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**POSITIVE
BEHAVIOURAL
SUPPORT**

Special
issue:

**Reactive strategies for
situational management**

Guest
editors:

Gary W LaVigna and
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Edited by David Allen and Peter Baker

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Papers

Opening editorial: Special issue on reactive strategies for situational management Gary W LaVigna and Thomas J Willis	4
The alignment fallacy and how to avoid it Gary W LaVigna and Thomas J Willis	6
The impact of situational management strategies on episodic severity Geoff Potter	17
Reactive strategies within a positive behavioural support framework for reducing the episodic severity of aggression Nicola Crates and Matthew Spicer	24
Non-aversive reactive strategies for reducing the episodic severity of aggression Matthew Spicer and Nicola Crates	35
Closing editorial: The need for a better evidence base for the situational management of challenging behaviour presented by people with intellectual disabilities Peter Baker and David Allen	52

News

Conference report: BILD's <i>International Journal of Positive Behavioural Support</i> Autumn Conference November 2015	55
NICE guideline in development – <i>Learning Disabilities and Behaviour that Challenges: service guidance</i>	57
Who's Challenging Who? Description of study and aims	58
<i>NHS England: Patient Safety Alert – Stage One: Warning. The importance of vital signs during and after restrictive interventions/manual restraint</i>	58
<i>Behaviour and Discipline in Schools: Advice for headteachers and school staff</i> Guidance from Department for Education (England) January 2016	59
Update on the Scottish Parliamentary Petition PE01548 National Guidance on Restraint and Seclusion in Schools	59

Book Reviews

**Positive Behavior Supports for Adults with Disabilities in Employment,
Community and Residential Settings**

60

Psychological Therapies for Adults with Intellectual Disabilities

62

Author Guidelines

64

Opening editorial: Special issue on reactive strategies for situational management

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This special issue of the *International Journal of Positive Behavioural Support* (IJPBS) addresses the management of challenging behaviours when they occur, otherwise referred to as situational management, within a positive behavioural support (PBS) framework. Ethics mandate that situational management should be accomplished using the least restrictive reactive strategy or strategies possible. In other words, non-restrictive, 'first resort' reactive strategies should be applied instead of restrictive, reactive 'last resort' strategies, whenever feasible, to resolve dangerous situations that are putting people at risk. Further, the effectiveness of situational management should be primarily measured by the effects of the reactive strategy or strategies on episodic severity; a quantified measure of the gravity of a behavioural episode. Episodic severity has been recognised as a dependent variable by the field of applied behaviour analysis (ABA) generally (Vollmer et al, 2011) and specifically by the field of PBS (LaVigna and Willis, 2005). That is, a major objective of a plan for the situational management of challenging behaviour (as a component of an overall PBS plan) should be to reduce the episodic severity of the behaviour(s) of concern. IJPBS is happy to provide the following four papers that focus on these important topics and to acknowledge the contribution they may make to the reduction in the use of restrictive procedures in the field.

The first article, by LaVigna and Willis, sets the stage for the following three articles. First, the article carefully and explicitly defines the measure of episodic severity as an important dependent variable for a PBS plan. This very relevant measure is missing from much of the research investigating restrictive practices. Secondly, the article introduces the 'alignment fallacy'. The concept of 'alignment' has to do with an established principle in the field that the restrictiveness of a situational management strategy should be proportionate to the risk or danger of harm related to the behaviour of concern. Unfortunately, due to the poor wording of laws and regulations that govern the use of restrictive strategies, some people may think

that the restrictiveness of a reactive strategy should be aligned with the severity and risk associated with the behaviour. This article argues that the need for alignment is a fallacy and that there are a host of positive, non-restrictive reactive strategies that can achieve the resolution of challenging situations rapidly and safely. In most cases, this renders the need for restrictive measures unnecessary, even for the most severe and imminently dangerous behaviours. The article also describes the multi-element, PBS model, including the measure of episodic severity, as the important context for using the identified positive, ie first resort, reactive strategies, without negative side-effects.

The second article in this special issue is 'The impact of situational management strategies on episodic severity', by Geoff Potter. Potter uses the multi-element model for a study of non-aversive reactive strategies using a multiple baseline design for three adults on the autism spectrum and one with a history of trauma. The behaviours of concern included self-injury sometimes resulting in the need for first aid, physical aggression severe enough to sometimes result in the need for medical attention and/or property damage that resulted in the need for expensive repairs (on one occasion alone, over AU\$20,000). Some of the first resort reactive strategies employed in this study included stimulus change, active listening, and capitulation. For all four participants, the episodic severity of their behaviour was dramatically improved with the use of first resort reactive strategies without the need for restrictive practices. Further, even though capitulation, giving in to the person and letting them have their way, was used as one of the reactive strategies for all four, their behaviour was not reinforced, evidenced by a reduction in their behavioural rates.

The third article in this special issue is 'Reactive strategies within a positive behaviour support framework for reducing the episodic severity of aggression', by Nicola Crates and Matthew Spicer. In their study, they address the concern held by many that capitulation, redirection to a preferred event, or other positive,

non-aversive reactive strategies (NARS) may end up reinforcing, and thereby increase the rate of the behaviours of concern. Crates and Spicer investigated the effects of 24 multi-element, BSP plans, using NARS, on the rate of the targeted behaviours, their episodic severity, and, for the three cases in which they were used, on the use of restrictive practices. The 24 plans were developed by 24 different practitioners based on their comprehensive functional assessments as part of the training in multi-element PBS they were receiving. Training was provided by a specifically trained team. In all 24 cases, based on a three-month follow up after initial plan implementation, the episodic severity of all of the behaviours of concern was reduced, as were the rates of occurrence of these behaviours. Further, for the three applicable cases, the use of restrictive practices was either eliminated or dramatically reduced. Again, we see evidence that within a multi-element, PBS framework, it appears that NARS can be used without reinforcing the behaviours of concern.

The fourth article is 'Non-aversive reactive strategies for reducing the episodic severity of aggression', by Matthew Spicer and Nicola Crates. In our opinion, this last article provides an exceptionally strong finish to this special issue for two particular reasons. Firstly, it delineates the most comprehensive and explicit listing in the published literature of the NARS available for inclusion in a multi-element, PBS plan to reduce episodic severity. Remarkably, they list over 25 such 'first resort' strategies. Further, Spicer and Crates make an important distinction in categorising these NARS as either based on or not based on the function of the behaviour, as determined by a functional behaviour assessment. Secondly, they introduce a standardised measure, the momentary effect severity scale, for measuring the effects of each situational management strategy on the episodic severity of aggression, the behaviour of concern for their study. Their analysis was based on the data recorded by staff on 233 behavioural incident reports for 17 clients. Using the scale, they measured the effects on episodic severity of four different categories of reactive strategies, ie function based NARS, non-function based NARS, aversive reactive strategies and restrictive reactive strategies. We believe that many readers will be excited and inspired by the results of this study to change their practice and more pervasively adopt 'first resort' NARS.

In fact, we believe this excitement and inspiration will come from the entirety of this special issue. We also hope that this excitement and inspiration will go beyond practice and extend to further research in this important area. There is certainly more research to be done through carefully controlled studies that strongly validate the conclusions reached. The studies presented here add encouraging findings to the nascent research investigating the effectiveness of 'first resort' reactive strategies. This assists our field to further reduce the need for restrictive practices, even for the severest forms of challenging behaviour

We thank David, Peter and the rest of the IJPBS staff for the wonderful and meaningful opportunity we had to organise and edit this special issue.

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The alignment fallacy and how to avoid it

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Abstract

Alignment, as the term is used here, refers to the belief and practice that when challenging behaviour is at a crisis (ie, severe) level, duty of care requires proportionately restrictive strategies be used to prevent injury to the client, to prevent injury to staff, and to prevent injury to members of the public. This is a widely held belief that is supported in agency and government policies and guidelines. We argue here, that this is a 'fallacy', and continues to be promulgated because of a lack of alternative conceptualisations and strategies. We argue further that the field of positive behavioural support (PBS) offers the conceptual framework and practice to overcome this fallacy.

Keywords: Alignment, episodic severity, first resort, reactive strategies, multi-element, PBS

Introduction

Positive behavioural support (PBS) is applied behaviour analysis (ABA) in support of people with behaviours of concern (see Anderson and Freeman, 2000; Carr and Sidener, 2002; LaVigna and Willis, 2012). These behaviours are viewed as such because they get in the way of people having the best quality of life possible and/or they put themselves and/or others at risk for harm or injury. Quality of life can be measured in many ways, but it would likely include community presence and participation in ways that are age appropriate and valued by society, autonomy and self determination by making increasingly informed choices, expanding friends and relationships, and increasing independence (Wolfensberger, 1983; O'Brien and O'Brien, 1991). To achieve a good quality of life involves continuous engagement in an ongoing process of 'becoming' through learning new skills, making new friends, gaining increasing control over one's life, going to new places, doing new things and having fun.

Challenging behaviours that can act as barriers to these quality of life outcomes include, but are not limited to, aggression toward others, self or property, yelling and screaming, putting oneself or others in danger, and the like. Positive behavioural support

(eg Carr et al, 2002; LaVigna and Willis, 2005a; Gore et al, 2013) attempts to remove these barriers first with a plan based on an understanding of the meaning of the behaviour from the person's point of view. In an attempt to better understand the person's behaviour, Positive behavioural support goes beyond the simple ABCs of the behaviour and also takes into account, among other things, the person's history, the skills they have and don't have in their repertoire, their health, medical and psychiatric status, and the density of preferred events in their life. Second, PBS attempts to remove these behavioural barriers using the least restrictive and least aversive method possible, in keeping with the fundamental ethical principles that guide the professional practice of ABA. In doing so, PBS does not use Type I punishment nor Type II punishment (Donnellan et al, 1988). Type I punishment is defined as the contingent presentation of a stimulus or event that results in a decrease in future responding. Examples might include the use of verbal reprimands or 'smacks'. Type II punishment is defined as the contingent removal of a stimulus or event that also results in a decrease in future responding. Examples of this might include 'time out' from the opportunity for reinforcement or loss of privileges.

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Some people may consider the use of such aversive consequences as restrictive. However, there are significantly more extreme restrictive practices currently being used with people who are challenged by intellectual and developmental disabilities (and mental health). These include physical management and control of the person, mechanical restraint (for example, tying a person in a bed so they can't get up or using a straight arm splint so they can't bend their arm to hurt themselves), physical seclusion (for example, locking a person in a room), and the use of 'as needed' medication (ie PRN) requiring the person to ingest medication against the person's will resulting in physiological control (Royal College of Psychiatrists et al, 2007; Oliver et al, 1998).

The use of such restrictive procedures in the field is not to punish the behaviour in an effort to reduce its future occurrence. Rather, the purpose is for situational management, that is, to exert physical control over the person and their behaviours because those behaviours are putting the person, others or property at imminent and serious risk. The use of such procedures is often justified under a 'duty of care' (eg Queensland, 2011). Further drivers for situational management state, for example, that if, based on a risk assessment, someone or something is at imminent risk of harm, injury or damage due to a behaviour, staff have a duty to do what they need to do to prevent injury or damage from occurring, including the possible use of restrictive procedures (eg BILD, 2014).

Scandals have plagued the field in which we work and continue to occur around the abusive treatment so many people have experienced while receiving services. Further, these scandals have shown no national boundaries, occurring, to refer to only some, in the United Kingdom, in Australia and in the United States. For example, in the United Kingdom, abuse was documented at Winterbourne View hospital, a private hospital receiving government funds to provide services (Department of Health, 2012). In Australia, the report by Judge Carter (Carter, 2006) of the abuse that was occurring in Queensland led to corrective action that cost more than AU\$113M. In the United States, abuse was found throughout the system of over 2,000 state run group homes in New York (Hakim, 2011). Such scandals regarding the abusive treatment of people who are most vulnerable are revealed repeatedly in these and other countries throughout the world.

Although the abuse typically involves an individual staff's personal reaction to the behaviour rather than a prescribed treatment plan, invariably the public outcry in response to these scandals has our bureaucrats and politicians scrambling to fix the problem. Their interventions include the promulgation of mandated policies and procedures, rules to follow, regulations, guidelines, and staff training requirements. In an effort to eliminate abusive practices, all restrictive practices are limited and permitted to be used only if necessary to prevent serious harm, injury or property damage. This has led to what people consider to be the need for alignment as described above. Specifically, when challenging behaviour is at crisis levels, duty of care requires proportionately restrictive practices be used to prevent injury to the client, to prevent injury to staff and/or to prevent injury to the public. The rest of this article is aimed at showing that this statement is a fallacy, that is, to show that restrictive practices are not necessary to keep people safe from harm or injury.

Sources that feed the alignment fallacy

Policies and procedures, regulations, rules, guidelines, and staff training requirements, themselves, contribute to the alignment fallacy. For example, restrictive procedures and practices are referred to as 'last resort' reactive strategies to be used only if the first resort strategies are not able to assure safety in a situation posing imminent danger. Unfortunately, there is often no explicit reference or description to any 'first resort' reactive strategies capable of assuring safety in situations posing imminent risk. Although it may not have been the intent, what may be flawed wording leaves the impression that in the presence of imminent risk, restrictive practices are necessary and the only strategies available.

An example of this can be found in the policy published by the UK Department of Health regarding positive and proactive care and the associated statutory guidance (Department of Health, 2014) for reducing the need for restrictive interventions. Among other things, regarding the use of a restrictive procedure, the statutory guidance is that:

'There must be a real possibility of harm to the person or to staff, the public or others if no action is undertaken.'

This statement implies there are only two options when faced with a situation that poses 'a real possibility of harm'. One can either take no action or one can use a restrictive procedure. No mention or reference is made to non-restrictive actions that can be undertaken when there is 'a real possibility of harm'.

Elsewhere in the Department of Health statutory guidance (2014), it is stated that:

'The nature of techniques used to restrict must be proportionate to the risk of harm and the seriousness of that harm.'

That is, restriction 'must be' aligned with the risk. Again, this implies that if the risk of harm and seriousness of that harm is high, the level of restrictiveness to offset that risk must also be high. There is no reference to the availability of effective non-restrictive procedures for effectively dealing with high risk situations.

Even when there is reference to the use of restrictive practice as a 'last resort', there is no reference to possible 'first resort' strategies. In fact, there is the implication that if there is no build-up to the crisis level, where (unspecified) first resort strategies may be used, then restrictive strategies will be necessary.

'...use of restrictive procedures as a demonstrable last resort...where behaviours cannot be predicted.'

In other words, where behaviours cannot be predicted, restrictive procedures are demonstrably required since the first resort strategies are only useful for earlier, less severe levels of escalation.

There are, of course, references to primary and secondary prevention strategies (eg Department of Health, 2014) that would preclude the need for any reactive strategy, restrictive or otherwise, since the crisis level behaviours of concern would not occur. The discussion here, however, is with reference to needing to react to a behaviour that was not prevented and is putting someone at risk. What is needed is not just a reference to proportionately restrictive, last resort reactive strategies but also an explicit reference to non-restrictive first resort reactive strategies. Rarely is this done. While a list of examples of first resort reactive strategies is not provided, there are at least two such references in the (BILD, 2014) Code of Practice:

'...de-escalation strategies that may prevent any requirement for restrictive physical intervention' (p. 69)

'...restrictive physical interventions must only be considered when... non-physical reactive intervention has been tried, reviewed and evaluated to be ineffective.'

Without an evaluation of effectiveness for first and last resort reactive strategies, decision makers are left only with the proportionality of the risk associated with the behaviours of concern aligned with the restrictiveness of the reactive strategies being considered to decide on what reactive strategies to recommend/approve. Accordingly, we believe that another contributor to the alignment fallacy is the failure to require the measure of 'episodic severity' (LaVigna and Willis, 2005b) to evaluate the effectiveness of a reactive strategy. This measure is not referenced in many of the policies and procedures, regulations, rules, guidelines, and staff training requirements that govern the use of restrictive practices.

Episodic severity is defined as the quantified measure of the intensity or gravity of a behavioural incident. For example, each incident of a person's defined 'outburst behaviour' might be measured on a five-point scale, based on the most severe topography that occurred during the outburst. Level 1 could be defined as involving yelling and screaming; Level 2 involving property destruction or its attempts; Level 3 involving aggression against self or other (or its attempt); Level 4 resulting in someone needing first aid; and Level 5 resulting in someone needing medical attention. The measure of episodic severity is not, for example, the rate of Level 5s over a period of time but rather, for that period of time, the range of levels (eg from Level 2 to Level 5) and the average Level (eg 4.5). Other measures of the episodic severity of an outburst might include the cost of repair and replacement resulting from each incident and/or the number of minutes the outburst lasted from beginning to end, again summarised by range and average.

The point we are making is that duty of care should require us to use a situational management strategy, that is, a reactive strategy, that will minimise episodic severity. Governmental policies and procedures, regulations, and guidelines do not require the measurement of the effectiveness of a restrictive procedure in minimising episodic severity. Even respected systems of restrictive practices, such as Studio III and

PROACT-SCIPr-UK, have not been formally evaluated for their ability to reduce episodic severity. The only outcome research that has been carried out regarding systems that use restrictive procedures is research that has evaluated staff confidence in managing crisis level behaviours (eg Allen and Tynan, 2000). By requiring measures of episodic severity for all reactive strategies, restrictive or otherwise, we can evaluate which procedures are empirically shown to be most supportive of our 'duty of care'.

The policies and procedures, regulations, rules, guidelines, and training requirements for the use of restrictive practices referred to above do not explicitly describe and rarely even reference non-aversive, non-restrictive reactive strategies (LaVigna and Willis, 2002; Willis and LaVigna, 2004), such as stimulus change (eg suddenly doing a dance while singing a song), redirection to a preferred event (such as offering a piece of apple pie topped with a scoop of ice cream), and strategic capitulation (that is, giving the person what they want). These strategies are evidenced based (LaVigna and Willis, 2012; and see articles by Potter, 2016; Crates and Spicer, 2016 and Spicer and Crates, 2016 in this special issue) and are what we have described as 'first resort' strategies that can preclude the need for a restrictive procedure. As such, they can be used in the early stages of a behavioural event in order to prevent escalation, thereby precluding the need for a restrictive procedure. Additionally, they can be used in reaction to behaviours that start at or escalate to crisis levels as 'first resort' strategies, thereby precluding the need for restrictive procedures.

One notable exception that provides at least general references to first resort reactive strategies is the BILD (2014) Code of Practice. Page 50 states that restrictive physical intervention should only be considered if non-physical reactive interventions (meaning first resort strategies) have been tried. On page 69, the Code states that training should include '...de-escalation strategies that may prevent any requirement for restrictive physical intervention'. This important Code of Practice provides an explicit list of last resort strategies, including: physical intervention; seclusion; environmental, mechanical, and chemical restraint; PRN medication; rapid tranquilisation; and long term segregation. However, it would be helpful if the Code also provided a comparable list of the first resort strategies that may preclude the need for the restrictive options. Such strategies are not only referred to in this article

and in the other articles in this special issue of the IJPBS (Potter, 2016; Crates and Spicer, 2016; Spicer and Crates, 2016), but in other past publications as well (eg LaVigna and Donnellan, 1986; LaVigna and Willis, 2002, 2005a, 2005b).

Research provides emerging evidence that such non-aversive, non-restrictive reactive strategies may be more effective than restrictive procedures in minimising episodic severity, thereby making them more effective in meeting our duty of care responsibilities even at the time of a behavioural crisis (MacDonald, Hume and McGill, 2010; LaVigna and Willis, 2012; Potter, 2016; Crates and Spicer, 2016; Spicer and Crates, 2016). Further, this research also provides emerging evidence that, when used within the context of a full multi-element PBS plan, the behaviours of concern occur less and less frequently reducing the need for any reactive strategies.

Policies and procedures, regulations, rules and guidelines that govern the use of restrictive, 'last resort' strategies generally require that those who use these strategies be trained in their application. In contrast, these same policies and procedures not only often fail to identify 'first resort' strategies that can be used to preclude the need for restrictive, last resort methods, but also do not require training in their use.

