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Token Reinforcement, Cognitive Behavioural Therapy, Degree of Disability and Managing Aggressive Behaviour Among Pupils With Intellectual Disability

Aggressive behaviour has a significant negative effect on learning and academic performance. This study aimed to establish the main effect of token reinforcement, cognitive behavioural therapy, and degree of disability on reducing aggression among pupils with intellectual disability. The study participants were 60 pupils (N = 60, N = 27 boys; N = 33 girls; mean age = 11.7) with intellectual disability who were purposively selected from three (3) special schools in the study location. The participants were divided into three treatment groups: token reinforcement, cognitive behavioural therapy, and control groups, with the degree of disability as the moderating factor. The token reinforcement and cognitive behavioural therapy groups met for thirty sessions over twelve weeks. Three experimental (two treatment and a control) groups were assessed using the Overt Aggression Scale, while the three treatment groups were assessed post-intervention using the Overt Aggression Scale. Data for aggressive behaviour performance were collected after the participants were screened for intellectual disability. An analysis of covariance and estimated means was used to examine the data. The results revealed a statistically significant difference between the pre-test and post-test results of the three (3) treatment groups. The degree of disability had significant main effect on level aggressive behaviour among pupils with intellectual disability. The interaction effect of treatment and degree of disability was significant on participants' aggressive behaviour. Teachers and care givers should adopt token reinforcement and probably cognitive behavioural therapy in manage aggressive behaviour among pupils with intellectual disability.

Keywords: *Cognitive behaviour therapy, degree of disability, intellectual disability, token reinforcement*

Символьне підкріплення, когнітивна поведінкова терапія, ступінь інвалідності та управління агресивною поведінкою серед учнів з інтелектуальною недостатністю

Агресивна поведінка має значний негативний вплив на навчання та успішність. Це дослідження мало на меті встановити основний вплив символічного підкріплення, когнітивно-поведінкової терапії та ступеня інвалідності на зниження агресії серед учнів з інтелектуальною недостатністю. Учасниками дослідження були 60 учнів (№=60, №=27 хлопчиків; №=33 дівчинки; середній вік = 11,7) з інтелектуальною недостатністю, які були цілеспрямовано відібрані з трьох (3) спеціальних шкіл у місці дослідження. Учасники були розділені на три групи лікування: символічне підкріплення, когнітивно-поведінкова терапія, та контрольні групи зі ступенем інвалідності як фактором пом'якшення. Групи із символічного підкріплення та когнітивно-поведінкової терапії збиралися протягом тридцяти сеансів протягом дванадцяти тижнів. Три експериментальні групи (дві лікувальні та контрольна) оцінювали за шкалою явної агресії, водночас три групи лікування оцінювали після втручання за шкалою явної агресії. Дані щодо продуктивності агресивної поведінки були зібрані після того, як учасники пройшли перевірку на інтелектуальну відсталість. Для вивчення даних використовувався аналіз коваріації та оціночних середніх. Результати показали статистично значущу різницю між результатами до і після тесту трьох (3) груп лікування. Ступінь інвалідності мав достовірний основний вплив на рівень агресивної поведінки серед учнів з розумовою відсталістю. Ефект лікування та ступеня

інвалідності були значними для агресивної поведінки учасників. Вчителі та опікуни повинні застосувати символічне підкріплення та, ймовірно, когнітивно-поведінкову терапію для боротьби з агресивною поведінкою серед учнів з інтелектуальною недостатністю.

Ключові слова: когнітивно-поведінкова терапія, ступінь інвалідності, інтелектуальна недостатність, символічне підкріплення.

Introduction / Вступ. Most pupils with intellectual disabilities (ID) cannot adapt to challenging circumstances because of their limited ability to cope with stressful situations. Aggression and other frustrating actions are some of the most common consequences of this constraint. Studies in the community have found that over 80 % of pre-schoolers occasionally exhibit mild tantrums, with a smaller proportion, less than 10 %, exhibiting daily tantrums, considered normal behaviour at this age (Hong et al., 2015; Wakschlag et al., 2012). It is more common to recognize aggressive behaviours and emotional difficulties as «problems» rather than «disorders» during the first 2 years of life (Bagner et al., 2012). Aggressive behaviour has detrimental effects on the environment of an individual and often on the aggressor (Jacob et al., 2021). Some of the negative impacts of aggressive behaviour on aggressors include self-injury, interference with social events, and violence (Jacob et al., 2021).

Many clinicians and carers have difficulty differentiating normal emotions (*e.g.*, fears, crying) from distressing emotions that should be considered abnormal (Gardner & Shaw, 2009). Such behaviour is typical, with a probability estimated from 16% to more than 50%, depending on the definition (McGrother et al., 2007; Smith et al., 1996; Qureshi & Alborz, 1992). The prevalence of aggressive behaviour among people with ID differs significantly across studies (Crocker et al., 2006; Tyrer et al., 2006). People with ID are more likely to exhibit aggressive behaviours if they are experiencing psychological distress (Allen & Davies, 2007; Allen, 2008). Moss et al. (2000) found that challenging behaviours include aggressive and self-destructive behaviour. These behaviours can be defined as (1) psychiatric symptoms that are not conventional (Bodfish et al., 1995); (2) manifestations of a mental disorder (Meins, 1995); and (3) the result of psychiatric disorders that persist due to operant behaviour (Emerson & Bromley, 1995).

Aggressive behaviours, including risky behaviours, such as self-injury, sexual abuse, throwing tantrums and stealing, are commonly observed among pupils with ID, although prevalence rates differ significantly between studies (Emerson et al., 2001; Grey et al., 2010). Studies have revealed that aggressive behaviour among pupils with ID appears to persist over time in the general population (Einfeld et al., 2006). Although, different types of aggressive behaviour are frequently displayed at the same time among pupils with ID, such as verbal, physical, and self-aggressive behaviour (Cooper et al., 2009; Crocker et al., 2006; Nijman & Campo, 2002; Tenneij & Koot, 2008). It is challenging to provide the necessary support and safety for pupils with ID because they tend to exhibit aggressive behaviour due to the complexities of performing research on this population, such as non-randomized designs and preliminary outcome evaluation. (Keenan & Dillenburger, 2011; Willner, 2005).

