

Treatment interventions for people with aggressive behaviour and intellectual disability

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DEFINITION AND DIAGNOSIS OF AGGRESSION

The term 'aggression' is used widely and loosely to refer to 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. Further confusion comes from the use of a variety of terms other than 'aggression' to refer to more or less the same forms of behaviour (e.g. 'violence', 'extreme negativism', 'oppositional and assaultive behaviours'). At times, still other terms are used that refer to unobservable internal states (e.g. 'angry', 'vengeful', 'overstimulated' and 'poor impulse control').

There is no psychiatric diagnosis of 'aggressive behaviour disorder'. Rather, aggressive behaviour may be a symptom of a number of DSM-IV psychiatric diagnoses, including conduct disorder, oppositional defiant disorder, behaviour disorder not otherwise specified, intermittent explosive disorder, impulse control disorder not otherwise specified and some personality disorders. Thus, aggressive behaviour may be related to a very wide range of diagnoses. Several studies of large databases from California and New York have indicated *no* relationship between aggression and any specific psychiatric disorder in people with intellectual disability.

IS AGGRESSION COMMON IN PEOPLE WITH AUTISM AND INTELLECTUAL DISABILITY?

Epidemiology

The research literature shows that the prevalence of aggression among people with intellectual disability and autism ranges from 9% to 31%. The median reported is about 20%. Higher rates of aggression are found in institutional settings – up to 45% in some studies. However, many schools, families and community residential and vocational settings now have a significant minority of clients with aggressive behaviour.

Are particular groups at risk of developing aggression?

Aggression is more likely in persons with one or more of the following conditions:

- greater degrees of intellectual disability;
- organic aetiology;
- organic brain damage, and, perhaps especially, temporal lobe epilepsy;
- sensory disabilities;
- difficulties in language;
- poor coping skills;
- poor problem-solving skills;
- poor social skills;
- poor social support;
- concomitant psychiatric disorders.

Some studies have found that more males than females exhibit aggression. Further, aggressive behaviour is exhibited more frequently or more intensely in adolescents and young adults. It usually declines in middle and later adulthood. However, aggressive behaviour is often very stable over time. Thus, many families have to cope with aggression for many years, often with little or no support from professional staff.

Aggression may be modestly associated with certain causes of intellectual disability. Research into behavioural phenotypes has suggested that certain genetic syndromes, such as Down's syndrome and fragile X syndrome, may be associated with *lower* rates of aggression than other forms of intellectual disability.

WHAT ARE THE RISKS OF SHOWING AGGRESSIVE BEHAVIOUR?

To the self

Aggressive behaviour has many serious consequences for both clients and people around them. The client is often socially rejected and stigmatised. Further, those who are aggressive often are the victims of retaliation from peers. They are also at risk of abuse from staff and family members. Further, the client may also lose opportunities for integrated community activities, integrated education and living settings. Informal management practices from family members as well as staff, who are reluctant to include them in activities with others, may also restrict clients' lives.

When people with chronic aggression fail to respond to simple interventions they often receive multiple interventions. Many of these interventions are both restrictive and ineffective. Under the guise of behavioural interventions, clients may lose access to their personal possessions, work, money, community activities and access to their family and friends. Additionally, many people with chronic aggression are prescribed multiple psychotropic medications, which places them at risk of side-effects and drug interactions. Aggression is a major risk factor for failure of family and community placements and for admissions and multiple admissions to institutions and psychiatric facilities.

To others

Aggressive behaviour also represents a significant risk for others around the person. Injuries to peers, staff and family members are not uncommon. These injuries can lead to significant costs to service providers in the form of lost staff days and compensation and work-related disability claims. Additional costs can also arise from the need to provide enhanced staffing, additional staff training, specialised treatment facilities, and community behavioural support teams.

HOW DO WE CHANGE AGGRESSIVE BEHAVIOUR BY USING BEHAVIOURAL STRATEGIES?

No single biological or environmental cause of aggressive behaviour in people with autism or intellectual disability has been identified. Many developmental pathways contribute to the current form of a particular person's aggression. Further, the current factors maintaining aggression may change over time. For example, inadvertently ignoring adaptive communicative responses and

differentially responding to progressively more intrusive requests may initially shape aggression. Later, this same topography may come to elicit help during periods of illness.

