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Cognitive behavioral therapy as treatment intervention for aggressive behaviors in clients with intellectual disabilities and concomitant mental health conditions

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Abstract:

BACKGROUND: Few researchers have examined the effectiveness of cognitive behavioral therapy in treating aggressive behaviors among individuals with dual diagnosis (intellectual disability and mental health conditions) due to the relatively recent interest in the field of psychopathology in intellectual disability. This study investigated the effectiveness of cognitive behavioral therapy in treating aggressive behaviors among clients with dual diagnoses in a community rehabilitation center, Ibadan, Oyo state, and the moderating effects of parenting style and socioeconomic status in the associations.

MATERIALS AND METHOD: A 2 × 2 × 2 pre-test post-test factorial design was used. Parenting style and socioeconomic status at two levels each moderated the associations. A sample of 22 participants purposively selected was exposed to treatment using cognitive behavioral therapy, while the other five were exposed to placebo treatment all for 8 weeks. Data collected were analyzed using Line Chart and Analysis of Covariance (ANCOVA).

RESULTS: Improvements were found in the post-treatment scores obtained on the Aggressive Scale for Youths. A reduction in the Aggressive Incidents chart was recorded for each participant in the treatment group when compared with the control group, using a line chart and Analysis of Covariance (ANCOVA). Evidence also demonstrated that parenting style (authoritarian and authoritative), $F(1,14) = 0.75$, $P < .05$, $\eta 2 = 0.05$), and socioeconomic status (high and low), $F(1,14) = 0.01$, $P = 0.020$, $\eta 2 = .00$), moderated the associations.

CONCLUSION: Cognitive behavioral therapy is seen as a treatment intervention for individuals with intellectual disability co-existing with mental health manifesting aggressive behaviors in the community or other settings. This should be used to improve the client's quality of life under these conditions.

Keywords:

Aggression, cognitive dysfunction, mental deficiency, mental health, therapy

Introduction

The manifestation of challenging behaviors among children is now widely acknowledged in contemporary disability literature. One category of children prone to aggressive outbursts is those with intellectual disability and mental health conditions referred to in this study as dual diagnosis.[1] Parents, caregivers, teachers, peers, and community service providers have reported this. People with dual

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diagnoses often have poor resilience to stress and thus may have limited capacity to manage stress.[2] One of the most common results of this limitation is the response of aggression and related challenging behavior.

Intellectual disability, as defined by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-V), is a neurodevelopmental disorder that begins in childhood and is characterized by intellectual challenges and difficulties in conceptual, social, and practical areas of living.[3] Intellectual disability manifests in poor cognitive and social abilities, language, motor dysfunction, poor sensory abilities and community integration, and judgment of situations and circumstances in the environment. On the other hand, mental health condition is a behavioral or cognitive pattern that causes significant distress or impairment of personal functioning in every area of life.[4] They manifest features that may be persistent, relapsing and remitting, or occur as a single episode; this could include depression, anxiety, mania, aggression, self-injurious behavior, attentional problems, schizophrenia, and bipolar disorder, among others. Combining these conditions holds high potential to predispose them to a range of aggressive behaviors.

Aggression is a socially inappropriate physical or verbal behavior that can be directed either toward another individual or self, and it could be any or all of the following acts: physical assaults on peers; staff or family members of various intensity; verbal threats and hostile statements; threatening gestures; tantrums; and property destruction.[5] Aggression is often the primary reason individuals with dual diagnoses are often admitted or readmitted to institutional settings. It appears to be the primary reason they are usually placed on psychotropic or behavioral control medications that may impact their lives and others in numerous ways.[6,7] Furthermore,[4] it is noted that high rates of aggressive and rebellious behaviors had been reported as a feature of psychopathology in people with intellectual disabilities. Aggressive behavior is a common manifestation of psychoses, including schizophrenia, and may be observed in personality disorders. Aggression is less common in bipolar disorders, depression, and anxiety disorders. Substance abuse can cause aggressive behavior during phases of acute intoxication and deprivation. In each case, the etiology is usually identified by a careful psychiatric evaluation.[8]

