

Necessary forms of inclusion support for persons with cerebral palsy, hearing impairment and other associated difficulties

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Abstract.

Persons with cerebral palsy, hearing impairment and other associated difficulties need various forms of support. Support for these persons is inadequate, both due to the insufficient number of services provided by the system and largely due to the poor socio-economic status of these persons. The consequence of insufficient support, especially in the early period, is inadequate education and rehabilitation, which ultimately affects the social inclusion of these persons. **The aim of the study** is to examine the necessary types of support for persons with cerebral palsy, hearing impairment and other associated difficulties and to determine whether there is a statistically significant difference in the representation of the required types of support between cantons. The study was conducted on a **sample of 120 respondents**, persons with cerebral palsy, hearing impairment and other associated difficulties from four cantons of Federation of Bosnia and Herzegovina. Each canton consisted of one subsample of respondents. **The results of the study** showed that in addition to the existing support, 7.66% of persons with cerebral, hearing impairment and other associated difficulties need additional forms of support. Additional types of support mentioned by the respondents are: physical therapy (27.50%), more treatments (5.83%), professional help (5.00%), special education help (2.50%), school assistant help (3.33%), socialization (1.66%), all forms of support (8.33%), help from a speech therapist (11.66%), help from a psychologist (5.83%) and more socializing (5.00%). Respondents from all cantons need all these types of support and there is no statistically significant difference between cantons.

Keywords: Support Modalities; Cerebral Palsy; Hearing Impairment; Associated Difficulties

1. Introduction

Additional difficulties of persons with cerebral palsy are: speech difficulties (56.60%) intellectual difficulties (34.90%), visual impairment (32.50%), epilepsy (20.90%), hearing impairment (10.90%), conduct disorder (7.60%) and autism (2.40%). Each of the associated difficulties requires additional treatment by experts in the field (Salkić, Švraka, Pašalić et al. 2020). Cerebral palsy is not only a medical problem but also a psychological and social problem and requires an interdisciplinary approach. Each therapeutic approach is based on an individual approach. It is very important to start therapy as early as possible, because early therapy facilitates the development of the child and contributes to a better outcome of the therapy and quality of life. Cerebral palsy therapy should not be focused only on motor treatments, but also on treatments of other disorders from which the child suffers (Kraguljac et al., 2018). Professionals have an important role in defining the area of treatment, which contributes to increasing the level of engagement of children with cerebral palsy in all areas of functioning. The success of rehabilitation should not be measured not only by academic achievements, but also by the level of independence in family and recreational activities, as well as the domain of self-care (Slavković et al., 2017).

Persons with cerebral palsy, hearing impairment and other associated difficulties need various forms of support. Support for these persons is inadequate, both due to the insufficient number of services from the system and largely due to the poor socio-economic status of these persons. The consequence of insufficient support, especially in the

early period, is inadequate education and rehabilitation, which ultimately affects the social inclusion of these persons.

The aim of the study is to examine the necessary types of support for persons with cerebral palsy, hearing impairment and other associated difficulties and to determine whether there is a statistically significant difference in the representation of the required types of support between cantons.

2. Method

2.1. Sample

The study was conducted on a sample of 120 respondents, persons with cerebral palsy from four cantons of FBiH, within the project of the Cerebral Palsy Associations „Functional capacity of persons with disabilities, the main factor for improving the quality of life of the whole family“. The total sample of respondents was divided into 4 sub-samples of respondents:

- The first sub-sample of respondents (N=40) consisted of persons with cerebral palsy, members of the Association of Persons with Cerebral Palsy of Sarajevo Canton (Canton Sarajevo).
- The second sub-sample of respondents (N=41) consisted of persons with cerebral palsy, members of the Association of Parents of Persons with Cerebral Palsy and Other Disabilities „Dlan“ Zenica, (Zenica-Dobojski Canton).
- The third sub-sample of respondents (N=20) consisted of persons with cerebral palsy, members of the Association of Persons with Cerebral Palsy and Dystrophy of the Bosnia-Podrinje Canton - Gorazde (Bosnia-Podrinje Canton).
- The fourth sub-sample of respondents (N=19) consisted of persons with cerebral palsy, members of the Association of Persons with Cerebral Palsy and Other Disabilities of Sapna (Tuzla Canton).