Studies have suggested that psychosocial interventions can minimize aggressive behaviour among pupils with ID (Harvey et al., 2009; Heyvaert et al., 2010; Willner, 2005) despite this challenge. Since the adverse effects of psychoactive drugs raise health concerns and the absence of research suggesting that aggressive behaviour is significantly minimized (Antonacci et al., 2008; Matson et al., 2009; Matson & Neal, 2009), it is vital to identify efficient psychosocial interventions for managing aggressive behaviour among pupils with ID in school settings. Therefore, this study seeks to determine the effect of token reinforcement and cognitive behavioural therapy (CBT) as an intervention in managing aggressive behaviour among pupils with ID.

Token economies have been implemented to decrease disruptive behaviours and increase appropriate behaviours. In a token economy, punitive steps such as seclusion, restriction, and increased surveillance are often used to handle imminent aggression. The use of seclusion and restrictions, such as restraints, are often misused, resulting in pupils becoming more aggressive due to forced coercion (Poulsen & Engberg, 2001). Sandra and Friedrich (2009) described a token economy within an educational setting as a system for motivating learners by giving tokens for task completion or exhibiting the desired behaviour. It encourages learners to increase desirable behaviour and decrease undesirable behaviour. According to Hackenberg (2009), the token economy method was first used during the 19th century but, in recent times, manipulated, modified, and practised within various disciplines. A study conducted in a psychiatric hospital using token economy and positive reinforcement to minimize aggressive behaviour while facilitating adaptive behaviour showed significant group differences after two weeks (Park & Lee, 2012).

According to Elliott et al. (2000), a token economy involves rewarding students for exhibiting desirable behaviour. Various authors assert that the main objective of using a token economy in classroom interaction is to promote appropriate behaviour while decreasing undesirable behaviour

(Carr et al., 2005). Wille (2002) investigated the use of multicomponent intervention, which included token reinforcement to mitigate behavioural disorders in the classroom and found that token reinforcement was highly effective in improving classroom behaviour. Similarly, positive findings were reported when adopting tokens to increase the attendance of children with autism during discrete trial instructions (Tarbox et al., 2010). A different approach used tokens to reinforce reciprocal social interactions in interactions between three adults and a child (McDonald & Hemmes, 2003).

Similar to other studies reported here, the same result was achieved. Tokens' versatility in enhancing classroom instruction has also been demonstrated by an innovative and exciting study published by Kahng et al. (2003). They used the tokens earned by eating bites of food as a criterion for ending meals. The procedure effectively increased the food consumption of a 4-year-old girl with a pervasive developmental disorder. Moreover, the token system resulted in a greater variety of food being consumed by her. Reinke and Herman (2002) recently identified the importance of adolescents' psychosocial adjustment that, among other factors, the school environment is academically successful, peers in the classroom are perceived as friends or colleagues, and positive interactions occur with teachers.

Another strategy is CBT, a present-focused, time-restricted approach that empowers clients by harnessing their mental and behavioural capabilities to effectively manage their interpersonal and intrapersonal lives (Mennin et al., 2006). DiGiuseppe and Tafrate (2007) stated that behavioural approaches, including classical and operant conditioning, can manage anger. In addition to treatments, Paivio and Carriere (2007) also developed emotion-focused therapy for individual anger interventions. Therefore, CBT combined with mindfulness methods may effectively manage dysfunctional behaviour (Cayoun, 2004). According to a study by Chen et al. (2006), patients in an experimental group experienced more significant cognitive improvements (positive self-esteem improvement) than those in the comparison group due to CBT. CBT is an effective treatment for managing problems related to self-esteem and self-efficacy (Dryden, 2003; Lim et al., 2005).

Howells and Day (2003) demonstrated the effectiveness of anger-management strategies by incorporating CBT. The finding shows that CBT is an effective self-control method for managing aggressive behaviour (Singh et al., 2008). Hutchinson et al. (2016) found CBT interventions to reduce excessive expressions of anger, while Bekirogullari and Korusan (2019) recommended CBT as an effective tool for managing various psychological disorders. CBT is an effective treatment procedure for addressing self-esteem and personal efficacy (Neacşu, 2013) and is widely regarded as a highly effective treatment method for emotional disorders (Bekirogullari & Korusan, 2019).

Tenneij and Koot (2008) investigated the rate of aggression in long-term treatment centres for people with mild developmental disabilities and severe mental health challenges with a high rate of aggression. Over 20 weeks, there were 639 reported incidents. Seventy-one per cent of these incidents appeared to target others, primarily staff. Recent studies have specifically examined aggression instead of challenging behaviour (Deb et al., 2001; Tyrer et al., 2006) and support Emerson's (2001) assertion that people with a severe developmental disability are more likely to exhibit aggression, especially aggressive acts against themselves. The prevalence of aggressive behaviour has been shown to differ by gender in some studies in the recent past. However, Tenneij and Koot (2008); Crocker et al. (2006) found no significant differences between the two groups. Despite aggression beginning in childhood, it tends to become pronounced in adolescence and early adulthood, particularly among teens and young adults (Murphy et al., 2005; Crocker et al., 2007).

Studies have reported the correlation of aggressive behaviour with types of disability. Research shows that Epilepsy has a relationship with aggression irrespective of developmental disability (Marcangelo & Ovsiew, 2007). Therefore, Epilepsy may be a contributing factor in this population. Espie et al. (2003) found that behavioural problems, such as hyperactivity, nervousness, exhaustion, isolation, stereotyped behaviour, excessive irritability, inattention, and inappropriate communication skills, were lower than population norms in 186 individuals with developmental disabilities and Epilepsy. Deficiencies in language abilities are associated with aggression in non-disabled individuals (Burke et al., 1989; Cohen et al., 2003). Language skills are often inadequate or nonexistent in the population of individuals with developmental disabilities. Thus, these individuals may turn to aggression to communicate with others and themselves.

Bihm et al. (1998) investigated the level of aggression among 170 individuals with severe and profound developmental disabilities and found no correlation between lower communication levels and higher aggressive behaviour. Deb et al. (2001) found that higher rates of self-injury were correlated with more severe developmental disabilities and impaired communication skills. McClintock et al. (2003) summarised findings from the last 30 years and concluded that the severity of developmental disabilities, communication difficulties, and autism were indicators of aggressive behaviour. The overlap between these variables made interpreting their results difficult. Crocker et al. (2007) examined

motor and perceptual impairments (*physical handicap*) as identifiable characters among a sample of 296 persons with developmental disabilities. A high percentage of destructive behaviour (the various types of aggression) and destructive behaviour (self-injurious behaviour) participants had a physical handicap.

