New Ways of Predicting Violent Incidents in Clinical Settings

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Abstract

Aggressive behaviour in people with intellectual disability is a far reaching problem, estimated to be expressed by 7% of the population of people with intellectual disability. People with intellectual disability who are aggressive often experience an inequality in service provision. Carers who work in aggressive environments can find the management of aggression an overwhelming challenge and may suffer burnout. At a service level, providing suitable care for people who may be aggressive, whilst also providing a comprehensive care package, is very difficult. Aggression in people with intellectual disability is more prevalent than in equivalent cared for groups, but there is little research to date on the sequential nature of that aggression. Like all behaviour, aggression occurs as part of a sequence, and a crucial part of understanding violent behaviour in people with intellectual disability is to understand the nature of their aggression, and especially the (temporal) structure of these episodes, as well as the potential factors involved. Current research in aggression in people with intellectual disability focuses on the nature of static risk factors, mental health issues and the function that aggressive behaviour provides for the individual expressing it.

The main aim of this thesis is to document the patterns of aggressive behaviour in people with intellectual disability in order to examine what factors may be involved in increasing the risk of aggression in this population. Guidance as to what those factors may be was taken from research into aggression in the general and intellectual disability population.

The first phase of this study involved creating a database of violent incidents from the health care records of 18 participants, drawn from three National Health Service units for Intellectual Disability. These were collated into an aggressive incident database that brought together information from different sources about

individual incidents. The patterns in the incidents were used to construct a typology of aggression.

The second phase of the study formed the main focus of the research, and involved analysing the aggressive incident database using Sequence Analysis methods. The pattern of these results indicated that reports focused mainly on aggression that involved staff, and found visits, outings and denial of requests by participants were significant factors in the sequence of an aggressive incident.

The third phase focused on data drawn from a risk management system called Sentinel, and examined all aggressive incidents occurring across three units for people with intellectual disability over four and a half years to investigate temporal patterns of aggression using time interval analysis. This was used to identify distinct temporal patterns of aggression for each of the three units involved in the study.

The results indicated that visits and outings, meal times and requests were part of the sequence of aggression behaviour in people with intellectual disability. The possible implications of this were discussed, and these findings related to the wider literature.

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Chapter 1

1.1 Introduction

This thesis aims to document the patterns of aggressive behaviour in people with intellectual disability in order to examine what factors may be involved in increasing the risk of aggression in this population.

This chapter will provide an overview of the literature concerning aggressive behaviour in people with intellectual disability considering: the problems that aggressive behaviour may cause; theories of aggression in both the general and intellectual disability populations; ways that aggressive behaviour have been conceptualised in people with learning disabilities; and research methodologies applied to this area.

This chapter will first introduce the topic of intellectual disability, noting some of the characteristics and issues that people in this population face. One of the issues that has been at the forefront of research in intellectual disability is aggressive and challenging behaviour. Aggressive behaviour will be defined, and a discussion of the problems it causes in intellectual disability will be presented. Two major current approaches to aggressive behaviour in intellectual disability will be introduced, that provide options for assessment, treatment and management of aggressive behaviour. The limitations of these approaches will also be discussed. A model of aggression for the general population that combines factors from a variety of research disciplines will be introduced. These factors are discussed in the light of evidence from a variety of populations and the possible ways these factors might be important when considering aggression in intellectual disability. A method for examining these factors, Behavioural Sequence Analysis, will be introduced as a potential way of combining these factors.

1.2 Introduction to Intellectual Disability

Intellectual Disability, also referred to as Learning Disability, Learning Difficulties and, in the US, Mental Retardation, are terms applied to those who score below 70 on standard Intelligence Quotient (IQ) tests and have a range of adaptive behaviour impairments that affect their ability to self-care (Gillberg & Soderstrom, 2003; Bhate & Wilkinson, 2006; Lundstrom, Saveman, Eisemann & Astrom, 2007). In order to be classed as having an Intellectual Disability, these deficits need to be apparent before the individual becomes an adult (Lundstrom et al., 2007). An individual's level of functioning drops as their IQ score lowers, which can cause adaptive behaviour problems in a number of areas. This quality makes those with IQ scores under 70 a very heterogeneous group, as this encompasses a group of people with a vast range of abilities. To better describe functioning levels, people with Intellectual Disabilities are sometimes described as having mild (IQ 55-70), moderate (IQ 35-55), severe (IQ 20-35) or profound (IQ 0 <20) intellectual disabilities (Gillberg & Soderstrom, 2003). The British Psychological Society, however, recommends the use of two distinct terms, Significant (IQ 55-69) and Severe (IQ <55). People with mild or moderate Intellectual Disabilities make up 85% of the Intellectual Disability population (Bhate & Wilkinson, 2006).

Intellectual disability has varying causes, both genetic and environmental (Gillberg & Soderstrom, 2003) and in many cases its pathogenesis for a particular individual is unknown. Due to problems with definitions and study design, prevalence rates for intellectual disability vary, but it is estimated in the UK that 1-2% of the population have an intellectual disability (Bhate & Wilkinson, 2006). Some adults with mild intellectual disability may not require specialist care services, whereas those with more severe intellectual disability or complex social needs may live at home with parents/relatives or make use of care services (Healthcare Commission, 2007).

Services are usually organised by the government and can be provided by the National Health Service, local councils or private organisations. These can take a number of forms, such as residential homes, supported living, day care or adult placement schemes. Such services are in high demand: over 169,000 people over the age of 20 use learning difficulties services (Healthcare Commission, 2008). During 2006-2007 alone, there were over 90,000 temporary admissions of people with intellectual disability to residential care services by local council providers (The Information Centre, 2007). People with intellectual disabilities who use these services, as previously mentioned, are a diverse group and this diversity can place complex demands on service providers (Campbell, 2007). National Health spending on people with intellectual disability is £3000 million per year (Department of Health cited in Reed, Russell, Xenitidis & Murphy, 2004).

In a 2001 white paper titled 'Valuing People', the Department of Health aimed to increase the life quality of those with intellectual disability by focusing on the principles of inclusion, rights, choice and independence (Department of Health, 2001). One of the major practical outcomes of Valuing People has been an emphasis on moving people with intellectual disabilities from long term residential care to supported living in the community. This was seen as a way of de-institutionalising people with intellectual disabilities and providing them with choices about their lifestyle, whilst encouraging integration into society (Mansell, Knapp, Beadle Brown & Beckam, 2007). Consequently, people with intellectual disabilities are becoming more 'visible' in the community and are making more use of community services than ever before (Arthur, 2003).

1.3 Aggression, Violence and Challenging Behaviour

Aggressive behaviour has been defined as "any behaviour directed toward another individual that is carried out with the proximate (immediate) intent to cause harm. In addition, the perpetrator must believe that the behaviour will harm the target and that the target is motivated to avoid the behaviour" (Anderson & Bushman, 2002 p.28). The most extreme form of aggression is considered to be violence, which is behaviour that has serious harm as the intent, for example murder (Anderson & Bushman, 2002). Aggression is a serious problem, both for society as a whole and for people with intellectual disabilities.

The above definitions, utilized by aggression researchers from a variety of disciplines, were designed to apply universally to those who display aggressive and violent behaviour. However these definitions are not commonly used in research into aggression displayed by people with Intellectual Disability. These definitions describe aggression as an action that involves the intent to cause harm. In the general and non-cognitively impaired populations, assessing behaviour that results in harm or injury to another person using intent as a motivator is accepted. However, in the cognitively impaired, such as people with intellectual disability, aggressive acts are often examined under the broader banner of challenging behaviour.

Challenging behaviour is defined as "culturally abnormal behaviour of such intensity, frequency or duration that the physical safety of the person or others is placed in serious jeopardy, or behaviour which is likely to seriously limit or deny access to the use of ordinary community facilities" (Emerson, 2001, p.44). 'Challenging behaviour' is a term used to describe any behaviour that presents a management difficulty to the family, school or service that provides care for the person with intellectual disabilities. This definition was originally developed to

replace the pejorative and judgemental terms being used to describe behaviours displayed by people with intellectual disabilities. The term ‘challenging behaviour’ is used instead of other terms as it recognises how behaviours which cause problems may also be a useful adaptation to the environment, rather than a psychological disorganisation. By recognising that a behaviour is challenging to others, this widens the focus of enquiry away from the individual to place them in the context of the service or care they receive (Emerson, 2001).

1.3.1 Challenging Behaviour

In common with aggression, there are a variety of theories as to how challenging behaviour is developed and maintained. Clements and Martin (2001) argue that challenging behaviour will arise from an interplay of multiple factors: biological and social, past and present.

Challenging behaviour can refer to such actions as behavioural excesses, i.e. screaming, stereotyped behaviours, poor social interaction and lack of self-care, as well as aggressive behaviour (Zeller, Dassen, Kok, Needham & Halfens, 2011). The focus of this thesis is solely on aggressive behaviour. Aggression is so problematic in this population that researchers have called for a focus on aggression alone (Lindsay et al., 2004). However, much of the current research, especially large scale research, discusses aggression alongside other challenging behaviours so much of the literature reported here will reflect this.

At the beginning of this section, a definition of aggression was introduced by Anderson and Bushman (2002) which placed emphasis on intent to harm behind an aggressive action. However, due to the difficulties that people with intellectual disabilities face, both with understanding the world around them and getting their needs recognised, it is inappropriate to define all their aggressive acts as always

having intent to harm. A more appropriate definition for the examination of aggressive behaviour in people with intellectual disability is 'an overt act, involving the delivery of noxious stimuli (but not necessarily aimed at) another organism, object or self, which is clearly not accidental' (Patel & Hope, 1992, p.212).

Aggressive behaviour in people with intellectual disabilities is thought to have the same complex influencing factors that aggression in the general population has. Allen (2000) suggested that there was no reason to suggest that the factors which precipitate aggression in intellectual disability are any different from those of the general population. However, Allen also postulated that "the presence of an intellectual disability may, however, introduce additional risk factors that increase the probability of aggression. These factors can be viewed as setting conditions for aggression, and may be related both to individual characteristics and to characteristics of the environments in which people are typically supported" (Allen, 2000, p.58). This means that some research into intellectual disabilities has, out of necessity, moved away from mainstream research trends of aggressive behaviour, pursuing research avenues which actively try to account for the influence of intellectual disability while trying to avoid diagnostic overshadowing.

1.3.2 Aggressive Behaviour as a Problem in Intellectual Disability

Aggressive behaviour is a major problem for services that provide care for people with intellectual disability (Tyrer et al., 2006; Tenneij & Koot, 2007). Aggressive behaviour can include verbal aggression (Crocker, Mercier, Allaire & Roy, 2007), assaults on staff (Reed et al., 2004), self-injury (McClintock, Hall & Oliver, 2003) and sexual aggression (Crocker et al., 2006). It is demonstrated by 10-15% of people with ID who use social care services (Emerson et al., 2001), which translates to around 12,000 people using intellectual disability care presenting

aggressive behaviour at any given point in time (Department of Health, 2007). Aggressive behaviour is the most challenging form of behaviour encountered in intellectual disability services (Allen, 2000) and has a number of serious consequences and implications for service users and carers. In terms of service provision, those who display aggressive behaviour are often denied access to wider services –especially those located in the community– as they are seen as presenting a threat (Crocker et al., 2006). Within services, care provision for aggressive individuals can be reduced to strategies that minimise the risk of violence, but without the inclusion of other fulfilling activities (Macmillan, Hastings & Coldwell, 2004). Finally, those who display aggressive behaviour may be kept in unsuitable placements or have a delayed discharge into the community due to a lack of suitable services, resulting in further obstructions to resettlement (Reed et al., 2004).

For the person engaging in aggressive behaviour, this can cause difficulties in forming interpersonal relationships (Jahoda, Pert, Squire & Trower, 1998) and failure in employment placement schemes (Allen, 2000). People with intellectual disability who are aggressive are more likely to be physically abused by their care givers (Emerson et al., 2001) and endure the use of intervention strategies such as restraint or sedation, which are stressful and do not benefit them (Allen, 2000; Wilcox, Finlay & Edmonds, 2006). The stress of working in an aggressive environment can lead to staff injury and increased sick leave, which can strain an already stretched work force (Winstanley, 2005). Those individuals with ID who exhibit aggressive behaviour would benefit from staff who develop a caring and empathic relationship with them, however, these fragile interpersonal bonds are often put under strain by the mixed feelings aggressive individuals can elicit (Strand, Benzein & Saveman, 2004). Staff members who are involved with aggressive incidents have to deal with feelings of guilt, anger and fear whilst playing the conflicting role of the calming agent

(Lundstrom et al., 2007). This can cause them to avoid service users who they feel they should care for but harbour feelings of animosity towards. The presence of aggressive behaviour within a service means that a great deal of scant resources will be channelled into its prevention, with detrimental effect on the functioning of the therapeutic environment (Tenneij & Koot, 2007). Aggressive challenging behaviour is a serious problem in ID services, causing problems at all levels of involvement.

1.4 Theories of Aggression in Intellectual Disability

Aggression is the most destructive form of human behaviour. It is part of the human condition and evidence of these types of behaviours is present in every past society, and in every current one. This prevalence has made aggressive and violent behaviour worthy of detailed attention and study from a diverse array of research disciplines (Anderson & Huesmann, 2003).

Aggression and violence are seen as the product of a number of complex interacting influences which increase the likelihood that a person may become aggressive (Leary, Twenge & Quinlavin, 2006). These factors include ones relevant to the individual and the situation they are in as well as genetic, development, hormonal and cultural factors.