2.2. Research instrument

The study is retrospective and analytical-descriptive. The study used the „Questionnaire to Examine Associated Disabilities of Cerebral Palsy, Hearing Impairment and Other Associated Difficulties“. The measuring instrument consisted of 11 questions of nominal, ordinal and interval type. In the present study, the data obtained by the respondents' answers to the question from the measuring instrument „In your opinion, what kind of support do you or your child need?“ were used. The answers given by the respondents to the survey question of the measuring instrument were used as variables in the further analysis. The applied variables within the research are: physical therapy, several treatments, professional help, special education help, school assistant, socialization, all types of support, speech therapist, psychologist and more socializing.

2.3. Statistical data processing

Based on the data obtained from the study, a database was formed. After checking the integrity of the data, a statistical analysis was performed in the software IBM SPSS Statistics v.20.0 for Windows. The data are presented in tabular form using classical descriptive statistics methods. The parametric statistics, analysis of variance (ANOVA) at the level of statistical significance of 0.05 was used to examine the statistical significance of differences between the sub-samples of the respondents.

3. Results and Discussion

Table 1. Relationship between gender and age

Age	Canton Sarajevo		Zenica-Doboj Canton		Bosnia-Podrinje Canton		Canton Tuzla (Sapna)		Total			ANO VA (p)
	Pol Gender		Pol Gender		Pol Gender		Pol Gender		M	F	N	
	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)	N (%)	
0-15	3 (2.5)	1 (0.83)	15 (12.5)	8 (6.67)	1 (0.83)	3 (2.5)	3 (2.5)	3 (2.5)	22 (18.33)	15 (12.5)	37 (30.83)	0.6181
16-25	3 (2.5)	4 (3.33)	5 (4.17)	5 (4.17)	1 (0.83)	3 (2.5)	2 (1.67)	3 (2.5)	11 (9.17)	15 (12.5)	26 (21.67)	0.8350
26-35	8 (6.67)	4 (3.33)	2 (1.67)	4 (3.33)	4 (3.33)	2 (1.67)	3 (2.5)	1 (0.83)	17 (14.17)	11 (9.16)	28 (23.33)	0.3766
36-45	3 (2.5)	8 (6.67)	2 (1.67)	-	1 (0.83)	1 (0.83)	1 (0.83)	-	7 (5.83)	9 (7.5)	16 (13.33)	0.8505
46-55	2 (1.67)	2 (1.67)	-	-	1 (0.83)	2 (1.67)	1 (0.83)	-	4 (3.33)	4 (3.34)	8 (6.67)	0.8855
56-65	-	2 (1.67)	-	-	1 (0.83)	-	1 (0.83)	-	2 (1.67)	2 (1.67)	4 (3.34)	0.9091
>65	-	-	-	-	-	-	1 (0.83)	-	1 (0.83)	-	1 (0.83)	0.9335
Total	19 (15.84)	21 (17.5)	24 (20.01)	17 (14.17)	9 (7.48)	11 (9.17)	12 (10)	7 (5.83)	64 (53.33)	56 (46.67)	120 (100)	
	40 (33.34)		41 (34.18)		20 (16.65)		19 (15.83)		120 (100)			
Anova (p)	0.8629		0.7696		0.9404		0.0331					

An insight into the frequency and percentage distribution (Table 1) shows that 64 or 53.33% of respondents are male and 56 or 46.67% female.

Based on the results of the ANOVA test, it can be concluded that, at the set level of statistical significance of 0.05, **there is a statistically significant difference in the gender of the Tuzla Canton respondents** ($p=0.0331$). For **Canton Sarajevo** ($p=0.8629$), **Zenica-Doboj Canton** ($p=0.7696$) and **Bosnia-Podrinje Canton** ($p=0.9404$), **no statistically significant difference was observed in the gender of the respondents.**

The largest number of respondents was at age up to 15 years, 37 or 30.83% (22 or 18.33% male and 15 or 12.5% female). The second most frequent are respondents at age group 26-35 years, 28 or 23.33% (17 or 14.17% male and 11 or 9.16% female). The respondents in the age group from 16-25 years are in third place by frequency, 26 or 21.67% (11 or 9.17% male and 15 or 12.5% female). The respondents from 36 to 45 years of age are represented by 16 or 13.33%, (7 or 5.83% male and 9 or 7.5% female), and the respondents aged 46 to 55 with 8 or 6.67% of respondents (4 or 3.33 both sexes). Quite a small number of respondents at age group 56-65 years, 4 or 3.34% (2 or 1.67 male and 2 or 1.67 female). There are the least number of respondents over 65 years of age, 0.83% or 1 male respondent at age of 68 years.

