EFFECT OF MOTOR LIMITATIONS ON THE EXPRESSION OF AGGRESSIVENESS AMONG ADOLESCENTS

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SUMMARY – This study examined how motor limitations in terms of reduced possibilities to move influence aggression, starting from the fact that motor skills and movement have an important place in the expression of aggression, as well as the tendency of adolescents to "body language". Adolescent with motor deficit is hindered in gaining experience of one's own body, which is reflected in the formation of complete experience of himself, or constitution of the self. In many of the functions of motor skills and movement aggression has a significant place that we wanted to determine without deeper analysis of whether the origin of aggression is instinctive or it is always just the result of frustration. The sample on which testing was performed consisted of 100 randomly selected subjects of both genders aged 16-18 years. Fifty subjects had motor limitations due to illness or injury, and another fifty subjects had intact motor functions. The study used three instruments: 1) A-87 questionnaire for aggressiveness examination; 2) structured interview; and 3) protocol for observation under natural conditions. Results of the analysis of data obtained in total score, as well as in all five subscales of the A-87 questionnaire for aggressiveness examination showed that the two groups were not significantly different. The results obtained by structured interview showed the adolescents with motor limitations to demonstrate greater verbal aggressiveness, then latent physical aggressiveness. A statistically significant between-group difference was obtained on the factor of self-destructiveness, which implies that adolescents with motor limitations are somewhat more self-destructive compared to those in control group. From the results obtained by the protocol for systematic observation in natural conditions, it was evident that there were significant differences on most of perceptual conducts between control and experimental group, whereby adolescents with motor limitations were more aggressive than control group subjects, especially in behaviors that apply to all forms of verbal aggressiveness. All examined adolescents in which some apparent forms of aggressive behavior were noticed in the observation protocol showed comparable expression of aggressiveness according to the results obtained on the subscales of the A-87 aggressiveness questionnaire, which connects these two measuring instruments and justifies their use in the study of aggressiveness regardless of the understanding of the origin of aggression.

Key words: *Movement disorders; Aggression; Adolescents*

Introduction

When mentioning aggressiveness, aggression or aggressive behavior, there are many discussions and disagreements, starting from the very definition of the term. According to the dictionary of foreign words, the word aggression comes from the Latin word *aggredi*, which means access to someone, come against[1].

Aggression or aggressiveness is a tendency or assembly of tendencies that actualize in real life or in fantasy behavior, in order to inflict damage to the other, to destroy him, to coerce, to humiliate, etc. Besides

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violent and destructive motor actions, different forms of aggression are known and there is no, either negatively or positively, symbolically or in reality, achieved behavior which could not function as aggression[2].

This aspect of aggressiveness would mostly correspond to Freud's concept of aggressive instincts, *Aggressionstrieb*, which is part of the death drive directed to the external, whose background is primarily muscular system. In his work from 1923, I and It (*Das Ich und das Es*), Freud refers to part of the death drive, facing the outside world using muscles, which aims at destruction of the outside world and other creatures with instinct for destruction or destructive tendencies.

Various authors who have studied aggression generally agree that aggressive behavior is related to causing harm to another person[3], but some emphasize the intent to inflict such damage, and some do not.

Different psychological schools give different interpretations of the origin of aggression, but according to many authors[4], the theory of aggression can actually be divided into three groups: 1) biological-instinctive theory; 2) theory of frustration; and 3) theory of social learning.

According to the biological-instinctive theory and in psychoanalytic sense, instinct is defined as a stimulus that activates the spirit through its connection with the body, whereby patterns of aggression can be adaptive and non-adaptive, but in any case there is a significant impact of aggressive instincts in its stage of maturation and development.