Two major theories about aggression and challenging behaviour in people with intellectual disability will now be reviewed: behavioural approaches and mental health perspectives. These theories form the basis of the majority of approaches, assessments and interventions for challenging and aggressive behaviour in the field of intellectual disability

1.4.1 Behavioural Models of Challenging Behaviour and Aggression: The Importance of Function

Since the early 1940s, behavioural theories of psychology and learning have been applied to challenging behaviour and aggression in people with intellectual disability (Emerson, 2001). Behaviourist approaches have been very useful in promoting a conceptual understanding of aggression and challenging behaviour in people with intellectual disabilities as a response to their environment rather than as an expression of an internal pathology (Sturmey, 2007). These ideas have been developed through research and applied behavioural designs to become the most significant way of theorising and intervening in challenging behaviour in current intellectual disability practice (Department of Health, 2001). This section will discuss the ideas behind behavioural approaches to challenging behaviour, review the evidence for these ideas and discuss some of the limitations. It is important to note here that although this thesis is focused on aggressive and violent behaviour in people with intellectual disabilities, from a behavioural perspective, aggression and violence is viewed under the banner of challenging behaviour. When the research reviewed here is discussing aggression or more general challenging behaviour, this distinction will be made clear in the text.

1.4.1.1 The Functional Nature of Challenging Behaviour

Behavioural theorists see all behaviour as a result of environmental forces. First, the behaviour is shaped by environmental forces; these forces maintain this behaviour through reinforcement patterns (Bush, 2012). *Positive reinforcement* will increase the rate of a behaviour when presented alongside the behaviour (Ferster & Skinner, 1957). An example of positive reinforcement would be being presented with a drink when one asks for one. The behaviour ‘asking for a drink’ is reinforced positively by the presence of a drink, so one would expect to see an increase in asking

behaviour. *Negative reinforcement* will increase the rate of a behaviour when it is withdrawn while the behaviour is present. An example of negative reinforcement would be when a child screams at the presence of an unwanted food on their plate. If the carrots are removed , the behaviour of screaming is negatively reinforced. .

When the idea that the environment could play a part in shaping and maintaining behaviour was applied to challenging behaviour in people with intellectual disability, this opened up new ways of thinking about challenging behaviour. Prior to this point, challenging behaviour was viewed as an expression of the internal pathology of intellectual disability and something fixed and unchangeable (Emerson & Einfield, 2011). The idea that there was an environmental influence on this behaviour suggested that challenging behaviour was an example of *operant behaviour*. That is, challenging behaviours are a form of behaviours which are shaped and maintained through their environmental consequences. Carr (1977) argued that this meant that challenging behaviour can be seen as functional and adaptive, and that they are behaviours through which the person can exert control over their social world.

Bush (2012) outlines three principles which are essential when looking at challenging behaviour as an operant behaviour. The first is that there must be a functional relationship between the behaviour and the environment. Therefore, reinforcing stimuli must be shown to have an impact on the rate of the behaviour. What is reinforcing cannot be identified independently of function; it must be proven to show an increase or decrease in behaviour. Behaviour is described as being from a *response class*. This means that a behaviour is present because it serves a particular function. For some people, different types of behaviour will serve the same function and so fit into the same response class (Hanley, Iwata & McCord, 2003). For example, turning on a light switch to make a room brighter serves the same function, whether a

person does this with their finger, elbow, chin or by leaning on it. Similarly, a person's challenging behaviour may take several forms which achieve the same function.

The second principle is understanding the context within which the behaviour occurs. Context provides a motivational basis for behaviour, and will indicate the likelihood of a particular behaviour occurring. Context will often define whether a stimulus can become a reinforcement or not. For example, food may only act as a positive reinforcement when someone is hungry. Context is created from personal, biological, historical, and environmental factors, which then establish the reinforcing potential of an otherwise neutral stimulus. This has also been called an *establishing operation* (McGill, 1999). The context will also affect the likelihood of a particular behaviour occurring through being reinforced. This notion is called a *discriminative stimulus*, which enables the person to learn in what situations they are likely to be given a particular stimulus. For example, a small child may learn that they are more likely to be given sweets (positive reinforcement) if they beg for them (behaviour) in a sweet shop (presence of sweets - discriminative stimulus and context) than in a butchers shop (context).

The third principle is to consider operant behaviour as the product of a dynamic system. This means that people engage in a huge range of behaviours which are under the control of different reinforcement patterns. Therefore, a behaviour is not due to one discreet reinforcement contingency but part of a complex and dynamic system.

These principles have been used to develop a number of assessment, measurement and intervention techniques; most notably Applied Behaviour Analysis, Functional Analysis and Positive Behavioural Support, which focus on the function of challenging behaviour within a person's environment. The principles of these

approaches are that challenging behaviour is a learned response which is evoked and maintained by environmental conditions, and is influenced by establishing operations, antecedents and consequences (Didden, 2007). Establishing operations are things which mediate the response to the environment which will be present in some situations, for example, being tired, being pre-menstrual, or the presentation of demands.

The above section described elements from behavioural theory which suggest that challenging behaviour can be seen as an example of operant behaviour, and some of the key principles that are involved in this approach. However, Emerson (2001) advised caution when thinking about challenging behaviour from this perspective. As people live in dynamic systems there will be a number of variables influencing behaviour, as well as a complex set of reinforcements.

1.4.1.2 A Behavioural Paradigm for Conceptualising Challenging Behaviour

Carr, Innis, Blakely-Smith and Vasdev (2004) outlined a paradigm of challenging behaviour that attempts to capture the complex variety of antecedents, contextual issues and reinforcement patterns which may account for challenging behaviour when viewed as an operant behaviour:

Systems Factors ⇨ Setting Events ⇨ Discriminative Stimuli ⇨ Challenging Behaviour ⇨ Consequences

System factors are aspects of the environment, such as rules, regulations and policies, which influence the nature of setting events. For example, a care agency which mandates single sex accommodation may indirectly reduce the level of sexually aggressive behaviour between sexes.

Setting events are the motivational context or establishing operation that may alter the discriminative stimulus – challenging behaviour relationship. For example, if someone is hungry and in an environment without food, this may alter their activity when someone else brings food into the room.

The discriminative stimulus, as mentioned previously, is the stimulus learnt in the environment which may indicate whether a particular behaviour will be rewarded by a particular stimulus. For example, a person may have found that when they are asked to clean their room, if they bite the person asking, then they don't have to do this task. The person then learns that biting will stop the requests to clean their room.

Consequences are the reinforcing stimuli which provide a functional, useful result. For instance, in the example mentioned above: the consequence of not having to clean one's room is a reinforcement for biting behaviour, and one would expect to see the amount of biting behaviour increase.

Carr et al. (2004) suggested that all these stages will influence one another in affecting the likelihood of the behaviour occurring. For example, a setting event or establishing operation, such as being unwell, may make a discriminative stimuli such as being asked to clean one's room more aversive. To escape (reinforcement/consequence) from this aversive task, one is more likely to bite the person asking.

1.4.1.3 Evidence for Behavioural Models of Challenging Behaviour

There are a number of experimental and research designs which have been employed to provide an evidence base for behavioural models of challenging behaviour. Emerson and Einfield (2011) outlined four possible types of evidence. These are: descriptive studies which describe the context in which behaviour occurs;

experimental designs where challenging behaviour is shown to fluctuate under different experimental conditions; experimental manipulation of the reinforcing variables; and experimental functional replacement of behaviours, where a function of challenging behaviour is identified and replaced by a more acceptable one. These studies often focus on one or a few participants, as reinforcement structures are usually only applicable to one person, depending on their own motivational setting events and establishing operations (Carr et al., 2004).

This section will review findings from this area. The potential antecedents and reinforcing consequences of challenging behaviour from a behavioural or functional perspective have been extensively studied in the literature on challenging behaviour. Therefore, the literature relating to this topic is incredibly vast and varied (Carr et.al., 1999), with a focus on an individual or small number of participants per research paper. This section will focus on meta-analysis and systematic review papers which have begun to pull together a variety of research with small sample sizes to investigate what are the most salient antecedents and reinforcements of challenging behaviour.

Carr (1994) performed a systematic review examining research into the functional analysis of behaviour. *Functional analysis* is a technique of assessment where the function of a challenging behaviour is identified through the experimental manipulation of antecedent and consequence variables (Paclawskyj, Kurtz & O'Connor, 2004). The information from this is often augmented through direct observation and interviews with care givers. Carr (1994) noted that research using functional analysis had identified four controlling reinforcements for challenging behaviour. These were positive reinforcement in the form of increased attention from care givers, and access to tangible items such as sweets and preferred leisure items.

Negative reinforcement came in the form of escape behaviours, either as a way of avoiding task demands or avoiding social contact.

Hanley, Iwata and McCord (2003) reviewed all papers using functional analysis from 1961 to 2000, in which a functional assessment of challenging behaviour using direct observation was used to inform an experiment where an environmental variable was manipulated in at least two conditions. This resulted in the identification of 277 papers, 91.3% of which were investigating challenging behaviours in people with intellectual disability. The majority of the behaviours which were being assessed involved self-harm behaviours, and aggression or disruption. 32.2% of the research outcomes suggested that behaviour was maintained by the withdrawing of social attention such as escape-avoidance or task demand escape, and that 25.3% of behaviour was maintained by positive social reinforcement in the form of receiving attention. 10.1% of the research outcomes showed that behaviour was maintained by access to tangible items. For aggressive behaviour in particular, escape was the main form of reinforcement, however this result was drawn from a small number of studies.

Matson et al. (2011) identified 173 papers from the *Journal of Applied Behavioural Analysis* and *Research in Developmental Disabilities* which used a functional analysis assessment method to identify the functions of challenging behaviour. Four main reinforcements for challenging behaviour were identified. Attention, from care givers, was reinforcing and took the form of reprimands, as well as positive statements and affection such as hugs. A second class of reinforcement was when the person is alone. In this situation, challenging behaviour may occur due to internal reinforcement such as sensory issues or may be due to another environmental factor independent of social presence such as hearing a particular sound. A third class

of reinforcement was escape from demands, either a task or environment. A fourth reinforcement class identified was access to tangible objects. A successful reinforcement schedule could also be a combination of the four reinforcement classes. In 97% of the studies reviewed, presentation or access to reinforcing stimuli caused an increase in challenging behaviour.

Carr, Homer, and Turnbull (1999) performed a meta-analysis on all papers examining *Positive Behavioural Support* (PBS) from 1985 to 1996. Positive behavioural Support is an intervention technique for challenging behaviour which uses behavioural principles to decrease the rate of challenging behaviour and increase the rate of socially appropriate behaviours through reinforcement. Positive behaviour support utilises a number of methods to do this, such as changing the type of reinforcement after challenging behaviour, altering the environment to change the influence of setting events, establishing operations and discriminative stimuli, and teaching and reinforcing more appropriate behaviours. PBS does not always utilize a functional analysis of challenging behaviour when developing intervention techniques, sometimes relying on the manipulation of consequence reinforcement alone. The results of this meta-analysis have been an influential factor in the increasing recognitions of PBS and the implementation of these techniques, both in America and the United Kingdom (Association for Positive Behaviour Support, 2008). Carr et al. (1999) found that, in half of all the papers reviewed, there was a 90% decrease in the rate of challenging behaviour. There was also a small amount of evidence that these decreases could be maintained in 60% of these cases. However, a reduction in challenging behaviour was more common in papers which functionally assessed behaviour prior to intervention, and was more successful when focused on one type of behaviour rather than a combination.

Grey and Hastings (2005) systematically reviewed the papers published in 2004 that examined the effect of behavioural interventions on rates of challenging behaviour. They found that studies identified escape-avoidance as a major reinforcement when people are in task demand situations or social situations. These situations often resulted in the reinforcement of aggressive behaviour. Interestingly, this aggression was reduced when people where taught functional communication techniques which allowed them to request a break or another activity. Grey and Hastings postulated that functional communications skills could be an establishing operation or setting event which then changed the impact of the task or situation (discriminative stimuli).

The above reviews focus on challenging behaviour as whole, and the majority did not divide these behaviours into topographies. One review has focused solely on aggressive behaviour in intellectual disability: Brosnan and O'Healy (2011) looked at research from 1980 to 2009 investigating the efficacy of behavioural interventions to reduce aggressive behaviour in children aged between three and eighteen years who also had an intellectual disability. This yielded 18 papers, involving a total of 31 participants. All of the interventions had been somewhat successful in either reducing or extinguishing aggressive behaviour. When examining interventions which manipulated antecedents (setting events and establishing operations), children were less likely to be aggressive when they had a clear schedule to their day or were given choices in what they did when moving from one activity to another. In studies where reinforcement was manipulated, there was a reduction in aggressive behaviour when a functionally equivalent behaviour was taught and positively reinforced. For example, if a child demonstrated aggressive behaviour when they wanted to escape from a task demand, they were taught to indicate that they needed a break. Every time they did this, it was reinforced through being given a reward.

The above systematic reviews and meta-analysis suggest that behavioural approaches to challenging and aggressive behaviour is a large and well researched area. By combining the results of experimental manipulation and successful interventions with small number of participants, a growing body of evidence has been amassed that suggests several key elements in the shaping and maintenance of challenging and aggressive behaviour in people with intellectual disability. Potential functions of challenging behaviour include escape from tasks and social interaction, as well as increasing access to social interaction and tangible items. There have been many examples of a reduction in challenging behaviour through using differential reinforcement patterns, and replacing problematic behaviour with a more acceptable one with a similar function.

1.4.1.4 Limitations

1.4.1.4.1 Limitations of the Evidence Base

The majority of the research literature has the strongest findings when looking at classes of reinforcement. In this way, behaviour could be increased or decreased depending on the amount and type of reinforcement which was presented alongside it. Although many of the papers concluded that this evidenced a function to the challenging behaviour, such as escape from demands, for some of the evidence a functional assessment had not taken place. In studies where functional analysis had not taken place, challenging behaviour was increased or decreased through reinforcement schedules. Without a clear, defined function for the behaviour, changes in the rate of challenging behaviour could be due to simple reinforcement patterns. As there was little data which was longitudinal, it was difficult to assess the maintenance of any change in behaviour from using behavioural interventions.