Methodology / Методологія.

Material and methods

A quasi-experimental research design was used in the study consisting of a pre-test, post-test, and control group with the use of a 3 x 2 factorial matrix. Token reinforcement, CBT, and control were the three (3) types of treatment considered in the study. The design is as follows:

Experimental Group 1:(E1) O₁ X₁ O₄

Experimental Group 2:(E2) O₂ X₁ O₅

Control Group 3:(E3) O₃ O₆

Where:

O₁, O₂ and O₃ represent the experimental and control group pre-test scores, respectively.

O₄, O₅ and O₆ represent the post-test scores of the experimental and control groups, respectively.

X₁ represents the treatment for the experimental group (token reinforcement)

X₁ represents the treatment for the experimental group (CBT)

Participants

There were 60 participants in the study, of whom forty-five per cent (27) were boys, and fifty-five per cent (33) were girls. Their IQs ranged from 42 to 68 on the Slosson Intelligent Test for adults and children. Slosson developed the scale using the 1960 revision of the Stanford Binet (SB) Intelligence Test (Jacob, U. S. & Pillay, 2021). Validity coefficients were determined independently for each age group. The correlation coefficient ranged from 0.90 to 0.98. Thus, just as SB correlates with itself, SIT does as well. This indicates that the SIT is statistically valid and reliable. SIT-R3 now has adaptable score sheets for scanning electronic readers, and embossed materials are available for the blind and visually impaired (Jacob et al., 2021).

All participants had a history of exhibiting various forms of aggressive behaviour, while seventy-two (72%) had engaged in four or more of such behaviours over the six months before the study ($M=5.4$). Multistage sampling was used to select the participants. The first stage involved the selection of three special schools. The pupils with moderate/mild intellectual disability were selected using purposive sampling. We randomly assigned participants to one of three treatment groups, TR, CBT, or C, depending on their treatment type. In school TR, a total of 21 pupils with moderate/mild ID (male = 9; female = 12; mean age = 12.2) were selected; in school CBT, 17 pupils with moderate/mild ID (male = 8; female = 9; mean age = 10.6) were selected; and in school C, 22 pupils with moderate/mild ID (male = 10; female = 12; mean age = 12.3) were selected. The TR group received token reinforcement while school CT received cognitive behavioural therapy, and school C served as the control who were exposed to placebo treatment. The same treatments were administered simultaneously to children from the same school to avoid bias.

Hypotheses

The following were formulated and tested.

Ho1: There is no significant main effect of treatment on the aggressive behaviour of pupils with ID.

Ho2: There is no significant main effect of the degree of ID on the aggressive behaviour of pupils with ID.

Ho3: There is no significant interaction effect of treatment and degree of ID on the aggressive behaviour of pupils with ID.

Description of instruments

Token reinforcement

The token reinforcement consists of a research assistant that implements the point system. As a baseline, identified target behaviours were recorded. There were six 30-minute intervals during the school day. For each interval, pupils with ID had the opportunity to earn four points. The absence of aggression during each interval earned the participant a point. The points were allocated verbally at the end of each 30-minute interval. The intervention did not reward misbehaviour with points. Pupils could earn a total of 24 points on the Day of intervention. The research assistant and the pupils jointly created a token reinforcement menu, and the points were exchanged with the reinforcer at the end of each session.

Cognitive behavioural therapy (CBT)

The therapist demonstrated and evaluated how thoughts, emotions, and behaviour are interrelated through CBT, utilizing the ABC model to show and evaluate participants' thoughts and their impact on aggressive behaviour. The treatment consisted of twenty-four weekly sessions for 45 minutes each for the treatment group for 12 weeks.

Overt Aggression Scale

In this study, the Overt Aggression Scale (Yudofsky et al., 1986) was used to assess participants' aggression, such as verbal assault, property damage, and physical assault. According to the Overt Aggression Scale, aggressive behaviour is measured, not tendencies to be violent. There are two parts to it. There are four groups in the first section: a) verbal attack, b) willful destruction of property, c) aggressive behaviour toward oneself, and d) aggressive behaviour toward others. In each of the categories, aggressive behaviour was assessed based on severity. The second section rated staff intervention during the aggressive incident. Scores for aggressive items were computed in the same manner as the scores of aggressive items (ranging from a minimum of one point to a maximum of sixteen points), along with teachers' intervention scores (from a minimum of zero points to a maximum of ten points), with a total maximum score of 26 points. The Overt Aggression Scale is easy to use for assessing aggressive behaviour. The scale allows for documentation and quantification of excessive verbal and physically aggressive behaviour. A high intraclass correlation coefficient of reliability (ICC) was found for most items (20).

Ethical approval

After identifying potential participants, their caregivers sign a consent form which indicate permission that their wards should participate in the study. The research team adapted written informed consent procedures to meet the developmental needs of the participants.

Results/ Результати.

Hypotheses testing

HO₁: There is no significant main effect of treatment on the aggressive behaviours of pupils with ID

Table 1

Summary of the result showing the effects of treatment, gender and the degree of disability of pupils with ID

Tests of Between-Subjects Effects						
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2070.297 ^a	11	188.209	16.751	.000	.793
Intercept	8687.041	1	8687.041	773.179	.000	.942
Treatment	1564.859	2	782.429	69.639	.000	.744
Degree of disability	770.866	1	385.423	42.722	.001	.366
Treatment *Degree of disability	347.754	1	182.237	21.715		.289
Error	539.303	48	11.235			
Total	15752.000	60				
Corrected Total	2609.600	59				

a. R Squared = .793 (Adjusted R Squared = .746)

Table 1 shows that there was a significant main effect of treatment on aggressive behaviour ($F(1, 59) = 69.639, p < .005, \eta^2 = .744$). Therefore, the null hypothesis HO₁ was not accepted. This suggests that the treatments significantly resulted in reduction in aggressive behaviour among pupils with ID. The Eta-value of .744 shows that the treatment reduced approximately 74% of the aggressive behaviour among participants. To further establish and determine the actual source of the observed significant main effect in ANCOVA, an estimated marginal mean difference presented in Table 2.