According to the theory of frustration, aggressive behavior develops from interference with the ongoing processes and/or gratificational behaviors, while according to the theory of social learning aggressive behavior arises as a result of educational practices, modes of socialization and interaction processes within the group. Quite a wide range of experiences can enhance or halt discharge of aggression. Certainly, at this level of external manifestation it is not possible to rule out the significance of social learning, although psychoanalysis in this case expresses concepts closer to clinical practice, for example, it is more likely to talk about aggressiveness as a result of identification with important primary objects, or that aggression is a response to anxiety, etc. Physical and sexual maturation during adolescence leads to the rush of sexual impulses that give different quality of instinctive life of an adolescent.

In normal development, part of the aggressive energy is oriented towards self, the remaining part is used for mental, intellectual and physical activity in the outside world, i.e. aggression is sublimated in activity. However, when there is too much aggressiveness towards self, it turns out with the constant need for masochism, blockade in the developing formation of ego and superego[5].

Physical disability is a phenomenon that primarily implies a below-average physical functioning of different etiology and phenomenology[6].

According to the International Classification of Impairments, Disabilities and Handicaps, impairment is defined as "any loss or abnormality of psychological, physiological or anatomical structure and function"[7].

Although the basic characteristic of physical disability is below-average physical functioning, it cannot be considered isolated in relation to other personality traits. Depending on the etiology and degree of physical disability, it directly or indirectly affects the development of personality and is even more pronounced if the disability occurred before[6,7].

The process of forming the personality structure of adolescents who are physically disabled from birth or early childhood is more specific in many ways. Considering that the self, as a concept, includes an image of the body in itself, i.e. that it represents the way in which a person experiences self, the process of constitution of the self in physically disabled people has changed.

Adolescents with motor deficit are distracted in gaining the experience of one's body and have difficulties in realizing their own sexuality. Likewise, the course of individuation and separation of physically disabled adolescents is hampered by their dependence on their parents.

Experience of one's body, as well as creating a complete picture of oneself has been largely characterized by motor deficits. Identification and monitoring of motor deviations from an early age will enhance future administration of therapeutic procedures, and therefore have a positive impact on the experience of one's own body[8].

Rehabilitation of children in an early age mostly takes place in a family environment with continuous monitoring by the professional team. Advising the

parents about all the processes that occur in children is of great importance[9].

In a child, later adolescent with motor deficit, there is a disruption in the acquisition of awareness of one's body, which affects the formation of identity and constitution of the self, since both of these concepts in themselves include a picture of the body.

Subjects and Methods

Subjects

The study sample consisted of 100 randomly selected respondents of both genders, of which fifty patients had motor limitations due to illness or injury, which significantly affected their ability of free movement (experimental group), and another fifty subjects with intact motor functions (control group). From school records, it was evident that all the subjects were within the average intellectual abilities. The subjects were students of the Center for Education of Children and Youth in Dubrava, Zagreb, and high school students of 2nd, 3rd and 4th grade.

In the experimental group, there were 27 male and 25 female adolescents, while in the control group there were 23 male and 25 female adolescents. The male to female ratio was approximately the same in both groups, as confirmed by the results of the corresponding χ^2-test (χ^2=0.160, df=1, p=0.421).

The subjects were aged 16-18 years, average age 17 years. The two groups did not differ according to age, as the mean age was 17.12 years in the experimental group and 16.98 years in the control group. Similar age distribution was also found between male and female subjects. The mean age of male respondents was 17.12 years and of female respondents 16.98 years.

Methods

The theoretical basis of the first administered A-87 questionnaire for measurement of aggressiveness was derived from Žužul's model of aggressiveness[10,11]. The questionnaire was designed for assessing aggressive behavior in provocative situations and measurement of impulsive aggression. The A-87 questionnaire consists of 15 items-situations. At each of the available forms of response (a-e), the respondent corresponds on a 1-5 scale, where numbers have certain meaning. The questionnaire consists of five subscales, so that using