Additionally, these same policies, procedures and regulations fail to identify or require training in preventative strategies (LaVigna and Donnellan, 1986); strategies that would preclude the need for any reactive strategies since the behaviours of concern could be prevented from happening at all. Such preventative strategies would include, but not be limited to, increasing the density of preferred events and activities in the person's life; introducing schedules of reinforcement that provide explicit incentives for not exhibiting the behaviours of concern; controlling or eliminating the events or situations that tend to trigger the behaviours of concern; and giving the person free access to the things that may be motivating the behaviours of concern, thus precluding the need for the person to engage in those behaviours. By their very nature, preventative strategies are artificial. They are prosthetic ways of minimising the occurrence of serious behaviours. Accordingly, a full PBS plan would also include additional strategies such as skill building to eventually preclude the need for these prosthetics.

Barriers to breaking away from the alignment fallacy

Lack of integration of crisis management strategies/systems with basic principles of ABA

Above, we discussed some of the sources of the alignment fallacy. While we understand the sources, there are barriers to overcoming the alignment fallacy. One of these barriers is the lack of integration of approved crisis management systems and procedures into the methodology of ABA. While ABA is characterised by its objectively and reliably measured changes in behaviour as a result of equally clearly defined procedures, crisis management strategies suffer from a lack of clearly defined and reliably measured procedures and outcomes. If crisis management strategies are considered necessary, they should be defined clearly and objectively and need to be included as a component of the PBS plan that addresses the behaviours of concern. Further, with regard to the removal of the barriers to the person's good quality of life, the plan, among other things, needs to be aimed at reducing both the occurrences of those behaviours and, should they occur, their episodic severity.

Since one of the basic ethical principles of PBS, ie ABA, is to use the least restrictive methods possible to solve a problem, restrictive methods should be recommended only as a literal 'last resort', with the 'first resort' methods recommended explicitly and employed first wherever possible. For example, if the behaviour of concern was physical aggression, physical management of that behaviour might be recommended as a last resort reactive strategy, but only if the first resort strategies failed to get the behaviour to stop. An example of a first resort reactive strategy that could be recommended might be using a remote switch to click on a recording of Bill Haley and the Comets singing 'Rock Around the Clock', which had been previously cued up on the CD player for a person who obsesses about such music.

Lack of required episodic severity measures

Another barrier to resolving the alignment fallacy is confusion around measuring severity. Generally speaking, even when using an approved restrictive procedure, if there is any measure of severity, it is a measure of severity over time, NOT a measure of episodic severity. For example, someone needing to go to the hospital as the result of a person's physical aggression would be an important measure of severity for that behaviour.

If we were documenting the number of hospitalisations that occur as a result of physical aggression each week, we might see that hospitalisations used to happen ten times a week, but three months after we implemented our plan it is only happening three times a week. This looks like improvement. But it tells us nothing about the severity of individual episodes. However, if we were to measure episodic severity based on levels of severity, with someone needing to go to the hospital being Level 5, we might see not so rosy a picture. We might see that before treatment the average level of episodic severity was 3.5 a week with a range of from Level 1 to Level 5. In contrast, we might see that three months after we implemented our plan the average severity level is 5, with every occurrence of physical aggression resulting in someone needing to go to the hospital. In other words, while the overall severity showed that the number of hospitalisations went down, the measure of episodic severity indicated that the severity of individual episodes was increasing; that is, now every time physical aggression occurs, someone goes to the hospital. Therefore, assuming that the occurrence of the behaviour has been reduced, a reduction in severity over time does not necessarily mean there has been a reduction in the episodic severity of the behaviour. In contrast, assuming that the occurrence of the behaviour has been reduced, a reduction in the episodic severity of the behaviour also means there has been a reduction in severity over time. Accordingly, episodic severity measures should be one of the measures of the effectiveness of a PBS plan that includes the recommendation to use a restrictive procedure as a last resort strategy. (See the IABA guidelines for emergency management in Willis and LaVigna, 2004.)

Non-utilisation of the principles and procedures of resolution and escalation

The basic behavioural procedures of reinforcement and punishment are defined in terms of their effect on the rate of future responding. That is, reinforcement increases future responding and punishment decreases future responding. To achieve the needed reductions in episodic severity, it is necessary to use those behavioural procedures defined not by their future effect but rather by their situational effect. These are the procedures of resolution and escalation (LaVigna and Willis, 2005b). 'Resolution' is defined by its situational effect, *as a process by which the reactive presentation or withdrawal of a stimulus or event results in a decrease in the immediate probability of response continuation or escalation*. 'Escalation' is defined by its situational effect, *as a process by which the reactive presentation*

or withdrawal of a stimulus or event results in an increase in the immediate probability of response continuation or escalation. PBS plans are designed to include procedures that produce 'resolution' and avoid procedures that produce 'escalation' as measured by the episodic severity of the behaviour (LaVigna and Willis, 2005b).

PBS plans need to explicitly include reactive procedures that will resolve the behavioural episode as quickly and safely as possible, such as the stimulus change and redirection procedures referred to above. Further, they need to avoid reactive procedures that will maintain or escalate the severity of the behavioural episode. Such maintenance or escalation are often the effects of the restrictive crisis management strategies that are employed (for example, see Spicer and Crates, 2016 in this special issue).

Unfortunately, this explicitness is not always evidenced in the relevant current literature. For example, in the behaviour plan evaluation instrument (BIP-QE II) published by the California Department of Education (Wright, Mayer and Saren, 2013), there is no explicit reference to the measure of episodic severity, the principles of 'resolution' and 'escalation', nor, for further example, the first resort reactive strategies of stimulus change, redirection and strategic capitulation strategies referred to above (LaVigna and Willis, 2002; Willis and LaVigna, 2004).

Positive behavioural support

Positive behavioural support, as described by LaVigna and Willis (2005a) suggests a model that may be helpful for avoiding the alignment fallacy.

Outcomes

This PBS model has at its foundation several important outcomes. First and foremost among these is an improvement in the focus person's quality of life. Secondly, if there are behaviours of concern creating a barrier to the person having a better quality of life, the outcome objective is to get the most rapid reduction possible in both the occurrence and the episodic severity (LaVigna and Willis, 2005b) of the behaviour. Further outcome objectives include the plan's acceptability to the focus person, his/her family, staff and the wider community; the lasting durability of the plan's accomplishments; the generalisation of the plan's effects to the wider community; and, finally, the avoidance of any negative side effects.

Comprehensive functional assessment

To accomplish these outcomes, the PBS process begins with a comprehensive functional assessment aimed at understanding the behaviour from the focus person's perspective (Willis, LaVigna and Donnellan, 2011). This process includes, but doesn't stop with a simple ABC analysis that identifies the antecedents and consequences that control the behaviour. Rather, it goes to the level of a more personal understanding of the behaviour. For example, someone's attention seeking behaviour may be influenced by a history of rejection and abuse experienced as a child and the message behind the behaviour might better be understood by recalling the lyrics of the song of the West End hit, *Oliver*, 'Where is Love'. Or, as another example, someone becoming aggressive when required to leave the computer when it is someone else's turn may not simply be communicating 'I want the computer'. His aggression may be influenced by the neurologically based movement disturbance recognised now as a feature of autism (Leary and Hill, 1996). His behaviour might more accurately be understood as communicating, 'I can't stop! I can't stop!'

Support plan

Based on the understanding obtained from the functional assessment, PBS provides a structured plan of support that includes both proactive and reactive procedures.

Proactive procedures

Ecological strategies – smoothing the fit

The first set of proactive strategies in a PBS plan involves 'smoothing the fit' in the mismatches identified through assessment between the person's needs and characteristics and their surrounding ecologies. These include but are not limited to aspects of the physical, interpersonal and service environments. Typically, these environmental changes are not made temporarily, being needed only until the behaviours of concern are no longer occurring. Rather, they are typically made with the expectation that they will be needed permanently, if not to keep the behaviours of concern under control then at least as permanent improvements in the person's quality of life. Examples of such ecological strategies include: recruiting staff who are fluent in sign language when supporting a person who can't hear and who uses sign to communicate; increasing the choices the person has regarding where he or she will live, who they will live with, who their staff will be, what

they will have for breakfast, lunch and supper, what kind of job they want, etc; increasing and maintaining the frequency of preferred events in the person's daily life; and getting appropriate and needed health and psychiatric services.

Positive programming – teaching skills

Behaviours of concern almost always occur within the context of the focus person not having sufficient skills to get their needs met and to have the best quality of life possible (Goldiamond, 1974, 1975). Accordingly, there are four categories of skills that are taught in a full PBS plan (LaVigna, Willis and Donnellan, 1989). The first of these are general domestic, self care, recreational, community and even academic skills. Included as at least one of the skills taught in this category should be at least one 'fun' skill, referring to something the person personally wants to learn. An example of this might be teaching the person how to independently use the CD player without the need for any prompting or assistance from staff.

The second category of skills in positive programming is referred to as functionally equivalent skills. A comprehensive functional assessment identifies the functions served, or the needs met by the behaviour of concern. Functionally equivalent skills involve teaching the person socially acceptable, alternative ways of getting the need met. Examples of such skills might be to teach the person how to ask for something they want, how to communicate 'No', or how to independently get something they want without any assistance from another person. Related to the functionally equivalent skills, there are also functionally related skills that need to be taught. This represents the third category of skills. Examples might include teaching the person how to make a choice and how to discriminate between socially acceptable and unacceptable behaviour.

A subset of functionally related skills is so important it justifies having its own category. It involves teaching the focus person socially acceptable ways for coping with and tolerating naturally occurring aversive events. Examples of such events are: needing to wait for something you want (eg for dinner to be served); doing without something you want (eg having a relationship with someone who doesn't want to see you any more); and needing to do something you don't want to do (eg cleaning out the toilet bowl). The irony is that the more successful we are in supporting the person to have a full life, the more these kinds of aversive events are likely to occur. Further, such aversive events are often

the immediate antecedent to the behaviours of concern. Learning how to cope with and tolerate such naturally occurring aversive events is one of the key strategies for assuring the lasting benefits of a PBS plan.

Focused support – prevention

As important as teaching skills and removing the environmental mismatches may be in producing lasting effects, they may take some time to accomplish. In the meantime, a full PBS plan includes what is referred to as focused support procedures to rapidly reduce the occurrence of behaviours of concern and the resulting need for any reactive strategies. Examples of such strategies (LaVigna and Donnellan, 1986) include: antecedent control (eg not asking the person to clean out the toilet bowl until he or she has been taught to cope with and tolerate the performance of this task); certain differential schedules of reinforcement (such as the differential reinforcement of other behaviour (DRO) or of low rates of responding (DRL)); and providing satiation levels of what is motivating the behaviours of concern until the person has been taught to cope with and tolerate more normalised access.

Unlike the environmental strategies and the teaching strategies, preventative strategies such as these are, by their nature, artificial and unnatural. They represent prosthetic support for the person analogous to a wheelchair or a hearing aid. Accordingly, these artificial focused support strategies can be safely faded out when the critical ecological mismatches have been removed and when the critical skills have been learned.

Reactive procedures

In spite of the planned focused support strategies, behaviours of concern may still occur on occasion. This requires the preplanning of reactive strategies for purposes of situational management (LaVigna and Willis, 2002, 2005a). It needs to be remembered that the role of a reactive management strategy is not to effect future behaviour but rather to get rapid, safe control over that episode, resolving it at the lowest level of episodic severity possible. To emphasise this point, we recommend that the line between the proactive and reactive strategies should be a solid line. This means that the only role of a reactive strategy is the minimisation of episodic severity. All responsibility for the future is assigned to the proactive strategies, including protecting the person from the possible negative side-effects of the reactive strategies.

For example, in one situation, the behaviour of concern involved an eight-year-old girl who would run off the school grounds during recess. The teacher's intuitive reaction to this behaviour was to chase after her and physically stop her and, if necessary, drag her back to the school. Fortunately, the head of this school had received training in positive behavioural support. Based on her assessment of this behaviour, she instructed the teacher that if the student ran off of the school grounds she should call her name while holding up a Mars bar (the student's favorite candy) and use it to coax her back. In addition to a full proactive plan, she also had the teachers pass out bits of Mars bar to all of the students twice a day. Given this non-contingent access to Mars bars combined with the other elements of the proactive plan, the outcomes were that the reactive strategy was effective in coaxing her back to the school grounds whenever she ran off (without the need for physical management). Given the full proactive plan, running off the school grounds decreased (providing evidence that coaxing her back using the Mars bar did not reinforce her running away); and, ultimately, given the full proactive plan, running away was totally eliminated and was, therefore, no longer a behaviour of concern.

When there is a need, that is, a duty of care, for a reactive strategy to accomplish a rapid and safe resolution to a behavioural episode, there are two reasons for wanting to identify and use first resort strategies in response to the crisis rather than using the restrictive strategies that are referred to as last resort strategies. (A full description of first resort strategies such as stimulus change, redirection to a preferred event, redirection to an obsessive/compulsive behaviour and capitulation is available in LaVigna and Willis 2002, 2005a, and 2005b.) The first reason is the ethical mandate that we should use the least restrictive method that is capable of resolving the situation. However, the second reason is also very compelling. That is, restrictive practices tend to increase the episodic severity of the behaviour to even higher levels, increasing the risks rather than lowering them. Whenever there is a need to lay hands on an individual to release, block, escort, or restrain, there is a greater likelihood that the focus person and/or the people carrying out the procedures will be injured. This is not to say that approved restrictive practices would never be needed. Rather, we are saying that they should be in fact last resort procedures with clearly defined first resort strategies being positioned

to be used first even at the crisis level whenever possible. This is demonstrated in the recommendations illustrated in *Table 1*, which shows even when actual physical aggression occurs, this person's PBS plan recommends that non-restrictive first resort strategies be employed before considering the possible need for physical management. (In the actual plan all the behaviours listed are clearly defined and all the recommended antecedent control (responding to precursor behaviours) and reactive strategies for responding to the behaviours of concern are clearly and fully described.)

Table 1: Antecedent control and reactive strategies for topographies in behavioural chain

	Behaviours				
	Precursor	Verbal Threats	Running	Property Destruction	Aggression
Active Listening	X	X	X	X	X
I Statements		X	X		
Program Reminders	X	X	X	X	X
Reframing	X	X			
Redirection: Topic	X	X	X	X	X
Redirection: Item	X	X	X	X	X
Redirection: Activity	X	X	X	X	X
Stimulus Change			X	X	X
Strategic Capitulation	X	X	X	X	X
Physical Mgt – ProAct					X

With that said, staff who are present and must respond to a sudden crisis situation, need to exercise some 'on the spot' judgement as to which of the reactive strategies to employ to most quickly, safely and certainly bring the situation under control. This may lead to a decision in that specific situation to employ one of the first resort strategies. However, it is possible that the decision may be to employ the planned last resort strategies. The decision may also be to combine two or more of these strategies for simultaneous implementation, including two or more first and last resort strategies. However, if any restrictive procedure is used, the required debriefing would determine if its use could have been avoided through the correct implementation of the reactive strategy protocol and if the protocol needs to be modified to further reduce the need to be restrictive.

There is an emerging base of evidence, including the articles published in this special issue of the IJPBS, demonstrating the efficacy of positive behavioural support with specific reference to the most severe behaviours of concern (LaVigna and Willis, 2012; MacDonald, Hume and McGill, 2010; Potter, 2016; Crates and Spicer, 2016; Spicer and Crates, 2016). That body of evidence contributes to the findings that the most serious behaviours of concern can be brought under control and that PBS can significantly reduce episodic severity. Further, the LaVigna and Willis (2012) literature review of 12 published studies involving over 400 cases shows that the use of PBS for even the most challenging behaviour is cost effective and is easily accessible for those who want to use this approach.

Most relevant to the alignment fallacy, the research cited above supports the conclusion that:

- PBS first resort, non-restrictive reactive strategies can significantly reduce the episodic severity of behaviour precluding need for restrictive reactive strategies, even for the most imminently severe and challenging behaviour
- PBS first resort reactive strategies, including capitulation and redirecting the person to a preferred event, can be used without reinforcing the behaviours of concern
- PBS first resort reactive strategies dramatically reduce the need for last resort restrictive procedures
- PBS first resort reactive strategies appear to be significantly more effective than last resort restrictive procedures in reducing episodic severity

- such first resort strategies can be implemented to keep people safe if time is needed to carry out an assessment and/or to develop and implement a complete PBS plan, including all of the proactive strategies.

It is important to say that the justification for first resort strategies doesn't exclusively rest on published research. Rather, the recommendation for such strategies would and should be strongly influenced by the consequence analysis carried out as part of the comprehensive functional assessment. This analysis would have identified which reactive strategies would tend to safely resolve the episode and which would tend to escalate it. To say it succinctly, a comprehensive functional assessment provides information that leads to a PBS plan for preventing the need for any reactive strategies through ecological changes, skill teaching and focused support strategies. However, if necessary, this informed PBS plan also recommends reactive strategies that are most likely to reduce episodic severity while avoiding or minimising to the greatest extent possible the use of restrictive procedures that may themselves increase episodic severity.

Conclusions

The need to align restrictive practices with the severity of challenging behaviour is a fallacy. While, in some instances, it may be necessary to use a last resort restrictive procedure, even at the most imminent risk of severity, positive first resort strategies have been proven to be more effective in minimising episodic severity without any unwanted side effects. Further, the implementation of a full multi-element, positive behavioural support plan ultimately leads to the point where behaviours of concern are not occurring, precluding the need for any reactive strategies.

Accordingly, we recommend that policy, procedures, rules, regulations, guidelines and training should:

1. explicitly tie evidence based, first resort strategies to duty of care at the most severe levels
2. require training and certification in first resort reactive strategies as a precondition for using last resort strategies
3. require training and certification in PBS preventative strategies as a precondition for using last resort strategies

4. require measures of episodic severity
5. require an integrated PBS-ABA model that includes reactive strategies for positive and negative resolution.

One final thought regarding behaviours of concern. The unnecessary use of restrictive procedures may itself be considered as a behaviour of concern. While there may be more, at least two groups of people exhibit this behaviour: staff who use restrictive procedures in conflict with the recommendations of the existing positive behavioural support (PBS) plan; and professional staff who recommend restrictive, last resort strategies without taking full advantage of first resort strategies. As such, these behaviours might better be brought under control if a comprehensive functional assessment was carried out and a full PBS plan developed and consistently implemented in support of these staff, as brilliantly suggested by Allen, McGill and Smith (in press).

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The impact of situational management strategies on episodic severity

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Abstract

Background: LaVigna and Willis' (2002; 2005a) multi-element model includes a variety of non-aversive situational management strategies to assist people to reduce the episodic severity (ES) of behavioural incidents without the need for restrictive procedures.

Method: In this study we introduced some or all of these situational management strategies to reduce ES with 3 adult persons with ASD and with one adolescent dealing with trauma. A multiple baseline design across participants was used to determine the effect of these strategies on ES.

Results: ES was decreased for all of the participants and these effects persisted across time. Results also showed that the rate of occurrence decreased.

Conclusions: These findings show that the positive situational support strategies proposed by LaVigna and Willis (2002) and Willis and LaVigna (2004) may have significant utility in decreasing ES in persons challenged by behaviour. Non-aversive situational management shows promise as an effective strategy to rapidly reduce ES precluding the need for restrictive practices.

Keywords:

Episodic, severity, situational, reactive, strategy

Introduction

Intellectual disability is synonymous with decreased mental functioning and adaptive skills deficits, and it is reported that up to 50% of persons with intellectual disability display challenging behaviour (Tyrer et al, 2008). The implications of such behaviours can carry with them enormous physical, social, educational and economic consequences (Hudson et al, 1995). This has led to a number of restrictive intervention strategies being utilised by care givers and staff to reduce the risk of injury to the individual and carers, such as physical management, restraint or seclusion and as required medication (Royal College of Psychiatrists et al, 2007; Oliver et al, 1998).