A great deal of evidence from the research suggested that four classes of reinforcement were involved in the maintenance of challenging behaviour. The systematic review conducted by Carr (1994) indicated that escape and access to attention and items were major reinforcements of challenging behaviour, and this trend continued through the more recent reviews. However, as research builds upon the finding of previous researchers, it may be that as these reinforcement classes began to build up an evidence base, subsequent research has focused on those rather than other types, or researchers have tried to incorporate the reinforcement class found in their study to those which are most successful. For example, in Matson et al.'s (2011) review, although research was subdivided into the four common reinforcement classes, the definitions used by researchers varied widely, suggesting that there is a possibility when researchers believe they are reinforcing a behaviour with an escape reinforcement that this could actually be another type of reinforcement class. This point is not made to try to deny the large amount of evidence indicating the importance of these reinforcement classes, but to suggest that there may be other reinforcement classes which have not been researched, or that current research may not always be reflective of the reinforcement class it states it is.

One of the major issues with looking at published evidence, both as standalone evidence and as part of a review, is positive publication bias (Matson et al., 2011). Papers that show a positive or efficacious result are more likely to be published, which makes estimation of the number of studies using behavioural approaches to challenging behaviour that were not successful very difficult to estimate. Positive selection bias may have also taken place at various stages throughout research, such as choosing participants who seemed to have clear functions or reinforcement patterns in their behaviour rather than those who were very disorganised. It is feasible, therefore, to hypothesise that there are people who display

challenging behaviour for whom a behavioural or functional approach was not successful or did not have clear environmental antecedent and consequences surrounding their behaviour.

While the majority of the reviews identified important functions and reinforcement of challenging behaviours, there was little evidence regarding the antecedents, setting events, establishing operations, systems factors or general context that have also been hypothesised to play an important role in behavioural theories of challenging behaviour (Carr, 1994; Carr et al., 1999). Systems factors have been particularly neglected (Carr et al., 2004). Although Brosnon and O'Healy (2011) identified a number of papers with positive results which had looked at manipulation of antecedents by providing information about the day's schedule to participants, this was only in a small amount of research and focused on a specific area. As Emerson and Einfield (2011) stated, behaviour arises from a complex and competing system of antecedents as well as reinforcement classes. Many functional assessment tools do examine setting events by asking questions about physical events, social events and physiological events (Carr et al., 2004). While research has examined the effect of some setting events on challenging behaviour, such as activities as a setting event (McGill, Teer, Rye & Hughes, 2005), menstrual pain (Carr, Smith, Giacin, Whelan & Pancari, 2003) and the presence of others interacting (Taylor, Sisson, McKelvey & Trefelner, 1993), a research synthesis in this area has not yet taken place.

1.4.1.4.2 Limitations of Behavioural Approaches to Challenging Behaviour

While popular, especially in clinical practice, behavioural and functional approaches to challenging and aggressive behaviour do have limitations.

On a practical note, a thorough functional analysis is a lengthy process, often involving direct observation, interviews and experimental procedures in order to

identify the antecedents and consequences of behaviour. This has made this approach difficult in community settings and although a number of tools have been designed to make this process easier, this approach can still be time consuming or, when performed in an attenuated pattern, risk missing particular variables of importance.

Emerson (2001) noted that there is a motivational aspect to challenging behaviour, similar to Carr's (2004) notion of systems factors, setting events and discriminative stimuli, where environmental, biological, historical and personal factors combine to produce a motivational state which will affect how much influence a neutral stimuli will have on the presence of challenging behaviour. Although this has become recognised in theoretical literature as essential to the understanding of challenging behaviour, these factors are rarely studied within a functional framework (Carr et al., 2004). By not studying these factors and their relation to challenging behaviours, clear functional frameworks for this behaviour cannot be established. There is a large amount of research into some of these factors, such as sleep deprivation and pain (discussed elsewhere in this review), however this has not been linked to behavioural approaches in a way that allows researchers to systematically investigate their influence. One exception to this is the research into automatic reinforcement (Emerson & Einfield, 2011). Automatic reinforcement occurs internally as a response to events, for example, when people with sensory processing issues or unmet sensory needs may engage in self-harm behaviours, which are then positively reinforced due to their biological reaction. Automatic reinforcement presents its own challenge to researchers as it is very difficult to determine whether this is occurring. However, research into interventions in sensory processing issues have noted a reduction in self-injurious behaviour that was automatically reinforced when it has been replaced functionally by other actions (Emerson & Einfield, 2011).

There is also a danger that some of the results found in research into behavioural approaches to challenging behaviour are false positives. Rooker, Iwata, Harper, Fahmie and Camp (2011) noted that in studies where there was a tangible reinforcement condition, a high proportion of these studies reported that tangible reinforcement was the primary reinforcement class. Also, in research that was investigating behaviours which were reinforced through multiple reinforcement classes, 41 out of 49 of the studies which used tangible reinforcement reported that it was one of the sources of behaviour maintenance. Rooker et al. (2011) suggested that rather than all of these studies showing evidence for tangible reinforcement, potentially providing a person with access to highly desired item (as identified by preference assessment) during an experimental condition may produce a false positive outcome in some cases. In order to investigate this point they performed an experiment with six adolescents who had intellectual disability. The participants were reinforced for performing a simple task (either button pressing or card touching) either with attention, tangible objects, play, demands or an alone condition where the participant was left with the materials for the response. In five of the six participants, the tangible reinforcement condition was the only one which caused an increase in the target task. This either occurred immediately or increased dramatically after the initial sessions. For the participant who did not respond to tangible reinforcement, he did not respond to any of the other conditions apart from the 'alone' one, where his button pressing may have been reinforced due to an automatic reinforcement. Tangible reinforcement therefore rapidly increased a previously unreinforced behaviour.

Rooker et al. (2011) then tested how this worked in adults who displayed stereotypic (a form of challenging) behaviour. Rooker et al. (2011) identified, by preference assessment, the favourite food item of three adults with intellectual disability and stereotyped behaviour (chocolate, mint chocolate and yogurt). They also

identified the most common tangible items presented to the adults after stereotyped behaviour. These items were presented relatively infrequently; in fact one participant received no tangible reinforcement in a four hour observation period and consisted of a magazine, a puzzle, juice, and a marker pen. This led Rooker et al. (2011) to conclude that the behaviour was automatically reinforced, a conclusion strengthened by the behaviour occurring mostly when the participants were alone rather in other conditions. The experimental conditions were being alone, being presented with the highly preferred item or an item from the observations of commonly presented tangible reinforcements. In all three cases, stereotypy occurred more often and more consistently when it was reinforced with a highly preferred item, than in the alone condition or the condition where they were given an item from the observation. These experiments suggest that tangible reinforcement conditions may give a false positive result for tangible reinforcement for either a response with no history of reinforcement or a response with a different history of reinforcement. For example, in the second study, preference assessment indicated what the participants preferred foods were. However, these were never given during the times the challenging behaviour occurred, so using this as a reinforcement condition gave a false impression about what might be driving the challenging behaviour. Rooker et al. (2011) suggested that access to tangible items should not be included as a condition when examining reinforcement unless there is a strong indication that this is important for the individual. Also, caution should be taken during preference assessments as a person's preferred item may be one that is never presented during the time of challenging behaviour, for example, access to chocolate during lessons. This research suggests that there is a potential for research using tangible reinforcement conditions to provide false positive results. Although there is no research on this area to date, it is possible that other types

of reinforcement may provide false positive results and so research evidence, even with thorough functional analysis should be taken with caution.

The behavioural approach to challenging behaviour has been revolutionary in the assessment and intervention of challenging behaviour in people with intellectual disabilities. However, approaching all behaviours in this way, including aggressive and violent behaviour, makes the assumption that behaviour is always functional in nature. These functions have often been suggested to be escaping demands, both task and social and increasing access to preferred items or social content. However, as suggested earlier in this chapter, violent and aggressive behaviour is thought to be the product of interacting forces, both personal and environmental. Some aggressive and violent behaviour is not used in a traditionally functional way, but may be an expression of anger; a response to provocation or frustration; or as a result of a history of socio-economic deprivation (Emerson & Einfield, 2011). Behavioural approaches to aggression also focus on immediate antecedents and consequences, and therefore may miss more complex causes of aggressive behaviour. Approaches that can capture longer sequences of antecedents and their interactions would be useful when exploring aggressive behaviour in people with intellectual disability, as it may better describe how aggression arises. A focus on antecedents as opposed to functional consequences may also aid in developing predictive and preventative strategies.

Now this review will turn to the second major approach to challenging and aggressive behaviour in intellectual disability research: mental health problems.

1.4.2 Mental Health and Aggressive and Violent Behaviour

Mental health problems have often been linked with violent and aggressive behaviour in the social and cultural conscience (Elbogen & Johnson, 2009). Public

conceptions about the risk posed by people with mental health problems have been shown to increase stigma about mental health and decrease the likelihood that the general population would engage with people with mental health problems (Link, Phelan, Bresnahan, Stueve & Pescosolido, 1999).

While there is a suggestion that some mental health problems may be implicated as a causal factor in the aggressive behaviour of the people experiencing them (Buchanan, 1993), many researchers have questioned the idea that mental health problems lead to an increased risk of becoming violent or being frequently violent (Stuart, 2003). Although there is a high rate of violent and aggressive behaviour when people are admitted into acute inpatient wards, this is potentially due to aggressive behaviour being a common reason for admission, rather than this behaviour being a fundamental part of the mental health problem being experienced (Steadman et al., 1998). Indeed, Steadman et al. (1998) found that 12 months post-discharge from an inpatient treatment facility, violent and aggressive behaviour by former inpatients with a singular mental health diagnosis had fallen to the same rates as a comparable community sample.

Some researchers have suggested that those experiencing particular types of mental health problems may lead to an increased risk of violent and aggressive behaviour. For instance, it has been argued that people experiencing psychosis or schizophrenic symptoms involving delusions are more likely to be violent if those delusions are threat/control override in nature (Link, Stueve & Phelan, 1998). Threat/control override delusions are ones in which the person believes that they are under threat from another person or that their minds are being controlled by outside forces. However, in a longitudinal survey of 852 discharged psychiatric inpatients, Appelbaum, Clark Robbins and Monahan (2000) found those with any type of

delusion were no more likely to have been violent post-discharge than fellow patients without delusions. Although Appelbaum et al. (2000) concluded that delusions potentially played a part in a small amount of aggressive and violent behaviour, they also showed that when results were controlled for anger and impulsivity, this wiped out the effect of delusions on the violent and aggressive behaviour in the sample.

The MacArthur Violence Risk Assessment Study (Zeleznik, Appelbaum, Frank & Clark Robbins, 2001) looked at 1,136 people admitted to inpatient facilities for mental health problems from three sites in America. Participants were assessed on 134 potential risk factors for violent behaviour and followed up post-discharge into the community for a period of up to 12 months (depending on attrition rates). Out of the original sample, 18.7% of participants were violent at least once in the first 20 weeks post-discharge. Out of the original risk factors identified, a history of prior violence, childhood experiences of abuse, high psychopathy and anger scores were all associated with being violent post discharge, as was a co-morbid substance abuse problem. Diagnosis of a major mental health problem and the experience of delusions and hallucinations were not associated with violent behaviour.

Co-morbid substance abuse issues have been suggested as a potential link between violent behaviour and mental health problems. Elbogen and Johnson (2009) looked at data collected by the National Epidemiological Survey on Alcohol and Related Conditions, a face to face survey which took place in two waves from 2001-2003 and 2004-2005 and involved 34,653 adults over the age of 18. Measures included those of substance abuse, mental health issues, violence between waves and the risk factors used by the MacArthur Study. Multiple regression analysis revealed that the most robust predictors of whether the participant sample had been violent between waves one and two were age (younger), gender (male), history of violence,

history of juvenile detention, divorce in past year, history of childhood abuse, unemployment, co-morbid substance abuse and mental health problem and victimization in the past year. In fact, mental health problems without the presence of a co-morbid substance abuse issue were not a predictor of violent behaviour and risk estimates were at a similar level to those without any diagnosis.

Steadman et al. (1998) used the data from the MacArthur study and compared it with a community sample from the same neighbourhood and found that, as previously mentioned, 12 months post-discharge from inpatient facilities, violent behaviour had decreased to levels seen in the comparable community sample for people with a singular mental health diagnosis. Those participants with a co-morbid substance abuse problem remained elevated in their rates of violence and aggressive acts even at 12 month follow up. Interestingly, the elevated rates of violence in the co-morbid substance abuse group were similar to those in the community sample who demonstrated signs of substance abuse. Stuart (2003) has suggested that substance abuse may be linked to violence in people with mental health issues as it could lead to less medication adherence and poor insight.

Current research suggests that while mental health problems may have a causal link with some violence and aggression, it is unlikely all people with mental health problems are going to be at higher risk of being violent or with more frequency. Many of the identified risk factors for violent and aggressive behaviour in those with mental health problems are dispositional, historical and contextual in nature (Elbogen & Johnson, 2009), and are typical of risk factors for violence in those without a mental health problem. Substance abuse appears to have a mediating link in whether someone with a mental health problem is violent and aggressive.

1.4.2.1 Mental Health, Intellectual Disability and Aggression

The above section examined the link between mental health problems in the general population and violent and aggressive behaviour. Research findings are mixed, but researchers do not deny the possibility that for some people the presence of a mental health problem may have a link to their violent and aggressive behaviour. However it is very important to take other risk factors into account.