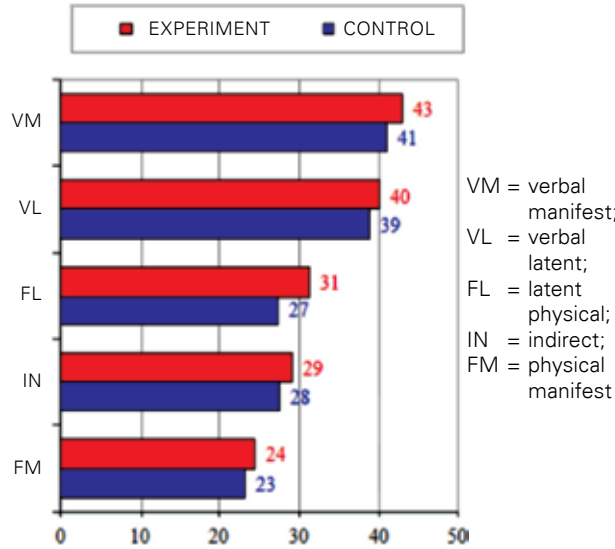

Fig. 1. Results of A-87 subscale in experimental and control group and statistical significance of between-group differences (ns = nonsignificant).

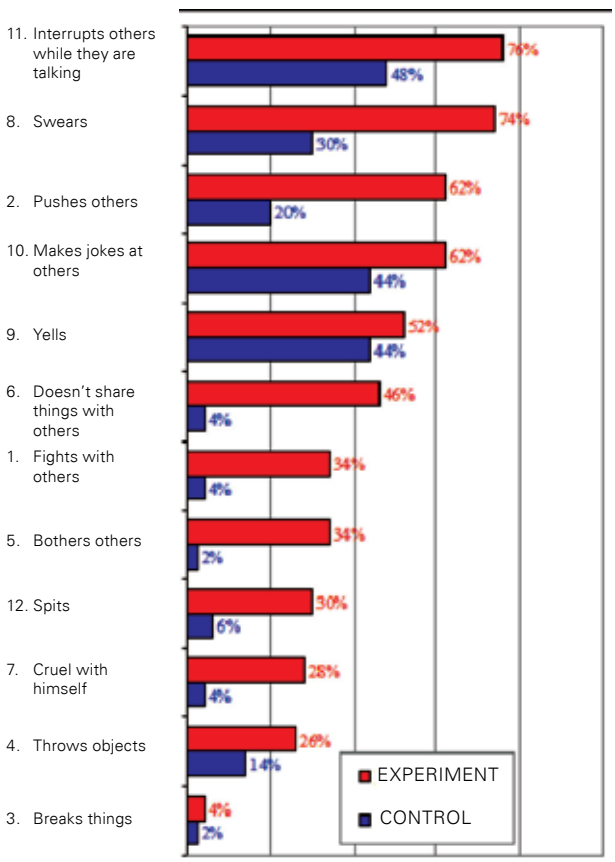

Fig. 2. Results of protocol sections for systematic observation according to groups of adolescents.

the questionnaire results are obtained on each of the five subscales, i.e. for any form of aggressive response (verbally manifested aggression, physically manifested aggression, indirect aggression, verbal and physical latent aggression), and an overall score can also be formed as a measure of the general tendency of the individual to respond to provocative situations with aggression.

The structured interview is a classic, indispensable method for examining individual cases[12], and it was divided into four groups of questions. The first group contains general information, details of personal and family history; second group refers to latent aggressiveness; and third and fourth groups describe auto-aggression. Data obtained from the interviews were recorded in the previously made forms.