Traditionally, the success of a support plan has been measured only by the changes in behaviour over time (eg measures of the frequency, duration and intensity of target behaviours) when using proactive measures. However, focus has not been placed on the degree to or speed with which a behavioural incident can be safely resolved (ie when reactive strategies are required). As a result, practitioners have tended to look beyond applied behaviour analysis (ABA) to emergency management systems such as Mandt, Nappi, and CPI, which have not been empirically tested for their effect on episodic severity (LaVigna and Willis, 2005a). Established evidence (Malott, Whaley and

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Malott, 1997) suggests that the aversive components of these emergency management systems may, due to the degree of aversiveness, actually escalate the severity of a behavioural episode. Within the field of ABA exists a number of technologies (stimulus change, chain interruption, strategic capitulation, etc) that allow the safe resolution of behavioural incidents and negate the need for non-ABA based emergency management systems.

LaVigna and Willis (2005a) suggest research could focus on reducing the 'episodic severity' (ie the measured gravity or intensity) of the behaviour when and if it occurs.

'ES is defined as a measure of the gravity or intensity of a behavioral incident. In this usage, the word episodic does not mean intermittent but, rather, means "with respect to an episode". Therefore, episodic severity would not be measured over time (e.g., 4.5 hr total duration a week, or five trips to the hospital per month for medical treatment due to self-injury) but, rather, within the cycle of a behavioral incident (e.g., an average duration of 1hr per episode, with a range of 5mins to 2hrs per episode, or an average severity rating of 3.2 for episodes of self-injury, with a rating range of 2 to 5, using a 5-point scale of severity, with level 5 representing the need to go to the hospital for medical treatment as a result of the episode). The cycle of a behavioral incident would be circumscribed by its defined onset and offset, or boundaries.' (LaVigna and Willis, 2005a, p 48)

Thus, LaVigna and Willis propose the introduction of a dependent variable (ie episodic severity) that will provide the opportunity to empirically test situational management strategies.

For example, the ES of aggression can be measured in various ways; the first includes measuring the degree of harm or injury resulting from the incident. Other measures of ES might involve examining the number or kind of topographies occurring during the behavioural incident. This is a significant consideration given that specific topographies of aggression can lead to significant harm. Social outcomes like psychological impact, time off work, increases in peer stress and/or social isolation resulting from the incident may also be examined to indicate an episode's intensity. The intrusiveness or restrictive nature of situational management strategies which may include the use of restraining

devices, may be in itself an indicator of the level of ES or in some cases, a setting event or antecedent for increased ES.

There is a need to research non-aversive situational management strategies that result in the immediate reduction in the episodic severity of the challenging behaviour. This paper examines the impact on episodic severity of chain interruption, stimulus change, strategic capitulation and geographical positioning as described by LaVigna and Willis (2002) and Willis and LaVigna (2004) in their *Emergency Management Guidelines*.

What follows is a brief description of the strategies used. Chain interruption involved diversion to a powerfully preferred or compelling event or activity. This activity or event was intended to divert the person from what they were doing (LaVigna and Willis, 2002; Willis and LaVigna, 2004). Stimulus change was a novel and sudden change in ambient stimuli that is non-aversive and produced immediate (although transitory), suppression in responding (LaVigna, Willis and Donnellan, 1989). Strategic capitulation involved giving in to the communicative message of the person's behavioural incident. That is, if you know what the message is from the behaviour, meeting the function of the message will result in the behaviour stopping (LaVigna and Willis, 2002; and Willis and LaVigna, 2004). Geographical positioning involved the use of the immediate environment to minimise or to eliminate the consequences of behaviour that may have caused injury or damage to the carer or others; that was avoiding physical contact with the person by positioning objects in the environment between the carer and individual (Willis and LaVigna, 2004).

Method

Description of participants

Participants included four persons who had been referred for positive behavioural support services. All participants had 24-hour staffing supplied by the state. All participants lived with one other person in a state-run residential home.

Person 1 is a 29-year-old male with a DSM-V (American Psychiatric Association, 2013) diagnosis of autism level II. He had a 20-year history of aggression toward others, which included hitting others with open and closed hands to the right and left side of the head and chest. The ES of this behaviour had resulted in medical treatment of others and police involvement.

Person 2 is a 14-year-old female with a diagnosis of mild ID and trauma. She had a three-year history of property damage, which included kicking, punching and throwing property. The ES of the behaviour had resulted in damage of more than AU\$20,000 within a single episode, police involvement and incarceration.

Person 3 is a 24-year-old male with a DSM-V diagnosis of autism level III. He had an eight-year history of aggression toward others, which included hitting others with closed hands to head or chest, kicking to legs or groin and pushing people over. The ES of his behaviour had resulted in medical treatment of others and police involvement.

Person 4 is a 21-year-old male with a DSM-V diagnosis of autism level III. He had a 17-year history of self injurious behaviour (SIB) which included hitting his head with closed and open hands or against hard surfaces. The ES of the behaviour had resulted in tissue injury requiring first aid.

Situational management of ES investigated in this study for the four participants included capitulation, chain interruption, stimulus change and geographical positioning.

Design

A functional assessment (Willis, LaVigna and Donnellan, 2011) was completed for the four participants by a behaviour specialist. This assessment informed the operational definition of problem behaviour inclusive of occurrence measures and ES measures (duration, outcomes and cost of repair or replacement) as recommended by Willis, LaVigna and Donnellan (2011). Based on the operational definition, ES scales were constructed for each individual (LaVigna and Willis, 2005a).

The assessment also helped to identify which actions and reactions of staff tended to increase ES and which tended to decrease it. This information then informed the development of situational management strategies by the behaviour specialists for each individual to decrease the ES of incidents. Differential reinforcement of other behaviour schedules (DRO) were also developed to impact on the frequency of the behaviour and were applied during the situational management phase.

Staff were trained in the use of the situational management strategies, DRO and data collection via verbal competence and simulated competence as described by LaVigna et al (1994). The behaviour specialist spent approximately 12 hours in design and implementation

of the intervention components described above for each participant.

A multiple-baseline design was used to demonstrate the effect of the situational management by showing changes across the individual's ES when the situational management was introduced. The design attempts to control for the effect of extraneous events, demonstrating that specific changes in ES were associated with the situational management strategies at different points in time for each participant (Bailey and Burch, 2002). The participants in the study continued with the routine, lifestyle and support structure prior to referral during the baseline and intervention period of the study. Additional multi-element procedures of support were added at the completion of the study. The intervention for each participant was introduced at the completion of the functional assessment, design of situational management strategies and data collection sheet. Training of staff on the strategies and data collection concluded with the beginning of the intervention on the first day of the next calendar week. As this was a field-based study the baseline periods and intervention were set at 19 weeks as this was considered realistic to complete the assessment, design the strategies and train the staff, and allowed for some stability in the staggered baseline measures and some stability within the staggered intervention measures for each participant.

Response measures and inter observer agreement

The dependent variable was the measure of ES during an incident. The independent variable was the situational management strategies used to react to the behaviour during the incident. As shown in *Table 1*, the measure of ES was scored via a five-point scale of severity for participants 1 (P1), 3 (P3) and 4 (P4) and via a seven-point scale for participant 2 (P2). After applying the situational management strategies, the severity of an episode of aggression toward a person, property damage and self-injury were measured, depending on the outcome of the event using these scales.

Data were collected 24 hours a day by the group home staff on a prepared data sheet at the offset of an episode. An episode was the occurrence of one or more target responses with defined onset/offset criteria for the incident. Recording of the behavioural episode included the objective measure of its ES based on a five or seven-point scale for a single episode of target behaviour as shown in *Table 1*. Data were tallied and reviewed by the behaviour specialist team on a weekly basis.

Table 1: Episodic severity measures for the four participants

Participant # (Challenging Behaviour)	ES Measure
One (aggression)	5 - Time off work for the injured person 4 - Medical treatment for the injured person 3 - First aid required 2 - Physical injury not requiring first aid 1 - No physical injury
Two (property damage)	7 - Significant damage to object/s estimated cost of repair or replace is more than \$3000 6 - Significant damage to object/s estimated cost of repair or replace is more than \$2000 but less than \$3000 5 - Significant damage to object/s estimated cost to repair or replace is more than \$1000 but less than \$2000. 4 - Significant damage to an object/s estimated cost to repair or replace is more than \$500 but less than \$1000. 3 - Damage to object/s estimated cost to repair or replace is less than \$500 2 - Damage to objects but do not require repair 1 - No damage occurred to object
Three (aggression)	5 - Time off work for the injured person 4 - Medical treatment for the injured person 3 - First aid required 2 - Physical injury not requiring first aid 1 - No physical injury
Four (self-injury)	5 - Emergency services called 4 - Medical treatment for injury required 3 - First aid required for injury 2 - Injury not requiring first aid 1 - No physical injury

Reliability checks

Casual reliability on the data recording procedure was conducted by the behaviour specialist observing whether staff recorded the occurrence of ES on data sheets at the offset while he/she was present and an event occurred. Casual reliability was 100%. Procedural integrity (fidelity), the correct application of the situational management strategies by staff during an incident, was conducted via the behaviour specialists and ranged from 80% to 100%, with a mean of 93%.

Results

The results of the impact of situational management on episodic severity (ES) for each person are summarised in *Figure 1*, below. *Figure 1* illustrates the average score for ES of incidents per week with the range of the scores per week (from 1 to 5 for participants 1, 3 and 4 and from 1 to 7 for participant 2), as recommended by Willis and LaVigna (2005a). A score of 0 for the week indicates no ES measure was recorded as no incidents occurred. A score of 1 reflects incidents in which no injury or damage occurred. The high average and range of ES for participant 2 during intervention in weeks 15 and 16 was due to staff not following the situational management strategy.

A highly important result is the average occurrence scores of ES during the baseline and situational management phase, as shown in *Table 2*. A measure of the effectiveness of the situational management strategies in minimising the ES is the average occurrence scores approaching 1.

Although not a primary measure for this study, it is also relevant to report the average weekly frequency of occurrence of the target behaviours during the baseline and support phases. Aggression during baseline for P1 occurred an average of 3 times a week and during the support phase, an average of 0.5 times a week. Property damage during baseline for P2 occurred an average of 1.6 times a week and during the support phase, an average of 0.9 times a week. Aggression during baseline for P3 occurred an average of 2.2 times a week and during the support phase, an average of 0.1 times a week. Finally, self-injury during baseline for P4 occurred 16.6 times a week and during the support phase, an average of 8.7 times a week.

Figure 1: Episodic severity outcomes

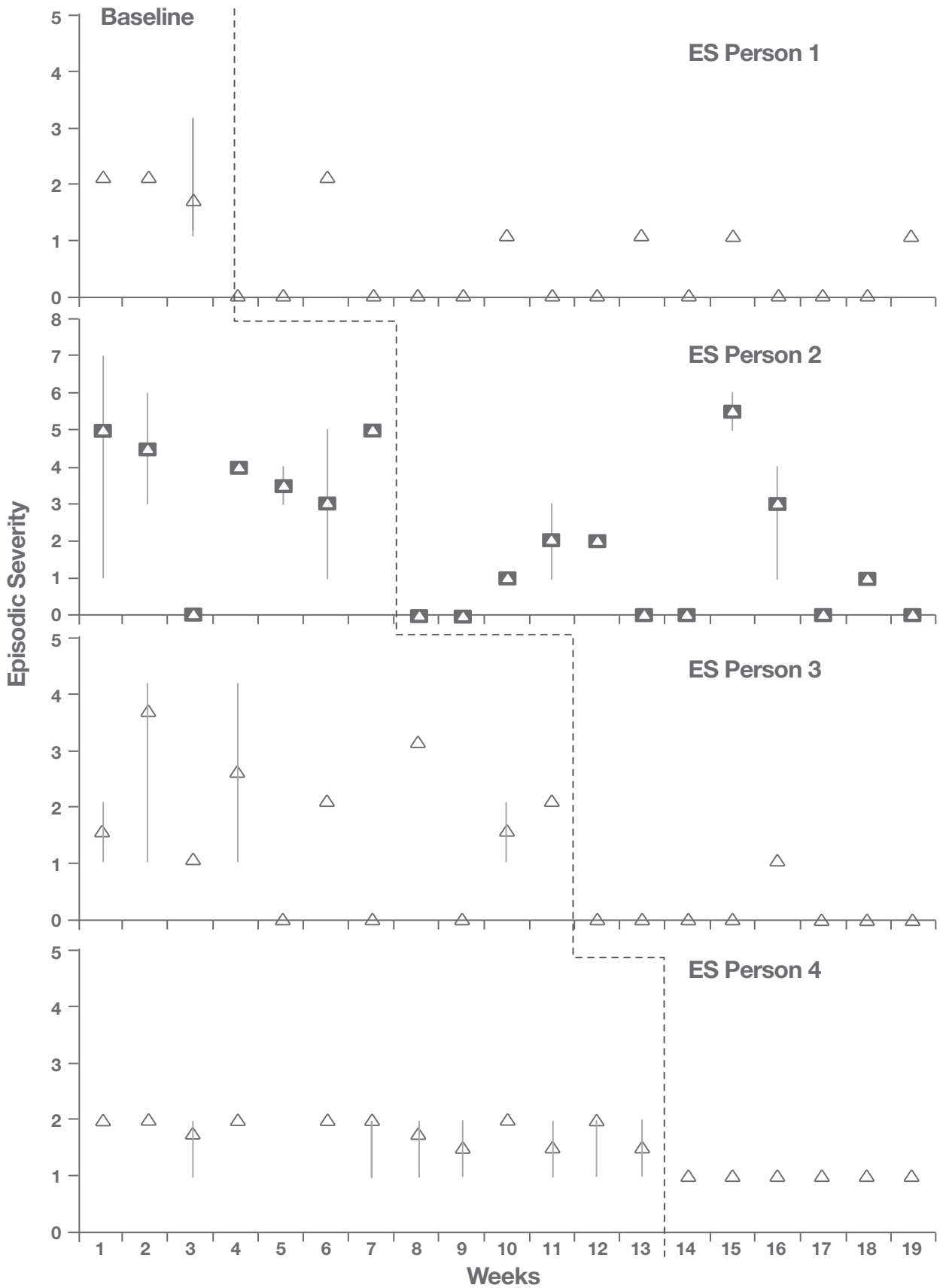


Table 2: Episodic severity occurrence average

Participant #	Baseline average occurrence of ES	Intervention average occurrence of ES	Baseline highest recorded ES	Intervention highest recorded ES
1	1.8	1.2	3	2
2	4.2	2.4	7	6
3	2.1	1	4	1
4	1.8	1	2	1

Discussion

The sole purpose of a situational management strategy is to safely bring the behaviour under control (LaVigna and Willis, 2005b). To safely bring the behaviour under control requires strategies that impact on the episodic severity (ES) of the incident. The results of this study indicate that the situational management procedures proposed by LaVigna and Willis (2002) and Willis and LaVigna (2004) produced decreases in ES across the participants in the study as compared to baseline ES.

The study has limitations. First, there were only a small number of participants. Further research with more participants is required before we can draw any meaningful conclusions in regard to the effect of situational management on ES. Second, the study was based on fieldwork; it was limited to permanent products records from a field-based intervention. The design did not allow for potential confounding effects such as no controls over experimenter bias. Third, we did not analyse the impact of an individual situational management strategy on the ES. This analysis would be an interesting area of further research.

One consideration highlighted by the results of this study was the magnitude of effect of the situational management strategies on ES. It would be useful to compare this effect (situational effects) with magnitude of effect on ES in studies using restrictive procedures for situational management. Is magnitude of effect on ES likely to be greater using non-aversive situational

management strategies, as opposed to contingent use of restraint or seclusion, for example, with regard to side effects such as type I and II escalations (LaVigna and Willis 2005a)? This comparison may further support non-aversive situational management strategies as highly desirable while the proactive strategies are put in place to generate more long-term effects.

Another consideration was the magnitude of effect of each individual situational management strategy on ES. For example, Spicer and Crates (in press) have reported highly significant magnitude of effect on ES from the use of functional reactions (eg strategic capitulation) in situational management. One example of a question regarding non-functional situational management would be: does stimulus change have generalised effects of magnitude across settings, activities and people with magnitude being predictive of the novelty of the type of SC? That is, would a more dramatic stimulus change have greater magnitude of effect on the episodic severity of the incident?

Non-aversive situational management shows promise as an effective strategy to rapidly reduce ES. The study has shown that the effect is promising. Further research is required to determine the impact of this underutilised and under-researched strategy in the non-aversive situational management of challenging behaviour.

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Reactive strategies within a positive behavioural support framework for reducing the episodic severity of aggression

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Abstract

Background: As a model of intervention for people with disability and challenging behaviour, positive behavioural support (PBS) is strongly supported by a growing base of evidence. A key value within PBS is the avoidance of aversive and restrictive practices (Gore et al, 2013). However, when responding to maintain safety during behavioural crises involving aggression, aversive and restrictive practices are too often the strategy of choice instead of alternative non-aversive crisis management techniques. A common rationale offered by practitioners and support staff for this choice is the concern that problem behaviour followed by a preferred event will lead to the reinforcement of that behaviour.

Method: Plans based on comprehensive functional assessments, utilising a range of proactive strategies and non-aversive reactive strategies (NARS) for maintaining safety during behavioural crisis, were introduced in support of 24 people for the problem behaviour of physical aggression.

Results: The 24 multi-element PBS plans demonstrated significant reductions in occurrence, episodic severity, restraint and the elimination of seclusion. These outcomes demonstrate the efficacy of NARS within a PBS framework for maintaining safety without resorting to aversive or restrictive practices.

Conclusions: This paper provides support for the use of NARS when managing a behavioural crisis involving aggression and suggests that unwanted reinforcement can be avoided in the context of the multi-element PBS plan.

Keywords: Accidental reinforcement, episodic severity, aggression, restraint reduction, NARS, challenging behaviour, positive behavioural support, crisis management, last resort, maintain safety, non-aversive reactive strategies

Introduction

As a model of intervention for people with disability and challenging behaviour, positive behavioural support (PBS) is strongly supported by a growing base of evidence (Gore et al, 2013; Goh and Bambara, 2013; LaVigna and Willis, 2012). Positive behavioural support (PBS) has been described by LaVigna and Willis (2012) as a multi-element, non-linear approach which includes three proactive elements to address the occurrence of problem behaviour over time (future effects): the ecological element, positive programming and focused support. It also includes one reactive element, addressing episodic severity, aimed at delivering rapid

and safe control during a crisis (situational effects). Proactively, the ecological element would seek to smooth the fit between the person and their environment; positive programming aims to teach a range of skills including those to replace the problem behaviour (functionally equivalent skills), those that increase a person's ability to deal with the naturally occurring aversive events in life (coping and tolerance skills), and those that address independence and improve quality of life (fun skills); and focused support aims to avoid the need for reactive strategies by preventing the behaviour using a range of techniques (antecedent

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control and time-based as well as differential schedules of reinforcement) (LaVigna and Willis, 2005b). The fourth element includes a suite of reactive strategies (Willis and LaVigna, 2004). These non-aversive reactive strategies (NARS) refer to methods for responding to physical aggression and other problem behaviour in ways that do not include punishing consequences, the use of physical management, the use of seclusion, or any other strategy that would be unwanted by the person (LaVigna and Willis, 2005a).

NARS might include strategies that meet the assessed need communicated by the physical aggression (function) such as strategic capitulation; for example if functional assessment indicates that aggression occurs to escape a situation or demand then the person is supported to escape. This could be described as a functionally based non-aversive reactive strategy. Alternatively a non-functionally based non-aversive reactive strategy might be employed where the function was unknown or not available. For example, if the situation the person was seeking to escape was a waiting room and the person had an urgent medical need to address, then diversion to a highly preferred activity such as having an ice cream, playing a favourite game on their mobile phone or receiving a call from a preferred person might be introduced. This known highly preferred activity might also be effective in a situation where function was unknown.