However, the prevalence of aggressive behavior among people with dual diagnoses vary drastically among studies due to methodological variations and operationalization of the concept within the populations studied. According to literature,[9] the prevalence of aggression among children with dual diagnosis range from 39.5% to 87.5%. Literature has come up with multifaceted precipitating factors of aggressive behavior in children with dual diagnoses, which may be biological, psychological, and social.[10]

Psychological methods such as using cognitive behavioral therapy (CBT) for treating aggression in individuals with intellectual disabilities have found evidence of effectiveness.[11] CBT uses a range of methods to change thoughts and behaviors that may be causing or maintaining inappropriate emotions. Methods include relaxation training, problem-solving, stress management, and self-instructional training. The degree to which the type of CBT needs to be adapted and its benefits will depend on the person's level of intellectual disability, the problem it is being used to address, and the therapist's understanding of intellectual disability.[11,12] CBT can help people look at the different situations they find themselves in and understand their thoughts, emotions, and behaviors.[13] Our thoughts, feelings, physical symptoms, and behavior can influence one another and help maintain unhelpful moods such as aggression, anxiety, and other psychological distresses.

A study by Prout and Nowak-Drabik[14] reviewed 19 articles searching for empirical evidence to support the use of CBT in the treatment of various mental disorders associated with intellectual disability. Of the 16 quantitative studies reviewed, all 16 found statistically significant improvement on at least one outcome measure. Most studies (13 of 16) found statistically significant findings on at least half of the outcome measures used. None of the studies reported that clients regressed due to the CBT intervention. In three qualitative studies reviewed, all three found that participants reported positive feelings about CBT. The results of this systematic review suggest that CBT has an emerging and positive evidence base in treating adults with intellectual disabilities who suffer from different mental health problems and is useful to both generalist social workers, who may refer clients to a specialist, and clinical social workers, who may directly treat these concerns.

Also, Orim and Orim[15] noted that despite previous concerns about the ability of people with intellectual disabilities to use psychological interventions, there is now growing evidence that CBT is being offered in clinical practice and is suitable to treat a range of mental health problems in people with intellectual disability. These include psychosis, obsessive-compulsive disorder, anxiety, depression, and anger.[14] Prout and Nowak-Drabik conducted a meta-analysis on the efficacy of psychotherapy in people with intellectual disabilities. They found 92 studies that evaluated the effects of psychotherapy in children and adults with

mild to severe intellectual disability in various settings, including community and residential care. They reported that 13% of the studies reviewed used cognitive/cognitive-behavioral techniques. Their findings also suggest that cognitive/cognitive-behavioral interventions result in *a moderate degree* of change as reported by the outcome measures and effectiveness in terms of benefit to people with intellectual disabilities.

Researchers[16,17] maintained that aggressive behavior among individuals with dual diagnoses is a psychosocial phenomenon that may be influenced by environmental factors like parenting style and socioeconomic status (SES). In this study, parenting style is conceived simply as the nature and process of bringing up children, including meeting their needs and interactions between parents and children. The authoritarian and authoritative parenting styles used in this work, according to Orim and Orim,[15] are different ways of parenting but look the same at face value. Authoritarianism is a much stricter and undemocratic attitude that characterized parents' and children's interactions. Parents tend to set very strict rules and expectations in this style, often with little reasoning (or at least few explanations surrounding the reason). Authoritative parenting means rules, but it also means communicating between parents with leeway between them. In authoritative parenting, the reasoning behind the rules is discussed with the children. Unlike authoritarian parenting, this type allows the children and parents to talk more openly before making decisions. Parenting style and SES have been linked with the manifestation of aggressive behaviors in children with dual diagnoses. Parenting styles and SES create different social environments in the lives of children within the home. Many studies have investigated the effects of parenting style and SES on children's emotional development and behavior.[18] The capacity of the parent to meet the basic needs of children in home impact their lives in certain directions.

Due to insufficient local empirical evidence, this study was conceived to investigate and provide more empirical evidence on the effect of CBT on aggressive behaviors among clients with dual diagnoses. This study also provided an initial clinical trial of CBT and its interaction effects with sociodemographic factors on aggressive behavior in children with dual diagnosis to offer local empirical evidence that provides support for extant findings. The present study differs from previous investigations that have mostly focused on clients with a single diagnosis.