Table 1. Differences between experimental and control group according to A-87 questionnaire subscales

A-87 subscale	Group	n	$\bar{X}$	SD	Mann-Whitney test	
					U	p
VM	Experimental	50	42.98	16.16	1206.5	0.764
	Control	50	40.98	11.67		
VL	Experimental	50	39.20	14.46	1214.5	0.807
	Control	50	38.82	13.09		
FL	Experimental	50	31.20	14.60	1090.5	0.271
	Control	50	27.32	11.43		
IN	Experimental	50	27.94	12.43	1214.5	0.806
	Control	50	27.54	10.16		
FM	Experimental	50	24.38	9.77	1236.0	0.923
	Control	50	22.80	9.12		

VM = verbal manifest; VL = verbal latent; FL = latent physical; IN = indirect; FM = physical manifest; n = number of cases; $\bar{X}$ = arithmetic mean; SD = standard deviation; U = Mann-Whitney U test value; p = level of significance

Observing in the natural environment is an instrument which is used for observation of respondents who spontaneously behave in the environment in which they are viewed. This method has several advantages: observation can be done in a way that is imperceptible enough, so that the image of behavior we get is not distorted with confusion of the subject being aware that he is being observed, or by his motivation to arouse a certain impression in the observer[13,14].

By observation the adolescents were monitored in precisely defined circumstances with regard to the location, time and activity. The place of observation was classroom and school hallway, during school break. Timing of observation was in the morning hours between school classes, during one month. In one day, five adolescents were observed. Results were recorded in the previously made forms, protocol for systematic observation in the natural environment, which consisted of twelve behavioral acts of subjects.

Results

All these procedures were calculated using the SPSS software (SPSS for Windows 2002 (Chicago, USA). For statistical and graphical data processing, standard methods of descriptive statistics were applied[15].

Differences in the continuous variables of normal distribution were tested by independent t-test in case of differences between two independent samples and by analysis of variance in case of difference of independent samples. When the variables did not follow normal distribution, nonparametric methods were used (Mann-Whitney test, Kruskal-Wallis test, etc.)[15,16].

Analysis of differences between the experimental and control groups with regard to verbal manifest aggression, verbal latent aggression, physical latent aggression, indirect aggression and physical manifest aggression, Mann-Whitney test for independent samples was applied. Results of the analysis are listed in Table 1.

As evident in Table 1, subjects in the experimental and control groups did not differ significantly in any of the variables of the A-87 questionnaire describing different forms of aggressive behavior.

Study subjects, regardless of the affiliation group, obtained the highest average value on the manifest verbal aggression subscale, followed by the subscales of verbal latent aggression, physical latent aggression, indirect aggression, showing least aggression on the scale for measuring physical manifest aggression.

Differences between the experimental and control groups according to the choice of affirmative answer ("yes") on the questions of particular components of the structured interview (latent aggression, manifest aggression, self-destructiveness) did not prove to be systematic, and at the level of individual sections they

Table 2. Statistical significance of mean differences in results on subscales and total score on A-87 between adolescents in whom every behavior was and was not monitored by the Protocol

Protocol for observation under natural conditions	VM	FM	IN	VL	FL	AG
1) Fights with others	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2) Pushes others	0.007	0.002	0.013	0.089	0.020	0.005
3) Breaks things	ns	ns	ns	ns	ns	ns
4) Throws objects	<0.001	<0.001	<0.001	0.002	<0.001	<0.001
5) Bothers others	0.009	0.004	0.004	0.056	0.001	0.004
6) Doesn't share things with others	0.050	ns	ns	ns	ns	ns
7) Cruel with himself	ns	ns	ns	ns	ns	ns
8) Swears	0.001	0.039	0.054	ns	0.009	0.012
9) Yells	<0.001	0.014	0.003	0.033	0.003	0.002
10) Make jokes at others	0.009	ns	ns	0.021	0.009	0.018
11) Interrupts others while they are talking	ns	ns	ns	ns	ns	ns
12) Spits	0.026	0.021	ns	ns	0.057	ns

VM = verbal manifest, FM = physical manifested, IN = indirect, VL = verbal latent, FL = latent physical, AG = total score; ns = nosignificant

were difficult to interpret, so we did this by particular factor solutions, but the reliability of the structured interview scale measured by Cronbach α coefficient was below the required 0.80, and in other cases the reliability of individual scales was not sufficient for interpretation.