PBS is also described as a multi-component framework including ten combined elements relating to values, theory and evidence with interventions (monitored and evaluated over the long term) following logically from a functional analysis and containing both proactive and reactive components. Within a PBS framework, aversive, restrictive and seclusion strategies are recognised as the 'least desirable' strategies or those of 'last resort' (Gore et al, 2013). This is also reflected within many legislative and policy frameworks – for example, the Tasmanian Disability Services Act (Tasmania, 2011), the Disability Act 2006 (Victoria, 2006), and Statutory Instrument No 415 of 2013 (Ireland, 2013). The rationale for their use within legislation is most often the safety or protection of people and property. However, there are counter arguments to this when 'the therapeutic or treatment benefits of seclusion and restraint interventions remain unsubstantiated' (Ashcraft and Anthony, 2008, p 1198); and there are adverse outcomes known to be associated with restrictive practices and seclusion, such as the stimulation of aggression, increased cost, difficulty complying with legal and clinical

standards and the traumatising nature as described by people subject to their use (Ashcraft and Anthony, 2008), including the development of post-traumatic stress disorder (Sullivan-Marx, 1994). The adverse outcomes for those implementing these practices and the resulting costs for organisations within their service delivery models are also known to include physical and psychological injury for staff, reputational damage and litigation (Chan, LeBel and Webber, 2012). People having experienced trauma or adversity are also likely to associate such practices with past experience and seek to avoid (where possible) environments that utilise such practices (Vollmer, 2002). Essentially, avoiding or disengaging from the supports and services that exist to help them recover.

There is considerable evidence for a range of approaches to reducing the use of restrictive practices and seclusion, including: improving the quality of behavioural support plans (Webber, Richardson, Lambrick and Fester, 2012); changing practices through the use of organisational change management approaches such as policy and procedural change, strong leadership direction, staff training, debriefing and feedback (Ashcraft and Anthony, 2008); and monitoring the use of restraint and introducing organisational contingencies in response to restraint (Williams and Grossett, 2011). There is also an emerging evidence base regarding the effectiveness of NARS in reducing episodic severity (ES) within multi-element positive behavioural support (PBS) interventions (Crates and Spicer, 2012; Grey and McLean, 2007; MacDonald, Hume and McGill, 2010; and for a fuller review see LaVigna and Willis, 2012).

Despite this the use of restraint and seclusion continues:

'in Victoria the public record reports that during 2005/06, on average, 28% of residents in accommodation services were subject to restraint and/or seclusion and 23% of clients in respite services were subject to restraint and/or seclusion (Intellectual Disability Review Panel, 2006).' (McVilly, 2008)

A survey conducted in the south-east of England covering three local government areas, sampling 137 respondents including 30 health services (22% of sample), five social services (3.6%), 57 private services (42%) and 45 voluntary services (33%) found that 30% used at least one restrictive physical intervention such as escorting, sitting or floor restraint (Deveau and McGill, 2009).

Further research is needed that explores the range of reasons why service providers employ restrictive practices over NARS. One reason often expressed to the authors when describing or discussing the use of NARS in service delivery settings, is the frequently articulated concern from professionals, managers and support staff that introducing preferred stimuli, or removing non-preferred stimuli during a crisis, will lead to reinforcement of problem behaviour. This belief is often most strongly expressed when the stimuli relate directly to the function of the behaviour. That is, when the stimulus meets the person's need and represents a functionally based non-aversive reactive strategy (FB-NARS). This belief typically expresses a concern that the occurrence of 'problem behaviour' will increase (future effects) and therefore provides a basis for rejecting NARS to manage episodic severity relating to safety in the moment (situational effects).

The concern for accidental reinforcement might seem warranted where support is based on single-element interventions. However, the comprehensive nature of PBS (LaVigna and Willis, 2012; Gore et al, 2013) demonstrates that the complex problem of challenging behaviour cannot be effectively responded to with a single-element approach to intervention. There is some evidence indicating that the use of NARS to reduce episodic severity within a multi-element model can be undertaken without reinforcing aggression or other problem behaviours. McLean et al (2005) showed significant reductions in occurrence of challenging behaviour over 22 months using plans based on the multi-element model described previously. Simultaneous reductions were also reported in both occurrence and episodic severity of problem behaviour using the same model of positive behavioural support; including NARS (Crates and Spicer, 2012). A reduction in the occurrence of problem behaviour indicates that the risk of accidental reinforcement is mitigated in a multi-element intervention where reinforcement is frequently accessible for other (non-challenging) behaviours. Given that NARS addresses the ethical requirements for challenging behaviours, it is important to examine their effectiveness as a replacement for restraint and seclusion in practice and to investigate their use in the context of multi-element positive behavioural support plans to understand their impact on frequency and severity of aggression.

Hypothesis

Our hypothesis is that when using NARS to maintain safety and manage a behavioural crisis involving aggression, the occurrence and episodic severity of aggression do not increase when the proactive elements of the behavioural support plan are also implemented; and where restrictive strategies or seclusion are in place, their use can be reduced or eliminated.

Method

PBS plan development

Between 2003 and 2004 practitioners in Tasmania were trained to conduct comprehensive functional assessments and develop multi-element support plans utilising the methodology described in LaVigna, Christian and Willis (2005). Participants completed Level 1 training (four days of lectures) and Level 2 training (a nine-day longitudinal practicum) conducted over a six to nine-month period. Training methods included lectures, Socratic discourse, reading assignments, practicum assignments, repeated practice, group activities, individual written feedback, group feedback and modelling. This training took place at two levels. Level 1 training consisted of the four days of lectures, for six hours a day, including (but not limited to) topics such as: IABA's multi-element model; functional behavioural assessment; positive programming to teach functionally equivalent and other replacement behaviours; focused support strategies, including (but not limited to) the use of antecedent control and the use of preferred activities and events to reduce the need for reactive strategies; reactive strategies and emergency management within a non-aversive framework; and systems for assuring staff and programme consistency. After completing Level 1 training, trainees entered Level 2 training, a longitudinal practicum, which included four modules and three inter-module practicum assignments relating to carrying out a comprehensive functional assessment, developing a positive, multi-element behavioural support plan and implementing that plan for an actual client referral. Level 2 training involved nine days spread over a period of six to nine months.

Subsequently, three staff with allied health qualifications were trained by the IABA to become trainers in this model, delivering this practicum training in Tasmania until 2009. Upon completion of the longitudinal training practicum all trainees submitted a comprehensive functional assessment and recommended support plan that they had completed and implemented, based on the Level 2 practicum assignments (LaVigna et al, 2005).

Training participants included staff with allied health qualifications working as consultants in support teams providing services to people with disability and staff with disability support industry experience employed in leadership and management roles within community support organisations providing support services to people with disability. There are no institutional or large scale treatment facilities for provision of services to people with disability and challenging behaviour in Tasmania, thus all intervention is provided in community based settings. (Note there are some congregate facilities, 20 to 40 beds, in Tasmania for people with high physical support needs; none of the subjects in this study were living in such a setting.) The subjects of this training for whom plans were developed included children and adolescents living with family and attending regular and/or special education schools, adolescents living with family but accessing out of home respite on a weekly basis and adolescents and adults living in community based accommodation settings either alone or sharing with others.

Reports submitted as a part of this training were reviewed by the authors. Those plans targeting aggression (where aggression was defined as any threats of, attempts to make or actual physical contact with another, using a body part or object, where there was no consent, implied or actual, for the contact and the contact was likely to cause harm) were included in the data set for the current study. The authors identified and included 24 plans delivered between 2004 and 2009 to individuals engaging in the problem behaviour of aggression. To be included the submitted plan needed to target behaviour meeting the definition of aggression, include a complete assessment and plan and include baseline data and a three-month follow-up report detailing implementation, occurrence and episodic severity. Seventy people enrolled in the training, 57 attended all sessions and submitted some written assignments; of these, 24 plans met the criteria outlined above. The presenting severity at referral was reported for those plans (13) measuring episodic severity using a five-point outcome scale and outcomes relating to restraint and seclusion when these were present in the person's support at the time of referral were also evaluated.

Clients and target behaviours

The reports for people in the study included those for children and adults with cognitive difficulties relating to intellectual disability and acquired brain injury. Some people also had additional difficulties related to autism spectrum disorder, Down syndrome or epilepsy, for example. People ranged in age from 12 to 49 years and included 8 females and 16 males; 6 were aged under 18-years and 18 were adults.

People in the study were selected by trainees and their support organisations as individuals presenting with challenging behaviour warranting a comprehensive assessment and intervention.

The target behaviours addressed through the assessments and multi-element support plans included 'aggression' and 'outburst behaviour' where topographies of 'outburst behaviour' met the criteria stated in the definition for aggression. These behaviours included dangerous topographies such as threats with or use of weapons; hitting, punching, biting, kicking or attempting to choke others. Property damage and self-injury such as cutting self or hitting head on hard surfaces were also present in addition to aggression for some clients who presented with 'outburst behaviour'.

Plan implementation

Trainees developed a support plan based on functional assessment as well as detailed protocols for plan implementation. Trainees worked with the subject, their family (where family were involved) and/or support staff in community based support and/or educational settings to implement the recommended support plan and collect data regarding behavioural outcomes such as reductions in target behaviour and increases in skills.

Measures

Reports documented measures of each person's target behaviour as an outcome of intervention at both baseline and after three months' intervention. These outcomes were collated and summarised in terms of occurrence and episodic severity of behaviour and, where present at referral, the use of restrictive practices and seclusion in response to aggression. Episodic severity was calculated based on individual scales designed to measure outcomes specific to the individual and their context. Thirteen participants utilised a common scale that reflected physical outcomes of aggression (see *Table 1*).

Table 1: Outcome-based episodic severity scale for aggression and outburst behaviour

Level	Description
1	Contact causing property damage, making verbal threats or attempts to make physical contact with a person
2	Physical contact with a person resulting in no marks
3	Physical contact resulting in marks but not requiring treatment
4	Physical contact that results in injuries requiring first aid
5	Physical contact that results in injuries requiring professional medical attention

Results

Client outcomes

Client outcomes for occurrence, episodic severity, restrictive practices and seclusion are reported as a percentage change from baseline (i.e. baseline = 0%), such that positive '+' percentage scores indicate an increase in occurrence, episodic severity, restrictive practices or, seclusion respectively, while negative '-' percentage scores indicate a decrease.

Occurrence – Observational reliability indices at baseline for occurrence data had a mean of 86.0% and a range of 50–100%, and were calculated from the results available for 5 of the 24 reports utilised for client outcomes. Reliability indices for occurrence data at 3 months had a mean of 85.7% and a range of 50–100%, and were calculated from the results available for 13 of the 24 reports.

Episodic severity (ES) – Observational reliability indices at baseline for ES had a mean of 86.0% and a range of 50–100%, and were calculated from the results available for 5 of the 24 reports. Reliability indices for ES data at 3 months had a mean of 84.1% and a range of 50–100%, and were calculated from the results available for 13 of the 24 reports utilised.

Restrictive – There was only one report that recorded observational reliability data for restrictive practices which were recorded at 100% for baseline and three-months follow-up.

Seclusion – There were no reliability figures available at either baseline or three-months follow-up.

The results for client outcomes of this study are shown in *Figure 1*. *Figure 1* shows reductions in restraint, seclusion, occurrence and episodic severity for the 24 clients presenting with aggression after three months' intervention using PBS, reported as a percentage of baseline measures. Every case in *Figure 1* included a PBS plan, based on a comprehensive functional assessment leading to a multi-element plan using the framework from LaVigna and Willis (2005b). The plans for the service users included three proactive elements (ecological, positive programming and focused support) and one reactive element (reactive strategies) that utilised NARS.

The median change for episodic severity at three months was -38% of baseline with a range of -66 to -11%, which, using a one sample Sign test, was found to be a statistically significant reduction, $Z(23) = -4.59$, $p = .000004$, $r = .96$. The median change for occurrence at three months was -67% of baseline with a range of -100 to -35%, which, using a one sample Sign test, was a statistically significant reduction, $Z(24) = 4.69$, $p = .000003$, $r = .96$. These plans implemented within a multi-element framework led to significant reductions in both episodic severity and occurrence of the problem behaviour of aggression.

Where restraint and/or seclusion were present as part of a person's plan at referral, as in Cases 1, 4 and 5, these were substantially reduced or eliminated after three months' intervention with a PBS plan including NARS (see *Table 2*).

Table 2: Reductions in occurrence, episodic severity, restraint and seclusion at three-month follow-up reported as a percentage of baseline measures

Outcome measures	Occurrence	Episodic severity	Restraint	Seclusion
Case 1	-86%	-55%	-75%	-100%
Case 4	-92%	-33%	-67%	-
Case 5	-88%	-13%	-	-100%

Figure 1: Change in restraint, seclusion, occurrence and episodic severity at three-month follow-up

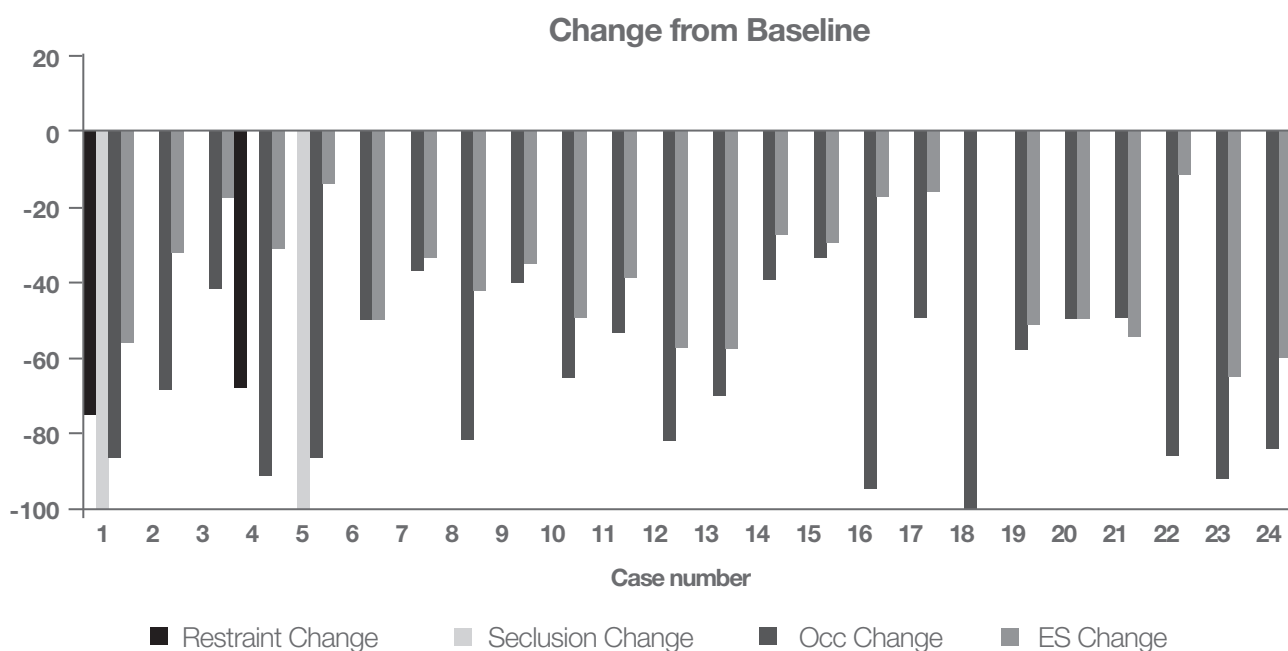
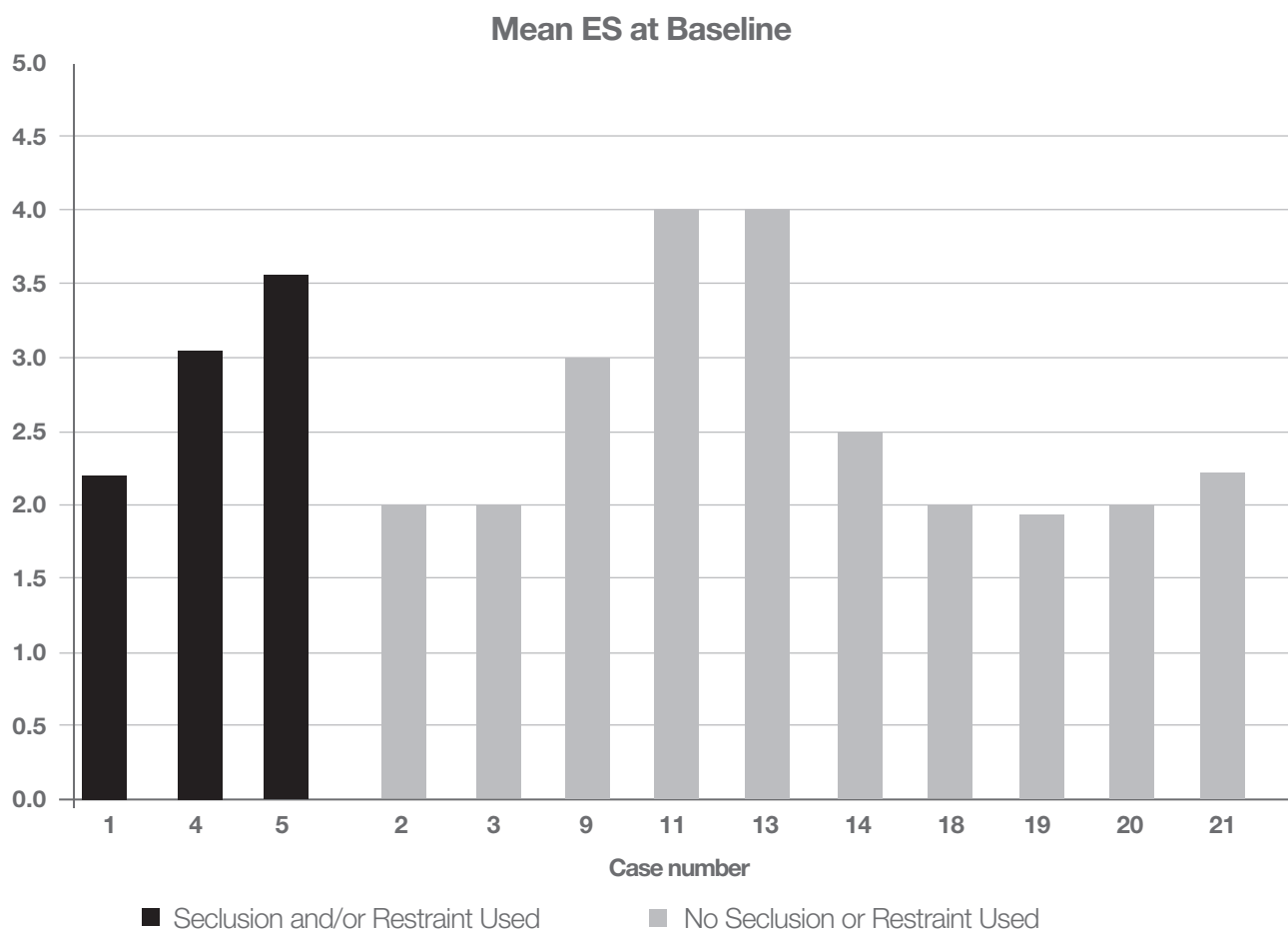


Table 3: Summary of the PBS plan for Case 1

<p>Target Behaviour – Aggression Topographies – hitting, punching, hair pulling and kicking</p> <p>Function of behaviour To gain interaction; especially if feeling excluded</p> <p>Environmental strategies Time based schedule of non-contingent praise and interaction Visual timetable to structure predictable routines Key word signing and simple language use by staff</p> <p>Positive programming Fun – independent access to local store to buy daily ‘treat’ Functionally equivalent skill – learning to give and elicit compliments Functionally related skill – recognising and labelling emotions Coping and tolerance skill – tolerating ‘No’</p>	<p>Focused support DRO for no aggression on a daily interval Antecedent control – interaction, assistance or preferred activities offered</p> <p>Reactive strategies Functionally based – offering 1:1 outing to preferred activity Stimulus change Evasion and brief ‘evacuation’ of co-residents Pre-existing restraint and seclusion faded out</p>
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Figure 2: Mean episodic severity (ES) at baseline for 13 of 24 cases using the same ES scale



These reductions were achieved with the implementation of multi-element PBS plans. See *Table 3* for a sample plan used to achieve the reductions in occurrence, episodic severity, and restraint and the elimination of seclusion for Case 1.

The mean episodic severity at the time of referral is presented for 13 cases using the scale presented in *Table 1*; three cases (1, 4 and 5) where restraint and/or seclusion were used; and 10 where restraint and/or seclusion were not in use at baseline.