In the intellectual disability population, it is only fairly recently (past 25 years) that the concept of mental health problems has been applied to people with intellectual disability (Holden & Gitlesen, 2003). Prior to this point, issues which may have arisen from mental health problems were treated as part of the intellectual disability itself, a concept called diagnostic overshadowing. Currently, mental health issues are coming to the fore of thinking about challenges which people with intellectual disability face, but this area is one of research and ongoing challenge for clinicians (Hurley, 2008).

Dagnan and Lindsay (2012) identified five ways in which people with intellectual disability were more at risk than the general population for developing mental health problems:

- Some intellectual disabilities with a genetic cause, such as Down's syndrome, are associated with particular. psychological profiles. People with Down's syndrome are more likely to develop depression and dementia (White, Chant, Edwards, Townsend & Waghorn, 2005).
- People with intellectual disabilities have deficits in emotional regulation, communication and problem solving, which can make their interactions more complex and demanding.

- People with intellectual disabilities often have particular attachment experiences which are linked with the development of mental health problems (Schuengal, Schipper, Sterkenburg & Kef, 2013).
- People with intellectual disabilities are more often exposed to negative social experiences such as bullying, sexual abuse and loss (Tsakanikos, Bouras, Costello & Holt, 2007).
- People with intellectual disabilities are exposed to many of the social factors associated with low social economic status such as unemployment, poverty and social isolation.

Although people with intellectual disabilities are likely to have a high vulnerability for developing mental health problems, the actual prevalence rates of mental health problems have been difficult to determine (Cooper, 2004). In a systematic review of the data on prevalence rates of mental illness in intellectual disability, Whitaker and Read (2006) found that the data used to estimate prevalence rates was flawed due to a number of issues, such as relying on administrative samples which may be biased towards showing higher rates of mental illness; a lack of reliability in diagnosis; and a lack of consistency in the use of diagnostic categories. For example, Whitaker and Read found that many of the studies used 'behavioural problems' as a psychiatric disorder despite there being no such disorder outlined in the Diagnostic and Statistical Manual of Mental Disorders (DSM - IV) or the International Classification of Diseases (ICD-10), the two most commonly used diagnostic texts. A variety of studies have found varying prevalence rates depending on the population and sampling method used. For example, Deb, Thomas and Bright (2001) found a 16% prevalence of mental health problems in 101 registered service users in South Wales; White et al. (2005) found a 23.3% prevalence rate in 554 people from a

community sample in Australia; while Cooper et al. (2007) found a 52.2 % prevalence rate in 131 people with severe intellectual disabilities taken from a whole population survey in West Scotland. Despite the difficulties in assessing prevalence rates, research does suggest that people with intellectual disabilities do experience mental health issues, that the prevalence rate is possibly higher or at least equal to the rate seen in the general population, and that proper assessment and treatment of mental health issues is essential to the wellbeing of the intellectual disability population (Dagnan & Lindsay, 2012).

In some cases, aggressive and challenging behaviour has not been found to have a recognisable function or environmental cause. Furthermore, the majority of people with intellectual disability do not show aggressive or challenging behaviour. Due to the recognition that mental health problems are prevalent in people with intellectual disability, some researchers have been led to suggest that mental health problems may be a causal factor in aggressive and challenging behaviour (Myrbakk & Tetzchner, 2008). Emerson, Moss and Kiernan (1999) identified three ways in which aggression and challenging behaviour may be associated with mental health issues:

- Aggression may be an atypical presentation of a core symptom of a mental health problem in people with intellectual disabilities (Allen, 2008).
- Aggression may be secondary features of mental health problems in people with intellectual disabilities.
- Mental health problems may act as establishing operations for operant maintained aggression.

Bhaumik, Tyrer, McGrowther and Ganghadaran (2008) have also suggested that the expression of aggressive behaviour should constitute a mental health problem

in its own right, while Lowry (1993) argued that mental health problems are setting events for aggression as they reduce the tolerance for aversive events.

Since the early 1990s, there has been a steadily growing body of research which has investigated mental health presentation and challenging and aggressive behaviour. However, the majority of this research has not focused on the potential hypothesis outlined above, but rather on a variety of hypotheses depending on the stance of the researcher. A brief review of current research findings will now follow.

Dura (1997) examined 67 adults with intellectual disability. Dura compared levels of expressive communication, psychiatric symptoms as measured by the Brief Psychiatric Rating Scale (BPRS) and aggressive behaviours towards others. Dura found that the higher the score on the BPRS, the higher the incidence of aggressive behaviour and the lower the expressive communication ability. Bihm, Poindexter and Warren (1998) looked at 170 people with severe and profound intellectual disability, rates of aggressive behaviour and scores on the Reiss Screen, which is a 36 point scale designed to screen for mental health problems in people with intellectual disability (Gustafasson & Sonnander, 2002). Using multiple regression analysis, they found that 28% of the variance of aggressive behaviour could be accounted for by high score of the Reiss Screen, indicating that high levels of mental health symptoms were associated with some aggressive behaviour. The specific subscales from the Reiss Screen which were predictive of aggressive behaviour were dependent on personality, psychosis and depression.

Holden and Gitlesen (2003) found that mental health symptoms were significantly more present in a sample of 105 people with intellectual disability who displayed challenging behaviour than that of 60 people with intellectual disability who had not displayed challenging behaviour. Mental health symptoms were measured by

the Psychiatric Assessment Schedules for Adults with Learning Disability (PAS-ADD), a 25 item questionnaire designed for use with care staff (Moss, Prosser & Goldberg, 1996). Subscales measuring psychotic and anxious disorders were rated significantly higher in the challenging behaviour group than people who were not challenging.

Hemmings, Gravestock, Pickard and Bouras (2006) examined 214 participants with intellectual disabilities scores on the PAS-ADD levels of social impairment and challenging behaviour. Using multiple regression analysis, they found that aggressive behaviour was predicted by the presence of three items from the PAS-ADD: low energy, early waking and irritable mood. Hemmings et al. (2006) noted that these items were similar to the symptoms of affective disorders such as depression in the general population. However, the predictive profile of another type of aggressive behaviour –property destruction– did not fit the profile of a mental health diagnostic structure, so it may only be some types of behaviour that are influenced by mental health issues.

Myrbakk and Tetzchner (2008) compared 71 people with intellectual disability and challenging behaviour against 71 matched controls. Psychiatric symptoms were assessed using the Reiss Screen, PAS-ADD and Diagnostic Assessment of the Severely Handicapped II (Dash – II) (Sturmey, Matson & Lott, 2004). Those with higher rates of challenging behaviour scored higher for the presence of mental health problems on all measures than those with low rates of challenging behaviour. Also in 2008, Felce, Kerr and Hastings looked at the relationship between severity of intellectual disability, challenging behaviour, social skills and mental health issues as measured by the Psychopathology Instrument for Mentally Retarded Adults (PIMRA). Using multiple regression analysis, Felce et al

(2008) found that high PIMRA scores were predictive of higher levels of challenging behaviour. However, more severe disability, poor social skills and less adaptive behaviours were also highly predictive of the presence of challenging behaviour.

McCarthy et al. (2010) compared the challenging behaviour rates of 124 adults with intellectual disabilities and autistic spectrum disorders and 562 adults with intellectual disabilities. They found no evidence that mental health issues, as measured by ICD-10 categories, were predictive of challenging behaviour. However, they did find an association with severe intellectual disabilities, autistic spectrum disorder and challenging behaviour.

Kearney and Healy (2011) examined the social skills, challenging behaviour rate and scores on the DASH-ii in 39 people with severe to profound intellectual disabilities. Those with high rates of challenging behaviour scored significantly higher on the DASH-II than those with moderate or no challenging behaviour. Also in 2011, Tsiouris, Kim, Brown and Cohen examined scores on the Modified Overt Aggression Scale, which includes a scale for psychiatric diagnosis. Out of those participants who were violent or aggressive, 59% had a diagnosis of at least one psychiatric disorder. However aggression was also highly correlated with age, level of intellectual disability and the presence of an autistic spectrum disorder.

The above studies used a variety of scales which attempt to capture a range of psychiatric symptoms. Some of these scales, such as the PAS-ADD and DASH-II include subscales that correlate with DSM diagnosis for specific psychiatric disorder. However, specific diagnostic labels were applied post analysis and the above research was not attempting to look at what (if any) challenging and aggressive behaviour may be related to specific diagnostic categories. If challenging and aggressive behaviour is related to the expression of mental health problems, some researchers argue that there

might also be specific subtypes of challenging behaviour associated with them, such as depression and psychosis.

Hurley (2008) compared the rated challenging behaviour in 85 people with intellectual disabilities and a diagnosis of depression against 70 people with bipolar disorder, 30 with anxiety and 27 controls. Information about participants was collected from the reports of initial psychiatric screening from a specialist psychiatric clinic. Hurley found that the majority of those diagnosed with depression were angry, anxious and withdrawn. The major referral issue for the depressed patients had been their aggressive behaviour. Those in the depressive group were also classed as being more aggressive than those in the anxious and control conditions.

Hayes, McGuire, O'Neill, Oliver and Morrison (2011) found that people with severe and profound intellectual disabilities who had low scores on the Mood Interest and Pleasure Questionnaire (MIPQ), a measure of depression in people with severe and profound intellectual disabilities, were rated as displaying higher levels of challenging behaviour.

Thorson, Matson, Rojahn and Dixon (2008) compared the rates of challenging behaviour in 14 people with intellectual disabilities and psychotic spectrum disorders against 22 people with intellectual disabilities and another kind of mental health issues, and 22 controls subjects who were people with intellectual disability and no mental health problem. Psychiatric symptoms were assessed using DASH-II. No difference in the rates of aggressive behaviour between the three groups was noted, but there was significantly more stereotyped challenging behaviour in the psychotic spectrum group.

The above studies indicate that some people with a mental health problem and intellectual disability also display challenging and aggressive behaviour. However

there are a number of limitations with these studies, both methodologically and conceptually, which make conclusions about the strength and nature of the association between challenging and aggressive behaviour, mental health and intellectual disability problematic.

There are a variety of measurement instruments used in the studies. This makes standardisation across results difficult, and there are also flaws with the instruments themselves. The PAS-ADD is not appropriate for use with severe and profound intellectual disability (Holden & Gitlesen, 2003), although it was used with some of these populations in the studies. None of the measurement instruments used were directly comparable with DSM and ICD-10 disorders (standard diagnostic criteria for mental health diagnosis), and many of the instruments use behavioural indicators of mental health issues within their scales. This creates a circular problem when trying to determine the link between mental health and challenging behaviour (Holden & Gitlesen, 2009). If people are diagnosed as having a mental health issue when displaying challenging behaviour, any further challenging behaviour they display will strengthen or contribute to a mental health diagnosis. The majority of the studies which used these instruments relied on untrained informants such as the care staff who have been working with participants for some time. Although care staff are a useful source of information, untrained informants can enter measurement bias to results. For example, Holden and Gitlesen (2009) asked informants to rate the level of mental health symptoms their clients were experiencing using the PAS-ADD and to justify how they had observed this. They found that 73% of all symptoms on the checklist were marked as present due to the presence of challenging behaviour rather than by other issues. As this checklist is reliant on observational means, it is perhaps understandable that informants used concrete examples of behaviour to justify the presence of certain symptoms, however, Holden and Gitlesen (2009) also found that

there was a misunderstanding of diagnostic criteria when attributing certain mental health symptoms. Holden and Gitlesen (2009) found that particular aspects of a person's behaviour were being cited as a symptom of a mental health problem when it bore no relation to the symptom class being described. For example, an item on the scale which asked the informant to rate whether someone has lost self-help skills such as eating and getting dressed, which is a symptom of affective disorders, was rated as being present for a person due to them having a lack of general motor skills.

These measuring instruments also do not capture the potential fluctuations in the status of mental health in participants (Hemmings et al., 2006). Fluctuations would be useful to capture as if there is a link between mental health and challenging behaviour; one would expect there to be corresponding increases and decreases in challenging behaviour rates with mental state. As of yet, this has not been investigated.

Other studies (for example, Hurley, 2008; McCarthy et al., 2010) have tried to move away from the potential problems of using measuring instruments by following the diagnostic criteria for mental health problems as outlined in the DSM or ICD-10. However, this has also been criticised as diagnostic categories often rely on verbal reports of symptoms which are not suitable for those with moderate to profound intellectual disability. Meins (1996) found it impossible to apply the majority of criteria for depression, as outlined in DSM-II to people with severe and profound intellectual disability. White et al. (2005) also discussed the idea that mental health in intellectual disability does not correlate to the diagnostic criteria in the DSM or ICD-10 which provides a challenge for researchers investigating this area.

Research which has compared more than one variable in the investigation of challenging behaviour and mental health (Felce et al., 2008; McCarthy et al., 2010;

Kearney et al., 2011; Tsiouris et al., 2011) such as poor social skills, communication skills or the presence of autistic spectrum disorder has found evidence to suggest that these areas also play a part in the expression of challenging behaviour. This is consistent with research into challenging behaviour in other research domains (McCarthy et al., 2010).

The majority of the studies discussed above had very small sample sizes, and all participants were recruited from services for people with intellectual disability. A major factor in whether a person with intellectual disability accesses services is whether or not they display challenging behaviour. Whitaker and Read (2006) highlighted that although roughly 1% of a general population will have an intellectual disability, only 0.25% of this 1% are known to services. This means that samples drawn from service user populations are unlikely to be representative of the number of people with intellectual disability who have a mental health problem.