Based on the results of the ANOVA test, it can be concluded that at the set level of statistical significance of 0.05, **there is no statistically significant difference in age at all age groups between the sub-samples of the respondents.**

Table 2. Distribution of frequencies and percentages of responses of the first subsample of respondents (Canton Sarajevo)

No.	Variable	Number of possible answers (expressed needs)	Number of answers (expressed needs)	%
1.	Physical therapy	40	9	22.50
2.	Multiple treatments	40	2	5.00
3.	Professional assistance	40	1	2.50
4.	Special education assistance	40	2	5.00
5.	School assistant	40	1	2.50
6.	Socialization	40	0	0.00
7.	All types of support	40	3	7.50
8.	Speech therapist	40	4	10.00
9.	Psychologist	40	2	5.00
10.	More socializing	40	1	2.50
				62.50
Total		400	25	6.25

With an insight into the distribution of frequencies and percentages of responses of the first subsample of respondents, respondents from the Canton Sarajevo, it can be concluded that respondents could express a maximum of 400 needs for support (40 respondents for 10 needs). Out of the total number of possible needs, the respondents stated 25. Based on the above, it can be concluded that **6.25% of respondents from the Canton Sarajevo need additional types of support.**

Of the total number of expressed needs for support, the most common type of support that respondents cite is physical therapy (22.50%), followed by support from speech therapists (10%), and 5% of respondents state that they need special education support, psychologist support and more physical therapy treatments. A smaller percentage of respondents (2.50%) believe that they need professional help, help from a school assistant and more socializing. Some respondents (7.50%) believe that they need all forms of support.

Table 3. Distribution of frequencies and percentages of responses of the second subsample of respondents (Zenica-Doboj Canton)

No.	Variable	Number of possible answers (expressed needs)	Number of answers (expressed needs)	%
1.	Physical therapy	41	6	14.63
2.	Multiple treatments	41	1	2.44
3.	Professional assistance	41	2	4.87
4.	Special education assistance	41	0	0.0
5.	School assistant	41	1	2.44
6.	Socialization	41	0	0.0
7.	All types of support	41	1	2.44
8.	Speech therapist	41	2	4.87
9.	Psychologist	41	1	2.44

10.	More socializing	41	1	2.44
				36,57
Total		410	15	3,65

With an insight into the distribution of frequencies and percentages of responses of the second subsample of respondents, respondents from the Zenica-Doboj Canton, it can be stated that respondents were able to express a maximum of 410 needs for support (41 respondents for 10 needs). Out of the total number of possible needs, the respondents stated 15. Based on the above, it can be concluded that **3.65% of respondents from the area of Zenica-Doboj Canton need additional types of support.**

Of the total number of expressed needs for support, the largest percentage of respondents (14.63%) believe that they need physical therapy. A small percentage of respondents (4.88%) state that they need support in the form of professional help and help from a speech therapist. 1 respondent or 2.44% each state that they need more physical therapy treatments, help from a school assistant, help from a psychologist, more socializing and all other types of support.

Table 4. Distribution of frequencies and percentages of responses of the third subsample of respondents (Bosnia-Podrinje Canton)

No.	Variable	Number of possible answers (expressed needs)	Number of answers (expressed needs)	%
1.	Physical therapy	20	8	40.00
2.	Multiple treatments	20	1	5.00
3.	Professional assistance	20	2	10.00
4.	Special education assistance	20	1	5.00
5.	School assistant	20	2	10.00
6.	Socialization	20	1	5.00
7.	All types of support	20	2	10.00
8.	Speech therapist	20	3	15.00
9.	Psychologist	20	1	5.00
10.	More socializing	20	2	10.00
				115,00
Total		200	23	11.50