On the protocol for systematic observation it was found that there were significant between-group differences in most perceptual behaviors, whereby the experimental group was more aggressive than the control group, especially in the behaviors that apply to all forms of verbal aggression, as shown graphically in Figure 2. The reliability of protocol subscales for systematic observation in natural conditions measured by Cronbach coefficient α was satisfactory. In the experimental group, Cronbach's coefficient α was satisfying 0.8268, in the control group it was less satisfying, 0.7481, while on the total sample it was 0.8344.

It should be noted that all sections of the protocol for systematic observation in natural conditions are of equal validity. Namely, omission of any of them did not alter the reliability of the remaining scale in either group.

Adolescents from both groups in which particular behaviors in the protocol for systematic observation in natural conditions were observed were significantly different from adolescents whose behavior was not observed, in formation of the results on the A-87 questionnaire subscales, indicating strong correlation between the protocol for systematic observation and A-87 questionnaire (Table 2).

Discussion

There are many disagreements in the viewpoints of the phenomenon of aggression. Different psychological schools give different interpretations of the origin of aggression.

In the research of the connection between motor limitations and aggressiveness it was not possible to avoid the above-mentioned dilemma about the origins of aggression. The measuring instruments used in the study have also stemmed from different understanding of the origins of aggression and aggressiveness. In that way, the questionnaire for measurement of aggressiveness named A-87 by Keresteš and Žužul[10] is linked to the understanding of aggression as a reaction to external frustration[3], while the other two instruments, structured interview and protocol for observation in natural environment, are perhaps closer to the psychoanalytic interpretation of aggressive events that may have a double origin, internal and inherent or external and reactive[4,17,18].

All the three measuring instruments used in this study actually measure only the external manifesta-

tions of aggression, whether in the open (manifest) or covert (latent) form, verbal and physical, direct or indirect direction, which generally makes them usable in the study, regardless of the understanding of the origins of aggression.

In favor of this approach speaks the link between the results of the A-87 questionnaire of aggressiveness and the results of the other two measuring instruments, structured interview and protocol for systematic observation in natural environment.

Analysis of five subscales of the A-87 questionnaire of aggressiveness (verbal aggression manifested (VM), verbal latent aggression (VL), latent physical aggression (FL), indirect aggression (IA) and manifested physical aggression (FM)), as well as the overall results of the questionnaire, yielded no statistically significant differences between the experimental and control group. In other words, with this measuring instrument it could not be determined that there was a statistically significant difference in the manifested and latent, verbal and physical, and indirect aggressiveness among adolescents with physical limitations and adolescents with regular motor functions.

There are numerous observations of aggression that can be obtained only by special type of observations, possible in some situations, and in that way some forms of aggression may be linked to the idea of danger, internal or external, real or imagined, aware or unaware. Clinical data and those obtained by observation point out that experiences in the early years are decisive in this process, therefore psychoanalytic clinical context fails to show aggression only as a reaction to frustration[19].

It seems that the theory of frustration is also missing the symbolic or associative meanings that frustration has, or may have for the individual. Knowledge of an individual's personal experience deepens the insight into the problem of aggression[4].

Clinically speaking, aggression and aggressiveness appear as 'clinical facts'. Diminishing aggression as a motivating force is interpreted with excitation of anxiety and resistance that it provokes in the viewer. These numerous uncertainties related to the expression of aggressiveness in adolescence are smaller when we are trying to understand it in the clinical context rather than outside of it, or in the general approach to this phenomenon.

As limitations of this study, we point out that the study did not inspect distinction of aggressiveness towards the object or as defense against psychopathology, but only the manifestation of aggression in adolescents' daily lives, some of which are motor healthy, while others are, due to illness or injury, subjected to permanent motor limitations. The survey showed that respondents with physical limitations in some areas of expression of aggression were somewhat more aggressive than healthy adolescents. The causes of these findings we could only guess at the level of body representations (body image), which especially in adolescence affects satisfaction with themselves and maintaining of self-esteem. Certainly, motor limitations (deficit) as well as other highly visible injuries or chronic diseases of the body in this context affect self-confidence and self-esteem. It also affects the image of oneself, which is being built on the interaction with the others' reaction to their look, behavior, etc.[20-22]. Furthermore, it is presumable that sublimation (a process that leads to changes in the target of aggression in a socially acceptable activity or action) is more difficult for adolescents with physical limitations than for healthy individuals.