Ross and Oliver (2002) have suggested an alternative explanation for the link between mental health and challenging behaviour. Ross and Oliver have examined the effects that being challenging has on a person with intellectual disability and their environment. As mentioned in the introduction to this chapter, being challenging or aggressive can cause a number of problems for the person with intellectual disability, the people they live with and who care for them, and service provision. This may cause lack of resources such as outings being given to the person, and long times spent socially isolated because others withdraw from the behaviour. Ross and Oliver suggested that these results of challenging behaviour could cause low mood and mental health issues in the person with intellectual disability. Therefore, intervention aimed at reducing the negative effects of being challenging would be more beneficial to this group than medication for mental health issues.

1.4.2.2 Mental Health, Challenging Behaviour and Medication

When examining the idea that aggressive behaviour might be a mental health problem, it is useful to look at the wide prescription of anti-psychotic and anti-depressant medication to people with intellectual disability who have no formal mental health diagnosis. If aggression is part of a mental health problem, one would expect to see a reduction in these behaviours when prescribed therapeutic doses of anti-psychotic and anti-depressant medications. However, there is a lack of evidence of efficacy of these drugs for reducing challenging behaviour beyond their sedative and suppressive effects (Allen, 2008; Matson & Neal, 2009). Bhaumik et al. (2008) found no difference in rates of reduction of aggression in people with intellectual disability who were treated using Haloperidol, Risperidone (two commonly prescribed anti-psychotics) or a placebo. Valdovinos, Caruso, Roberts, Kim and Kennedy (2005) found that in some cases what was being interpreted as aggression was actually a side effect of taking anti-psychotic medication. These side effects tended to be treated with the prescription of more medication, which increased levels of problematic behaviour.

In conclusion, the link between mental health and challenging behaviour in people with intellectual disability is unclear. While people with intellectual disability are at increased risk of developing mental health issues, research into prevalence is inconclusive and dogged by issues of validity of diagnosis. Evidence from research suggests that some people with mental health issues and intellectual disability are more likely to be challenging in their behaviour, however samples may be biased, measuring instruments are not consistent or valid across studies, and when other variables are introduced they have been more accountable for challenging behaviour than mental health issues. When looking specifically at aggression, there was a suggestion from the research that people with intellectual disability and depression or low mood may be more likely to display aggressive behaviour than other kinds of

challenging behaviour. However, this was not supported by studies looking at a variety of challenging behaviours and mental health symptoms.

Mental health problems are often cited as a cause for aggressive behaviour in people with intellectual disability, or the aggressive behaviour is named as a mental health problem in its own right. However, this approach does not take into account other factors, such as environmental variables, which are also important when considering the risk of a person acting aggressively. In clinical settings where the majority has a mental health problem and intellectual disability but different levels of aggressive behaviour, mental health issues alone are not a good predictor of aggression. Approaches that examine how environmental variables may explain aggressive behaviour would be useful when considering these settings.

1.5 General Aggression Model

The above sections reviewed two of the major approaches to assessment, intervention and management of aggressive and challenging behaviour in intellectual disabilities. Although these approaches have been influential in the field of intellectual disability practice, both approaches consider challenging behaviour more consistently than aggressive behaviour. As mentioned previously, aggression is thought to be the product of a number of factors, many of which are not accounted for by the behavioural and mental health approaches seen in intellectual disability.

The General Aggression Model (Anderson & Bushman, 2002) proposes a way of integrating the different facets that may affect aggression into a comprehensive model of aggressive behaviour. Personal factors such as age and gender are thought to combine with situational determinants to influence a person's current internal cognitive state, arousal level and emotion. This then influences the person's decision making process, which may make them more or less likely to engage in aggressive

action. The General Aggression Model is a useful framework for considering factors which may be involved with aggression in intellectual disability but are not covered by the two dominant models of aggression in people with intellectual disability. Factors of the General Aggression Model that are potentially important in understanding aggression in people with intellectual disability will now be reviewed.

1.5.2 Personal Factors

The personal factors in the GAM are now discussed, examining the literature for evidence supporting them in the intellectual population.

1.5.2.1 Age and Gender

Age has been cited as a major factor in aggressive behaviour in the general population, with younger people more likely to be aggressive (Anderson & Huesman, 2003). Gender has also been cited as a major risk factor for aggression. Little boys start by displaying more aggressive behaviour than little girls, and these differences increase with age until beginning to decrease around 30-40 years, with men and women showing different patterns of aggressive behaviour and at different frequencies (Cross & Campbell, 2011).

Aggression in people with intellectual disability has, from the result of a number of meta-analytical studies, been suggested to increase in age from child to adulthood in a similar pattern to that of the general population. This aggressive behaviour then appears to decrease after the age of 40 (Davies & Oliver, 2013). Other studies have supported the link between younger age and aggressive behaviour (Tenneij & Koot, 2008).

Studies examining the effect of gender on aggressive behaviour in people with intellectual disability have been inconclusive. McClintock, Hall and Oliver (2003) conducted a meta-analysis of all literature dealing with aggression in people with

intellectual disability. This identified gender (male) as being one of two factors likely to increase the risk of engaging in aggressive behaviour. However, McClintock et al. (2003) did not find an effect by age. An effect of gender was not replicated in Crocker et al.'s (2006) study on people with intellectual disability using care services in Montreal (n = 3246), wherein educators of the participants filled in the Modified Overt Aggression Scale, a measurement of the expression of aggression, over 12 months. However, this relies on recollections from a possibly overworked and stressed group who may selectively remember incidents that were damaging or harmful to them. Lowe et al. (2007) conducted a survey on all users of seven services for Intellectual Disability in Wales. They found no gender bias in the expression of aggressive behaviour, but did find a link between age, aggressive and destructive behaviour: younger people with intellectual disability were more likely to exhibit these behaviours.

1.5.2.2 Level of Intellectual Disability

The level of intellectual disability of a person has been shown to correlate with different rates of challenging behaviour. The more severely impaired a person is, the more assistance they require from others. Their level of cognitive deficit also increases. The higher the level of cognitive deficit, the less that person will be able to understand their own needs and the actions of people around them. Higher rates of deficit also lead to an increased impairment in communication skills, which may make the risk of challenging behaviour with a functional component more prevalent (Emerson, 2001, Emerson & Bromley, 1995).

1.5.2.3 Autistic Spectrum Disorder

There is a high frequency of autistic spectrum diagnosis in people with intellectual disability (Matson & Shoemaker, 2009). Autistic spectrum disorders have

been linked with higher rates of challenging behaviour in people with intellectual disability. In a total population study of people with intellectual disability, Holden and Gitleson (2006) found that those with autistic spectrum disorders were significantly more likely to be challenging in their behaviour than people with intellectual disability who did not have this disorder. Autistic spectrum disorder was also implicated as a factor in aggressive behaviour in a meta-analysis of 30 years of cohort studies on challenging behaviour in people with intellectual disability (McClintock et al., 2003).

1.5.3 Situational Factors

1.5.3.1 Frustration

Frustration has been defined as the "blockage of goal attainment" (Anderson & Bushman, 2001), and has been considered a proximal precursor of aggression against both the frustrating agent and others who were not responsible for the aggression (Fortman, 2005). Frustrating situations are common in day-to-day life, which can evoke a primary aggression response (Kahn-Greene et al., 2000). Individuals' primary aggressive response to frustrating situations is normally mediated by their individual characteristics, such as their ability to weigh up the benefits and consequences of short to long-term actions within the bounds of socially accepted behaviour in their culture. These abilities can be mediated by other proximal precursors of aggression, such as lack of sleep, mood and alcohol use (Baas, Muller, Gallhoffer & Netter, 2011). The ability to mediate aggressive responses to frustrating situations can also be affected by factors such as high trait anger in people with psychopathy (Harenski & Keihl, 2010).

Although frustration as a precursor to aggression in the general population has been extensively studied, this has not been the case in the intellectual disability population. However, in a study of 443 people with intellectual disability who were

aggressive, Tyrer et al. (2006) found that experiencing frustration was significantly predictive of aggressive behaviour.

It has been suggested that the lives of people with intellectual disability are characterised by situations which are frustrating (Black, Cullen & Novaco, 1997). Strand et al. (2004) asked staff members from a variety of services in Sweden to detail the kinds of violent incidents they had witnessed or been involved in during their employment. Three situations were described that were commonly associated with physical aggression toward staff members by service users. These were: *Helping Situations*, when service users required assistance from staff; *Molestation Situations*, when staff members were attacked with no obvious precursor; and *Reluctance Situations*, which occurred when people with intellectual disability demonstrated against their everyday living demands. Strand and colleagues highlighted that the 'helping situation' during intimate care is an area fraught with tension. People with intellectual disability may not want the help, and feel forced into these situations. They may also disagree with 'rules' of hygiene or social niceties that may accompany these areas. Staff members can find these tasks difficult or unpleasant as they involve distasteful tasks. Staff members suggested that people with intellectual disability 'fight back' in situations of 'reluctance' to assert their rights through limited communicative means. These two situations, although common in the lives of people with intellectual disability, are similar in their general tone to situations that might provoke frustration in the general population. These situations involve the removal of power and choice, which may be very frustrating as well as preventing access to goals (Lawrence, 2006). Tenneij and Koot (2007) also found 'reluctance situations' to be associated with aggressive behaviour. When staff members were asked what they thought had caused people with intellectual disability in their care to become aggressive, nearly half of all incidents were attributed to having a request denied. Aggression may occur in these

situations as a result of frustration about not being able to access what one desires. This may be exacerbated by cognitive deficits preventing an understanding of why the request cannot be met.

1.5.3.2 Provocation

Interpersonal provocation has been cited as an important factor in aggression (Anderson & Bushman, 2002). Provocation causes levels of negative affect, which then activates aggression networks in the brain, causing feelings of anger and wanting to aggress (Berkowitz, 1993). Being provoked through insults has been shown to cause both retaliation aggression and displaced aggression hours after the provoking event (Vasquez et al., 2013). Provocation is thought to increase rumination about the incident, which also causes negative effects. This may lead to displaced aggression triggered by another provoking incident which occurs later and is of less significance (Denson, Pedersen, Friese, Hahm & Roberts, 2011a).

As with frustration, aggressive responses are mediated by factors such as levels of self-control (Denson et al., 2011a). Training in self-control has been shown to reduce levels of aggressive behaviour to provocation in people with high trait anger (Denson, Capper, Oaten, Friese & Schofield, 2011b). People with high trait self-control do not respond to provoking situations with aggression as much as people with low trait self-control (DeWall, Baumeister, Stillman & Gaillot, 2007).

Very little research has been done into provocation as a cause of aggression in intellectual disability. Tenneij and Koot (2008) found that in 48% of outwardly aggressive incidents by people with intellectual disability, provocation was suggested as the cause of the behaviour by staff reports. However, provocation was defined as ‘denial of request’, a situation that has also been used as an example of a frustrating situation by the same authors.

There is certainly potential in the living situations of people with intellectual disability to be provocative, such as competing for shared resources, problems with interpersonal relationships with staff members and peers, and bullying. Provocation can take many forms, including insults and rudeness (Denson et al., 2011b). People with intellectual disability can be verbally aggressive to their peers and staff members. Research into rates of verbal aggression towards staff members has been mentioned earlier in this chapter, but resident-to-resident aggression is an understudied problem. This is partially due to the difficulty of observing and recording such incidents (Rosen, Pillemer & Lachs, 2008). However it is feasible to assume that provocation between peers occurs, and this kind of environment could lead to retaliation aggression.

Daffen, Mayer and Martin (2004) found there was a reduction in resident-to-resident aggression when residents moved into a unit where they were able to access their rooms independently. In their previous home, avoidance of irritating or disliked fellow residents and staff who may have provoked a resident had been impossible as they were not allowed to access the first floor bedrooms before bedtime. This could also be seen as an example of a frustrating situation, as residents were unable to access the rooms they wished to.

There is also little research into the effects of staff responses and approaches as a provocation of aggression in intellectual disability. There is a high level of burnout, stress and staff turnover associated with working in intellectual disability settings, especially with those people who are defined as challenging. Potentially, the psychological effects of these problems could have an impact on the personal interactions between staff members and those they care for, perhaps causing sharpness in tone or language. It is not the author's intention to suggest that staff members do not work hard when caring for people with intellectual disability, however there has

been a lack of research examining how staff and service user interpersonal interactions may be perceived as provoking, either because of stress and burnout causing interpersonal problems or because of the person with intellectual disabilities having issues with assessing provoking stimuli. Staff attributions about the causes of challenging behaviour have been linked to placement breakdown and levels of challenging behaviour (Dilworth, Phillips & Rose, 2011). If challenging behaviour is believed to be under the person with intellectual disabilities' control, then less help is provided by staff and placements are more likely to break down, as compared to people with similar levels of challenging behaviour whose behaviour is attributed to external influences (Rose, 2010). These attributions may be one mechanism in which provoking situations occur. For example, if a staff member believes a person is in control of their behaviour and is acting out to annoy others, they may respond towards their requests or attempts at interactions in a pejorative fashion. However, there has been no research linking these concepts at present.

1.5.3.3 Sleep

Sleep is essential for preserving many physiological functions. In current society, getting adequate amounts of sleep is problematic and researchers have begun to question the impact sleep issues have on a number of areas, including aggressive and violent behaviour. In a systematic review of evidence examining sleep deprivation as a causal factor for impulsive reactive aggression and violence, Kamphuis, Meerlo, Koolhaas and Lancel (2012) suggested that sleep deprivation may cause poor pre-frontal cortex functioning, resulting in an inability to inhibit inappropriate responses and cause poor emotional intelligence. People with sleep deprivation are then less likely to be able to inhibit reactions to provocateurs of aggression, or misinterpret others' actions as threatening thus leading to more reactive aggression.