Hypotheses

The following hypotheses were tested at the. 05 level of significance.

$\mathbf{H_{o1}}$. There is no significant main treatment effect on aggressive behavior among dual diagnoses clients.

$\mathbf{H_{o2}}$ There is no significant interaction between treatment, parenting style, and SES on aggressive behaviors among clients with dual diagnoses.

Methods and Materials

Study design and setting

The research adopted a 2 × 2 × 2 pre-test post-test factorial design. Parenting style and SES at two levels each moderated the associations. Purposive sampling technique was used to enumerate 22 clients with dual diagnosis in a specialized community rehabilitation center in Ibadan, Nigeria.

This study was conducted in a specialized community rehabilitation center for persons with developmental disabilities in Ibadan Oyo State, Nigeria. The center provides vocational training for its clients with disabilities. It is a state-owned center with residence facilities for all the clients. However, only registered clients with dual diagnoses in the center met the criteria for inclusion in the study.

Study participants and sampling

The participants of this study consisted of clients with dual diagnoses (intellectual disability and associated mental health conditions). A total of 22 clients were used as participants in the study. All participating clients with dual diagnoses lived in the rehabilitation center and received treatment. Eight weeks before the commencement of the study, the 22 participants used in the study recorded 637 aggressive incidents against staff, peers, and visitors. Each participant had recorded an average of four aggressive outburst per week. These aggressive incidents included verbal abuse (14%), aiming stones at others (19%), biting (7%), fighting (17%), use of dangerous objects (18%), and others (25%). Participant selection into two equivalent groups was done through random assignment using a matching technique based on their records of aggressive incidents over 2 months, which reduced bias.

Data collection tool and technique

The instruments for data collection were the Aggressive Scale for Youths (ASY) and the Aggression Incidents Form of each client in the center. ASY consists of (14) items with a 4-point rating scale, while Aggression Incidents Form was an individual daily record of aggressive incidents by each client in the center. A pilot study with adolescents with a dual diagnosis between the ages of 14 and 19 years provided initial support for the reliability (reliability coefficient of 0.84). Also, experts in psychology and psychiatry provided inter-rater validity

of the instrument, 42 copies of ASY were completed regarding each participant by parents who had not withdrawn informed consent from the study 3 weeks after receipt of the information pack. The instrument was also completed by 30 resident staff and the center's wards as a pre-test. Consequently, a baseline measure of the aggression level of each participant in the study was obtained before treatment. Each participant got at least three response sheets about their aggression level from the staff, wards, and parents. This was necessary because the participants could not give reliable information about their aggression level due to their condition. Additionally, baseline data were also gotten from each participant's aggressive incidents chart.

Eligible participants with a dual diagnosis with recent records of aggressive behaviors (defined by at least 3-times-per-week episodes of aggressive behavior in incidents chart, with at least ASY total score of 29 out of possible 56 were identified by 20 parents, 20 staff, and 10 wards. Letters and information sheets were sent to parents of all participants with dual diagnoses in the center. The study lasted for 20 weeks. However, treatment was done for 16 weeks. Records of aggressive incidents (for each participant) were kept during and after treatment for 20 weeks from when treatment started. A post-test was re-administered and completed 4 weeks after treatment using the same ASY to ascertain the change in behavior in the both Experimental and Control groups. Record of aggressive incidents was analyzed using Line Chart while pre-test and post-test of ASY were analyzed using analysis of covariance at 0.05 level of significance.

The treatment consisted of participants in the Experimental Group exposed to CBT. While the Control Group was given a placebo treatment that included drawing, storytelling, and local area politics. Each group consisted of 11 participants with at least 318 aggressive outbursts over the past 2 months before the study. Besides that, all clients were offered one-on-one treatment talks with support staff, psychologists, and psychiatrists. Some clients received extra treatments based on severity (mild to moderate).