Figure 2 shows the mean episodic severity at baseline for 13 of the 24 cases using the same ES scale to measure outcomes of aggressive behavioural incidents. In cases 1, 4 and 5 where restraint and/or seclusion were in use at baseline the mean episodic severity scores above 2 indicate some incidents resulted in marks or injuries. Similarly in cases 9, 11, 13, 14 and 21 where restraint and/or seclusion were not in use the mean episodic severity scores above 2 indicate some incidents resulted in marks or injuries.

Discussion

This was a retrospective study analysing data collected for quality and training evaluation purposes. The data relates to individuals accessing a range of supports and services within community settings and as such there was no control group, nor would it have been ethical to discontinue intervention to evaluate the impact of treatment effectiveness. As such the results should be interpreted with some caution as they may be impacted by a range of variables implicit in a research design that evaluates impacts of interventions designed by 24 different practitioners, working with 24 individuals in 24 different contexts. Key issues arising from this design include concerns regarding data reliability, sampling and impact of trainees' skills and experience. Reliability results were not available for all cases and while the mean reliability scores were 84.1% for episodic severity or higher the range indicated that the lowest score was 50%. In the authors' experience reliability reporting in practice is most likely to be impacted by under-reporting of low severity incidents since more serious incidents

are reported and reviewed as a matter of course due to work health and safety implications. Concerns about presenting challenges of individuals and sampling include that trainees may have selected people they expected to achieve good results with or conversely given the requirement of 13 days training time and up to 80 hours of work outside of training trainees may have selected more complex clients. The impact of skills and experiences of trainees and how that affected quality of intervention is reported in Crates and Spicer (2012) where it was demonstrated that a consistent quality of assessment and plans was achieved through the training approach utilised in this study.

While acknowledging the limitations of the design, the results demonstrate that in the cases presented multi-element PBS plans were effective in producing statistically significant reductions in occurrence and episodic severity of aggression. Thus, in these cases responding to aggression with NARS as part of a multi-element plan did not appear to reinforce or make aggression more likely to occur. In those cases where restraint or seclusion was present, seclusion was eliminated in both cases and restraint substantially reduced, with concurrent reductions in both episodic severity and occurrence. In these cases, reducing or eliminating these practices while implementing NARS as alternative reactive strategies resulted in an overall increase in safety as indicated by the reduction in episodic severity. These results add to the evidence for the effectiveness of multi-element PBS in reducing occurrence of aggression, and the effectiveness of NARS utilised within this context in reducing episodic severity. Furthermore, as seen in *Figure 2*, for cases 1, 4 and 5 where seclusion or restraint was used at baseline, and where ES was similar to some cases without seclusion or restraint at baseline such as cases 9, 11, 13, 14, and 21, then NARS could be considered as alternatives for restraint and seclusion to manage aggression safely.

A concern might be that individuals subject to restraint and/or seclusion present with more severe behavioural problems and since only three cases (1, 4 and 5) meet this criteria the majority of cases reported might be individuals with less severe aggression. *Figure 2* shows that cases 1, 4 and 5 have at baseline a mean episodic severity above 2, as do cases 9, 11, 13, 14 and 21. This indicates that within the group of cases using a comparable episodic severity scale, 8 of the 13 cases initially presented with similarly high levels of mean episodic severity of aggression. According to their ES scale this means that some incidents of aggression resulted in an injury leaving marks or requiring treatment.

Comparisons between clients can be difficult when based on potential risks, for example the risk of a 12 year old child hitting versus an adult, or the risk of a person engaging in aggression in a community setting versus their own home where they live alone. An outcome measure focuses on actual outcomes rather than potential risks allowing a comparison of mean episodic severity between individuals as well as providing an effective tool for measuring changes in mean episodic severity over time for an individual. In this sample, NARS implemented within the context of a multi-element PBS plan were effective with cases of both high and low severity aggression in reducing episodic severity of aggression. Importantly, while mean ES was reduced in each case there were also concurrent reductions in the occurrence of aggression. This demonstrates that NARS could be implemented as reactive strategies without leading to an overall increase in the occurrence of the problem behaviour (aggression), ie without reinforcement.

The risk of accidental reinforcement is one requiring serious consideration as increases in the occurrence of problem behaviour would signify changes that would further impede a person's quality of life and risk to the person and others. This was shown not to occur in the reported cases when NARS were utilised in the context of a multi-element PBS plan to manage aggression. Within such plans, the person is taught new skills to meet their needs and to develop coping and tolerance; a range of alternative reinforcement is made available by providing environments better matched to the person's needs as well as specifically including an increased density of preferred events. Differential reinforcement schedules are often introduced to reinforce non-occurrence of aggression and in the event that reinforcement did occur it would be recognised through regular data collection. In such a situation, this might be resolved by a reinforcer being made available non-contingently.

While the small numbers particularly with respect to people experiencing restrictive practices and/or seclusion and the design limitations warrant some caution in interpreting and generalising these results, there is published evidence that supports and helps to explain these findings.

First, there is evidence that NARS are effective in reducing episodic severity. As a treatment approach, the provision of non-contingent access to preferred items or reinforcers (a competing contingency) has been shown to lead to marked reductions in

self-injurious behaviour (SIB) often maintained by automatic reinforcement. Its application may be useful in removing the need for more intrusive procedures such as restraint or response blocking (Roscoe, Iwata and Goh, 1998); this is also useful when introduced for the management of aggression. Further, there is evidence for the effectiveness of functionally based reactive strategies, specifically the introduction of a preferred stimulus that confirms or meets the function of the behaviour leading to de-escalation (Iwata et al, 1994; Sigafoos and Sagers, 1995).

Second, the risk of accidental reinforcement can be mitigated by the strategies utilised within a multi-element PBS plan. The use of a preferred item or event (not linked to the function) as a reactive strategy, does not create an establishing operation for accessing the preferred event but rather a competing contingency and therefore is less likely to lead to accidental reinforcement. Further, within a multi-element plan the counter-intuitive approach of introducing and maintaining a high density of time-based preferred events sets the scene for a lower likelihood of problem behaviour producing the additional benefit of reducing the number of trials available for accidental reinforcement to occur. As the reinforcer is available in response to other antecedents and behaviours further competing contingencies are also established.

Konarski et al (1980) describe impediments to reinforcement, when the reinforcers are delivered at rates approaching or exceeding the amount that would be sought under free access conditions. Thus for some reinforcers, particularly those linked to function, it is possible to introduce non-contingent access at satiation levels with the benefits of not only undermining any possible contingent relationship but also precluding the need for the problem behaviour. The inclusion of non-contingent reinforcement as an intervention strategy can disrupt the response–reinforcer contingency and cause satiation, thereby affecting the establishing operations for the problem behaviour (Ecott and Critchfield, 2004). Such regular non-contingent access might also constitute neutralising routines known to act as establishing operations that serve to reduce the value of reinforcers linked to problem behaviour (Horner, Day and Day, 1997).

The teaching and reinforcing of functionally equivalent behaviours (as in the positive programming element of a plan) creates alternative response sets and therefore builds or expands a response class for the person. This improves a person's ability to meet their

needs independently (Goldiamond, 1975) or with other socially acceptable means of communicating (Carr and Durand, 1985) and would serve to address the problem behaviour by precluding the need for its use.

Matching law and competing reinforcement schedules are other ways that variables interact to affect behaviour (Horner, Day and Day, 1997) and the possibility of accidental reinforcement. Behaviour is distributed among concurrently available response alternatives in the same proportion that reinforcement is distributed amongst those alternatives (Borrero and Vollmer, 2002). Where a set of behaviours form a functional response class, the degree to which any available response alternative will occur in relation to other behaviours in the functional response class will be proportional to the reinforcement achieved by those alternatives. One behaviour increases at the expense of another (Ecott and Critchfield, 2004).

In a study examining matching law in relation to problem behaviours (aggression, self-injurious and disruptive behaviours), Borrero and Vollmer (2002) found that it accurately described the occurrence of alternative appropriate and inappropriate responses for all of the participants (4) in the study. Matching law demonstrates that by responding to appropriate behaviours in a response class there will be an increase in use of these behaviours to the extent that they are effective in achieving reinforcement and will thereby proportionally reduce use of problem behaviour. Thus responding to appropriate behaviour will see reductions in behaviours of concern such as aggression.

Undertaking to teach new appropriate skills will create or expand a functional response class. Knowing that the reinforcement of an alternative behaviour within the functional response class can serve to reinforce and maintain all of the behaviours in the class – including the problem behaviour (Cooper, Heron and Heward, 1987), it might be necessary to address this issue. This can be achieved within a multi-element plan (the focused support element) by continuing to reinforce appropriate behaviour and using, for example, differential reinforcement of other behaviour (DRO) to suppress the behaviour of concern (LaVigna and Donnellan, 1986).

If increasing occurrence indicating reinforcement was identified in data collection (a key component of PBS), then its impact could be managed in a number of ways. When responding with functionally based or non-functionally based NARS, if these strategies were seen to

be reinforcing then by simply responding sooner to less severe topographies of problem behaviour, or by responding to precursor behaviour, severity could be shaped down successively. That is, reinforce behaviours of less concern and lower risk by strengthening topographies occurring earlier in the escalation cycle, thereby increasing safety (LaVigna and Willis, 2005a).

These explanations are useful in understanding how NARS can be used within a multi-element plan to reduce episodic severity (situational effects), thereby increasing safety, without leading to increases in the occurrence of aggressive behaviour through accidental reinforcement (future effects). Further investigations into these factors may be a useful area of future research.

Conclusion

The data presented in this paper provide further evidence for the effectiveness of multi-element PBS as a whole and the effectiveness of NARS as crisis management strategies of 'first choice'. In this study, where NARS were implemented within a multi-element or multi-component model reductions were achieved in restraint and/or seclusion (three cases), episodic severity and occurrence, demonstrating that NARS can be effective while accidental reinforcement is mitigated by monitoring of data and the application of a range of proactive strategies. In this context there is evidence that the concern for accidental reinforcement need not be a barrier to the use of NARS in the first instance.

Notwithstanding the limitations of this study, the results provide encouraging evidence for the effectiveness of NARS. Further research targeting individuals currently subject to restraint and seclusion is required to explore the effectiveness of NARS in reducing and eliminating these practices, given that reactive strategies should reduce potential harm, be the least restrictive available and be effective (Gore et al, 2013), deliver rapid and safe control (LaVigna and Willis, 2005a) and thus reduce episodic severity. Furthermore, aversive and restrictive practices ought to be avoided or replaced within a PBS framework (Gore et al, 2013).

It is acknowledged that there may be extreme circumstances where restrictive practices would be used if other non-aversive strategies were demonstrated as ineffective in gaining rapid and safe control. However, where a treatment decision not to use NARS is made, it would be desirable to have evidence that strategies of 'first resort,' NARS, were ineffective rather than make

a decision on the basis of concerns for accidental reinforcement. Given the emerging evidence for the efficacy of NARS in the treatment of aggression, there is an increasing justification for their inclusion in PBS plans with the aim of reducing restrictive practices and seclusion within the field and achieving the ultimate aim of PBS: improving quality of life.

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Non-aversive reactive strategies for reducing the episodic severity of aggression

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Abstract

Background: Successful support of people experiencing behavioural crisis requires person centred responses that maintain safety. Crisis response strategies should not contribute to escalation of risk, likelihood of injury or exclusion. The effectiveness of positive behavioural support (PBS) in changing a person's behaviour over time is well documented. However, during a behavioural crisis there is evidence of a continued reliance on strategies of 'last resort' such as restrictive practices and seclusion. While the use of strategies of 'last resort' is regulated by legislation and policy, strategies of 'first choice' are less clearly defined. Evidence for the effectiveness of crisis management strategies that may include aversive and restrictive practices and positive approaches, and their associated situational effects during behavioural crises is unclear. In this study aversive and restrictive methods of management are compared with positive non-aversive reactive strategies (NARS), applied during behavioural crises, to examine the resulting situational effects.

Method: A 10-point scale measuring momentary effect (ME) severity during behavioural crises was developed. Standardised behavioural report forms were reviewed and information collected regarding: function of behaviour, the types of reactive strategies used and their effects. Reactive strategies for crisis management were categorised as non-aversive (functionally based or non-functionally based), aversive or restrictive. The resulting situational effects (resolution, continues, de-escalation or escalation) were determined via scores on the ME Severity scale. The degree of change on this scale and the number of steps required to resolve an incident were also recorded.

Results: In this study functionally based non-aversive reactive strategies (FB-NARS) were most effective in resolving behavioural crises. Non-functionally based non-aversive reactive strategies (NFB-NARS) were also effective in resolving behavioural crises while restrictive and aversive strategies were less effective in resolving behavioural crises and frequently led to escalation.

Conclusions: These results indicate that the most effective approach for resolving behavioural crises was through non-aversive reactive strategies (NARS). The benefits of this approach are that it is both non-aversive and person centred. Further research is needed to assess the effectiveness of NARS as crisis management strategies, including their effectiveness as an alternative to restrictive and aversive strategies.

Keywords: Non-aversive reactive strategies (NARS), episodic severity, reactive strategies, challenging behaviour

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Introduction

Within the disability sector, positive behavioural support (PBS) has emerged as recommended best practice for meeting the needs of people who present with behaviours of concern (Gore et al, 2013; Goh and Bambara, 2013; LaVigna and Willis, 2012). Behaviours of concern are often referred to as challenging behaviour, which has been defined by Emerson as 'culturally abnormal behaviour(s) of such an intensity, frequency or duration that the physical safety of the person or others is likely to be placed in serious jeopardy, or behaviour which is likely to seriously limit use of, or result in the person being denied access to, ordinary community facilities' (Emerson, 1995 cited in Emerson, 2001).

One of the challenges for the disability sector continues to be the provision of support to people who are experiencing behavioural crisis because of the safety issues that arise for both the person being supported and those providing support. Within the disability sector, restraint and seclusion continue to be used as strategies of last resort (Emerson, 2003; McVilly, 2008; McGill et al, 2009). This is despite mounting evidence that these interventions can be detrimental: to the people experiencing them, due to risk of injury, traumatisation or death; to individuals implementing them, due to physical and psychological injury; and to organisations, because of the costs arising from these events (Chan et al, 2012).

Working within the disability sector the authors frequently encounter a belief, expressed by managers, clinicians and direct support staff, that for serious aggression strategies of 'last resort' such as restraint and seclusion are necessary, and legislation regulating use of these practices supports this. In Australia, as in many other jurisdictions, these practices are not desirable and there is legislation in place to ensure that use of such practices is monitored and reviewed. However, there is a continued acceptance that for the most serious behaviours restrictive practices may be necessary (for example, the Disability Services Act 2011 [Tasmania], Disability Act 2006 (Victoria), Statutory Instrument No 415, 2013 (Ireland)).

Gore et al (2013) describe PBS as a multi-component framework comprising interventions used to address behaviour (proactively) and manage behaviour (reactively). Reactive strategies are described as a lesser (in regard to proactive strategies) but nonetheless important part of a plan, which should guide responses to challenging behaviour if and when it occurs. 'These strategies should be the least restrictive and most effective available, focus on ways to reduce potential harm

to the focal person and others, and minimise the risk of escalation of the behaviour' (Gore et al, 2013, p 19).

Essential to PBS is the work of staff who support individuals with behaviours of concern. They are expected to implement a range of proactive strategies to reduce occurrence of challenging behaviour while improving the person's quality of life. However, in the absence of effective crisis management strategies that keep both the individual and those supporting them safe, their focus is likely to be on the behaviour and not on the proactive elements of the plan that will reduce the behaviour over time and improve the person's quality of life. Thus for those directly providing support, reactive strategies may be seen as equally if not more important than proactive strategies until safety is established.

LaVigna and Willis (2005a) discuss the explicit inclusion of non-aversive reactive strategies as a component of a support plan. While the proactive strategies address speed and degree of effects over time, reactive strategies address the speed and degree by which each individual episode of behaviour can be brought under control with the least risk of injury to the person, support staff and others in the environment. The role of a reactive strategy, therefore, is not to produce changes in the future, but to keep people safe at the moment.

The term non-aversive reactive strategies (NARS) refers to methods for responding to physical aggression and other problem behaviour in ways that do not include punishing consequences, physical management, seclusion, or any other strategy that would be unwanted by the person. The effectiveness of reactive strategies can be determined through the use of episodic severity measures. Episodic severity (ES) is defined as a quantified measure of the gravity or intensity of a behavioural incident and measured within the context of a behavioural cycle as defined by its onset and offset criteria. Measures of ES might include, for example, the duration of a behavioural outburst, cost of property damage, and/or the severity of outcomes arising from an incident of aggression (LaVigna and Willis, 2005b).

NARS might include strategies that meet the assessed need communicated by a person's behaviour (function), such as strategic capitulation (LaVigna and Willis, 2002). For example, if functional assessment indicates that aggression occurs to communicate a tangible need such as 'Someone took my biscuit and I want it back!' then offering the person a replacement biscuit might lead to de-escalation or resolution of the incident. This could be described as a functionally

based non-aversive reactive strategy (FB-NARS). Alternatively, a non-functionally based non-aversive reactive strategy (NFB-NARS) might be employed where the function of the behaviour was unknown or unavailable, for example if the person wanted an energy drink which was known to be detrimental to their health if they drank them to excess. In this instance, diversion to a highly preferred activity such as making and eating popcorn might be effective. Alternatively, if the person had been practising deep breathing and going for a walk as a coping strategy then prompting this would be another example of NFB-NARS. Either of these strategies might also be equally effective in a situation where the function of the behaviour was unknown but the person's preferences and coping skills were known (see *Table 4* for a list of NARS).

There is evidence that the use of NARS to support people with behaviours of concern is effective in reducing ES within multi-element positive behavioural support interventions (Crates and Spicer, 2012; LaVigna and Willis, 2012). Reductions in ES as reported in this growing body of literature provide specific evidence for the effectiveness of the non-aversive reactive strategies for managing behavioural crisis. Using a multi-element framework, this can be achieved with a simultaneous reduction in occurrence (Crates and Spicer, 2012). MacDonald, Hume and McGill (2010) also reported significant reductions in ES and occurrence over a 22-month intervention using NARS for safe crisis management with a man who presented with aggression towards others, self and property.

Despite this evidence, restraint, seclusion and other aversive treatment strategies continue to be utilised across a broad range of service settings within the disability sector in response to serious aggression. The many limitations of restrictive practices and seclusion as reactive strategies are highlighted by Chan et al (2012) and include falls, injury, psychological trauma and death. The literature further suggests that punishment is not effective as a reactive strategy for managing aggression. Specifically, while punishment is used with the intent of reducing behaviour over time it can have an escalating effect on aggression. The role of a reactive strategy should be to reduce episodic severity. Punishment is known to produce the opposite effect (Malott, Whaley and Malott, 1997). So in addition to the ethical imperative that professionals use the least aversive methods available, there is an empirical imperative for avoiding punishment since it escalates episodic severity, thereby increasing risk during a behavioural crisis when this occurs.

The potential benefits of NARS over restrictive or aversive practices in supporting individuals experiencing behavioural crisis, therefore, include the potential to improve quality of life and avoid the risk of human rights infringements, eliminate the physical risk to the individual presenting with behaviours of concern and those who support them, avoid the risk of traumatisation and/or re-traumatisation and avoid potential damage to the therapeutic alliance between the persons receiving and providing support.

In this study the authors seek to examine the relative efficacy of NARS in comparison to approaches such as aversive and restrictive practices when implemented as crisis management strategies in response to challenging behaviour. Further, they seek to examine the relative efficacy of functionally based and non-functionally based NARS.

Hypotheses

That FB-NARS and NFB-NARS are more effective than aversive or restrictive reactive strategies for de-escalating and resolving aggressive behavioural crises.

That functionally based non-aversive reactive strategies (FB-NARS) are more effective than non-functionally based non-aversive reactive strategies (NFB-NARS).

Method

Behavioural incident reports were reviewed as a standard component of service delivery, ongoing supervision and quality review activities in two not-for-profit service delivery organisations. Both providers were delivering a range of community services including accommodation and respite services in shared or individual households for people with intellectual disability and people without intellectual disability who had experienced trauma, adversity or chronic stress.