Sleep deprivation studies have shown people with even a small amount of sleep deprivation may take part in more risky and aggressive behaviours, experience higher levels of stress and irritability, have longer reaction times and reduced attentive focus as well as experiencing a high number of hormonal changes and immune system issues (Orzel-Gryglewska, 2010). Sleep is important for regulating our emotional and cognitive ability and mood. Problems with getting enough sleep or having disturbed sleeping patterns have been suggested as a proximal predictor of aggression, as people will struggle to regulate their emotional reactions toward aggression provoking stimuli.

Cote, McCormick, Geniole, Renn and MacAulay (2012) predicted that sleep deprivation would cause an increase in reactive aggression in provoking situations due to sleep deprivation affecting a persons' ability to regulate reaction to emotional stimuli. 20 participants were deprived of sleep for 33 hours, as compared to 23 controls who experienced normal sleep. Cote et al. (2012) found that participants in the experimental condition described themselves as feeling more negative in mood than the control group. Men in the experimental condition also experienced dips in testosterone rates. However, when taking part in a computer task designed to provoke reactive aggression, the men in the control condition were more likely to act in a reactively aggressive way. The men in the control group experienced a surge in testosterone while taking part in the task which the experimental participants did not. Women did not show any difference in reactive aggression between the two groups. Sleep deprivation also leads to an inability to inhibit aggressive responses when faced with frustration situations. Kahn-Greene, Lipizzi, Conrad, Kamimon and Killgore (2006) found that after 55 hours of sleep deprivation, 26 participants were more likely to respond with outwardly directed aggression and blame when presented with hypothetical frustrating situations than at baseline.

Sleep problems have been suggested as being more prevalent in the intellectual disability population than in the general population (Brylewski & Wiggs, 1999). However prevalence rates have been difficult to determine due to variations in definitions and sample participants across studies. Sleep issues are difficult to detect in people with intellectual disability as they often lack the cognitive skills to describe their quality of sleep, and so information is often based on observations of nursing staff. People with intellectual disability may also live in situations where adequate sleep is difficult to achieve. For example, a shared living environment may be noisy, especially if one's housemates listen to loud music or engage in screaming behaviour. In acute wards, night observations where a nurse enters a bedroom to check on a patient are common. While these checks are important for safety, they may also disturb sleeping patterns.

Van de Wouw, Evenhuis & Echteld (2012) performed a systematic review on research into sleep in people with intellectual disability and found that people with intellectual disability have a higher prevalence of sleep problems than the general population, with problems include settling problems and night waking. Van de Wouw and colleagues concluded from the evidence reviewed that sleep problems were associated with challenging behaviour. However these results were not supported by Boyle et al.'s (2010) cohort study on 1,123 people with intellectual disability, who found prevalence rates for sleep problems in people with intellectual disability to be the same as for the general population. However, they did find a strong correlation between sleep problems, mental health issues, challenging behaviour and taking psychotropic medication.

There is a growing body of evidence which links sleep problems with challenging and aggressive behaviour. Brylewski and Wiggs (1999) compared 79

adults with intellectual disability and sleep problems with 121 adults with intellectual disability and no sleep problems. Participants with sleep problems were significantly more irritable, and displayed significantly more aggressive behaviour and self-injury. There was no difference between the two groups in taking medication. Didden, Korzilius, van Aperlo, van Overloop and de Vries (2002) found that in 286 children with intellectual disabilities, 99.4 % of them were reported to have at least one type of sleep problem by their parents. Children with sleep problems were more likely to be taking medication, be irritable, stereotyped in their behaviour, be aggressive, have temper tantrums and be non-compliant.

Rzepecka, McKenzie, McClure and Murphy (2011) found a high correlation between sleep problems and rates of challenging behaviour in 167 children with intellectual disability; a multiple regression analysis found that sleep problems accounted for 42% of the variance in challenging behaviour. Rzepecka et al. (2011) also found that taking medication had an impact on the presence of sleep problems, as children who took medication were more likely to have a sleep issue. Rates of prescribed medication are high in people with intellectual disability who are also aggressive, so this relationship is important to note.

In a total population study in Sweden, Lundqvist (2013) found that risk of aggressive behaviour was predicted by having shorter sleep duration than the average seen in people with intellectual disability who were not aggressive (7.5 hours vs. 8 hours).

Interventions for sleep problems in people with intellectual disability have been limited. Pharmacological interventions which increased sleep duration and quality have shown reductions in challenging behaviour when compared with treatment by placebo (Braam et al., 2010).

The above evidence suggests a link between sleep problems and aggressive behaviour in both the general and intellectual disability population. Sleep problems affect the general population's expression of reactive aggression by reducing emotional regulation and decreasing mood. However the mechanisms of sleep in intellectual disability have not been extensively researched. Aggressive and challenging behaviour, taking medication and mental health issues have all been linked with sleep deprivation in people with intellectual disabilities, but the mechanisms which link these have not been investigated as of yet (Boyle et al., 2010). It has been suggested that sleep problems may cause challenging and aggressive behaviour, be a result of challenging and aggressive behaviour or be related to a third unknown variable (Didden et al., 2002). Medication use has also been linked to poor sleep. Many people with intellectual disabilities have health problems which require medication. Aggressive and challenging behaviour is also often treated with medications. Medication could be a cause of sleep problems in people with intellectual disability, or sleep problems may result in medication being prescribed, but there has been little research investigating this link.

1.5.3.4 Other Situational Factors

1.5.3.4.1 Pain

Pain has been defined as an unpleasant sensory and emotional experience (Janseen, Spinhoven & Brosschot, 2001). Pain has been cited as a factor in aggressive behaviour as it may increase discomfort (Anderson & Bushman, 2001), but it may also increase anger or increase the focus on anger-provoking stimuli in people experiencing pain. Studies on patients with chronic pain have found that the experience of long term pain will increase people's reported experience of anger (Gaskin, Greene, Robinson & Geisser, 1992), and that they are more likely to report

feeling angry and hostile than community patients or non-patients (Fishbain et al., 2011).

In adults with dementia who are aggressive, pain management has been shown to reduce aggressive behaviours (Husebo, Ballard & Aarsland, 2011; Ballard, Smith, Husebo, Aarsland & Corbett, 2011; Bradford et al., 2012).

For many years, people with intellectual disability were not thought to experience pain in the same way or to the same extent as people in the general population (Meir, Strand & Alice, 2012). However, this idea has now been recognised as untrue and that people with intellectual disability experience pain to the same extent as the general population, though research into this area remains limited (Knegt & Scherder, 2011). People with intellectual disability are at risk from undiagnosed health issues which may cause pain due to being unable to communicate needs, or from internal causes of pain going unnoticed by others (Kastner, Walsh & Fraser, 2001). A systematic review of the physical conditions associated with challenging behaviour by de Winter, Jansen and Evenhuis (2011) found that challenging behaviour was associated with a number of undiagnosed medical problems, however the evidence base was very small and mostly came from case study or secondary study data. A study of 753 people with intellectual disability found that 15.4% of these people had been experiencing chronic pain for at least three months (Walsh, Morrison & McGuire, 2011). The group that was experiencing pain was more likely to be challenging in their behaviour.

The experience of pain may cause increased anger, hostility or discomfort, which may in turn create an internal state in which aggressive behaviour is more likely. In people with dementia, untreated pain has been associated with challenging and aggressive behaviour. There have been some associations found between the

experience of pain and challenging behaviour in intellectual disabilities, but research has so far been limited.

1.5.3.4.2 Crowding

Living in a crowded environment has been shown to be a risk factor for poor socio-emotional development and increased physiological signs of stress (Evans & English, 2002). Being in a crowded situation may increase cognitive complexity; the brain has to work harder to interpret social information (Regoeczi, 2003). To reduce the pressure of processing so much social information, aggression may result as a way of dispersing the crowd or escaping from it. Nijman and Rector (1999) suggested that crowding leads to aggression on inpatient wards due to a lack of psychological space to rest and have privacy, as well as to avoid unwanted interactions.

Ng, Kumar, Ranclaud and Robinson (2001) found that there was significantly more aggressive behaviour from patients on acute wards when there was a high patient occupancy as compared to low patient occupancy. They suggested that increases in stress and increased frustration from forced socialisation might be the causes of these increased rates, as well as a possible evolved mechanism to use aggression to disperse others in order to increase access to resources. Similar results have been found in studies of emergency department wards where higher rates of occupancy were significantly related to higher incidences of aggression (Medley et al., 2012).

Units for people with intellectual disability vary in capacity and occupancy rates. The number of people present in a unit will depend on current occupancy, activities provided outside of the unit and the number of staff on shift.

Frustration due to lack of resources, withdrawal from social complexity and discomfort due to lack of space have all been suggested as possible links between

crowding and aggression. Although there have been no studies into the effect of crowding on aggression in intellectual disability, the effects noted for crowding in other patient populations could be applicable to people with intellectual disability. For example, staff attention or assistance could be viewed as a resource which causes frustration when it has to be shared. Crowding on wards may cause those with a low tolerance for social interaction to try and escape. A large number of service users in one room may cause discomfort due to noise, lack of space and raised temperatures. Times where withdrawal from a crowded situation may prove problematic for staff and organisations, such as mealtimes when all staff are needed, may also be implicated in challenging behaviour as the person feels overloaded but cannot withdraw from the situation due to situational demands.

People with intellectual disabilities, especially those who are challenging in their behaviour or have just been admitted to a unit for assessment, are often placed under observation (Machenzie-Davies and Mansell, 2007). This can involve various levels of increased contact with staff members. For instance, two staff members may be assigned to be within arm's length of an individual at all times, whereas another resident may be checked on once every hour. While observation is not a typical example of crowding, observation may cause an issue in the person being able to obtain psychological space, which may increase aggressive behaviour in an attempt to gain it.

1.5.3.4.3 Time of Day/Week

There have been several studies which have suggested temporal patterns of violence in a variety of health care settings. Aggressive incidents were found to be most common in psychiatric inpatients during the morning shift when 49% of recorded incidents occurred; 36% of incidents occurred during the afternoon shift

(Barlow, Grenyer & Ilkiw-Lavalle, 2000). These results were replicated by Grassi, Peron, Marangoni, Znachi and Vanni (2001), who during a five year study of the characteristics of violence in an acute ward found that 45.6% of violent incidents occurred between 8 am and 1 pm, and 35.9% happened between 2pm and 8pm. Incidents were distributed evenly through the days of the week and months. Frequency of incidents during the morning was related to that being when new admissions took place. Verbal aggression was found to be at its highest rate during the afternoon in psychiatric inpatients in an acute ward (Ng et al., 2001). In a twenty year analysis of staff assaults in both community and inpatient settings for mental health patients, Flannery, Flannery & Walker (2010) found assaults in inpatient units were more likely to occur during the morning shift at breakfast time, and in community settings during the morning shift at midday. Some studies found that aggressive behaviour is not always common in the morning. El-Badri and Mellsop (2006) found that 52% of aggressive incidents occurred in the evening in a psychiatric in-patient population. Temporal patterns of aggression have also been noted in nursing home residents who were often agitated. Aggression occurred more frequently at meal times and in the evening (Cohen-Mansfield, Marx, Werner & Freedman, 1992).

Despite the prevalence and frequency of challenging and aggressive behaviour in people with intellectual disability, analysis of the time of day or day of week when aggression occurs has been limited. Times when service user demand is high have been suggested as a possible reason for the temporal patterns of aggression (Barlow et al., 2001). Meal times have been highlighted as a potential area when challenging or aggressive behaviour may occur due to the level of need of support that many people with intellectual disability require when eating (Ball et al., 2011). Meal times have also been found to times of high aggression in inpatient populations (Bowers et al., 2009). Shift change patterns may also be an area of interest for a number of

reasons. Hand over times, as previously mentioned, may increase crowding on units, or conversely reduce the number of available staff, which may increase frustration. Prolonged shift work has been shown to cause chronic fatigue in some health care assistants and nurses (Samaha, Lal, Samaha & Wyndham, 2007). This increased level of tiredness may mean staff members at the end of their shifts are less able to deal with the possible signs of early challenging behaviour effectively, or have less patience for social interactions.

1.5.3.4.4 Staff Members

A number of factors related to staff members may be considered when examining aggressive behaviour.

Members of staff are a crucial part of life for people with intellectual disability, as their influence will affect how people with intellectual disability access the community, engage in activity and provide reinforcement for behaviours (Mansell, Elliot, Beadle-Brown, Ashman & Macdonald, 2002). Staff numbers on shift are meant to represent the number needed to fulfil care requirements for the number of service users. This logic would assume that the more staff on shift, the more involvement, interaction and opportunity for engagement would be given to service users. Those who have the most severe needs would therefore need the most staff members on shift to fulfil this. The care provision for people with intellectual disability also has a duty to help support those with ID in their chosen activities, and to encourage the development of adaptive skills such as cooking, cleaning, budgeting, hygiene as well as the mental skills needed to cope with these activities. Increased staffing levels have not been found to mean increased service user contact, interaction and assistance, especially in those with severe ID (Felce et al., 1998). When comparing group homes with a heterogeneous group of service user needs and abilities, Felce and Perry (1995)

found that there was no consistent relationship between service user ability and the amount of time spent with staff, and that generally across all the houses staff assistance and resident interaction was very low, in some cases only amounting to a couple of minutes per hour. Although staffing needs to be of a certain level to ensure activities can take place, the above research shows that this does not translate into increased quality of care. Low staff involvement means that service user's behaviour and skills are not being actively developed and negative behaviours may be reinforced. This situation does not allow relationships between staff and service users to develop, which might also lead to negative behavioural outcomes.