Conclusion

In this study, we tried to examine how motor limitation in terms of reduced possibilities of movement affects aggression, whereby we did not enter more deeply into the theories of aggression, and we did not examine if its origin was instinctive or it was always the result of frustration. Results of the analysis of data obtained on the overall results as well as on all five subscales of the A-87 questionnaire to measure aggressiveness showed that adolescents with motor limitations did not present statistically significant aggression compared to healthy adolescents. Adolescents with motor limitations were more self-destructive than those in the control group. From the results obtained by the protocol for systematic observation in natural conditions it was evident that adolescents with motor limitations were more aggressive than adolescents from the control group, especially in behaviors that apply to all forms of verbal aggression.

References

1. Klaić B. Rječnik stranih riječi. Zagreb: Nakladni zavod Matice hrvatske; 1986. (in Croatian)
2. Laplanche J, Pontalis JB. Rječnik psihoanalize. Zagreb: Naprijed; 1992. (in Croatian)
3. Žužul M. Agresivno ponašanje. Zagreb: RZ RK SSOH; 1989. (in Croatian)
4. Arlow AJ. Perspectives on aggression in human adaptation. Psychoanal Q. 1973;42:178-97.
5. Rudan V, Bastašić Z. Organizacija agresije u adolescenciji. Psihoterapija. 1986:16:69-77. (in Croatian)
6. Soldo N. Odgojno obrazovna integracija djece s tjelesnom invalidnošću. Savez SIZ-ova odgoja i osnovnog obrazovanja, Fakultet za defektologiju Sveučilišta u Zagrebu, Zagreb: Savez slijepih Hrvatske, 1986. (in Croatian)
7. WHO. International Classification of Impairments, Disabilities and Handicaps. Geneva: World Health Organization; 1980.
8. Crnković M, Matijević-Mikelić V, Demarin V, Košićek T, Morović S, Grazio S. Risk factors for gross motor dysfunction of lower limbs in children. Acta Clin Croat. 2011;50(3):361-6.
9. Matijević-Mikelić V, Bartulović J, Košićek T, Crnković M. Educated parent as a key member of rehabilitation team. Acta Clin Croat. 2011;50(4):469-73.
10. KERESTEŠ G, ŽUŽUL M. Priručnik za primjenu Upitnika za mjerenje agresivnosti (A-87). Jatrebarsko: Slap; 1992. (in Croatian)
11. Žužul M. Novi pristup agresivnosti i upitnik za ispitivanje agresivnosti. Primijenjena psihologija. 1986;7:1-4. (in Croatian)
12. Kondić K. DTS intervju. Beograd: Savez društava psihologa SR Srbije; 1985. (in Serbian)
13. Nietzel TM, Bernstein AD, Milich R. Uvod u kliničku psihologiju. Jastrebarsko: Naklada Slap; 2001. (in Croatian)
14. Biro M, Buttolo W. Klinička psihologija. Department of Clinical Psychology, Ludwig Maximilian University, Munich; 2002. (in Croatian)
15. Petz B. Osnovne statističke metode za nematematičare. Jastrebarsko: Naklada Slap; 2002. (in Croatian)
16. Ivanković D, *et al*. Osnove statističke analize za medicinare. Zagreb: Medicinski fakultet Sveučilišta u Zagrebu; 1991. (in Croatian)
17. Freud A. Comments on aggression. Int J Psychoanal. 1972;53(2):163-71.
18. Hartmann H, Kris E, Loewenstein R. The Function of Theory in Psychoanalysis, Drives, Affects, Behaviour. New York: International Universities Press; 1983.
19. Frank A. The unrememberable and the unforgettable. Psychoanal Study Child. 1969;24:48-77.
20. Lewiss M. Lewis's Child and Adolescent Psychiatry: A Comprehensive Textbook. 3rd ed. Philadelphia, US: Lippincott Williams & Wilkins Publishers; 2007;467-79.
21. Rutter M, Bishop D, Pine D, Scott S, Stevenson J, Taylor E, *et al*. Child and Adolescent Psychiatry. 5th ed. Blackwell Publishing; 2008;648-62.
22. Nikolić S, Maragunić M, *et al*. Dječja i adolescentna psihijatrija. Zagreb: Školska knjiga; 2004;41-53. (in Croatian)