Table 2

The adjusted marginal mean is shown below, along with the direction of the difference in token reinforcement and CBT between the groups

Treatment	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Token reinforcement	23.886	1.021	21.832	25.939
CBT	13.632	1.068	11.485	15.779
Control	8.809	.769	7.262	10.356

Table 2 shows that participants in treatment group 1(token reinforcement) obtained a higher mean

score of ($\bar{x} = 23.886$), followed by treatment group 2 (CBT) with a mean score of ($\bar{x} = 13.632$), while the lowest means score of ($\bar{x} = 8.809$) was recorded for participants in the control group of ($= 8.809$). An indication that aggressive behaviour among participants in treatment group 1 reduced than those in treatment group 2 and the control group. It then means that token reinforcement had a better effect in the management of aggressive behaviour among pupils with ID than both CBT and control.

HO₂: There is no significant main effect of degree of ID on aggressive behaviour of pupils with ID in Ibadan

Table 1 show that aggressive behavior was significantly affected by degree of ID among pupils with ID ($F(1,59) = 42.722, p < .005, \eta^2 = .366$). Thus, it can be concluded that the degree of ID significantly contributed to the variation in participants' scores on the aggressive behaviour scale. The Eta-value of .366 shows that degree of ID contributed approximately 37% to aggressive behaviour among the participants.

Table 3

Adjusted Marginal Mean showing the direction of difference in the degree of ID on aggressive behaviour among the groups

Degree of ID	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Mild	17.526	.536	13.449	18.603
Moderate	16.358	.973	14.402	15.315

Table 3 shows that participants with mild ID obtained a higher mean score ($\bar{x} = 17.526$) than participants with moderate ID with a mean score of ($\bar{x} = 16.358$). The implication is that mild ID contributed to better behaviour among pupils with ID than those with moderate degree of ID.

HO₃: There is no significant interaction effect of treatment and the degree of ID on aggressive behaviour of pupils with ID in Ibadan

Table 1 shows a substantial interaction between the effect of treatment and the degree of ID on the aggressive behaviour of pupils with ID ($F(1,59) = 21.715, p < .005, \eta^2 = .289$). A significant contribution was made to the variation in aggressive behaviour reduction among pupils with ID by the interaction of treatment and degree of ID. The Eta-value of .289 implies that treatment contributed approximately 29% to the participants' aggressive behaviour reduction.

Table 4

Adjusted Marginal Mean showing the direction of difference in aggressive behaviour by interaction effect of treatment and the degree of ID among the treatment groups.

Treatment	Degree of ID	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Token reinforcement	Mild	22.571	1.896	20.770	24.373
	Moderate	21.200	1.836	21.509	22.891
CBT	Mild	16.264	1.904	13.446	18.081
	Moderate	15.000	1.935	11.109	16.891
Control	Mild	8.743	.981	6.770	10.716
	Moderate	8.575	1.185	6.492	11.258

Table 4 shows that participants with mild ID in treatment group 1 (token reinforcement) obtained a higher mean score of ($\bar{x} = 22.571$) than the participants with moderate ID in this treatment group with a mean score of ($\bar{x} = 21.200$). Participants with a mild degree of ID performed better than those with a moderate degree of ID. Also, from the table, participants with a mild degree of ID in treatment group 2 (CBT) obtained a higher mean score of ($\bar{x} = 16.264$) than the participants with a moderate degree of disability with a mean score of ($\bar{x} = 15.000$), while the participants in the control group had the lowest mean scores of ($\bar{x} = 8.743$) and ($\bar{x} = 8.575$) respectively. The result shows that token reinforcement was more effective in managing aggression, and the interaction effect with the degree of ID on aggressive behaviour was more significant, especially among those with a mild degree of ID.

Discussion of findings / Обговорення. This study revealed that treatment significantly had effect (token reinforcement and CBT) on reducing aggressive behaviour among pupils with ID. The findings are consistent with the assertion of Park and Lee (2012), who reported significant group differences after two weeks of using token economy and the concept of positive reinforcement to

minimize aggressive behaviour while facilitating adaptive behaviour. Theirs align with those of Chen et al. (2006), who found that increased cognitive improvement (self-esteem increase) was observed among patients in the experimental group compared to the control group due to the use of CBT. It aligns with the observation of Reinke and Herman (2002) that an academically successful school environment, peer interaction in the classroom, and positive interactions with teachers are essential for adolescent's psychosocial adjustment.

A resource-reduction method involves providing tokens randomly to students who follow expectations (rather than giving a token for every occurrence). The use of randomized contingencies in school environments and behavioural research has a long history of empirical evidence (Cariveau and Kodak, 2017; Theodore et al., 2004). Several studies have demonstrated that the token's value is correlated with the reinforcers it can exchange for (e.g., backup reinforcer; Bonfonte et al., 2020). Most individuals may make such reinforcers prohibitively expensive, resulting in significant limitations (Lott & Jencius, 2009). Implementing evidence-based interventions for large groups of students can be costly due to the need for backup reinforcers. Moreover, punishment often leads to an immediate change in behaviour; reinforcement-based and CBT interventions take a while to have any effect (Mayer et al., 2019; Thompson & Iwata, 2005).

These interventions successfully served as positive reinforcement for managing aggressive behaviour. Although token reinforcement was more effective when compared to the use of CBT. Based on previous research, token economies with reinforcement and response cost contingencies reduce aggressive behaviours twice as effectively as response cost systems alone (DeJager et al., 2019). Teachers' feedback input will be incorporated into future directions regarding the target behaviours for reinforcement and the desired outcome for reducing aggressive behaviours (Alberto & Troutman, 2017).

The adjusted marginal means show that token reinforcement better reduced aggressive behaviour among pupils with ID. This is supported by Carr et al. (2005), who opined that the primary goal of token reinforcement was to increase and maintain appropriate behaviour while decreasing undesirable behaviour. The findings are also consistent with the submission of Howells and Day (2003), who asserted the efficacy of CBT as an anger management technique. Higher adjusted means were recorded among pupils treated with token reinforcement because the token was visible and easily compared with the tokens earned by their peers in the learning environment. Nevertheless, CBT offered the opportunity to learn effective self-control methods necessary for anger management and effectively reduce dysfunctional expressions of anger (Singh et al., 2008; Hutchinson et al., 2016). Results from previous studies have shown that CBT is an effective intervention for self-esteem and self-efficacy-related problems (Dryden, 2003; Lim et al., 2005). Token reinforcement produced higher outcomes in this study, which cannot be disputed.