Ethical consideration

Ethical clearance was received from the institutional review board (IRB) in the Academic Planning Division of the University of Calabar, with approval number CAL/IRB/2021/097. Every parent of all the participants in the study and the staff in the center was asked to give written informed consent (by signing a participation form) before participating in the study. Participation in this study was also voluntary and respondents were free to quit the exercise at any point. Respondents were fully aware of what the data collected will be used for, after data anonymity. The respondents were also assured of confidentiality through data deidentification and aggregation in line with the safe harbor principles.[19] After consent, sociodemographic variables of all participants (clients with dual diagnoses and staff members) were collected.

Results

Frequency of aggressive incidents (FAI)

Through data collection during and after treatment, 182 aggressive incidents were recorded for the 11 participants in the Experimental Group. In comparison, 317 aggressive incidents were recorded for participants in the Control Group completed by staff members and wards in the center. From Figure 1, the average number of incidents for the experimental group showed a moderate decline from 3.6 times per week to 1.5 times per week, showing an improvement of 57.2% in aggressive incident reduction, while those in the control group showed no evidence of a decrease in aggressive incidents. The Figure also revealed a week-by-week downward deviation from the Control Group trend line. Although the downward

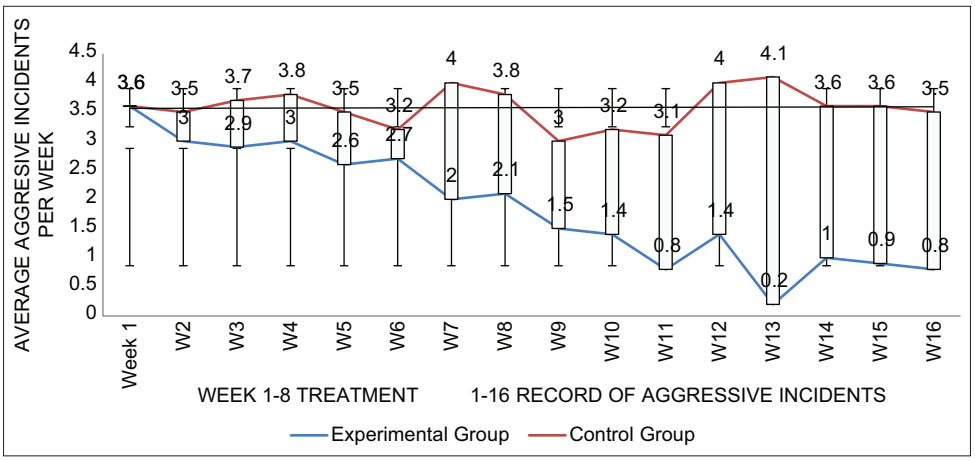

Figure 1: Line chart showing a summary of the week-by-week response to treatment progress.

deviation is zigzag, there was an overall improvement as the treatment progressed. The zigzag nature of the control and experimental group lines may partly explain some research biases, such as therapists' competence in applying CBT and variation in "classroom" management skills among the therapists.

Hypothesis testing

Hypothesis 1

There is no significant main treatment effect on aggressive behavior among dual diagnoses clients. Table 1 shows a significant main effect of treatment (CBT) on aggressive behaviors among clients with dual diagnoses. The null hypothesis was therefore rejected. This implies that the CBT positively influenced aggressive behaviors among clients with dual diagnoses in the experimental group. The estimated marginal mean scores of aggressive behavior among clients with dual diagnoses was higher in the experimental group ($M = 46.75$, $SE = 0.87$), than the control group ($M = 31.97$, $SE = 0.98$). A post hoc test was performed to determine whether a significant pairwise difference exists in the mean of aggressive behaviors among clients with dual diagnoses. The analysis showed that clients in the experimental group differed significantly from those in the control group with a mean difference of 14.78, 95% CI [11.97 to 17.60], $P < .01$.