Sažetak

UTJECAJ MOTORIČKE OGRANIČENOSTI NA IZRAŽAVANJE AGRESIVNOSTI U ADOLESCENATA

M. Tripković, V. Matijević, H. Marković i *N. Ercegović*

Ovim istraživanjem pokušalo se utvrditi koliko motorička ograničenost u smislu umanjene mogućnosti kretanja utječe na agresivnost, polazeći od činjenice da motorika i kretanje u izražavanju agresivnosti imaju značajno mjesto, kao i tendencija adolescenata prema "govoru tijela". Adolescent s motoričkim deficitom ometen je u stjecanju iskustva o vlastitom tijelu, što se odražava i na formiranje cjelovitog doživljaja sebe, odnosno na konstituciju sebstva (*selfa*). Među mnogim funkcijama koje kretanje i motorika posjeduju agresija ima značajno mjesto koje smo ovim istraživanjem željeli utvrditi, pričem nismo ulazili dublje u analizu je li podrijetlo agresivnosti nagonsko ili je ona uvijek rezultat samo frustracije. Uzorak na kojem se provodilo ispitivanje sastojao se od ukupno sto slučajno odabranih ispitanika oba spola u dobi od 16 do 18 godina. Pedesetero ispitanika imalo je motoričku ograničenost zbog bolesti ili povreda, a pedesetero ispitanika bilo je intaktnih motoričkih funkcija. U istraživanju su se koristila tri instrumenta: 1. upitnik za ispitivanje agresivnosti A-87; 2. strukturirani intervju; i 3. protokol opažanja u prirodnim uvjetima. Rezultati analize podataka dobivenih na ukupnom rezultatu kao i na svih pet podljestvica upitnika za mjerenje agresivnosti A-87 pokazuju da se ispitivane skupine statistički značajno ne razlikuju. U rezultatima dobivenim strukturiranim intervjuom vidi se da adolescenti s motoričkom ograničenošću iskazuju veću verbalnu latentnu, a zatim i latentnu fizičku agresivnost. Statistički je značajna razlika između ispitivanih skupina dobivena i na čimbeniku autodestruktivnosti, što govori da su adolescenti s motoričkom ograničenošću nešto više autodestruktivni u odnosu na one iz kontrolne skupine. Iz rezultata dobivenih protokolom za sustavno opažanje u prirodnim uvjetima vidljivo je da postoje izražene razlike na većini opažajnih ponašanja između kontrolne i eksperimentalne skupine, pričem su adolescenti s motoričkom ograničenošću agresivniji od ispitanika kontrolne skupine i to naročito u ponašanjima koja se odnose na sve oblike verbalne agresivnosti. Svi ukupno ispitivani adolescenti kod kojih su zapaženi pojedini oblici manifestnog agresivnog ponašanja na protokolu opažanja nadopunjuju se rezultatima agresivnosti dobivenim na podljestvicama agresivnosti upitnika A-87, što povezuje ova dva mjerna instrumenta i opravdava njihovu upotrebu u istraživanju agresivnosti bez obzira na shvaćanje samog podrijetla agresije.

Ključne riječi: *Pokretljivost, poremećaji; Agresija; Adolescenti*