The second hypothesis showed a significant main effect of degree of disability on aggressive behaviour among pupils with ID. In contrast, Espie et al. (2003) reported fewer behavioural problems in their sample of 186 people with developmental disabilities compared with population norms. Although, it aligns with the findings of Crocker et al. (2007) who investigated the profiles and correlates of aggressive behaviour among adults with intellectual disabilities. The researchers reported that a significant proportion of violent (all forms of aggression) and self-mutilation subgroups (self-injurious behaviour) had physical handicaps.

The result shows that the interaction effect of treatment and the degree of ID contributed significantly to the variation in participants' scores on aggressive behaviour of pupils with ID. This is consistent with Chen et al. (2006) report that increased cognitive improvements (self-esteem increase) were observed due to the effective intervention. This is also consistent with the opinions of Carr et al. (2005), who state that the primary goal of token reinforcement is to increase and maintain appropriate behaviour and to decrease undesirable behaviour. Furthermore, the result is supported by Deb et al. (2001), who reported higher rates of self-injurious behaviour as associated with a more severe developmental disability and poor communication abilities.

Conclusion / Висновки. The purpose of this study was to determine if token reinforcement and cognitive restructuring therapy were effective as behaviour modification strategies. The result shows that the intervention was quite effective in decreasing aggressive behaviour among pupils with ID. Token economy and cognitive restricting may have led to a reduction in participants' aggressive behaviour after using it according to its appropriateness and understanding of the participants. Findings show that behaviour modification therapy is an essential alternative to coercive measures in managing aggressive behaviour among pupils with ID. The results show a significant main effect of the degree of disability on aggressive behaviour among participants. Future studies should investigate the potential benefits of token reinforcement and cognitive restructuring of varying ages, gender, and school type (public or private) in controlled experimental studies to determine the effectiveness of token economy, cognitive restructuring, and degree of disability. The results can be used to develop outcome

measures and strategies to implement interventions in classroom settings.

Limitation

These results are based on a three-month baseline and intervention period during which the primary researcher evaluated the intervention system with teachers serving as the research assistants. However, the lack of resources and support for implementation hampered the study. In addition, the researchers did not find any study investigating the effect of independent variables (token reinforcement and cognitive restructuring therapy) on aggressive behaviour among pupils with ID. The study examined only the effectiveness of two behavioural modification strategies in reducing aggressive behaviour. The study was also limited by the small sample size selected as study participants due to the unique characteristics of pupils with ID.

Upon completion of the intervention period, the research assistants reported that the intervention effectively reduced the incidents of aggression among participants. As a result, they indicated they would encourage teachers to adopt the use of token reinforcement and CBT in managing aggressive behaviour. The research assistants also noted that they did not feel comfortable with the continued use of a punishment-based in managing aggressive behaviour since the intervention was effective. Aggressive behaviours can, however, be more overt and obvious than rule-following behaviours. Therefore, it might be easier for aggression to «catch,» identify, and resolve on a playground with many children to monitor. To successfully implement empirically supported behavioural interventions, it is also essential to understand what resources are required. It may enhance society's acceptance of these procedures and clear up misconceptions about their use if such knowledge is gained.

Conflict of interest

In this paper, the authors confirm that there are no conflicts of interest.

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Data Access Statements

Due to the nature of this research, participants of this study did not agree for their data to be shared publicly, so supporting data is not available.

References:

- Alberto, P. A., & Troutman, A. C.** (2017). *Applied behavior analysis for teachers* (9th ed.). Pearson. [in English].
- Allen, D.** (2008). The relationship between challenging behaviour and mental ill-health in people with intellectual disabilities: a review of current theories and evidence. *Journal of intellectual disabilities: JOID*, 12(4), 267–294. <https://doi.org/10.1177/1744629508100494> [in English].
- Allen, D., & Davies, D.** (2007). Challenging behaviour and psychiatric disorder in intellectual disability. *Current opinion in psychiatry*, 20(5), 450–455. <https://doi.org/10.1097/YCO.0b013e32826fb332> [in English].
- Antonacci, D. J., Manual, C. & Davis, E.** (2008). Diagnosis and treatment of aggression in individuals with developmental disabilities. *Psychiatric Quarterly*, 79, 225–247. <https://doi.org/10.1007/s11126-008-9080-4> [in English].
- Bagner, D. M., Rodríguez, G. M., Blake, C. A., Linares, D., & Carter, A. S.** (2012). Assessment of behavioral and emotional problems in infancy: a systematic review. *Clinical child and family psychology review*, 15(2), 113–128. <https://doi.org/10.1007/s10567-012-0110-2> [in English].
- Bekirogullari, Z., & Korusan, H.** (2019) Cognitive behavioural therapy treatment for sanitary napkin anxiety. *Psychiatry and Behavioral Sciences*, 9(3), 136–138. <https://doi.org/10.5455/PBS.20190201082443> [in English].
- Bihm, E. M., Poindexter, A. R., & Warren, E. R.** (1998). Aggression and psychopathology in persons with severe or profound mental retardation. *Research in Developmental Disabilities*, 19(5), 423–438. [https://doi.org/10.1016/S0891-4222\(98\)00015-8](https://doi.org/10.1016/S0891-4222(98)00015-8) [in English].
- Bodfish, J. W., Crawford, T. W., Powell, S. B., Parker, D. E., Golden, R. N., & Lewis, M. H.** (1995). Compulsions in adults with mental retardation: prevalence, phenomenology, and comorbidity with stereotypy and self-injury. *American journal of mental retardation: AJMR*, 100(2), 183–192. [in English].
- Bonfante, S. A., Bourret, J. C., & Lloveras, L. A.** (2020). Comparing the reinforcing efficacy of tokens and primary reinforcers. *Journal of applied behavior analysis*, 53(3), 1593–1605. <https://doi.org/10.1002/jaba.675> [in English].
- Burke, A. E., Crenshaw, D. A., Green, J., Schlosser, M. A., & Strocchia-Rivera, L.** (1989) Influence of