It is important to note that aggression often occurs with other challenging behaviours, such as non-compliance, tantrums and self-injury.

Applied behaviour analysis

Applied behaviour analysis (ABA) is the natural science of observable behaviour. It focuses on observable behaviour that is public and measurable. Observable behaviour has several dimensions, such as frequency, duration, latency, intensity and sequencing. Interventions are based on learning principles and an understanding of the idiosyncratic environmental events maintaining each person's behaviour.

The most important element of ABA is enhancing the client's quality of life and social acceptance, by teaching behaviours that are valued by the client and significant others around them, and which are also functional in replacing the client's aggression. Thus, ABA emphasises teaching social skills, language skills, educational and vocational skills, and coping strategies, such as relaxation training, problem solving and anger management. Interventions that do not include these elements do not include an essential element of ABA.

ABA also emphasises the *current* environmental events. The history and development of the problem are typically underplayed and contribute relatively little to the understanding of aggression and in guiding treatment. We may speculate on how a particular behaviour was shaped or how a traumatic event might relate to classical conditioning. However, such hypotheses are little more than speculation and not subject to verification.

Interventions based on ABA are described in a precise and technological manner. Thus, with adequate experimental design, one can be convinced that changes in the observed target behaviour are related to changes in the environment. This approach also allows for replication by other clinicians and researchers. Intervention is carried out not in the laboratory or by an experimenter but in the real world, where the person lives and works, and by the people who are typically present. Thus, staff and parent training, supervision, and the motivation of change agents are key elements of any behavioural intervention. Finally, intervention is evaluated with observable data on increases in adaptive behaviours and decreases in the target behaviour. This contrasts with most other approaches that monitor and evaluate interventions by self-reports, global impressions by third parties, or even no systematic monitoring of intervention effects at all.

Two common learning mechanisms are *classical* (respondent) and *operant* conditioning. Classical conditioning begins with an unconditioned response, such as salivating in the presence of food, or blinking when there is an object in the eye. When a neutral stimulus, such as a clicking noise, is repeatedly paired with an unconditioned stimulus, such as a blast of air, the neutral stimulus (now the conditioned stimulus) eventually comes to elicit the conditioned response in the absence of the unconditioned stimulus. Thus, the click eventually elicits blinking. Many examples of classical conditioning are associated with survival functions such as eating, drinking and avoidance of danger. Its antecedents control classically conditioned behaviour. Examples of interventions based on antecedent control include systematic desensitisation and some forms of anger management. For example, suppose social criticism is an antecedent that elicits aggression towards another person. A client might be taught relaxation training and be gradually exposed to progressively more provocative forms of criticism paired with relaxation training. This intervention is based on changing the relationship between antecedents (social criticism) and behaviour (aggression).

In contrast, operant behaviour is controlled by its consequences. In operant learning, the consequences of behaviour – reinforcers and punishers – determine the future probability of behaviour. Operant learning is probably more important than classical conditioning. Operant learning using techniques such as shaping has been used to teach many important social and language skills. Shaping is sometimes described as ‘successive approximations’, because, over time, closer and closer approximations to the final response being taught are reinforced. For example, presenting an item the client likes can shape appropriate requesting. Initially any communicative response, such as pointing, might be reinforced with access to the item. All other responses would be placed on extinction, since they would not be followed by access to the item or any other reinforcer. Later, some verbal response might be required. Later still, the sound ‘p’ might be required to request popcorn, and so on, until the client can request popcorn by saying the entire word.

Much important challenging behaviour is probably inadvertently learned through shaping. It is easy to imagine how, over time, a quiet request is ignored and eventually extinguished. A quiet verbal threat is then inadvertently shaped into a loud verbal threat, accompanied by a gestural threat. Later, as these behaviours are also placed on extinction, staff and parent avoid the client and respond only to physical aggression. As socially appropriate behaviour, such as requesting, is ineffective in gaining the desired consequence, progressively more intense forms of aggression are inadvertently shaped. Eventually aggression becomes the only functional behaviour. Research on animal models has

shown that unusual, pathological and even lethal behaviours can be learned through shaping quite quickly.