Sample reports were analysed to determine what effect, if any, the types of strategies used during a crisis had upon the severity of the presenting behaviour. This would determine the effectiveness of the strategy for restoring safety during aggressive behavioural crises.

Momentary effect (ME) scale

A 10-point momentary effect (ME) severity scale (see *Table 1*) was developed to measure the severity of aggression at the onset of the episode and the resulting changes in the severity of aggression following staff

intervention. The authors utilised their clinical experiences with staff reactions to a range of behavioural topographies and the resulting outcomes to construct the scale. In ascending order of severity, 1 through 10, a 1 was scored if no topographies of aggression were present; and a 10 was scored where the most severe possible outcome (death) might occur. This scale was used to measure ME severity at onset (that is after the definition for aggression was met, see *Table 2*) and after each strategy used by staff to manage the behavioural crisis.

Table 1: Momentary effect severity scale

1. No topographies present.
2. Insults or swearing directed at others, verbal and or gestural threats to harm self or others and/or physical contact with property.
3. Attempts at physical contact (no weapons) that may harm self or others, or any actual contact that leaves no marks.
4. Physical contact (no weapons) directed at self or others leaving marks or injuries that require no treatment. (No first aid or professional medical treatment.)
5. Physical contact directed at self or others leaving marks or injuries that require first aid treatment and/or gestural threats with a weapon, no attempt at contact and/or spitting.
6. Physical contact directed at self or others leaving marks or injuries that require professional medical treatment and/or attempted contact with a weapon.
7. The use of a weapon where contact occurs, and where no treatment is necessary; or causing injury requiring first aid and/or choking with no loss of consciousness.
8. Contact by use of a weapon that requires professional medical attention and/or choking with loss of consciousness.
9. Physical contact directed at self or others and/or use of a weapon that requires professional medical attention and results in permanent disability.
10. Physical contact directed at self or others and/or use of a weapon that results in death.

Table 2: Definition of aggression

An incident of aggression was determined to have commenced when staff reports indicated the first occurrence of any topography of aggression where aggression was defined as any threats of, attempts to make or actual physical contact with another, using a body part or object where there was no consent, implied or actual, for the contact and the contact was likely to cause harm.

ME scale content validity

An examination of content validity of the ME scale was conducted. Volunteers with a background in the community service industry and volunteers with no background in community services (but an awareness of the risks relating to aggression because of involvement in a martial arts school) were given a randomly arranged list of each item (outcomes) on the ME scale and asked to place them in order from most (10) to least (1) severe.

The scale covers outcomes that can result from a wide range of topographies of aggression. A consensus validity methodology was used to determine agreement between the authors' rating and those of the volunteers in relation to the content and order of the scale. An item on the respondent's scale had to correspond to the equivalent item on the ME scale for agreement to be established. Calculations were made as follows:

$$\frac{\# \text{ Agreements}}{\# \text{ Agreements} + \# \text{ Disagreements}} \times 100 = \% \text{ Validity}$$

The average validity rating for the 29 respondents for the order of outcome of the content was 83%. Volunteers had high agreement that the content and order of the scale measured increasing severity in the outcome of aggression.

Informed consent

All individuals, their guardian or person responsible consented to receive services from their provider and understood that records are made relating to their behaviour and its impact on them and others. The

review of reports to determine the efficacy of support and other legal and contractual compliance activities was also a known standard aspect of service delivery. All information was de-identified so that individuals could not be identified or linked to the reported data.

Selection of reports for inclusion

A sample of reports was selected across a two-year period from two organisations providing support accommodation and respite support in community based settings. These narrative incident reports of episodes of aggression were routinely submitted by direct support staff to their supervisors who reviewed reports for the purposes of supervision, service monitoring and quality reviews. The first year reports were analysed by the reviewers from individuals in receipt of support that had three or more incident reports for aggression in the 12-month period. The second year (to increase the number of high severity incidents in the sample) reports were reviewed from individuals who had at least one incident where episodic severity could be scored five or higher on the ME scale.

Subjects

The reports selected were written by paid support staff working rostered staff shifts within community based supported accommodation settings, with 1–4 residents. Some were from respite settings with similar arrangements. The people using these services whose reports were included ranged in age from 12 to 69 years with a mean of 25.6 years. There were incident reports from 14 males and 3 females, with 8 people receiving services to support their living with intellectual disability and/or autism, and 9 people with a history of trauma, adversity or chronic stress.

Procedure

Each incident report included in the study was first reviewed to determine if the function of the behaviour could be determined. Where clients had functional behaviour assessments in their files, these were used to inform decisions relating to the function of aggressive behaviour during incidents. Where such assessments were not available then the function was determined, if possible, from the provided narrative, utilising categories (tangible, sensory, escape and interaction) from the Motivation Assessment Scale (Durand and Crimmins, 1992), and emotional expression from the Aide to Functional Assessment (Willis and LaVigna, 2004a). Where it was not possible to determine the function of the

behaviour then the strategies were coded as non-functionally based. All included reports were screened to ensure that the incident description had a clear start that met the standard definition for aggression (see *Table 2*) and contained sufficient detail to allow a score on the ME severity scale (see *Table 1*) at onset. Incidents also needed to include a description of the strategies used and clients' responses to allow coding for strategy type and subsequent scoring on the ME severity scale.

In total, 93 incident reports were reviewed in the study, which included 230 separately rated reactive strategies; of these 18 were classified as FB-NARS, 138 NFB-NARS, 51 aversive and 23 restrictive. *Table 3* shows the distribution of rated reactive strategies for each participant in the study. Strategies reported as aversive included, for example, threatening to report behaviour to higher authority or refusing to take person on scheduled outing. (Note: outings were not cancelled since this required supervisor approval and as long as the person was calm their activities were attended as scheduled.) Such strategies were responded to internally through performance monitoring and coaching. Strategies reported as restrictive were used in accordance with existing policy and relevant legislation. The strategies implemented were consistent with the techniques staff had been taught through accredited training courses. They usually involved brief (typically less than 60 seconds) escort techniques used to move a person from danger or brief restraints of the movement of limbs, while people moved away to safety.

Raters

The authors and one other co-rater independently rated each incident report included in the study. The consistency of ratings for strategy type, momentary effect severity and strategy impact were used to calculate inter-rater reliability. The raters each had between 9 and 25 years experience in the field of developmental disabilities and/or residential care and practised as psychologists, speech pathologists or social workers.

Inter-rater reliability

A consensus reliability methodology was used to determine inter-rater reliability. All three raters' records on an item had to be the same in order for agreement to be established.

$$\frac{\# \text{ Agreements}}{\# \text{ Agreements} + \# \text{ Disagreements}} \times 100 = \% \text{ Reliability}$$

Agreements + # Disagreements

Table 3: Strategy spread across subjects

Client	Total No of Incidents	No Of Strategies FB-NARS	No Of Strategies NFB- NARS	No Of Strategies Aversive	No Of Strategies Restrictive	Total No Of Strategies
1	10	1	13	6	1	21
2	19	7	20	4	2	33
3	4		2	1	2	5
4	21	1	37	-	6	44
5	4	-	7	4	3	14
6	1	-	1	2	-	3
7	5	-	11	5	1	17
8	5	-	10	11	3	24
9	1	-	5	1	1	7
10	2	-	7	-	6	13
11	1	-	3	1	1	5
12	3	1	7	6	-	14
14	5	2	8	-	2	12
15	2	1	1	1	1	4
16	2	-	6	2	3	11
17	2	1	-	-	1	2

Reliability indices were calculated based on a sample of 11% of reports, which included 13% of all reactive strategies used. The reliability index for strategy type was 87%, strategy impact 95% and momentary effect change 95%. The reliability for steps from resolution was 100% since the narrative had to be agreed by each of the 3 raters prior to the scoring process. Where the narrative was unclear the report was not included in the study.

Measures

Strategy type

Each incident was reviewed to categorise the staff actions (reactive intervention strategy types) as an independent variable (strategy type). Strategy type consisted of four possibilities: *Functionally based non-aversive reactive strategies* (FB-NARS), where positive strategies directly linked to meeting the need expressed through the behaviour (the function) such as strategic capitulation were used (see Table 4 for a detailed list of NARS); *non-functionally based non-aversive reactive strategies* (NFB-NARS), where positive strategies not directly linked to meeting the function, such as redirection were used; *restrictive*, where the person's freedom of movement was restricted, typically a brief manual restraint lasting less than 60 seconds; and *aversive*, where an unpleasant stimulus was introduced such as a verbal reprimand or a where a preferred stimulus was 'threatened' for removal, such as loss of privileges.

Momentary effect severity

The 10-point Momentary effect (ME) severity scale (see Table 1) was used to rate the severity of aggression at its commencement (see Table 2) and then following implementation of each strategy.

Strategy impact

Each intervention strategy employed by staff during the incident was then assessed by rating the severity of aggression following the implementation of the strategy using the momentary effect severity scale. A comparison of this rating and the rating preceding the implemented strategy was made to assess the dependent variable (strategy impact). Where the momentary severity rating increased the strategy impact was rated as *escalation*; where the momentary severity rating stayed the same the strategy impact was rated as *continues*; where the momentary severity rating decreased the strategy impact was rated as *de-escalation*; and where no topographies of aggression were present, thus concluding the incident, strategy impact was rated as *resolution*.

Momentary effect change

The momentary effect severity scores before and after each strategy were recorded with the difference calculated to create the dependent variable momentary effect change (ME-change). This variable captured not only the direction of the change as in strategy impact, but also the degree of change on the momentary effect severity scale that resulted from the different strategies utilised by staff to respond to aggression during an incident.

Table 4: List of non-aversive reactive strategies (NARS)

Functionally based NARS	Positive resolution – introduce a stimulus to reduce episodic severity
	Tangible – give the person what they want or need <ul style="list-style-type: none"> ● Strategic capitulation (immediate and delayed) ● Reactive stimulus satiation
	Sensory – provide alternate sensory input that the person wants or needs <ul style="list-style-type: none"> ● Divert to preferred sensory activity ● Divert to perseverative activity
	Emotional expression – support the person to express emotions <ul style="list-style-type: none"> ● Active listening ● Physical comfort ● Physical exertion ● Facilitate communication
	Interaction – provide the interaction the person wants or needs <ul style="list-style-type: none"> ● Exclusive engagement ● Facilitate communication ● Active listening
	Negative resolution – remove a stimulus to reduce episodic severity
	Escape – support the person to escape from the situation or experience they find unpleasant <ul style="list-style-type: none"> ● Facilitate leaving ● Remove demands, requests and expectations ● Move away from the person ● Use distraction (to facilitate escape from upsetting or traumatic thoughts)
	Sensory – remove sensory input that is unpleasant or overwhelming for the person
Non-functionally based NARS	Positive resolution – introduce a stimulus to reduce episodic severity
	Stimulus change
	Introduce something they love to do <ul style="list-style-type: none"> ● Preferred events ● Perseverative activities
	Ask them to help you
	Ask them to do something they always do
	Reminder of previously arranged deals for positive behaviour
	Inject humour
	Facilitate coping skills <ul style="list-style-type: none"> ● Pre-potent Instructions ● Physical activity ● Relaxation ● Deep breathing
	Negative resolution – remove a stimulus to reduce episodic severity using stimulus change

Steps from resolution

Having identified each of the strategies utilised by staff and their impact, the total number of strategies required to achieve resolution of an incident of aggression was counted with the sum calculated and recorded as a third dependent variable, steps from resolution (SFR).

Analysis

Descriptive statistics (percentages) for strategy impact were examined and are reported for each level of the independent variable, strategy type. The means and standard deviations for ME change and SFR are also reported for each level of the independent variable, strategy type. These data indicated the effect of strategy type on strategy impact, ME change and SFR.

The data were derived from standard governance activities and not an experimental design. The resulting ad hoc design meant the data were not independent as there were multiple measures for most subjects and the use of reactive strategies was not randomised. Instead they were used at the discretion of staff who likely selected strategies based on their knowledge of the person, their previous experiences and the presenting severity level prior to the selection of the reactive strategy implemented. Consequently, these data were subject to nested effects.

Given concerns for the above-mentioned nested effects within the sample, data from clients 1, 2 and 4 were reported to explore their individual data for the effect of strategy type on strategy impact, ME change and steps from resolution. Outcomes for these individuals are reported as Type 3 case studies meeting Kazdin's (1981) criteria for Type 3 studies allowing valid inferences. Specifically: (1) data were objective and collected on multiple behaviours; (2) continuous measures were taken during baseline (in this study onset), during intervention (application of reactive strategies), and follow-up phases (in this study return to baseline); (3) the behaviours targeted had long-standing histories and would not be expected to improve without direct, effective intervention; and (4) the three case studies reported involved the application of reactive strategies to individuals with varying ages, diagnoses, functioning levels and personal backgrounds. Collectively clients 1, 2 and 4 represented 54% of incidents and 43% of strategies examined within the study.

Results

Strategy impact

Figure 1 shows the results for strategy impact for each strategy type for all included cases.

Figure 1 shows that aversive strategies led to escalation in 47% of cases, continuation with no change in severity in 43% of cases and resolution in only 10 % of cases. Restrictive strategies led to escalation in 46% of cases, continuation with no change in severity in 42% of cases, de-escalation in only 13% of cases and never led to resolution. NFB-NARS led to escalation in only 7% of cases, continuation with no change in severity in 25% of cases, de-escalation in 19% of cases and resolution in 48% of cases. FB-NARS led to resolution in 100% of cases.

Figure 1: Comparison of strategy impact for strategy type

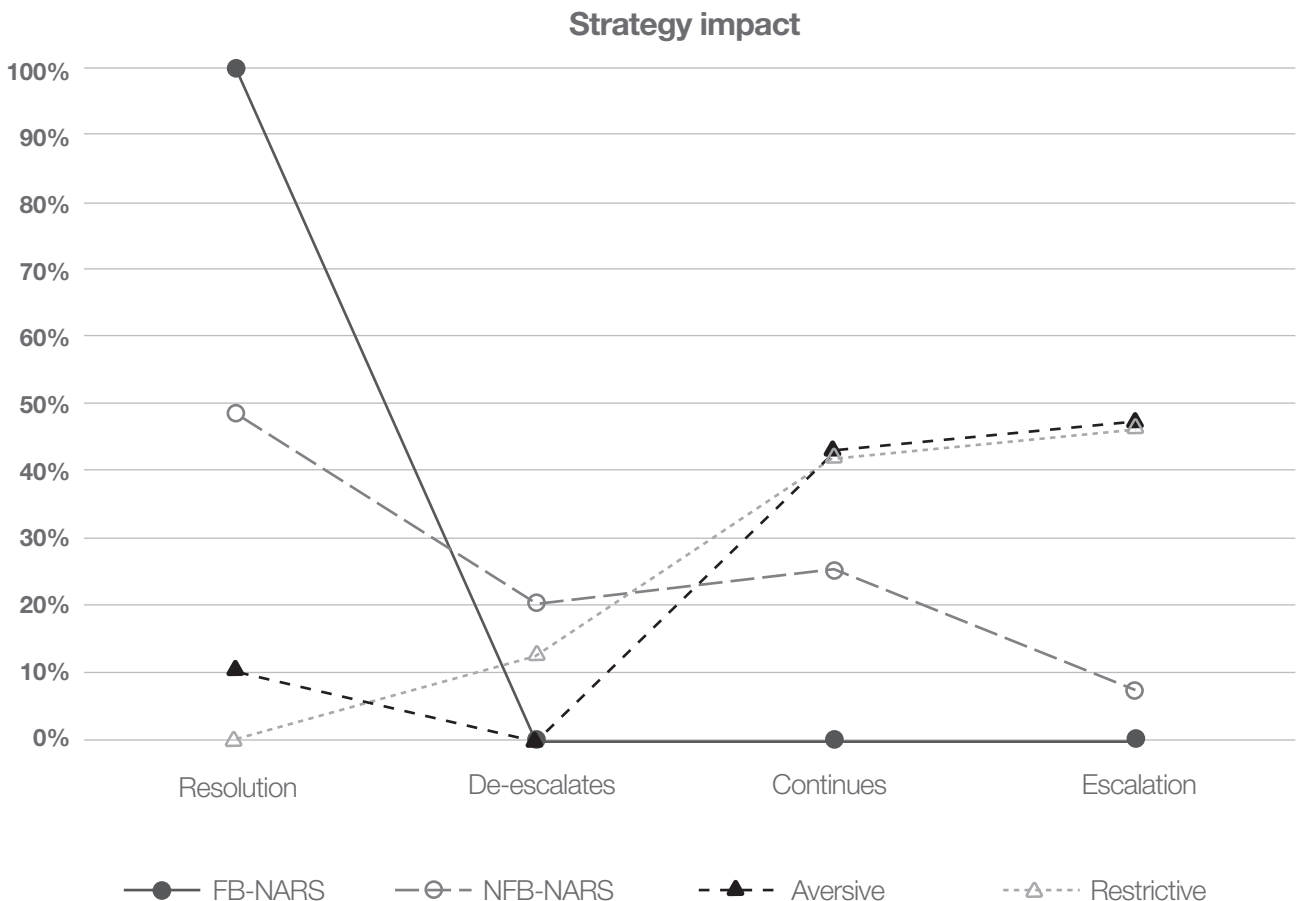
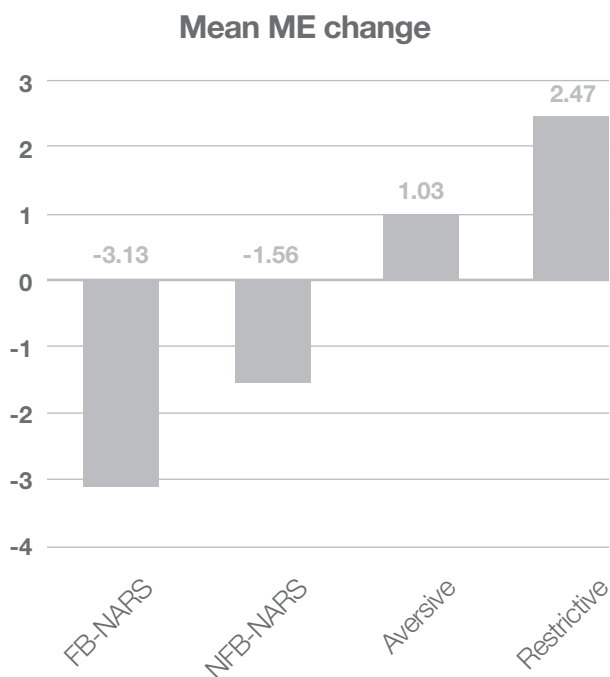


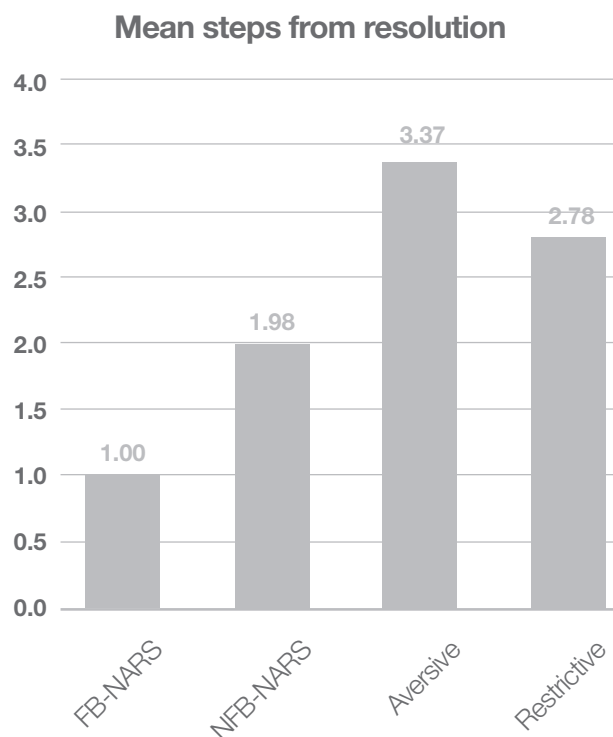
Figure 2: Mean momentary effect change scores for strategy type



Momentary effect change

Figure 2 shows the mean change on the momentary effect severity scale for all cases for each strategy type. Aversive strategies led to escalation with a mean increase in momentary severity of 1.03 (SD = 1.61). Restrictive strategies led to a mean increase in momentary severity of 2.47 (SD = 1.08). NFB-NARS led to a mean reduction in momentary severity of -1.56 (SD = 1.62). FB-NARS led to a mean reduction in momentary severity of -3.13 (SD = 1.70).