Hypothesis 2

There is no significant interaction effect of treatment, parenting style, and SES on aggressive behavior among dual diagnosis clients. Table 1 shows a significant interaction between treatment, parenting style, and SES on aggressive behavior among clients with dual diagnoses. Based on this evidence, the null hypothesis was rejected. This implies that the treatment (CBT), parenting style, and SES influenced aggressive behaviors among clients with dual diagnoses. The estimated marginal mean was computed to determine the mean score obtained by the two levels of treatment, parenting style, and SES, and the result is shown in Table 2. Table 2 indicates that aggressive behavior for clients with authoritarian parenting and a high SES was higher in the experimental than in the control group. Similarly, clients in the experimental group with authoritarian parenting and low SES reported higher aggressive behavior than their counterparts in the control group. Table 2 also provides evidence that clients in the experimental group with authoritative parenting and a high and low SES had higher mean aggressive behavior scores than those in the control group with authoritative parenting, with a high and low SES. The within-group analysis in Table 2 indicates for the experimental group and control groups that clients with a high SES but with authoritarian parenting had higher mean aggressive behavior scores than those with a high SES but with authoritative parenting. However, clients with a low SES and authoritative parenting had a higher mean aggressive behavior than those with a low SES and authoritarian parenting in both the experimental and control groups.

Table 1: ANCOVA Summary of treatment, parenting style, and socioeconomic status on aggressive behaviors among clients with dual diagnosis

Source of Variance	SS	DF	MS	F	*P*	η^2
Corrected Model	1359.40	7	194.20	25.54	0.000	0.94
Intercept	27412.26	1	2741.26	3604.62	0.000	0.99
Treatment group	966.84	1	966.84	127.14	0.000	0.90
Parenting style	5.68	1	5.68	0.75	0.002	0.05
Socioeconomic status	0.08	1	0.08	0.01	0.020	0.00
Treatment × parenting style × SES	23.07	1	23.06	3.033	0.004	0.18
Error	106.47	14	7.61			
Total	35319.00	22				

Table 2: Estimated Marginal Means of the interaction effect of treatment, parenting style, and socioeconomic status on aggressive behaviors among clients with dual diagnosis

Treatment Groups	Parenting style	SES	M	SE
Experimental Group	Authoritarian	High	47.00	1.38
		Low	45.50	1.95
	Authoritative	High	45.50	1.95
		Low	49.00	1.59
Control Group	Authoritarian	High	30.66	1.59
		Low	32.00	1.95
	Authoritative	High	34.00	2.76
		Low	31.20	1.23

In the experimental group and within the authoritarian parenting style, clients with a high SES reported higher aggressive behavior than those with a low SES. In the experimental group, within the authoritative parenting style, clients with a low SES had a high mean aggressive behavior than those with a high SES. In the control group, within the authoritarian parenting style, clients with a high SES reported a lesser mean aggressive behavior than those with a low SES. Furthermore, for the control group, within the authoritative parenting style, clients with a high SES reported higher mean aggressive behavior than those with a low SES.

Discussion

This study determined the effectiveness of CBT and the moderating effect of parenting style and SES on aggressive behaviors among clients with dual diagnoses. The study provided evidence that CBT was effective in reducing aggressive incidents among these clients. Also, the moderating effect of parenting style and SES was evident in the experiment. These results indicated that participants in the Experimental Group had a reduction in their aggressive emotions in such as verbal abuse (6%),

aiming stones at others (10%), biting (2%), fighting (9%), use of dangerous objects (8%) and others (16%). The ANCOVA result also demonstrates the effectiveness of the treatment on the subjects. This result is comparable to Dodge[20] who found that CBT reduced aggressive problems among children with intellectual disabilities, but the effect was not significant. The result would have been so due to the limited CBT sessions on the respondents. Although Ikinako's study was not on individuals with dual diagnoses, the study demonstrated that CBT could be used on individuals with intellectual disabilities and possibly adapted for those with dual diagnoses. It could yield a positive result. Similarly, the current study showed only a 2.1 average decline in aggressive incidents among participants. This could be explained because only 8 weeks were used for treatment, in addition to the variation in skills of therapy session management by the therapists. The curve could have probably gone lower if the therapy had covered more weeks. Therefore, it can be concluded that the sharp reduction in aggressive behaviors among participants in the experimental group of the current study was not by chance since their counterparts in the control group showed no evidence of a reduction in aggressive incidents. These findings contradict Loobr[21] who reported that the treatment of aggression in persons with intellectual disability, with or without comorbid mental illness, remains a highly controversial area, and changes in practice have been slow to come.