Aggression may be shaped and maintained by either access to attention or tangible items (e.g. drink, food), or access to preferred activities (e.g. ritualistic behaviours). Aggression can also be shaped and maintained by avoidance of negative consequences. The most common maintaining consequences here are escape from work, a task or academic demands. In some cases, especially in some people with autism, escape from excessive stimulation, noise, crowding, demands or merely interacting with others may maintain aggression. Recent research on ABA and aggression has focused on operant conditioning as a model for aggression in persons with intellectual disability and autism.

If operant aggression is maintained by its consequences, then teaching a more appropriate way to request those consequences may introduce a competing response, and reduce the frequency of aggressive behaviour. Thus, aggressive behaviour can be thought of as a way of requesting. This form of intervention has become known as 'functional communication training'. Thus, if a client's aggression is reinforced by escape from work, then teaching the client to request a break may be an effective way to reduce aggression. This would be especially so if staff respond promptly to appropriate requesting.

Functional assessment

ABA can be contrasted with much technique-driven behaviour modification of the past. These technique-driven behavioural procedures, such as time out, token economies and schedules of reinforcement, were implemented without an understanding of the behaviour that was being changed. Further, treatments were often implemented based on the therapist's preference and local practice, rather than an understanding of each client's motivation for aggression.

The current standard of practice is to ascertain, before intervention, the individual client's motivation for aggression. This information is then used to develop an individually tailored intervention. Therefore, such an intervention can identify and strengthen adaptive behaviours that serve the same function as the target behaviour. For example, if aggression is motivated by attention, the person can be taught appropriate social skills, such as hand shaking, raising an arm, or learning to say 'hey, come here', to gain attention in an acceptable manner. Interventions can also include rescheduling the reinforcer that maintains aggression, such as rescheduling attention at times when no aggression occurs as well as ensuring that no attention is given after aggression occurs.

Interventions based upon a functional assessment can also include removing those events that trigger aggression. For example, if attention-maintained

aggression is more likely to occur after the person has been ignored for an extensive period of time, one such intervention to reduce attention-maintained aggression would be to give frequent periods of attention. This would ensure that the person is not deprived of attention. Thus, the purpose of a functional assessment is to develop an individually designed intervention, based on the individual functions of each person's aggression.

Pre-intervention assessment can take various forms. Interviews with the client, family members and staff are very often used. These interviews can sometimes be useful for developing a broad-brush picture of the problem and can be used to develop a number of competing hypotheses about the target behaviour. However, the use of interviews as the only basis for a functional assessment is not recommended. The information gleaned from interviews is often incomplete and inaccurate. Other assessment methods are needed to develop an accurate functional assessment.

Some authors have developed questionnaire methods to identify the functions of challenging behaviours. Matson's Questions About Behaviour Function is one example of this approach (Matson *et al*, 1999). Informal, direct observation of the behaviour in the natural environment can often give clues as to the naturally occurring triggers and consequences of aggression. Staff records of incidents can be analysed for patterns of when, where and with whom aggression occurs. Sometimes direct manipulation of the environment can be used experimentally to manipulate the behaviour. In this way the clinician can be more confident that a functional relationship between aggression and the environment exists. Surveys have shown that practitioners tend to use interviews, questionnaires and direct observation but not experimental methods to determine the function of challenging behaviours such as aggression.

Staff and parent training

Since aggression is mediated by the behaviour of other people, behavioural interventions require that the people around the client change their behaviour. Unfortunately, part of the challenge is that the client has enormously powerful consequences for these people. The client's behaviour may powerfully shape counter-habilitative practices in staff, such as not placing demands on the client wherever possible.

There has been extensive research on staff and parent training. Generally, verbal training, reading and courses alone may lead to improvements in knowledge. However, such an approach does not lead to improvements in skills or implementation of recommended interventions. To change staff and parent behaviour, direct training using brief instruction, modelling, rehearsal to mastery

criterion and feedback may lead to the initial acquisition of the skills. After initial training, considerable effort is needed to ensure maintenance of staff and parent behaviour. The most effective format for this is through direct observation of implementation, feedback on performance and periodic retraining.