Figure 3: Mean steps from resolution scores for strategy type



Steps from resolution

Figure 3 shows the mean scores for steps from resolution (SFR) for all cases according to each strategy type. FB-NARS had the least number of SFR with a mean of 1 (SD = 0), NFB-NARS had a mean number of SFR of 1.98 (SD = 1.34), restrictive strategies had a mean number of SFR of 2.78 (SD = 0.85), while aversive strategies had the greatest number of SFR with a mean of 3.37 (SD = 1.62).

Results for individuals

Individual graphs for the effect of strategy type on strategy impact, ME change and SFR are presented for three clients (1, 2 and 4 from Table 3). Figures 4, 5 and 6 represent the results for client 1.

Figure 4: Client 1 comparison of strategy impact for strategy type

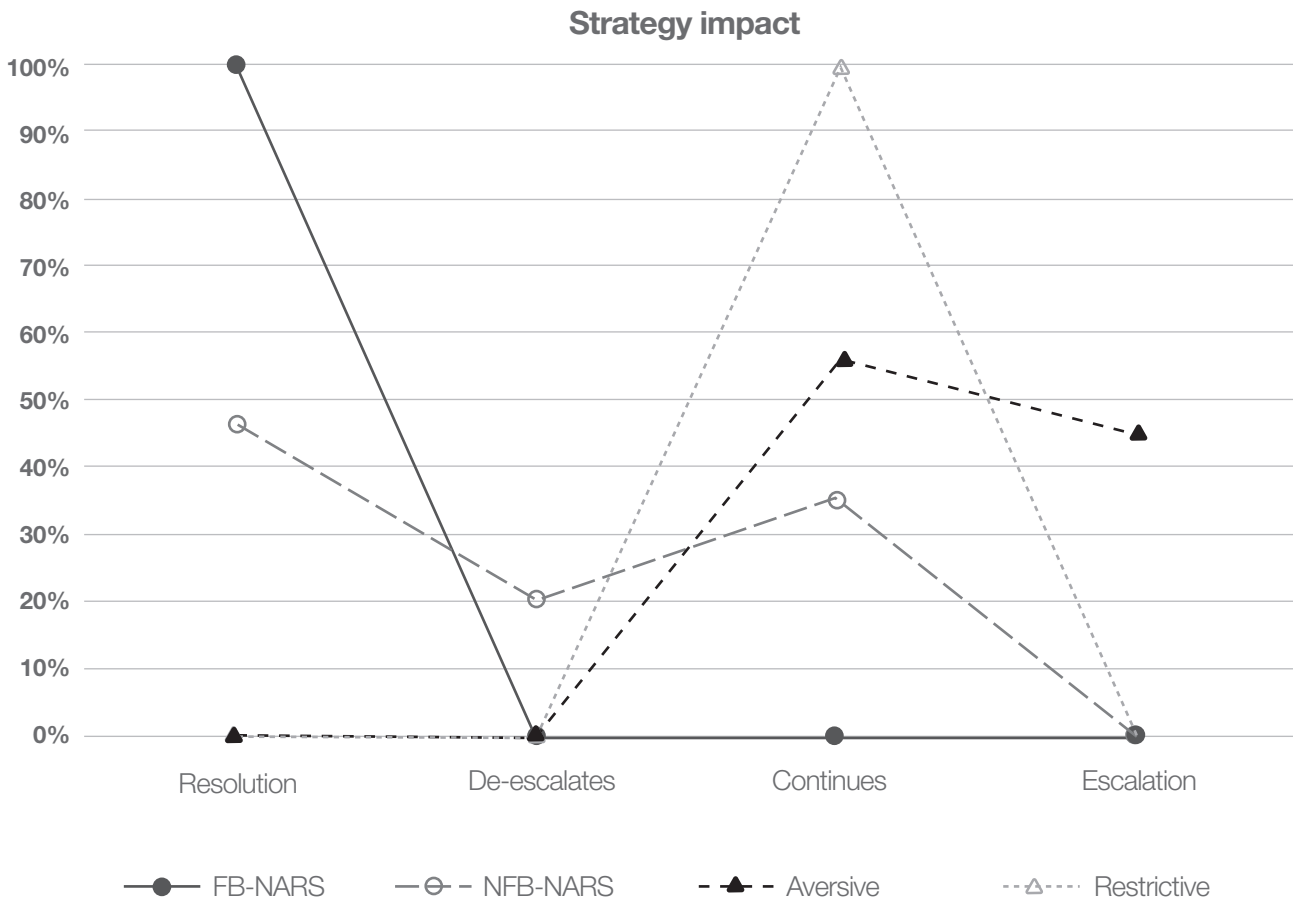


Figure 4 shows the strategy impact for each reactive strategy type for client 1. These results show that FB-NARs led to 100% resolution when it was used. NFB-NARS led to resolution 45% of times, de-escalation 20% of times and continuation 35% of times and never led to escalation. Aversive strategies never led to resolution (0%) or de-escalation (0%), continuation 56.25% of times and led to escalation 43.75% of times. Restrictive practices never led to resolution (0%) or de-escalation (0%), or escalation (0%) but resulted in 100% continuation when it was used.

Figure 5 shows the mean ME change for each reactive strategy type for client 1. These results show that FB-NARS led to a mean decrease of -2.0 and NFB-NARS a mean decrease in ME severity of -1.36. Aversive strategies increased mean ME change 0.67 and restrictive strategies 0.0 had no impact on the level of severity.

Figure 6 shows the mean SFR for each reactive strategy type for client 1. Mean scores indicate that for client 1 FB-NARS were 1 step from resolution, NFB-NARS 1.43, aversive 2.67 and restrictive strategies were 3.00 steps from resolution.

Figure 7 shows the strategy impact for each reactive strategy type for client 2. These results show that FB-NARS led to resolution 100% of times that they were used. NFB-NARS led to resolution 39.29% of times, de-escalation 32.14% of times, continuation 21.43% of times and led to escalation in 7.14% of times they were used. Aversive strategies never led to resolution (0%) or de-escalation (0%), resulted in continuation 45.45% of times and escalation 54.55% of times. Restrictive practices never led to resolution (0%) or de-escalation (0%), resulted in continuation 40% of times and escalation 60% of times.

Figure 5: Client 1 mean momentary effect change scores for strategy type

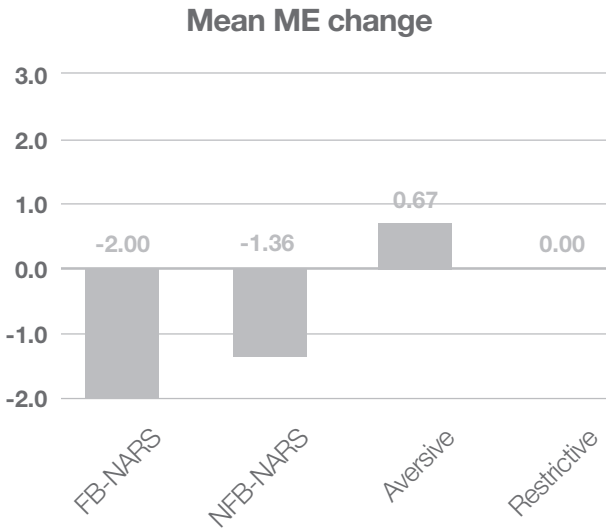


Figure 6: Client 1 mean steps from resolution scores for strategy type

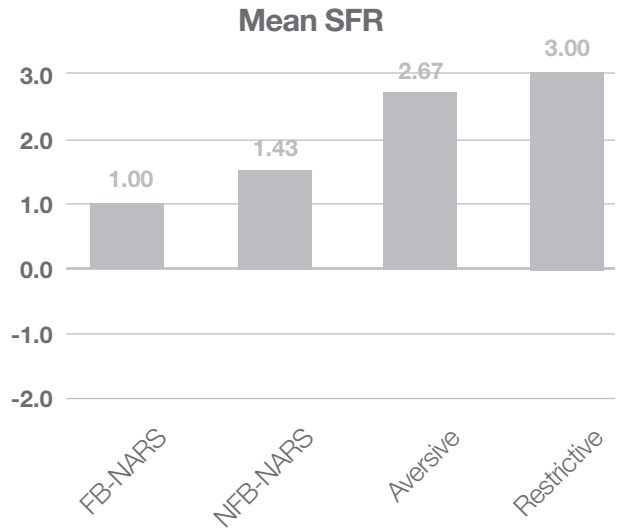


Figure 7: Client 2 comparison of strategy impact for strategy type

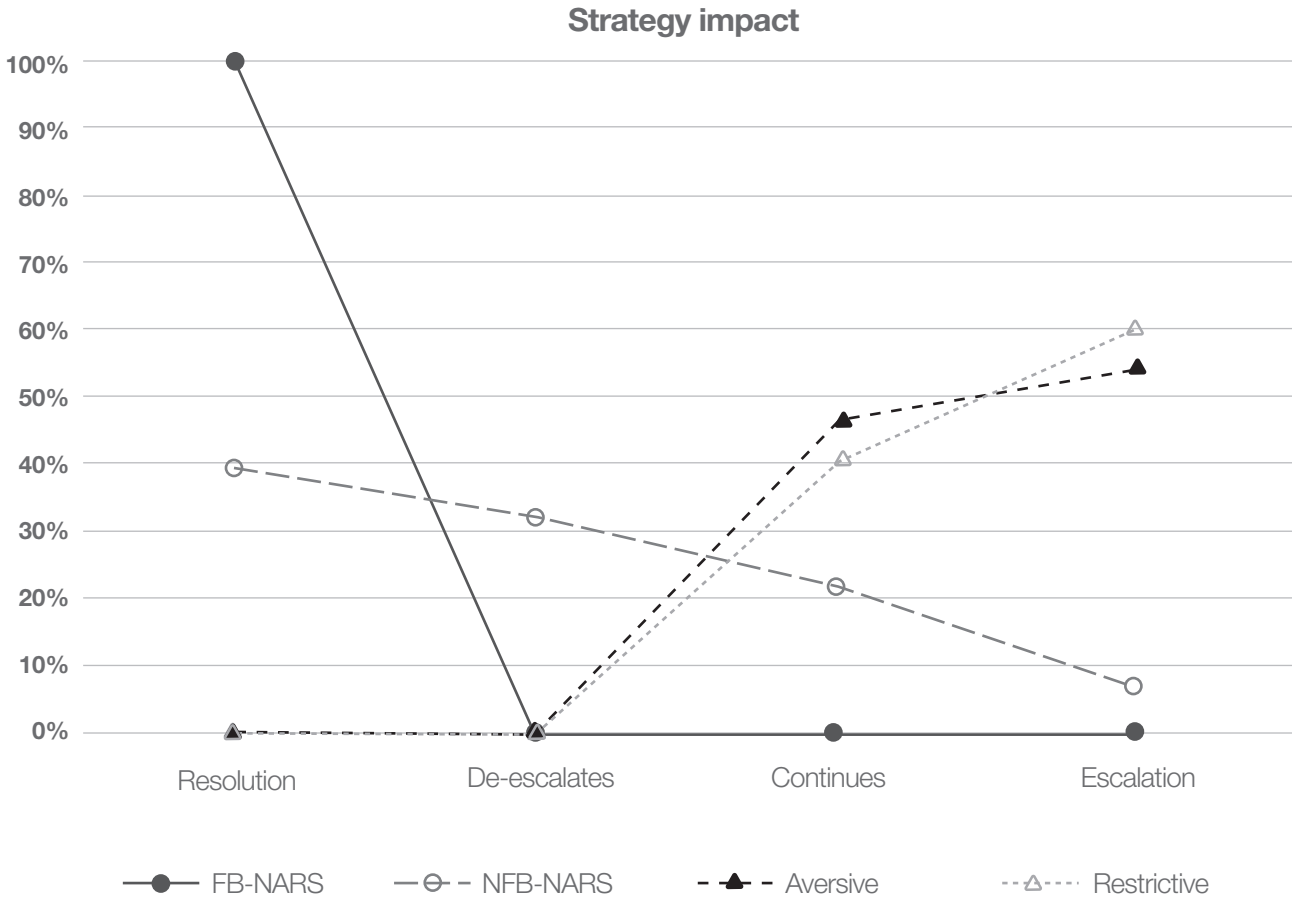


Figure 8: Client 2 mean momentary effect change scores for strategy type

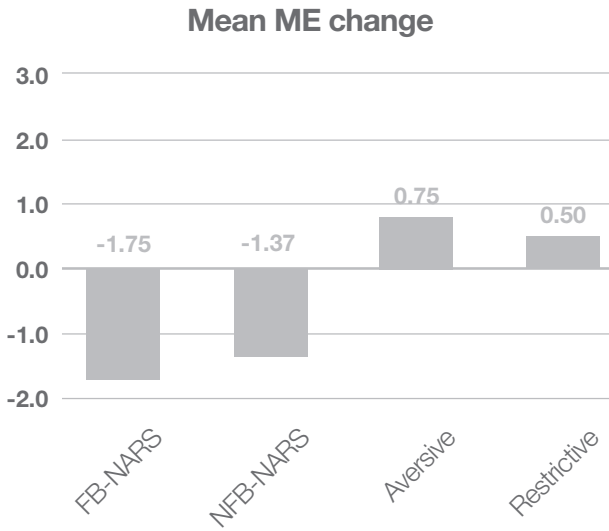


Figure 9: Client 2 mean steps from resolution scores for strategy type

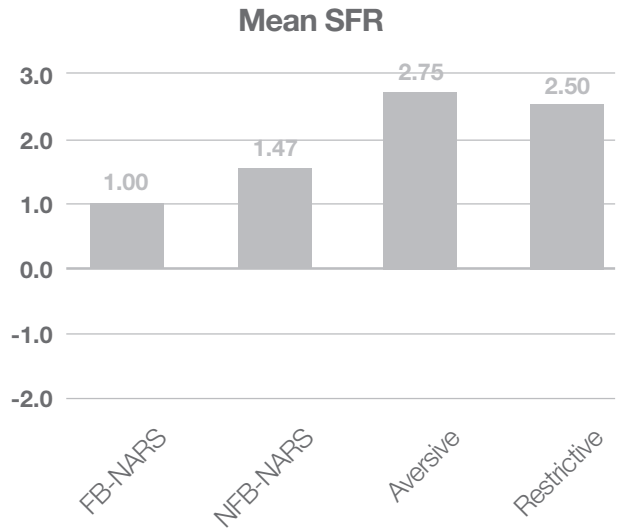


Figure 10: Client 4 comparison of strategy impact for strategy type

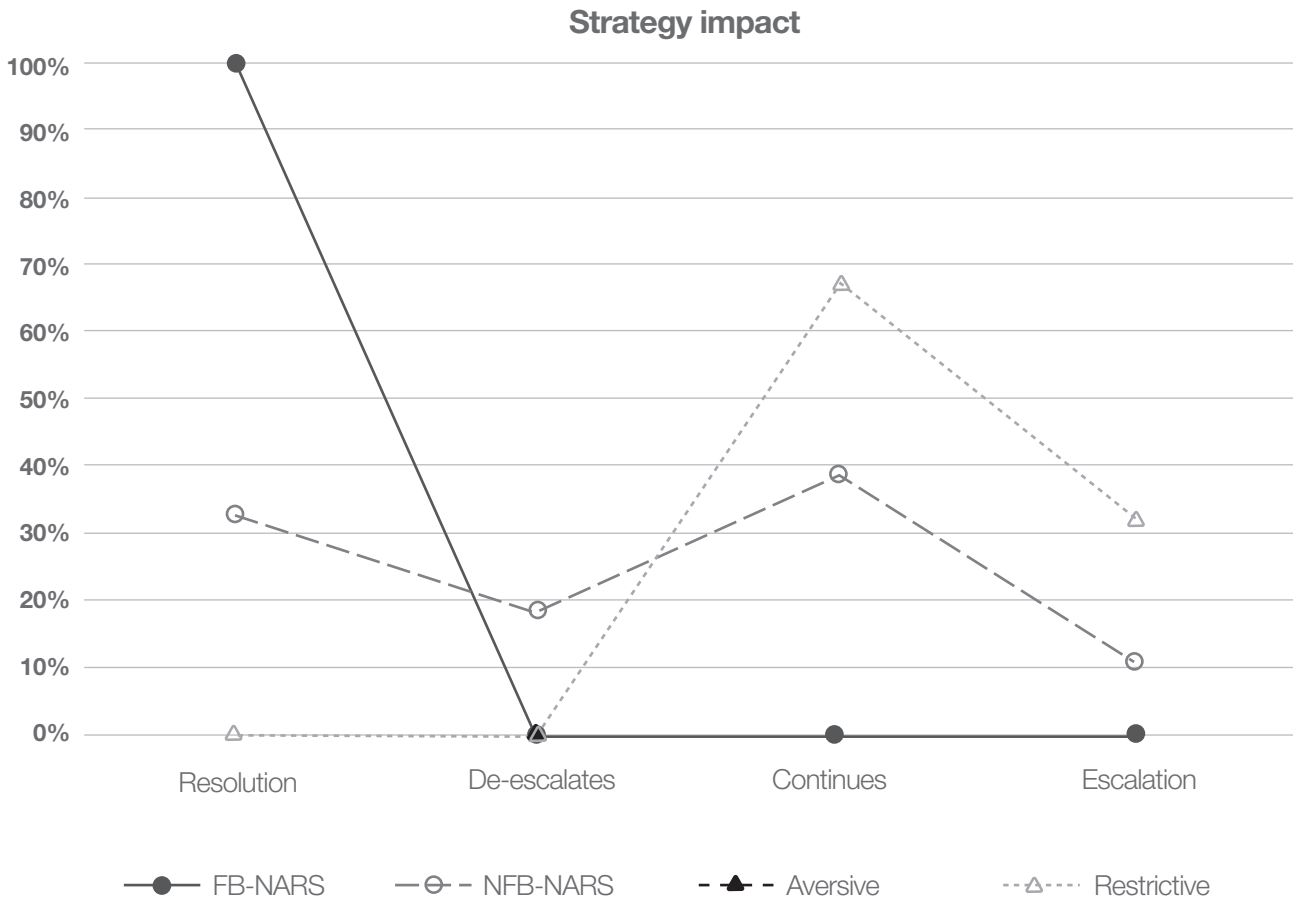


Figure 11: Client 4 mean momentary effect change scores for strategy type

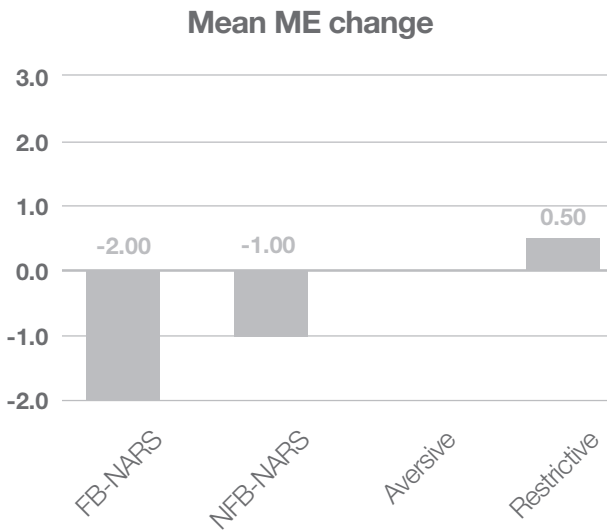


Figure 8 shows the Mean ME change for each reactive strategy type for client 2. These results show that FB-NARS led to a mean decrease in ME severity of -1.75 and NFB-NARS a mean decrease in ME severity of -1.37. Aversive strategies increased mean ME change 0.75 and restrictive strategies increased ME change by 0.5.