- verbal ability on aggression in physically abused children. *Journal of the American Academy of Child and Adolescent Psychiatry*, 28(2), 215–218. <https://doi.org/10.1097/00004583-198903000-00011> [in English].
- Cariveau, T., & Kodak, T.** (2017). Programming a randomized dependent group contingency and common stimuli to promote durable behavior change. *Journal of applied behavior analysis*, 50(1), 121–133. <https://doi.org/10.1002/jaba.352> [in English].
- Carr, J. E., Fraizer, T. J., & Roland, J. P.** (2005). Token economy. In A. M. Gross & R. S. Drabman (Eds.), *Encyclopedia of behaviour modification and cognitive behaviour therapy – Volume 2: Child clinical applications* (pp. 1075–1079). Sage. [in English].
- Cayoun, B.** (2004). *Advances in mindfulness training integration: Towards a non-dualistic cognitive-behaviour therapy* [Paper presentation]. 2004 biennial conference of the Australian Psychological Society's Buddhism and Psychology Interest Group: Deakin University, Melbourne, Australia. [in English].
- Chen, T-H., Lu, R-B., Chang, A-J., Chu, D-M., & Chou, K-R.** (2006). The evaluation of cognitive-behavioural group therapy on patient depression and self-esteem. *Archives of Psychiatric Nursing*, 20(1), 3–11. <https://doi.org/10.1002/pits.10048> [in English].
- Cohen, R. A., Brumm, V., Zawacki, T. M., Paul, R. Sweet, L., & Rosenbaum, A.** (2003) Impulsivity and verbal deficits associated with domestic violence. *Journal of the International Neuropsychological Society*, 9(5), 760–770. <https://doi.org/10.1017/S1355617703950090> [in English].
- Cooper, S-A., Smiley, E., Jackson, A., Finlayson, J., Allan, L., Mantry, D., & Morrison, J.** (2009). Adults with intellectual disabilities: Prevalence, incidence and remission of aggressive behaviour and related factors. *Journal of Intellectual Disability Research*, 53(3), 217–232. <https://doi.org/10.1111/j.1365-2788.2008.01127.x> [in English].
- Cooper, S-A, Smiley, E., Morrison, J., Williamson, A., & Allan, L.** (2007). Mental ill-health in adults with intellectual disabilities: Prevalence and associated factors. *The British Journal of Psychiatry*, 190(1): 27–35. <https://doi.org/10.1192/bjp.bp.106.022483> [in English].
- Crocker, A. G., Mercier, C., Allaire, J. F., Roy, M. E.** (2007). Profiles and correlates of aggressive behaviour among adults with intellectual disabilities. *Journal of Intellectual Disability Research*, 51(10), 786–801. <https://doi.org/10.1111/j.1365-2788.2007.00953.x> [in English].
- Crocker, A. G., Mercier, C., Lachapelle, Y., Brunet, A., Morin, D., & Roy, M.-E.** (2006). Prevalence and types of aggressive behaviour among adults with intellectual disabilities. *Journal of Intellectual Disability Research*, 50(9), 652–661. <https://doi.org/10.1111/j.1365-2788.2006.00815.x> [in English].
- Deb, S., Thomas, M., Bright, C.** (2001). Mental disorder in adults with intellectual disability 2: The rate of behaviour disorders among a community-based population aged 16 and 64 years. *Journal of Intellectual Disability Research*, 45(6), 506–514. <https://doi.org/10.1046/j.1365-2788.2001.00373.x> [in English].
- DeJager, B., Houlihan, D., Filter, K. J., Mackie, P. F. E., & Klein, L.** (2020). Comparing the effectiveness and ease of implementation of token economy, response cost, and a combination condition in rural elementary school classrooms. *Journal of Rural Mental Health*, 44(1), 39–50. <https://doi.org/10.1037/rmh0000123> [in English].
- DiGiuseppe, R., & Tafrate, R. C.** (2007). *Understanding anger disorders*. Oxford University Press. [in English].
- Dryden, W.** (2003). *Managing low self-esteem*. Whurr Publishers. [in English].
- Emerson, E., Kiernan, C., Alborz, A., Reeves, D., Mason, H., Swarbrick, R., Mason, L., & Hatton, C.** (2001). The prevalence of challenging behaviours: A total population study. *Research in Developmental Disabilities*, 22(1), 77–93. [https://doi.org/10.1016/S0891-4222\(00\)00061-5](https://doi.org/10.1016/S0891-4222(00)00061-5) [in English].
- Elliott, S. N., Kratochwill, J. R., Cook, J. L., & Travers, J. F.** (2000). *Educational psychology: Effective teaching, Effective learning* (3rd ed.). McGraw Hill. [in English].
- Einfeld, S. L., Piccinin, A. M., Mackinnon, A., Hofer, S. M., Taffe, J., Gray, K. M., Bontempo, D. E., Hoffman, L. R., Parmenter, T., & Tonge, B. J.** (2006). Psychopathology in young people with intellectual disability. *JAMA: The Journal of the American Medical Association*, 296(16), 1981–1989. <https://doi.org/10.1001/jama.296.16.1981> [in English].
- Emerson, E., & Bromley, J.** (1995). The form and function of challenging behaviours. *Journal of intellectual disability research: JIDR*, 39 (Pt 5), 388–398. <https://doi.org/10.1111/j.1365-2788.1995.tb00543.x> [in English].
- Espie, C. A., Watkins, J., Curtice, A., Espie, A., Duncan, R. Ryan, J. A., Brodie, M. J., Mantala, K., & Sterrick, M.** (2003). Psychopathology in people with Epilepsy and intellectual disability; an investigation of potential explanatory variables. *Journal of Neurology, Neurosurgery and Psychiatry*, 74(11):1485–1488. <https://doi.org/10.1136/jnnp.74.11.1485> [in English].
- Gardner, F., & Shaw, D. S.** (2009). *Behavioral Problems of Infancy and Preschool Children (0–5)*. Chapter 53 in Rutter's Child and Adolescent Psychiatry Fifth Edition. [in English].
- Grey, I., Pollard, J., McClean, B., MacAuley, N., & Hastings, R.** (2010). Prevalence of psychiatric diagnoses and challenging behaviours in a community-based population of adults with intellectual disabilities. *Journal of Mental Health Research in Intellectual Disabilities*, 3(4), 210–222. <https://doi.org/10.1080/19315864.2010.527035> [in English].
- Hackenberg, T.** (2009). Token reinforcement: A review and analysis. *Journal of the Experimental Analysis of Behavior*, 91(2): 257–286. <https://doi.org/10.1901/jeab.2009.91.257> [in English].