Intensive early behavioural intervention

Over the past 15 years, Lovaas' work on intensive early intervention with children with autism has raised considerable interest (see Lovaas *et al*, 1989). The possibility that 47% of children who were diagnosed with autism during infancy or early childhood could gain apparently normal functioning and maintain this into adolescence is intriguing to researchers and has attracted considerable interest from parents. However, the impact on aggression has not been directly reported. Nevertheless, the finding in Lovaas' early studies that nearly half of the children were mainstreamed and apparently indistinguishable from non-disabled peers suggests that aggression was not a significant problem, at least for these children. This raises the possibility that early intensive behavioural intervention may prevent later aggression in children with autism.

Restraint

Recently the use and risks of restraint have received much attention. Restraint methods have been associated with a significant number of client deaths in the United States. Some behavioural interventions have incorporated restraint as a consequence for aggression. Indeed, there is good evidence that contingent restraint may be an effective intervention to reduce aggression in some people. However, the current climate strongly favours the use of restraint only in emergencies in which there is imminent danger of harm to self or others. Services that use restraint to treat aggression should focus their energies on restraint reduction. They should be prepared to justify the use of restraint in any other circumstances.

HOW DO WE CHANGE AGGRESSIVE BEHAVIOUR BY USING PHARMACOTHERAPY?

General considerations

The use of psychotropic medication with people with developmental disabilities remains for many a controversial issue that is full of contradictions. On the one hand, we eschew the use of medications, turning to them as a last

resort. On the other, staff and family members often clamour for medications at the first sign of aggression before making any rational consideration of the alternatives. Perhaps one-third of clients living in group homes now take psychotropic medication. Medical professionals point to diagnosis as the basis for the use of medication. However, surveys of American physicians taken during the development of DSM-IV revealed that many practitioners willingly admitted that they rarely adhere to DSM diagnostic criteria. Some psychiatrists regard diagnosis more as an administrative issue related to billing, rather than a clinical issue used as the basis for the use of medication. Professionals vacillate over whether we can use polypharmacy rationally. In spite of this oft-voiced concern, we often observe consumers on five or six psychotropic medications with an accompanying list of multiple diagnoses.

Another important recent issue is the limited amount of good-quality research on the evaluation of psychotropic medication with people with intellectual disability or autism. This is a relatively small market for medication compared with, say, antidepressants for use within the general adult population. Thus, drug companies generally have little interest in funding research for this relatively small population. Many reviews of psychotropic medication repeatedly mourn the absence of basic features of experimental design, such as adequate description of participants, control groups, meaningful outcome measures, blinding procedures, social validity data, follow-up data and data on adaptive behaviour.

An often-repeated recommendation has been to base the use of psychotropic medication on an accurate psychiatric diagnosis. Recently, some progress has been made here. In at least some cases it is possible to make a true ICD or DSM diagnosis for people with borderline to moderate intellectual disability. Further, it is possible to modify the criteria to make them more concrete. Interviewing a client with intellectual disability may have to be done more carefully than with a person of average intelligence, but it is certainly possible to do so. Structured psychiatric interviews, such as the Psychiatric Assessment Schedule for Adults with Developmental Disability (PAS-ADD; Moss, 1999), have shown promise in this regard. Additionally, screening instruments such as the mini-PAS-ADD (Moss, 1999) and the Diagnostic Assessment for the Severely Handicapped (DASH; Matson *et al*, 1996) have also shown promise.

In persons with severe or profound intellectual disability, the diagnostic challenges are more marked. These clients are usually minimally verbal or non-verbal. They do not directly complain of their own distress or request services. Therefore, diagnosticians are dependent upon reports from direct-care staff, other professionals and family members. Making inferences about each other's mental state is difficult for most of us. The evaluation of the mental state of a person with a severe disability is a highly inferential process.

However, where there are publicly observable phenomena that correspond to diagnostic criteria – for example, weight loss – these phenomena may sometimes be reliable and may assist in diagnosis. The issue of whether challenging behaviours, such as aggression, can be interpreted as a behavioural equivalent of an underlying psychiatric disorder in a person with severe or profound intellectual disabilities remains controversial.

No single psychotropic medication is specifically effective for aggression. The best sources of information in this area that practitioners can avail themselves of are publications from the International Consensus Panel on psychotropic medication in persons with intellectual disability (see Reiss & Aman, 1999). Below is a summary of research related to psychotropic medications and aggression in people with intellectual disability.