With an insight into the distribution of frequencies and percentages of responses of the third subsample of respondents, respondents from the area of Bosnia-Podrinje Canton, it can be stated that respondents could express a maximum of 200 needs for support (20 respondents for 10 needs). Out of the total number of possible needs, the respondents stated 23. Based on the above, it can be concluded that **11.50% of respondents from the area of Bosnia-Podrinje Canton need additional types of support.**

Of the total number of expressed needs for support, the largest percentage of respondents (40.00%) believe that they need physical therapy as a form of support. 15% of respondents need speech therapy support. 10.00% of respondents have the need for professional support, support from a school assistant, the need for more socializing and all other forms of assistance. A small percentage of respondents (5.00%) state that they need more physical therapy treatments, special education help, socialization and psychologist support as support.

Table 5. Distribution of frequencies and percentages of responses of the fourth subsample of respondents (Canton Tuzla, Sapna)

No.	Variable	Number of possible answers (expressed needs)	Number of answers (expressed needs)	%
1.	Physical therapy	19	10	52.63
2.	Multiple treatments	19	3	15.79
3.	Professional assistance	19	1	5.26
4.	Special education assistance	19	0	0.0
5.	School assistant	19	0	0.0
6.	Socialization	19	1	5.26
7.	All types of support	19	4	21.05
8.	Speech therapist	19	5	26.32
9.	Psychologist	19	3	15.79
10.	More socializing	19	2	10.52
				152.63
Total		190	29	15.26

With an insight into the distribution of frequencies and percentages of responses of the fourth subsample of respondents, respondents from the area of Sapna (Canton Tuzla), it can be stated that respondents could express a maximum of 190 needs for support (19 respondents for 10 needs). Out of the total number of possible needs, the respondents stated 29. Based on the above, it can be concluded that **15.26% of the respondents from the area of Sapna need additional types of support.**

Of the total number of expressed needs for support, the largest percentage of respondents (52.63%) believe that they need physical therapy as a form of support, and 15.79% of respondents believe that they need more physical treatment. 15.79% of respondents need speech therapy support. 10.53% of respondents state the need for more socializing. Professional help and help in socialization, as needed, is 5.26% of respondents. About a fifth of respondents (21.05%) believe that they need all kinds of support. There are no respondents who stated that they need the help of a special educator and the help of a school assistant.

Table 6. Distribution of frequencies and percentages of responses of the total sample of respondents

No.	Variables	Canton Sarajevo	Zenica-Doboj Canton	Bosnia-Podrinje Canton		Canton Tuzla (Sapna)			Number of possible answers (expressed need)	Number of answers (expressed need)			Anova (p)
		N	%	N	%	N	%	N	%	N	%		
1.	Physical therapy	9	7.50	6	5.0	8	6.67	10	8.33	120	33	27.50	0.8583
2.	Multiple treatments	2	1.67	1	0.83	1	0.83	3	2.50	120	7	5.83	0.9586
3.	Professional assistance	1	0.83	2	1.67	2	1.67	1	0.83	120	6	5.00	0.9781
4.	Special education assistance	2	1.67	0	0.00	1	0.83	0	0.00	120	3	2.50	0.9710
5.	School assistant	1	0.83	1	0.83	2	1.67	0	0.00	120	4	3.33	0.9777
6.	Socialization	0	0.00	0	0.00	1	0.83	1	0.83	120	2	1.66	0.9709
7.	All types of support	3	2.50	1	0.83	2	1.67	4	3.33	120	10	8.33	0.9455
8.	Speech therapist	4	3.33	2	1.67	3	2.50	5	4.16	120	14	11.66	0.9382
9.	Psychologist	2	1.67	1	0.83	1	0.83	3	2.50	120	7	5.83	0.9586
10	More socializing	1	0.83	1	0.83	2	1.67	2	1.67	120	6	5.00	0.9672
	Total	25	20.83	15	12.49	23	19.17	29	24.15	----	---	76.64	
									1200	92	7.66		

With an insight into the distribution of frequencies and percentages of responses of the total sample of respondents, it can be stated that the respondents were able to express a maximum of 1200 needs for support (120 respondents for 10 needs). Out of the total number of possible needs, the respondents stated 92. Based on the above, it can be concluded that **7.66% of the respondents need additional types of support.**

Of the total number of expressed needs for support, most respondents, 33 or **27.50%**, believe that they need **physical therapy**. The need for physical therapy in the largest percentage was expressed by respondents from Canton Tuzla 8.33%, then from Canton Sarajevo 7.50%, from Bosnia-Podrinje Canton 6.67% and from Zenica-Doboj Canton 5.00%. Based on the results of the ANOVA test, it can be concluded that at the set level of statistical

significance of 0.05 **there is no statistically significant difference between the cantons for the variable physical therapy as a required type of support** (ANOVA $p=0.8583 >0.05$).