- Harvey, S. T., Boer, D., Meyer, L. H. & Evans, I. M. (2009). Updating a meta-analysis of intervention research with challenging behaviour: Treatment validity and standards of practice. *Journal of Intellectual & Developmental Disability, 34*(1), 67–80. <https://doi.org/10.1080/13668250802690922> [in English].
- Heyvaert, M., Maes, B. & Onghena, P. (2010). A meta-analysis of intervention effects on challenging behaviour among persons with intellectual disabilities. *Journal of Intellectual Disability Research, 54*(7), 634–649. <https://doi.org/10.1111/j.1365-2788.2010.01291.x> [in English].
- Hong, J. S., Tillman, R., & Luby, J. L. (2015). Disruptive behavior in preschool children: distinguishing normal misbehavior from markers of current and later childhood conduct disorder. *The Journal of pediatrics, 166*(3), 723–30.e1. <https://doi.org/10.1016/j.jpeds.2014.11.041> [in English].
- Howells, K., & Day, A. (2003). Readiness for anger management: Clinical and theoretical issues. *Clinical Psychology Review, 23*(2), 319–337. [https://doi.org/10.1016/s0272-7358\(02\)00228-3](https://doi.org/10.1016/s0272-7358(02)00228-3) [in English].
- Hutchinson, G., Willner, P., Rose, J., Burke, I., & Bastick, T. (2016). CBT in a Caribbean context: A controlled trial of anger management in Trinidadian prisons. *Behavioural and Cognitive Psychotherapy, 45*(1), 1–15. <https://doi.org/10.1017/s1352465816000266> [in English].
- Jacob, U. S. & Pillay, J. (2021). Effectiveness of music therapy on reading skills of pupils with intellectual disability. *Cypriot Journal of Educational Science, 16*(1), 251–265. <https://doi.org/10.18844/cjes.v16i1.5526> [in English].
- Jacob, U. S., Pillay, J., Ayandokun, O. C., & Oyundoyin, J. O. (2021). Social Skills of Pupils with Mild Intellectual Disability: Do Peer Tutoring, Storytelling and Gender Play a Role? *Universal Journal of Educational Research, 9*(12), 1887–1897. <https://doi.org/10.13189/UJER.2021.091201> [in English].
- Jacob, U. S., Pillay, J., & Oyefeso, E. O. (2021). Types of Aggressive Behavior among Learners with Moderate Intellectual Disability in Nigeria as Perceived by Teachers, *Jurnal Tatsqif, 19*(1), 41–66. <https://doi.org/10.20414/jtq.v19i1.3260> [in English].
- Jacob, U. S., Pillay, J., & Oyewumi, I. (2021). Aggressive Behaviour Among Adolescents with Mild Intellectual Disability: Do Parental Conflicts, Peer Influence, and SocioEnvironmental Deprivation Play a Role? *Al Ibtida: Jurnal Pendidikan Guru MI, 8*(1); 16–31 <https://syekhnrjati.ac.id/jurnal/index.php/ibtida/article/view/8036> [in English].
- Kahng, S. W., Boscoe, J. H., & Byrne, S. (2003). The use of an escape contingency and a token economy to increase food acceptance. *Journal of Applied Behavior Analysis, 36*(3), 349–353. <https://doi.org/10.1901/jaba.2003.36-349> [in English].
- Keenan, M., & Dillenburger, K. (2011). When all you have is a hammer RCTs and hegemony in science. *Research in Autism Spectrum Disorders, 5*(1), 1–13. <https://doi.org/10.1016/j.rasd.2010.02.003> [in English].
- Lim, L., Saulsman, L., & Nathan, P. (2005). *Improving self-esteem*. Centre for Clinical Interventions. [in English].
- Lott, D. C., & Jencius, S. (2009). Effectiveness of very low-cost contingency management in a community adolescent treatment program. *Drug and alcohol dependence, 102*(1-3), 162–165. <https://doi.org/10.1016/j.drugalcdep.2009.01.010> [in English].
- Marcangelo, M. J., & Ovsiew, F. (2007). Psychiatric aspects of Epilepsy. *Psychiatric Clinics of North America, 30*(4), 781–802. <https://doi.org/10.1016/j.psc.2007.07.005> [in English].
- Matson, J. L., Fodstad, J. C., Rivet, T. T. & Rojahn, J. (2009). Behavioural and psychiatric differences in medication side effects in adults with severe intellectual disabilities. *Journal of Mental Health Research in Intellectual Disabilities, 2*(4), 261–278. <https://doi.org/10.1080/19315860903082615> [in English].
- Matson, J. L., & Neal, D. (2009). Psychotropic medication use for challenging behaviours in persons with intellectual disabilities: An overview. *Research in Developmental Disabilities, 30*(3), 572–586. <https://doi.org/10.1016/j.ridd.2008.08.007> [in English].
- Mayer, G. R., Sulzer-Azaroff, B., & Wallace, M. (2019). *Behavior analysis for lasting change*. 4. Cornwall-on-Hudson: Sloan Publishing. [in English].
- McClintock, K., Hall, S., & Oliver, C. (2003). Risk markers associated with challenging behaviours in people with intellectual disabilities: A meta-analytic study. *Journal of Intellectual Disability Research, 47*(6), 405–416. <https://doi.org/10.1046/j.1365-2788.2003.00517.x> [in English].
- McDonald, M. E., & Hemmes, N. S. (2003). Increases in social initiation toward an adolescent with autism: Reciprocity effects. *Research in Developmental Disabilities, 24*(6), 453–465. <https://doi.org/10.1016/j.ridd.2003.04.001> [in English].
- McGrother, C. W., Byrne, V., Thorp, C., Tyrer, F., Watson, J. (2007). *Leicestershire learning disability register: Annual report for the Department of Health 2006*. Leicester: University of Leicester. [in English].
- Meins, W. (1995). Symptoms of major depression in mentally retarded adults. *Journal of intellectual disability research: JIDR, 39* (Pt 1), 41–45. <https://doi.org/10.1111/j.1365-2788.1995.tb00912.x> [in English].
- Mennin, D., Heimberg, R., Turk, C., & Fresco, D. (2006). Applying an emotion regulation framework to integrative approaches to generalized anxiety disorder. *Clinical Psychology: Science and Practice, 9*(1), 85–90. <https://doi.org/10.1093/clipsy.9.1.85> [in English].
- Moss, S. (2001) Psychiatric disorders in adults with mental retardation. *International Review of Research in Mental Retardation 24*, 211–43. [in English].
- Murphy, G. H., Beadle-Brown, J., Wing, L., Gould, J. Shah, A., & Holmes, N. (2005). Chronicity of challenging behaviours in people with severe intellectual disabilities and/or autism: A total population sample.