Neuroleptic medications

There have been a few studies of the use of chlorpromazine and haloperidol for aggression. These indicate that decreases in aggression in children with hyperactivity or conduct disorders may occur. Of three studies that have used sound methods, one showed an increase, one a decrease and one no effect on aggression.

Unfortunately, neuroleptics have significant side-effects, including sedation, tardive dyskinesia and neuroleptic malignant syndrome, which may be fatal. Some studies have reported that as many as a third of children with autism taking neuroleptics experience drug-related dyskinesia. Neuroleptic medication can also have serious cardiac side-effects. They may also impair learning. Because of their serious negative side-effects many practitioners are moving away from the use of neuroleptics, to other classes of psychotropic medication.

Anticonvulsants

Some antiseizure medications, such as carbamazepine and valproate, are sometimes used as mood stabilisers in persons with aggression. Under clinical indications there is no discussion of these medications and aggression. Moreover, there have been no methodologically adequate studies of aggression in this population.

Antidepressant drugs

There have been a handful of methodologically adequate studies of a variety of antidepressants for aggression. Several reported a large reduction in

aggression. One reported an insignificant reduction in aggression and another reported a significant *increase* in aggression.

Anxiolytic and sedative medication

Benzodiazepines have been shown to be effective in reducing anxiety in persons with intellectual disability and autism. It is therefore possible that, when aggression is mediated by anxiety or when aggression functions to reduce anxiety, benzodiazepines may be appropriate. However, it is important to balance the benefits against the potential problems of sedation and tolerance to benzodiazepines.

There is little support for the use of antihistamines to manage acting-out or hyperactive behaviour. There has been one controlled study of buspirone. This study found reductions in aggression and self-injury, *but not anxiety*, in five out of six cases. Reductions ranged from 26% to 63% of baseline rates of aggression. In one uncontrolled study, similar results were found. Some authors have concluded that the use of buspirone for aggression appears to be promising. However, this tentative conclusion is based on relatively few studies with this population.

Mood stabilisers

There have been three double-blind trials as well as several case series to evaluate lithium for aggression. They have produced equivocal results.

Stimulants

There have been several studies of methylphenidate in this population. Its effects appear to be limited to the symptoms of attention deficit hyperactivity disorder but not aggression.

Clonidine

This is used primarily as an antihypertensive agent. There has been little research specifically on aggression.

Beta-blockers

There have been no controlled studies on aggression in people with intellectual disability.

Opiate blockers

Naloxone is primarily used for self-injurious behaviour. However, there is no published information on aggression.

Fenfluramine

There is some evidence that fenfluramine may reduce hyperactivity in autism. However, there is little evidence that it has an impact on any other symptoms, including aggression. Fenfluramine has recently been withdrawn from the market because of serious negative cardiac side-effects.

Atypical neuroleptics

In recent years, so-called ‘atypical’ neuroleptic medications have been placed on the market. These include clozapine, risperidone, olanzapine and quetiapine. These agents were originally evaluated in patients with refractory schizophrenia and other psychoses but without intellectual disability. They were shown to be superior to traditional neuroleptic medications – at least when compared with higher doses of them – in the alleviation of the negative symptoms of schizophrenia as well as effective in treating the positive and disorganised symptoms. At this time it appears that these new agents are not so commonly associated with some of the more serious side-effects of neuroleptics, especially tardive dyskinesia and sedation.

In recent years, the use of atypical agents in persons with autism and intellectual disability has greatly expanded. As with people of average intelligence, they have an important role in the treatment of psychoses. However, in services for people with intellectual disability and autism, they have been used for a wide range of psychiatric disorders and challenging behaviours, including aggression. As well as a number of descriptive and uncontrolled case studies and open-label trials, there have now been two double-blind, cross-over, placebo-controlled trials of their use for a variety of challenging behaviours, including some clients with aggression. This research suggests that atypical neuroleptics may be effective in some clients with aggression. However, the mechanism of action is uncertain, as negative side-effects, such as sedation and significant weight gain, may also account for behaviour change.

Future research could address how to match diagnostic indicators or other predictors of a positive response to atypical antipsychotic agents. However, as time goes on, more negative side-effects of these medications are also being reported.