ID care often has a high staff turnover, which introduces a lot of inexperienced staff into care situations (Campbell, 2007). New staff will require time to become familiar with residents and procedural training before they can become a full member of the care team (Department of Health, 2007). ID care also uses a high number of agency staff to cover sickness and staff shortfalls, which again introduces inexperienced or unfamiliar staff into the care environment. Inexperienced staff members can be unaware of triggers of aggression or are unable to effectively implement intervention, and staff who do not know residents will also be unable to pick up on their idiosyncratic expressions of things such as pain (Foley & McCutcheon, 2004). People with intellectual disability living in care normally need accompanying when accessing the community, which means when there is a high number of inexperienced staff, community access and activities may be limited. This may also apply to family visits and holidays, which limits the people with intellectual disability quality of life and freedom. Occupation in activity and the impact of boredom will be discussed later, but issues surrounding the number of staff on shift, the type of staff involvement with service users and the level of experience that those

staff have all impact on the service user, which might be expressed in aggressive behaviour

.1.5.3.4.5 Activity Levels

Meaningful activity is a term applied to activities that stimulate and develop abilities, including adaptive behaviour skills and social skills, which promote meaningful interaction between staff and service users. Examples of meaningful activities might be learning to get dressed with lower levels of staff assistance, promoting independence and control over morning routines. Meaningful activity can be effectively implemented in all people with intellectual disability, including those with severe needs, and has been shown to improve engagement, adaptive behaviours and independence (Mansell et al., 2002). However, although these improvements are known, what constitutes meaningful activity and how to implement strategies to facilitate this has proved difficult, and in many residential services, there is not only a lack of meaningful activity but no activity at all (Mansell et al., 2002). There is little research as yet on how boredom and a lack of activity might affect the expression of aggression. There have been positive results with people with intellectual disability who are able to go into paid work through agencies such as Interwork (an employment agency for people with intellectual disability) showing a reduction of aggressive and challenging behaviour (Allen, 1995). However, there is little research on those with more severe needs, who are often the most difficult group to engage with (Felce & Perry, 1995). Meaningful and enjoyable activities reduce boredom, increase skills and quality of life for people with intellectual disability, and a lack of available opportunities for this might be a factor in aggression.

1.5.3.4.6 Environment

The location a person is in can have a positive or negative effect on their health, well-being and behaviour (Schweitzer, Gilpin & Frampton, 2004). In the general population, access to living environments with plenty of light, ventilation and access to the outdoors has been shown to increase health and wellbeing (Jackson, 2003). Wells (2000) found that living in high rise buildings is related to limited physical activity, behavioural problems in children and mental health issues in adults. A systematic review of research into buildings and mental health found that noisy, dark, humid, draughty residences which are crowded and poorly maintained have a negative impact on mental health (Chu, Thorne & Guite, 2004).

There has been a suggestion that building design, as well as affecting mental health, may also affect aspects of aggressive behaviour, such as what makes it more likely to be expressed, the type of aggression, and the locations where aggression is most frequent. Carter (2007) suggested that the buildings we exist in are stable elements of our daily life, influencing patterns of social coexistence. The buildings or locations we are in set the social context for aggressive behaviour, which interacts with personal determinants of aggression (Leonard, Quigley & Collins, 2003). Building design can also create situations of discomfort through crowding, heat and noise which, as previously discussed, may be a factor in aggression (Macintyre & Homel,1999).

Corridors were found to be the location of the most aggressive behaviour in Grassi et al.'s (2001) study of psychiatric inpatient aggression. This was hypothesised to be due to lack of space causing increased opportunity for aggression. However, when corridors were widened, this did little to reduce the overall rates of violence in the ward. Changes in accessibility to unit areas have been associated with higher risks of aggression. Bowers et al. (2009) found that when psychiatric inpatients were

restricted from accessing areas such as kitchens and bedrooms when doors were locked, there was an increased risk of aggressive behaviour. Bowers and colleagues suggested this was due to access being allowed at certain times but restricted at others, however they were not able to conclude why this would lead to aggressive behaviour.

Daffen et al. (2004) examined the rates and type of violence in an inpatient ward for psychiatric patients. Daffen et al. (2004) followed the inpatients as they were moved from a traditionally built large forensic hospital to a purpose-built forensic unit. A review of incident forms for the last two years of residence in the forensic hospital and the first two years of residence in the purpose-built unit found no difference in the overall rate of violence. However, the type of violence occurring had changed. For example, resident-to-resident violence had been found to decrease following the move to the new unit. Daffen et al. (2004) suggested that this was due to the building move changing the need for particular types of violence. In the old unit, patients were not allowed to access their bedrooms during the day as they were on another floor. In this unit there was a high rate of aggression between peers when they were in communal spaces. In the new unit, patients were able to access their bedrooms whenever they wanted to which correlated with a significant reduction in patient-to-patient aggression. In their previous home, avoidance of irritating or disliked residents and unwanted social interaction had been impossible.

The services and locations which provide care for people with intellectual disability have undergone a complete restructuring in the past 30 years, beginning with the closing of large institutions and campus provision where more than 40 residents may have shared a room at a time. Provision of care was then moved to residential homes. Currently, supported living environments, where a small number of people share a house in the community and receive support from staff when they

require, it has become standard. Supported living services are typically normal houses which have been bought for this purpose. These changes have resulted in increased quality of life for people with intellectual disability (Allen, 1999). Smaller units with small staff groups have been shown to increase the levels of activity and engagement in activity by people with intellectual disabilities (Felce, Repp, Thomas, Ager & Blunden, 1991). Not all people with intellectual disabilities who live in residential care live in supported living environments. Some live is assessment and treatment units, institutions, or remain in what is left of the large residential homes, although these are being disbanded.

There is little research looking at the effect of building or location on aggressive and challenging behaviour in people with intellectual disability. It has been noted that there are higher rates of challenging behaviour in institutional settings than in supported living or family type support, however this may be due to challenging and aggressive individuals being more likely to be referred to these types of units (Emerson, Robertson, Gregory, Halton & Kessissoglou, 2000). Different types of units may have different ways of managing challenging and aggressive behaviour. Seclusion has been shown to be utilised more often as a response to challenging behaviour in community settings than in National Health Service campus provision, and anti-psychotic medication and physical restraint were used more as a response to challenging behaviour in National Health Service campus provision (Emerson et al., 2000.)

The locations where people with intellectual disability live create the context for their behaviour, as suggested by behavioural approaches to challenging behaviour. These contexts involve the rules, regulations and culture of the agency which controls

it, provides opportunities for interpersonal acts, and determines access to resources such as attention and material objects.

1.5.5 Internal States

Internal states are created and influenced by a combination of personal and environmental factors. These internal states then make the expression of aggression more or less likely

1.5.5.1 Mood and Emotion

Mood states are a set of feelings, usually involving one or more emotions, which influence thought processes and subsequent responses to a range of situations over a period of time (Lane & Terry, 2000). Emotions are distinct short term emotional states which have a distinct cause and are more extreme than moods in their expression (Smith & Kirby, 2000). Moods and emotions are directly affected by personal and situational factors (Anderson & Bushman, 2002), and may act as a setting event for later aggressive behaviour.

There has been little research into the experience of mood and emotional states in people with intellectual disabilities (Argus, Terry, Branston & Dinsdale, 2004).

Tenneij, Didden, Stolker and Koot (2009) found that mood swings, sudden mood changes and becoming easily upset were associated with higher rates of challenging behaviour compared to those who were not challenging or had low rates of challenging behaviour. People with intellectual disabilities who were rated as having low mood by their key workers had a higher frequency and severity of challenging behaviour when compared to a group with normal mood, after other risk factors such as presence of autism had been controlled (Hayes et al., 2011).

This research suggests that mood and emotion may be linked to challenging behaviour in people with intellectual disabilities. However, as mood and emotional states have not been investigated in depth in this group, the mechanism linking moods, emotions and challenging behaviour are unknown.

1.5.5.2 Anger

Anger is a subjective emotional state which involves physical arousal and cognitions of hostility (Navaco, 1994). There is mixed evidence for a direct relationship between anger and aggressive behaviour; for example, anger does not always lead to aggressive behaviour, and self-reported anger is weakly correlated with aggressive behaviour (Hortensius, Schutter & Harmon-Jones, 2012). The experience of anger can lead to verbal and physical aggressive outbursts, but also to more socially accepted reactions such as assertiveness and problem orientated communication (Deffenbacher, Oetting, Lynch & Morris, 1996). Anderson and Bushman suggested five ways in which anger was implicated in aggressive behaviour: as a justification of aggressive behaviour; helping a person maintain aggressive intentions over time; providing a cue to respond; priming aggressive thoughts and scripts; and increasing arousal levels.

Anger can be *state anger*, which is a subjective experience that fluctuates depending on situational variables such as frustration (Krieglmeyer, Wittstadt & Strack, 2009). Alternatively, *trait anger* is part of the general temperament. People with high trait anger may have a low threshold when responding to a variety of innocuous stimuli (Ramairez & Andreu, 2006). People who are high in trait anger are more likely to be reactively aggressive. Anger may also increase focus on negative stimuli such as that which causes pain. Participants who had been harassed prior to

experiencing experimentally induced pain had decreased tolerance and a lower threshold for pain (Janssen et al., 2001).

Just as little is known about the emotional lives of people with intellectual disability, there is also little known about experience and expression of anger, and its relation to aggression (Taylor, 2002; Argus et al, 2004).

A systematic review of anger management training has suggested that for some people with intellectual disability, anger management training can reduce rates of aggressive behaviour, but the amount of research was small, with only a few papers providing follow-up data on treatment gains (Taylor, 2002). More recently there has been evidence for individual cognitive treatment of anger (Taylor, Novaco, Gillmer, Robertson & Thorne, 2005) and mindfulness-based anger reducing techniques (Singh et al., 2011). Although anger management training has been shown to lower rates of aggression in some people with intellectual disability, it is unclear whether this reduction is due to reinforcement effects or a change in the person's cognitions and ability to maintain low arousal levels. If change is due to reinforcement, then this may indicate different processes than a reduction in anger being responsible for changes in behaviour.

Anger has also been shown to increase hostile cognitions in people with intellectual disability who are frequently aggressive (MacMahon, Jahoda, Espie & Broomfield, 2006). Hostile cognitions involve negative evaluation of people or things, negative beliefs, mistrust and suspicion (Ramirez & Andreu, 2006). These hostile cognitions can then cause someone to focus more on anger-related stimuli, which can lead to psychological arousal. This creates a feedback loop wherein people are biased to react in an aggressive fashion towards anger-provoking stimuli.

Anger can cause an increase in physical arousal and cognitive hostility, which in some people can cause an aggressive reaction. Some people are more prone to anger due to high levels of trait anger, while state anger can be caused by exposure to aggression related risk factors. How anger works in relation to aggression in people with intellectual disability is not clear. Some anger management interventions have shown results in reducing aggression. However, there have been no investigations to assess individual differences in trait and state anger in people with intellectual disability, or of how anger may be implicated in aggression in the ways outlined by Anderson and Bushman (2002).

1.5.6 Conclusion

The General Aggression Model represents an attempt to distil research evidence from a variety of disciplines about factors that are important to the expression of aggressive behaviour. Using this model as a guide suggests important areas which are relevant to aggression in the intellectual disability population. However, major research trends in intellectual disabilities have not, on the whole, focused on these areas.

1.6 Risk Assessment

The risk assessment of aggressive behaviour is essential for any agencies that work with people who are aggressive. Risk assessment measures attempt to predict the likelihood that a person will become aggressive in order to provide better management and intervention structures, and to protect the individual and others from harm. Risk assessment structures attempt to use a variety of evidence about aggression in order to predict aggressive behaviour more accurately.

Forensic, inpatient and intellectual disability populations are often noted for their rates of aggressive and challenging behaviour. Risk assessment has become a

crucial part of the approach to caring for these individuals (Ogloff & Daffern, 2006). Risk assessment is important for a formulation of a treatment and management plan (Snowden, Grey, Taylor & Fitzgerald, 2009). It is also important for promoting safety on the ward and in the community post-release (Vitacco et al., 2009). Risk assessment may involve structured tools and actuarial judgements as well as clinical decisions, which are combined to suggest the risk of aggressive behaviour by an individual (Nicholls, Brink, Desmarais, Webster & Martin, 2006). Structured tools that have good evidence bases for predicting risk of aggression are the Psychopathy Checklist, Violence Risk Appraisal Guide and Historical Clinical Risk (HCR-20) (Doyle, Dolan & McGovern, 2002).

Static and historical methods of predicting risk such as the use of age, gender, and history of violence are essential for evaluating risk. There are a number of structured tools which enable clinicians to make risk assessments based on static risk factors (Rogers, 2000). While these factors are important in assessment of risk, they do not vary over time, so cannot provide information about when a person may become aggressive (Ogloff & Daffern, 2006). The tools have also been shown to differ widely in terms of their predictive validity. In a comparative study of 68 investigations of the predicting ability of risk assessments, those that were designed for highly specific populations and looked at older participants were found to have more predictive ability (Singh, Grann & Fazel, 2011).

However, in forensic and inpatient populations there has been a move to increase the focus on dynamic risk predictors. Dynamic predictors of risk are those which may change over time. These have been suggested to be highly variable and include, but are not limited to: self-neglect; substance abuse; mental state; other challenging behaviour; insight; attitudes; negative attitudes and impulsivity;

irritability; sensitivity to provocation; becoming easily angered when requests are denied; unwillingness to follow direction; becoming loud and verbal; have threatening stances; confusion (Whittington & Patterson 1996; Almvik, Woods & Rasmussen, 2000; Doyle et al., 2002; Nicholls et al., 2006; Ogloff & Daffern, 2006). Daffern et al. (2004) have stated that while a lot of research into risk assessments have stressed the importance of including these factors into risk assessment, there is little research examining the effects when they do.