Journal of Autism and Developmental Disorders, 35, 405–418. <https://doi.org/10.1007/s10803-005-5030-2> [in English].

Neacsu, V. (2013). The efficiency of a cognitive-behavioural program in diminishing the intensity of reactions to stressful events and increasing self-esteem and self-efficacy in the adult population. *Procedia – Social and Behavioral Sciences*, 78, 380-384. <https://doi.org/10.1016/j.sbspro.2013.04.315> [in English].

Nijman, H. L. I., & Á Campo, J. M. L. G. (2002). Situational determinants of inpatient self-harm. *Suicide and Life-Threatening Behavior*, 32(2), 167–175. <https://doi.org/10.1521/suli.32.2.167.24401> [in English].

Paivio, S. C., & Carriere, M. (2007). Contributions of emotional-focused therapy to the understanding and treatment of anger and aggression. In Timothy A. Cavell & Kenya T. Malcolm (Eds.), *Anger, aggression, and interventions for interpersonal violence* (p.143-164). Lawrence Erlbaum Associates. [in English].

Park, J. S., & Lee, K. (2012) Modification of severe violent and aggressive behaviour among psychiatric inpatients through the use of a short-term token economy. *Journal of Korean Academy of Nursing*, 42(7), 1062-1069. <https://doi.org/10.4040/jkan.2012.42.7.1062> [in English].

Poulsen, H. D., & Engberg, M. (2001). Validation of psychiatric patients' statements on coercive measures. *Acta Psychiatrica Scandinavica*, 103(1), 60–65. <https://doi.org/10.1111/j.1600-0447.2001.00146.x> [in English].

Qureshi, H., & Alborz, A. (1992). Epidemiology of challenging behaviour. *Mental Handicapped Research*, 5(2): 130–145. <https://doi.org/10.1111/j.1468-3148.1992.tb00041.x> [in English].

Reinke, W. M., & Herman, K. C. (2002). Creating school environments that deter antisocial behaviours in youth. *Psychology in the Schools*, 39(5), 549–559. <https://doi.org/10.1002/pits.10048> [in English].

Sandra, L., & Friedrich, M. A. (2009). Token economy system. In *The Gale Encyclopedia of Mental Health*. Encyclopedia.com. <https://www.encyclopedia.com/medicine/encyclopedias-almanacs-transcripts-and-maps/token-economy-system> [in English].

Singh, N. N., Lancioni, G. E., Winton, A. S. W., Singh, A. N., Adkins, A. D., & Singh, J. (2008). Clinical and benefit-cost outcomes of teaching a mindfulness-based procedure to adult offenders with intellectual disabilities. *Behaviour Modification*, 32(5), 622-637. <https://doi.org/10.1177/0145445508315854> [in English].

Smith, S., Branford, D., Collacott, R. A., Cooper, S-A, & McGrother, C. (1996). Prevalence and cluster typology of maladaptive behaviours in a geographically defined population of adults with learning disabilities. *The British Journal of Psychiatry*, 169(2): 219–227. <https://doi.org/10.1192/bjp.169.2.219> [in English].

Tarbox, J., Wilke, A. E., Findel-Pyles, R. S., Bergstrom, R. M., & Granpeesheh, D. (2010). A comparison of electronic to traditional pen-and-paper data collection in discrete trial training for children with autism. *Research in Autism Spectrum Disorders*, 4(1), 65–75. <https://doi.org/10.1016/j.rasd.2009.07.008> [in English].

Tenneij, N., & Koot, H. (2008). Incidence, types and characteristics of aggressive behaviour in treatment facilities for adults with mild intellectual disability and severe challenging behaviour. *Journal of Intellectual Disability Research*, 52(2), 114–124. <https://doi.org/10.1111/j.1365-2788.2007.00968.x> [in English].

Theodore, L., Bray, M. A., & Kehle, T. J. (2004). A comparative study of group contingencies and randomized reinforcers to reduce disruptive classroom behavior. *School Psychology Quarterly*, 19(3):253–271. <https://doi.org/10.1521/scpq.19.3.253.40280>. [in English].

Thompson, R. H., & Iwata, B. A. (2005). A review of reinforcement control procedures. *Journal of applied behavior analysis*, 38(2), 257–278. <https://doi.org/10.1901/jaba.2005.176-03> [in English].

Tyrer, F., McGrother, C. W., Thorp, C. F., Donaldson, M., Bhaumik, S., Watson, J. M., & Hollin, C. (2006). Physical aggression towards others in adults with learning disabilities: Prevalence and associated factors. *Journal of Disabilities Research*, 50(4), 295–304. <https://doi.org/10.1111/j.1365-2788.2005.00774.x> [in English].

Wakschlag, L. S., Choi, S. W., Carter, A. S., Hullsiek, H., Burns, J., McCarthy, K., Leibenluft, E., & Briggs-Gowan, M. J. (2012). Defining the developmental parameters of temper loss in early childhood: implications for developmental psychopathology. *Journal of child psychology and psychiatry, and allied disciplines*, 53(11), 1099–1108. <https://doi.org/10.1111/j.1469-7610.2012.02595.x> [in English].

Wille, J. R. (2002). *Reducing disruptive classroom behaviour with multicomponent intervention: A literature review*. (Master's thesis, University of Wisconsin-Stout, Wisconsin, US). <https://docplayer.net/20988296-Reducing-disruptive-classroom-behavior-with-multicomponent-intervention-a-literature-review-jessica-r-wille-a-research-paper.html> [in English].

Willner, P. (2005). The effectiveness of psychotherapeutic interventions for people with learning disabilities: A critical overview. *Journal of Intellectual Disability Research*, 49(1), 73–85. <https://doi.org/10.1111/j.1365-2788.2005.00633.x> [in English].

Yudofsky, S. C., Silver, J. M., Jackson, W., Endicott, J., & Williams, D. (1986). The overt aggression scale for the objective rating of verbal and physical aggression. *The American Journal of Psychiatry*, 143(1), 35–39. <https://doi.org/10.1176/ajp.143.1.35> [in English].

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