The need for more treatments was expressed by 5.83% of respondents in the total sample. Of that, 2.50% from Canton Tuzla, 1.67% from Canton Sarajevo and 0.83% from Zenica-Doboj and Bosnia-Podrinje Cantons. Based on the results of the ANOVA test, it can be concluded that at the set level of statistical significance of 0.05, **there is no statistically significant difference between the cantons for the variable of multiple treatments as the required type of support** (ANOVA $p=0.9586 >0.05$).

Of the total sample of respondents, **5.00% of respondents believe that they need professional help as a form of support**. 1.67% of respondents from Zenica-Doboj and Bosnia-Podrinje Cantons, and 0.83% of respondents from Canton Tuzla and Canton Sarajevo. Based on the results of the ANOVA test, it can be concluded that at the set level of statistical significance of 0.05, **there is no statistically significant difference between the cantons for the variable professional assistance as a required type of support** (ANOVA $p=0.9781 >0.05$).

Based on the distribution of frequencies and percentages of the total sample of respondents, it can be stated that **2.50% of respondents believe that they need special education as a form of support**, 1.67% of respondents from Canton Sarajevo and 0.83% of respondents from Bosnia-Podrinje canton. Based on the results of the ANOVA test, it can be concluded that at the set level of statistical significance of 0.05, **there is no statistically significant difference between the cantons for the variable special education as a necessary type of support** (ANOVA $p=0.9710 >0.05$).

Of the total number of respondents 3.33% need a school assistant as a form of support. From the area of Bosnia-Podrinje Canton 1.67% and 0.83% from the area of Canton Sarajevo and Zenica-Doboj Canton. Based on the results of the ANOVA test, we can conclude that **there is no statistically significant difference between the cantons for the variable assistant in school as a required type of support** (ANOVA $p=0.9777 >0.05$).

Based on the distribution of frequencies and percentages, it can be stated that **1.66% of respondents believe that they need socialization as a form of support**, and 0.83% of respondents from Bosnia-Podrinje Canton and Canton Tuzla. Based on the results of the ANOVA test, it can be concluded that at the set level of statistical significance of 0.05, **there is no statistically significant difference between the cantons for the socialization variable as the required type of support** (ANOVA $p=0.9709 >0.05$).

Based on the distribution of frequencies and percentages of the total sample of respondents, it can be stated that **8.33% of respondents believe that they need all types of support**. 2.50% of respondents from Canton Sarajevo, 0.83% of respondents from Zenica-Doboj Canton, 1.67% of respondents from Bosnia-Podrinje Canton and 0.83% of respondents from Canton Tuzla need this type of support. Based on the results of the ANOVA test, it can be concluded that at the set level of statistical significance of 0.05 **there is no statistically significant difference between the cantons for the variable all types of support** (ANOVA $p=0.9455 >0.05$).

Based on the distribution of frequencies and percentages, it can be stated that **11.66% of respondents believe that they need the help of a speech therapist as a form of support**. Of that, 3.33% of respondents from Canton Sarajevo, 1.67% of respondents from Zenica-Doboj Canton, 2.50% of respondents from Bosnia-Podrinje Canton and 4.2% of respondents from Canton Tuzla. Based on the results of the ANOVA test, it can be concluded that at the set level of statistical significance of $p=0.05$, **there is no statistically significant difference between the cantons for the variable help of speech therapists as a necessary type of support** (ANOVA $p=0.9382 >0.05$).

Based on the distribution of frequencies and percentages, it can be stated that **5.83% of respondents believe that they need the help of a psychologist as a form of support**. Of that, 2.5% of respondents from Canton Tuzla, 1.67% of respondents from Canton Sarajevo and 0.83% of respondents from Zenica-Doboj and Bosnia-Podrinje Cantons. Based on the results of the ANOVA test, it can be concluded that at the set level of statistical significance of 0.05, **there is no statistically significant difference between the cantons for the variable help psychologist as a necessary type of support** (ANOVA $p=0.9586 >0.05$).