Secretin

Over the past few years secretin, a gut hormone, has received considerable attention from parents and practitioners. Anecdotal reports had been made that intravenous infusions of secretin may lead to global improvement in some children with autism and pervasive developmental disorders. Unfortunately, the first two published double-blind placebo-controlled trials revealed that there were no differences between secretin and placebo. Nonetheless, these results have not deterred those who believe in secretin's effectiveness in persons with autism.

Summary

The overall research evidence for the use of psychotropic medication based on these studies is poor to equivocal. This is due to both the small quantity and the overall poor quality of research. The new atypical neuroleptics, such as risperidone, may be effective for some people, but there is insufficient research to be conclusive. One way forward is to assume that aggression is multi-determined. Some forms may be purely learned and have no biological basis. Others may be very closely related to a concomitant psychiatric diagnosis. Still other forms may have a complex or indirect relationship to a psychiatric diagnosis. It is unreasonable to expect one intervention or drug to be particularly effective in reducing aggression. Research is needed to evaluate whether a differential psychiatric diagnosis can be made in cases of aggression and whether it can predict a differential response to different classes of psychotropic medication. Moreover, research needs to help us identify predictors of who responds to which medication.

Clinicians can improve their prescribing practice by using data-based decision making, having clearly defined symptoms to track the response to psychotropic medication, and having explicit, written diagnostic hypotheses as to the relationship between a possible psychiatric disorder and aggression.

ARE THERE OTHER APPROACHES?

There are many therapies for aggression other than those based on ABA and pharmacological therapies. Very few have been evaluated and they all should be regarded cautiously. Some have been evaluated and the results of the evaluations have been negative.

The advent of the Internet has led to a very rapid transmission of information among professionals and parent groups. This has led to the rapid

dissemination and demand for fads and unproven therapies. This is equally true for both biological and socially based interventions.

- *Counselling* is often practised with persons with borderline, mild and moderate intellectual disability. To the extent that counselling includes various behavioural methods such as relaxation training, problem-solving and anger-management skills, it is possible that counselling may be effective. However, there is no evidence that either non-directive or supportive counselling methods are effective in treating aggression with this population. Counselling methods are almost always contraindicated with persons with moderate through to profound intellectual disability.
- *Psychotherapy*. There is a surprisingly long history of psychotherapy with persons with intellectual disability and autism, including various forms of non-verbal psychotherapy. After more than 50 years of practice and research into psychotherapy, there is very little evidence that it is an effective treatment for aggression in persons with either autism or intellectual disability.
- *Cognitive therapies* Some authors have suggested that cognitive therapy might be appropriate for some persons with either intellectual disability or autism. In cognitive therapy the therapist hopes to improve behaviour by changing the client's beliefs and perceptions of the world. This is a possibility, but to date there is little evidence to support this.
- *Sensori-integration therapies*. Sensori-integration therapy (SIT) is based on the hypothesis that challenging behaviours, such as aggression, are due to lack of adequate sensory stimulation in persons with intellectual disabilities. Recently, a meta-analysis of SIT studies was published that found little evidence of its effectiveness. Indeed, there is evidence that in some cases SIT may increase challenging behaviours. Thus, SIT has been evaluated relatively well, but the results indicate that it is not effective.

A wide range of other therapies are used for the treatment of autism and aggressive behaviour. All of these therapies have their passionate advocates and endorsing parents. These therapies include: aromatherapy; music therapy; interventions based on theory of mind; re-parenting; the development, individual difference, relationship (DIR) model, also known as floor time; touch therapy; holding therapy; facilitated communication therapy; auditory integration therapy; adrenocorticotrophic hormone; immunological therapies, such as immune globin; oral antifungals; special antifungal diets; vitamin therapies; dietary therapies, such as gluten-free diets and the Feingold diet; dolphin therapy; therapies for putative allergies to food additives and other toxins; and

so on. (I have recently heard of an extract of cow placenta being used with children with autism.) By the time this chapter is published the list will undoubtedly be longer. At this time there is little evidence to support the use of these therapies to treat aggression. Indeed, some of these therapies have potentially serious side-effects, which, given the unproven status of the therapies, may lead one to judge that these negative side-effects would cause rational physicians to reject their use. At the very least, use of these therapies distracts people from those interventions that are more likely to help the client. As we move closer and closer to evidence-based practice, there continues to be a greater need for advocates and practitioners to demonstrate the effectiveness of these and other therapies.