Figure 9 shows the mean SFR for each reactive strategy type for client 2. Mean scores indicate that for client 2 FB-NARS achieved resolution after 1 step, NFB-NARS required 1.47 steps, aversive and reactive strategies required 2.75 and 2.50 steps for resolution to occur respectively.

Figure 10 shows the strategy impact for each reactive strategy type for client 4. These results show that FB-NARS led to resolution 100% of times it was used. NFB-NARS led to resolution 31.67% of times, de-escalation 18.33% of times, continuation 40% of times and in escalation 10% of times. Restrictive practices never led to resolution (0%), or de-escalation (0%), resulted in continuation 66.67% of times and escalation 33.33% of times. Aversive strategies were not used in the incidents reviewed for client 4.

Figure 11 shows the mean ME change for each reactive strategy type for client 4. These results show that FB-NARS led to a mean decrease of -2.0 and NFB-NARS a mean decrease in ME severity of -1.00. Restrictive strategies increased mean ME change by 0.5.

Figure 12: Client 4 mean steps from resolution scores for strategy type

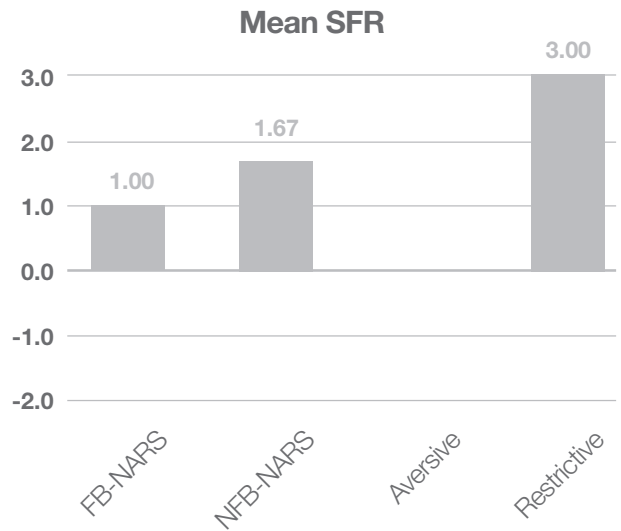


Figure 12 shows the mean SFR for each reactive strategy type for client 4. Mean scores indicate that for client 4 FB-NARS was 1 step from resolution, NFB-NARS 1.67 and restrictive strategies were 3.0 steps from resolution.

Discussion

This study is based on a sample with small numbers for some groups according to strategy types particularly FB-NARS. Further, the spread of data across subjects is unbalanced with individuals contributing differing and multiple data. Thus the results need to be interpreted with some caution. Notwithstanding these limitations, the data show encouraging trends for informing practice directions and future research.

Strategy impact

The analysis of strategy impact showed that in this study the most effective strategy type to resolve an aggressive behavioural crisis was functionally based non-aversive reactive strategies (FB-NARS) because they consistently resulted in resolution. Thus, when faced with an aggressive behavioural crisis where the function of the behaviour was understood, the most effective response was to meet the presenting need by implementing FB-NARS. The next most effective strategy type to resolve a behavioural crisis was non-functionally based non-aversive reactive strategies

(NFB-NARS). This strategy type was more effective than either restrictive or aversive strategy type. NFB-NARS led to escalation in only 7% of cases while restrictive strategies led to escalation in 46% of cases and aversive strategies led to escalation in 47% of cases.

The results of this study indicate that for this subject group, when faced with an aggressive behavioural crisis where the function of the behaviour was either not understood or not able to be met because to do so would be harmful and/or illegal (for example, a person under 18 asking staff for cigarettes) the most effective response was to use NFB-NARS, such as diversion to a preferred event or a stimulus change (see *Table 4* for a list of strategies included in this strategy type). (For a detailed description and examples see Willis and LaVigna, 2004b; Spicer and Crates, in press).

Momentary effect change

In this study, when responding to aggressive behaviour FB-NARS were the most effective means of reducing momentary severity with a mean reduction in ME change of -3.13. NFB-NARS were the next most effective strategies for reducing momentary severity with a mean reduction in ME change of -1.56. Both aversive and restrictive strategies led to an increase in momentary severity with the mean increase of ME change for aversive strategies 1.03 and for restrictive strategies 2.47.

Restrictive strategies are often recommended for the most severe behavioural crises. But the results from this study indicated that the immediate impact or situational effect of restrictive strategies was likely to result in increasing severity by a mean of 2.47. Clearly, restrictive practices were less effective than NARS and never resulted in immediate resolution. This is not to say that a restrictive practice like manual restraint could not (with sufficient trained staff) be used to contain an incident of aggression; only that when it was attempted the level of severity was first increased. With regard to the known possible risks of detrimental effects related to such practices, it would be important to know whether NARS had been used in the first instance and, if not, to understand any reasons for such a decision.

Due to the small sample numbers the results of this study should be interpreted with caution. However, these results do provide encouraging support for the use of NARS as an alternative to restrictive and aversive strategies. Clearly, FB-NARS and NFB-NARS were effective de-escalating and resolving strategies during aggressive behavioural crisis. In contrast, aversive

and restrictive strategies were far less effective for reducing ME severity during an incident because they led to escalation, which is the opposite of what would be sought from a reactive strategy when responding to an incident of aggression.

While the small sample size suggests some caution is required in generalising the results of this study, the effect of introducing a preferred event on episodic severity is broadly demonstrated in the literature related to the functional analysis of behaviour (Iwata et al, 1994a; Iwata et al, 1994b; O'Reilly, 1995; Sigafoos and Sagers, 1995). The methodology for determining the function of behaviour in these studies is to present the possible motivator upon the occurrence of the target behaviour. If this action repeatedly terminates or reduces the behaviour, the conclusion is reached that this is the reinforcer maintaining the behaviour. For example, if the person is given attention upon exhibiting the behaviour and if the result is that the behaviour stops or is reduced, it is concluded that the function of the behaviour is to get attention. While not directly assessing the situational effects of FB-NARS, the results of these studies demonstrate that what LaVigna and Willis (2002) call strategic capitulation reduces the episodic severity of the behaviour. The findings from the present study are consistent with the above-mentioned work, lending support to the results found in this study.

Steps from resolution

The results of the steps from resolution measure provide another indication of the relative efficacy of FB-NARS. In this study, FB-NARS were again most effective requiring a mean of 1.07 steps to be implemented to achieve resolution. That is, requiring only one strategy to resolve an incident of aggression rapidly and safely – the sole purpose of a reactive strategy within a PBS framework. These were followed by NFB-NARS that required a mean 1.99 steps (or strategies) to resolve an incident. In contrast, incidents where restrictive strategies were used, a mean 2.67 steps were required to resolve an incident; and where aversive strategies were used a mean 3.38 steps were required to resolve an incident. Where incidents included restrictive or aversive strategies more work was required by staff and it took longer to resolve the incident.

Results for individuals

The individual client data presented further illustrates the impact of strategy type during episodes that include aggression. *Figures 4, 7 and 10* clearly show that when

used, FB-NARS led to immediate resolution restoring safety for the person and their staff. NFB-NARS were the next most effective strategies when the function of the person's behaviour was unknown or unavailable. Indeed, NFB-NARS led to resolution for clients 1, 2, and 4 in 45.0%, 39.2% and 31.6% of cases respectively. Conversely, aversive and restrictive practices never led to resolution or de-escalation and indeed *Figures 5, 8 and 11* show that there were mean increases in ME change indicating the usual effect was escalation when these strategies were used.

When NFB-NARS were used, they resulted in continuation of the severity level for clients 1, 2 and 4 in 35.0%, 21.43%, and 40% of occasions respectively. Comparing these results with the mean SFR scores for client 1 (1.67), client 2 (1.47) and client 4 (1.43) suggests that when used a second time NFB-NARS led to resolution of a behavioural incident involving aggression. For example, if a person could not have their need to go out met immediately (ie function), and if a NFB-NARS like active listening was not successful at resolving the situation, then the next offer of an NFB-NARS, such as a cup of tea and a video game, would lead to resolution of the episode.

When NFB-NARS were used for clients 2 and 4 they escalated in 7.14% and 10% of cases respectively. It is likely that the inability to have one's needs met, despite the offer of a positive alternative, was not sufficient to prevent the situational effects from escalating. However, this low level of escalation was not the case when compared to occasions where aversive and restrictive strategies were used. For client 2, aversive strategies led to escalation 43.75% of times and restrictive strategies led to escalation 60% of the times they were used. For client 4, restrictive strategies led to escalation in 33.33% of occasions where they were used. When aversive and restrictive strategies were used during an incident, then the related SFR data indicates that staff always had to use a greater number of strategies in order to achieve resolution (see *Figure 3*). Thus incidents required more work from staff and more engagement with the person being aggressive before safety could be restored.

When comparing reactive strategies for their situational effects, FB-NARS and NFB-NARS were more effective than aversive and restrictive strategies in obtaining rapid and safe control over aggressive incidents and minimising episodic severity. This is important when working to maintain the safety of clients, staff and others – the sole purpose of reactive strategies.

Therefore, for some people FB-NARS and NFB-NARS could be considered as safer work practices than aversive or restrictive strategies.

Since FB-NARS are based on understanding and meeting a person's needs and NFB-NARS on delivering more positive stimuli, it is reasonable to expect that both FB-NARS and NFB-NARS will benefit a person's quality of life more than aversive and restrictive strategies, which is the primary purpose of PBS interventions when applied to support people with complex needs and challenging behaviour.

Conclusions

The results of this study provide encouraging evidence that NARS could provide a range of effective 'first choice' strategies for achieving rapid and safe resolution during an aggressive behavioural crisis. Additionally, they may be more effective as a crisis management strategy than either aversive strategies (usually intended to be punishing) or restrictive strategies typically used as 'last resort' interventions.

In this study both aversive and restrictive strategies typically led to an escalation in severity during incidents of aggression. The current study provides preliminary evidence to challenge the belief that the more severe the behaviour, the more restrictive and aversive the reactive strategy needs to be. In fact for these people with severe behaviour, the opposite was true; that is, restrictive and aversive strategies were most likely to escalate aggressive incidents whereas FB-NARS were the most effective ways to resolve an aggressive incident and NFB-NARS were the most effective response for de-escalation and resolution when meeting the need was not possible or the need was unknown. Thus FB-NARS and NFB-NARS best meet the criteria stipulated for reactive strategies which, 'should be the least restrictive and most effective available, focus on ways to reduce potential harm to the focal person and others and minimise the risk of escalation of the behaviour' (Gore et al, 2013, p 19).

This evidence for the effectiveness of NARS as a way of keeping people safe is encouraging. There are at least four benefits associated with the use of NARS in reaction to behavioural crises. First, NARS are more likely to support the building of therapeutic relationships as a basis for intervention since use of NARS is far less likely to be associated with adverse experiences or abuse. Second, NARS are consistent with the values of PBS and less likely to result in human

rights restrictions. Third, NARS provide an alternative to restrictive practices that the disability sector is seeking to eliminate. And fourth, NARS avoid potential respondent aggression sometimes associated with the use of aversive/restrictive practices. Indeed, it would be concerning if the use of an aversive practice led to escalation which then became the justification for the use of a restrictive practice, especially where NARS had not been considered or utilised.

In addition to providing an effective approach to reactive crisis management, the use of FB-NARS also confirms the function of behaviour, thereby guiding the focus on proactive strategies to meet the person's needs and assisting in identifying functionally equivalent skills that can be taught as replacement skills for long term behaviour change and quality of life improvements.

The results of this study provide evidence of the need for greater focus on reactive strategies including the measurement of situational effects to establish and monitor their effectiveness. A key imperative for the disability sector is to reduce the use of aversive, restrictive practices and seclusion to ensure that the human rights of people with disability are upheld. Additional research is required to further evaluate the degree or extent to which NARS can provide effective reactive strategies of 'first choice' and therefore be an effective alternative to aversive, restrictive practices and seclusion. These results provide encouraging evidence that NARS may be utilised as strategies of 'first choice'. If episodic severity is measured as a key element of PBS plans then this could ensure that the effectiveness of all reactive strategies is monitored providing treating clinicians with evidence of the most effective approaches for the individuals they are serving.

Further research could consider an increased sample size and alternative research designs that deal with the nested effects of data, noted within the current study. Such research might examine the efficacy of NARS in relation to other service settings or additional review with severe incidents. It might also be helpful to evaluate the impact of including NARS in behavioural support plans where chemical restraint, physical restraint or seclusion are recommended and to monitor the impact on the need for these strategies of 'last resort'.

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Closing editorial: The need for a better evidence base for the situational management of challenging behaviour presented by people with intellectual disabilities

Peter Baker and David Allen

This second special issue of the *International Journal of Positive Behavioural Support* addresses the important and topical issue of safe and effective situational management of risky and dangerous behaviours presented by people with intellectual disabilities.

We would especially like to take this opportunity to thank the guest editors, Gary LaVigna and Tom Willis, for making this special issue possible, and also to thank all of the individual authors for their highly innovative contributions. Our sincere hope is that this special issue will not only stimulate debate but will have a real impact on the reduction of restrictive practices used within the context of the care of vulnerable people.

The publication of this special issue presents an opportunity to reflect on the contribution that research has made in this area. It continues to be difficult to make authoritative comments about the prevalence of the use of physical interventions due to differences in sampling procedures employed. But the more recent publications continue to indicate widespread usage remains common, for example McGill, Murphy and Kelly-Pike (2009) found that restraint was used monthly or more frequently for 68% of their sample of 268 children and adults with intellectual disability and/or autism.

Of particular concern is that this widespread use takes place in the absence of an evidence base regarding effectiveness. Heyvaert et al (2014) recently conducted what at present is the only systematic review of the effectiveness of restraint interventions for challenging behaviour in the field of intellectual disability. Whilst this review was commendable in its comprehensive and systematic review of the literature in this area, it clearly demonstrated that researchers, almost without exception, have asked the wrong questions in regard to the outcomes which should be considered to guide practice in relation to situational management of challenging behaviour. They found that when outcome data are used to evaluate effectiveness, it is almost universally in the context of treatment, ie the reduction in the longer term frequency of the behaviour rather

than effectiveness in situational management. One of the central tenets of positive behavioural support has been to provide separation of the roles ascribed to treatment (behavioural change over time) and management, the safe responding to behaviours when they occur (Allen, 2002). Thus the question 'does restraint lead to a reduction in the behaviour over time' is inappropriate, the valid question being 'does it lead to better outcomes in the situational management of the behaviour', ie the incident is resolved as safely and rapidly as possible.

It is in this context that we need a fit for purpose research agenda to drive evidence based practice in this area. This special issue will hopefully contribute to that process. Though the reported results are very preliminary, and each of the studies presents methodological issues which place limitations on the conclusions that may be drawn from them, they are novel and hold great promise for impacting on the use of restrictive practices.

In developing this research agenda, it is important to build bridges between the papers presented here and existent research. There are three particular current research strands that this work needs to link to:

- individualised attempts to reduce restraint use
- research on the use and impact of reactive strategies
- research into whole organisation approaches to reducing the use of restrictive interventions.

Individualised attempts at restraint reduction, though not particularly numerous, hint at the possibility of combining the type of interventions described in the present issue of the journal with strategies such as restraint fading, targeted antecedent intervention, and altering criteria for release from restraint (see reviews by Luiselli, 2009; Williams, 2010).

Studies on the impact of training in reactive strategies were reviewed by Allen (2001, 2011a) and McDonnell (2009). Contrary to the claim made by LaVigna and Willis (this issue), research into training staff in reactive strategies has focused on much more than participant confidence; additional dependent variables studied include the pre-post frequency of behavioural incidents, changes in the use of restrictive procedures (restraint, seclusion and as required medication), staff and service user injuries, participant knowledge, staff burnout, job satisfaction, stress, skill acquisition and maintenance, emotional impact, gender differences, social acceptability of techniques, usage of specific techniques, and staff and service user views. There is clear scope for researching whether teaching staff non-restrictive reactive strategies such as those described within the current volume impacts on these variables and, if so, whether it produces superior outcomes to more traditional training in reactive interventions.

It may also be argued that studies that have looked at, for example, changes in restraint, seclusion and emergency medication usage, were using analogues of behavioural severity. The measures employed may be less individualised and sophisticated than evidenced in the present papers, but this is nevertheless a related area of research which should inform and link into studies such as those presented here.

Allen (2011b) reviewed studies on more systemic attempts to reduce restrictive practices. The work of practitioners such as Huckshorn (2005) and Colton (2004) has identified a range of core strategies that need to be in place in order to achieve service wide change. These are:

- leadership
- consumer involvement
- development of acceptable therapeutic environments
- development of good programmatic structures
- individualised, proactive intervention strategies
- clear crisis management strategies
- attention to workforce emotional support, development and training
- processing and learning from critical incidents
- data-driven practice and quality assurance.

Current knowledge suggests that all the above are necessary, but none sufficient to bring about significant reductions in restrictive practices. This body of work would suggest that the type of interventions described in the papers in this issue (which would fit under the sixth bullet point) would be insufficient in themselves to achieve widespread and lasting changes – but adding such strategies to the above menu would theoretically enhance the potency of this recipe. This is again a testable assertion.

There are additional aspects of the papers contained in this issue which merit comment. The ‘alignment fallacy’ is in itself a far from uncontentious statement. Most policy in this area shares a great deal of common ground. One interpretation of the often shared position on more restrictive interventions is that such strategies should not be employed in reacting to less severe behavioural challenges – something which most practitioners would surely agree with; policies then typically go on to say that such interventions might be required to manage more extreme behaviour – but not that they must be used to do so. It is a fallacy in itself to suggest that they do.

The apparent failure to consider what LaVigna and Willis (this issue) term ‘first resort’ reactive strategies in UK policy may also be explained by the fact that such strategies are included primarily under ‘secondary prevention’ in the influential model developed by Allen et al (1997), though this categorisation does not preclude their use once a behaviour of concern has actually occurred. These differences in taxonomy between PBS models can lead to errors in interpretation, and is something that future research needs to be clear about. Such research needs to acknowledge that, even within the toolkit of more restrictive reactive strategies, there are gradients of intervention (ranging from the use of personal space, self-protective procedures, to restraint etc).

Some of the ‘first resort’ reactive strategies in this issue are highly creative, but also generate their own issues. For example, the effectiveness of using tangible reinforcers to distract and/or interrupt a behavioural chain will be very dependent on the reinforcing properties of that tangible. To a large extent, this will be determined by the motivating operation of the relative state of deprivation in relation to it. The efforts to ensure that the reinforcer used does not serve to accidentally reinforce behaviours of concern by making it available at times other than when this behaviour is performed

makes theoretical sense. However, the delivery of this reinforcer at 'non-challenging' times reduces its future power when it is employed reactively.

Allen (2002) made the distinction between strategies designed to change behaviour and strategies designed simply to manage it. The former have historically included aversive procedures, such as the use of contingent restraint, which look similar to behaviour management in that it involves physical intervention. The intended purpose of these topographically similar interventions is functionally different, however; on some occasions in the papers appearing in this issue, this distinction became unhelpfully blurred. The papers are not alone in this respect, but this is a really important difference that researchers need to be clear about.

While the research papers each hold huge promise, the jury would need to remain out at this stage in terms of whether the strategies described would be effective with more severe behavioural challenges. Pursuing the legal theme, the use of restrictive interventions is unfortunately directly or indirectly enshrined in the health and safety legislation of many countries. It will be interesting, for example, to see how providing someone who engaged in very high-level self-injury with a favourite sweet would stand up as a primary reactive strategy when tested at law, even in circumstances when, up until that point in time, such a strategy had been effective.

As stated above, we very much hope that this issue of IJPBS stimulates debate, so we would welcome further research-led commentaries on the issues raised, and additional research papers that provide further evidence of the effectiveness of less intrusive reactive strategies, or that combine such interventions with other research strands as described above. The evidence for the effectiveness of preventative behavioural interventions is at present not sufficiently compelling to suggest that reactive interventions will not form part of many persons' individualised support plans for some time to come; that we need to make sure that these pass all legal and ethical tests is a non-negotiable requirement. It is against this background that the present papers need to be read.

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