Based on the distribution of frequencies and percentages, we can conclude that 6 respondents or **5.00% believe that they need more socializing as a form of support**. 1.67% of respondents from Zenica-Doboj and Bosnia-Podrinje Cantons and 0.83% of respondents from Canton Tuzla and Canton Sarajevo. Based on the results of the ANOVA test, it can be concluded that at the set level of statistical significance of 0.05, **there is no statistically significant difference between the cantons for the variable more socializing as a necessary type of support** (ANOVA $p=0.9586 >0.05$).

Similar studies

A study conducted in Florida, which aimed to determine support programs for children with disabilities, showed that respondents most often state the need for physical therapy, occupational therapy, support from psychologists, speech therapists, special educators, school assistants... (Gavin, 2018).

Practice has shown that more and more children who need additional treatment, whether it is psychological, pedagogical, special education, physical or any other by which the child manages to overcome the requirements of the curriculum and achieve success in the teaching process, but to support this type in most schools it is absent by experts. In the absence of experts to provide the necessary professional support, teachers often educate themselves to facilitate learning and mastering the material for children with disabilities (Osmanagić, 2015).

Funtoš-Stamenković and Šćepanović (2014) conducted a survey on a sample of 50 respondents, persons with disabilities, their parents or guardians. The results of the research showed that 56% of respondents were covered by early special education, that the support period was short, that 96% of respondents believe that special education is necessary for children, that support in addition to developing an individual support plan at school includes individual treatments. in the field of education and rehabilitation, stimulation of psychomotor skills, speech therapy, which affects the increased motivation to come to school, cooperation with special educators and mastering regular school materials.

4. Conclusions

- **From total, 7.66% of respondents, persons with cerebral palsy, hearing impairment and other associated difficulties need additional types of support.** The needs mentioned by the respondents were: physical therapy, more treatments, professional help, special education help, help of a school assistant, socialization, all types of support, speech therapist, psychologist and more socializing.
- An additional need for **physical therapy as a form of support has 27.50% of respondents, persons with cerebral palsy, hearing impairment and other associated difficulties.** Respondents from all cantons need this type of support and there is no statistically significant difference between cantons.
- An additional need for **more treatments as a form of support has 5.83% of respondents, persons with cerebral palsy, hearing impairment and other associated difficulties.** Respondents from all cantons need this type of support and there is no statistically significant difference between cantons.
- **From total, 5.00% of respondents, persons with cerebral palsy, hearing impairment and other associated difficulties have an additional need for professional help as a form of support.** Respondents from all cantons need this type of support and there is no statistically significant difference between cantons.
- **An additional need for special education support has 2.50% of respondents, persons with cerebral palsy, hearing impairment and other associated difficulties.** Respondents from all cantons need this type of support and there is no statistically significant difference between cantons.
- **Additional need for a school assistant has 3.33% of respondents, persons with cerebral palsy, hearing impairment and other associated difficulties.** Respondents from all cantons need this type of support and there is no statistically significant difference between cantons.
- An additional need for **socialization has 1.66% of respondents, persons with cerebral palsy, hearing impairment and other associated difficulties.** Respondents from all cantons need this type of support and there is no statistically significant difference between cantons.
- **From total, 8.33% of respondents, persons with cerebral palsy, hearing impairment and other associated difficulties have an additional need for all types of support.** Respondents from all cantons need this type of support and there is no statistically significant difference between cantons.
- **In total sample, 11.66% of respondents, persons with cerebral palsy, hearing impairment and other associated difficulties have an additional need for speech therapist support.** Respondents from all cantons need this type of support and there is no statistically significant difference between cantons.
- **Additional need for the support of a psychologist has 5.83% of respondents, persons with cerebral palsy, hearing impairment and other associated difficulties.** Respondents from all cantons need this type of support and there is no statistically significant difference between cantons.
- An additional need for **more socializing has 5.00% of respondents, persons with cerebral palsy, hearing impairment and other associated difficulties.** Respondents from all cantons need this type of support and there is no statistically significant difference between cantons.

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