This study's result has been so successful because of the competence or expertise of the therapists used. Therefore, some past studies[22,23] on this subject though showed evidence of the effectiveness of CBT in reducing aggressive behavior in an individual with intellectual disability with or without comorbid mental health conditions, but the result showed weak significance. Some other biases may also explain this in those studies. The current research has also demonstrated that if therapists with the right competence and knowledge of the nature and characteristics of individuals with dual diagnoses are employed in such treatment, more success could be recorded.

Similarly, the current study's findings have revealed that parenting style and SES could impact individuals with dual diagnoses' socioemotional and psychological development. This study showed that participants from relatively high SES and authoritative parents showed much decline in aggressive incidents than those from low SES and authoritarian parents. These findings align with the study of Orim and Orim,[15] which showed that being rejected by parents due to having a disability, physical harassment, parents' inability to meet children's basic needs, and parent-child incompetent relationship are associated with aggressive behavior. Similarly, Akhtar *et al*. and Barrera[24,25] reported that physical abuse, parents' poverty, illiteracy, parents' violence, and authoritarian parenting are associated with aggressive behavior of children with intellectual disabilities with or without comorbid mental health conditions. Conversely, securely attached individuals with high self-esteem, enjoying intimate relationships, providing for children, and sharing feelings with parents positively impact the emotional development of children with dual diagnoses. The current study revealed that parenting style impacts these children's development more negatively than low SES. It can be concluded that children with dual diagnoses having an authoritarian parenting style and from low SES would be at high risk of developing even other emotional, behavioral, and social problems later in adulthood.

Limitations and recommendations

One of the substantive limitations of this study was inadequately trained personnel in intellectual disability. Also, there was a shortage of experts in administering CBT for persons with intellectual disabilities. This may have impacted the result. Intellectual disability is also a broad term covering many individuals and disorders. The mild, moderate, and severe intellectual disability classifications exist within the more general definition. Due to the large nature of the term, there can be no definitive assessment, diagnosis, or treatment procedures appropriate for every person with an intellectual disability. Furthermore, the sample used in the study was relatively small, resulting in weak extrapolative inferences of the findings. However, despite these limitations, the findings obtained from the study remain valid and provide a crucial foreknowledge and direction for other studies. This study only provided initial clinical trials. There is a need for more robust studies using CBT in treating psychopathology in understudied subjects to provide more local empirical evidence and strong extrapolative inferences of the findings.

Based on the findings of the study, the authors recommended that:

i. CBT should be used to remedy aggressive behavior in individuals with intellectual disabilities co-existing with mental health conditions.
ii. There should be community child-find programs at the earliest opportunity to identify and assess children with intellectual disabilities who may also have other problematic behaviors.
iii. A combination of socio-cognitive and pharmacologic interventions should be administered to eligible candidates at the earliest opportunity through community support services.
iv. Parents of children with dual diagnoses should be trained to offer the most favorable social, emotional, and physical environment for the overall development of children with intellectual disabilities

who may have other comorbid conditions such as mental health conditions.

Conclusions

The manifestation of aggressive behavior in individuals with intellectual disability may be due to several underlying causes, including unrecognized physical or mental health conditions, communication difficulties, deprived development, and issues surrounding the individual's physical or social environment. Therefore, it is pertinent that parents and community agencies identify, assess, and provide evidence-based intervention for these behaviors and symptoms at the earliest opportunity with consideration of these highlighted factors. Although research has shown that a combination of social and pharmacologic intervention is therapeutic, this study validates psychological measures such as CBT as a treatment strategy for aggressive behaviors in clients with dual diagnoses (intellectual disability and mental health conditions) in Ibadan, Oyo State, Nigeria.

Implication

This is still a developing area in research. The government, non-governmental organizations, and other relevant institutions must promote and fund more research in this area to provide more local empirical evidence of CBT effectiveness in the psychopathology of intellectual disability. Also, fund psychotherapeutic programs for children and adults with intellectual disabilities in various development programs across the nation. One of the most important findings of this study was the intense need for education and increased training opportunities for service providers and clinicians who work with individuals with intellectual disabilities. Every clinician or service provider interviewed stated that they had not received formal training in working with children and adults with intellectual disabilities.

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Declaration of patient consent

The authors certify that they obtained all appropriate patient consent forms. In the form the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understood that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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