Irlen lenses)	
		Megavitamin therapy	
		Feingold nutrition program	

Table 2.

Practices in this questionnaire - Autism Inclusion Questionnaire (AIQ) - are categorised into the following skill areas they aim to develop (Simpson, 2005)

Basic skills: Applied Behavioral Analysis, Teaching of Key Skills, Assistive Technology, Augmentative and Alternative Communication, Instruction by Situation, Common Action Routines, Structured Teaching (TEACCH Method), Picture Exchange Communication System (PECS), Training by Discrete Trials, Communication Facilitation and the Van Dijk Thematic Approach
Interpersonal relations: Strategies adapted to play, Play on the floor, Practice Teaching and Intervention through Relationship Development
Cognitive: Social Stories
Treatment with herbs, minerals and other nutritional supplements Sensory Integration
Classroom modifications: Position by preference, Relaxation strategies, Providing a list of changes to the school schedule for a school day and Providing a list of expected behaviors in the classroom
Social skills: Direct teaching of social skills, Teaching typically developing students about ASD, Peer initiation and peer teaching
Training techniques: Extra time to complete tasks, Preparation strategies, Motivation strategies (e.g., verbal, visual, imitation, physical, etc.) and Visual activity schedule
Caricature (the use of cartoons) Behavior Contract, Decision Making, Food Support, Functional Behavior Assessment/Behavior Analysis, Reward Exchange System, Verbal Reinforcement-Praise and Differential Reinforcement of Alternative, Opposite or Other Behavior
Others: Healing through art