Risk assessments which include dynamic factors in the prediction of aggressive behaviour have shown strong predictive validity. Whittington and Patterson (1996) found that 30 out of 31 inpatients became aggressive within three days of becoming more active and verbally abusive. The Broset Violence Checklist (Almvik, et al., 2000) uses changes in patients' observable behaviour, such as confusion and irritability, to predict the likelihood of aggression in the next 24 hours. Patients are assigned a rating from 1 (low risk) to 6 (high risk) which describes their likelihood of becoming aggressive. The Dynamic Appraisal of situational Aggression (DASA IV) (Ogloff & Daffern, 2006) is an assessment of dynamic risk factors. Patients are assigned a rating of low, medium to high risk of aggression. When comparing 482 studies using the DASA IV with 997 using other clinical methods, the DASA IV was found to be more accurate at predicting risk of aggression than when using a structured clinical judgement tool or clinical judgement alone (Griffin, Daffern & Goodbar, 2013). Findings from risk assessments which have included dynamic risk factors have led to the suggestion that dynamic predictors of risk should be prominent when conducting risk assessments in inpatient populations (Daffern, 2007).

In people with intellectual disability, risk assessment of aggressive and challenging behaviour is particularly important, as aggressive behaviour can have such

a negative impact on the services available. Research into risk assessment in forensic intellectual disability has suggested that utilising dynamic risk variables is important. Lindsay and Beale (2004) highlighted the need for formal risk assessments in this population as opposed to relying solely on clinical judgement, as the areas investigated may have no predictive validity in relations to aggression, and judgements of risk can vary between professionals and service providers. Lindsay et al. (2004) investigated the predictive capacity of Dynamic Risk Assessment and Management System (DRAMS) in five offenders with intellectual disabilities. Mood, psychotic symptoms, self-regulation and compliance with routine were highly correlated with aggressive incidents. Research using the Adult Behavioural Checklist (Achenbach and Rescorla, 2003) found that out of a group of 48 people with intellectual disability in inpatient treatment facilities, those who displayed serious aggressive behaviour were associated with the items 'arguing',' blaming others',' impulsivity', 'disorganised', 'mood swings' and 'easily upset' (Tenneij et al., 2009).

Although research into static risk factors has been extensive, research into dynamic factors in the intellectual disability population has been limited and focused in forensic intellectual disability populations who tend to have higher IQ and different patterns of challenging behaviour than the non-offending intellectual disability population (Johnston, 2002; 2004 Lindsay 2002; McMillan et al., 2004). However, in the limited amount of research focusing in this area, similar dynamic risk factors as in forensic inpatient populations have been suggested.

In the non-offending intellectual disability population, risk assessment of aggression has focused on static variables such as gender, degree of intellectual disability, autism, living situation and expressive communication deficits (McClintock et al., 2003; Tyrer et al., 2006; Cooper et al., 2009). The identification of static risk

factors is important in intellectual disability, just as in other populations where aggressive behaviour is a problem. Dynamic risk factors have proved useful in predicting aggressive behaviour in both forensic populations and forensic intellectual disability populations. Dynamic risk factors have not been investigated in other people with intellectual disability and investigation into these factors may prove useful in the prediction of aggressive and challenging behaviour.

1.7 Conclusions from the Literature Review on Aggression

The potential to be aggressive in the general population is thought to be due to an interaction of a number of personal and environmental variables. Personal variables like levels of trait anger, gender and age combine with environmental causes of aggression, such as frustration and provocation, to create situations where people are more likely to be aggressive. In people with intellectual disabilities, research into aggression has often been examined under the banner of challenging behaviour, but there has been some research focusing specifically on violence and aggression. Although the causes of aggression are thought to be similar in people with intellectual disability as the general population, research trends have been quite different. The largest research area by far concerned with aggressive and challenging behaviours have been behavioural approaches, concentrating on reinforcement patterns of challenging behaviour as well as the function of behaviours. While this has been an incredibly influential area within intellectual disability practice, there has been concern at the lack of research examining antecedents such as setting events, systems factors and contextual issues. Aggressive and violent behaviour has been seen as the most detrimental of challenging behaviours, both for the individual and the system they are in. Aggressive behaviour in intellectual disability therefore merits a research focus of its own, as in the general population. There is evidence that personal and environmental precursors to aggression, as well as proximal factors seen in the general

population, are present in the lives of people with intellectual disability. Evidence also suggests that people with intellectual disability are at high risks of experiencing these precursors, in part due to the pathology of intellectual disability but also because of the situations that people with intellectual disability are placed into. Research which explores possible antecedents of aggressive and violent behaviour, drawn from research in the general and intellectual disability population, would be useful in adding to the understanding of aggression and violence in intellectual disability.

1.8 New Methods for Exploring Violence in People with Intellectual Disability

Research in people with intellectual disability and aggression has indicated a number of areas that might cause and maintain aggressive behaviour. Aggressive behaviour appears to be very complex and unlikely to be the product of one factor. It has been recommended that rather than look at these factors in isolation, a method that combines the knowledge from existing research as well as the possible biological, social and environmental contributors is needed (Murphy, 1997; Griffiths & Gardner, 2002).

Griffiths and Gardner (2002) have also raised the questions that if there is more than one direct influence on aggressive behaviour, there needs to be consideration of what the effect of each one would be, and how would they interact with each other? One method that seeks to investigate the factors which may lead to a behaviour is Sequence Analysis. Factors that can be investigated using sequence analysis methodology can be both personal and environmental, making it an ideal technique for assessing a variety of risk factors. Sequence Analysis works on the principle that by examining sequences of events that are related to a behaviour, non-random patterns that describe that behaviour will emerge (Gottman & Roy, 1990). The

basic technique of this method involves looking at the probability of one event type following another, which is then used to create a complex pattern of probabilities detailing which events or factors are most likely to lead to a specified outcome. Understanding how patterns of events unfold over time can also allow 'trigger' events to be discovered and new intervention strategies created that will minimise risk. Sequences can be used to examine the social and environmental contexts that might increase the probability of an event occurring (Emerson et al., 1996). This technique has already been applied very successfully to two areas of interpersonal violence: pub fights and rapes (Beale, Cox, Leather & Lawrence, 1998; Fossi, Clarke & Lawrence, 2005). In both these examples, the result was a vivid picture of how those incidents unfold over time.

Aspects of the Sequence Analysis technique, such as time lag sequence analysis, have already been demonstrated as a successful method when studying single case populations in intellectual disability. This analysis involves looking at the probability of aggression occurring after a previous event, such as being given a task to do or being put in isolation (Emerson et al., 1996; Whitaker, Walker & McNally, 2004). Emerson et al. (1996) used observational data from videos to identify situations that increased the likelihood of challenging behaviours in 3 children with intellectual disability. Each child exhibited problematic behaviours after being placed in different conditions. For example, Susan displayed several self-injurious behaviours when being placed in demand conditions and when in isolation. This was different to Vicky, who spat and climbed on surfaces when in isolation. Emerson and colleagues used this information in a functional assessment framework to identify areas where negative reinforcement might be maintaining the children's challenging behaviour.

Whitaker, Walter & McNally (2004) used data from observational reports to examine low frequency challenging behaviour. Low frequency challenging behaviour is thought to be influenced by many variables which do not need to be present at the time of the behaviour, which increases the complexity of understanding what might have influenced that behaviour to occur (Whitaker et al., 2004). Whitaker et al. (2004) used time based sequential analysis as a method of investigating the likelihood of low frequency challenging behaviour to occur hours, days or weeks before the behaviour appeared in 3 adults with intellectual disability. Using this technique, Whitaker et al. (2004) were able to identify two things that were increasing challenging behaviour, visits to parents and contact with a subject's father, and also to disprove a hypothesis that linked one participant's behaviour to the onset of epileptic seizures.

Sequential Analysis has also been applied to a larger sample of the intellectual disability population as a means of predicting self-injurious behaviour (SIB). DeBoard, Marion, Touchette and Sandman (2003) observed videos of 14 adults with long term SIB going through their daily routine. DeBoard et al. (2003) found evidence that there was a sequential pattern unique to the expression of SIB. They also found from these patterns that the largest predictor of whether someone was going to self-harm was a previous SIB event. The above research demonstrates how Sequence Analysis techniques can be usefully applied to intellectual disability research, and its flexibility as a method. This research has highlighted the need for more research focus to be placed on sequential data in intellectual disability as a means of understanding aggressive behaviour (Emerson et al., 1996; Whitaker et al., 2004).

Observational data is the main data source for Sequence Analysis. This can take the form of videos and written observations, but this technique can also be applied to observations not originally made for that purpose. Within National Health

Services, a great deal of behavioural data on individuals, such as everyday activities, medication, medical reports, visitors, incidents and outings is made. The content of these records are highly detailed and observations are timed and dated, which make it a suitable data source for Sequence Analysis. Using these existing records means less strain on staff members and a cheap, convenient data source. Records are made when an event, such as a violent incident occurs so are unlikely to have the problems of retrospective survey data. There are issues that this data might not be reliable or scientific due to the nature of recording, or that there might be a lack of detailed information. However, as Whitaker et al. (2004) argue, records about this kind of behaviour are likely to be accurate because of their importance to the staff producing them, and a possible lack of scientific reliability does not mean the data is not clinically relevant and suitable for use in research. Challenging behaviour, aggression and violence are important issues in National Health Services care for people with intellectual disability, and there are a number of electronic data recording packages designed to capture and analyse information about aggressive incidents which the author believes will provide the right level of detail required for this analysis.

Sequence Analysis would be a useful technique to apply to aggressive behaviour in people with intellectual disability for a number of reasons. Sequence Analysis can examine the impact of a variety of factors, including reinforcement of behaviours and environmental issues, and put them into a useful sequential framework allowing for intervention strategies and service improvement. It would also enable the investigation of 'typical' event patterns in the lives of people with intellectual disability, enriching understanding of what it is like to be a person with intellectual disabilities, which is especially useful when considering people with limited communication. Applying this technique to aggression in ID would enable the

investigation of environmental contributors in a non-invasive manner that capitalises on existing information sources.

1.9 Thesis Aims

Research into aggressive behaviour has highlighted a wide variety of factors which need to be considered when assessing the risk of aggressive behaviour, in both the general population and the intellectual disability population. Although research trends in aggression in intellectual disability have proved very useful for explaining aggressive behaviour in some individuals, these approaches have not incorporated findings from research into aggression from the general population, which may make a valuable contribution to the understanding of this behaviour.

This thesis aims to document the patterns of aggressive behaviour in people with intellectual disability using Behavioural Sequence Analysis in order to examine what factors may be involved in increasing the risk of aggression in this population.

Chapter 2 Data Collection

This chapter will explain the way the data was collected for the research, illustrating the type of data available and the procedures taken to obtain access to it.

2.1 Overview

Sequence Analysis is based on the observations of behaviour or interactions unfolding over time. In this research, the observations were taken from health records on people with intellectual disabilities living in National Health Service residential units. Access to any health record in the National Health Service is a lengthy procedure involving many ethical issues. Involving people with intellectual disability in the research compounded this. This is a vulnerable and complex group of people

whose needs and best interests were carefully considered in the course of gaining access to their information.

The type of information contained in the records, although following some standardised criteria, was varied in form and content across the units involved in the study as each followed idiosyncratic recording conventions (within record taking guidelines). The types of data collected will be discussed.

2.2 Health Records and the National Health Service

2.2.1 Health Records.

When anyone in Britain uses some part of the health service, a written record is kept about why that service was consulted and what treatment or care resulted from doing so. This record is called a Health Record and is defined by the Data Protection Act of 1998 as something which 'consists of any information related to the physical or mental health or condition of an individual' and 'has been made by or on behalf of a health professional in connection with the care of that individual' (Data Protection Act, 1998). Health records are a vital means of tracking the care of a patient, communicating information about the patient to different care providers, facilitating detection of problems such as early changes in condition and as a means of holding those who provide care to account. The person who administers care or treatment to a patient writes health records. As people see a wide variety of health care professionals throughout their lives, records can contain reports from therapists, doctors, nurses and dentists. Guidelines and best practice formats for record keeping varies across health care professionals and National Health Service trusts, and there are no national standardised formats for writing a health record. However, all records are kept for the purposes of safeguarding the patient, keeping an accurate record of care and to enable

care planning so across disciplines and trusts. There is an emphasis on accuracy, dates, accountability and readability (Nursing and Midwifery Council, 2009).

Health records contain a great deal of sensitive information about a patient. Who has access to these records is also governed by the Data Protection Act. Health care professionals involved in the care of the patient can access their records and the responsibility of keeping these records safe and confidential belongs to the health service. Currently the majority of records are kept on paper. Paper records are kept in the location they are written, for instance at the doctors surgery, and when these are out of date or a patient leaves the service, they are moved to a safe archive. This method is bulky, which can make records difficult to transport, share with other health care professionals/providers and cause problems accessing a particular record. Therefore, the practice of keeping paper records is being changed to electronic records, which are intended to make patient information easier to access and share (National Health Service, 2010).

2.2.2 Health Records and People with Intellectual Disability.

Record keeping guidelines apply to all healthcare users. People with intellectual disability who live in residential care are users of both external and internal services. For example, external services could be primary care, and internal services refer to the nurses and healthcare assistants who support them in their residential unit. The care and interventions or treatment received by people with intellectual disability in residential care is subject to the same guidelines as external care and so also need to be documented. This means people with intellectual disability who live in National Health Service Units have extensive records kept about their lives, which fall into three distinct categories.

2.2.2.1 Multi-disciplinary Team Notes (MDT).

MDT notes are an archive of important information about a person. Although each one is slightly different depending on the needs of the service user, they will generally contain life history information, results of assessments and medical investigations, correspondence relating to the person's healthcare and social care situation, old medical cards, and archived notes from their psychiatrist and psychologist. They may include information about risks in the form of risk analysis documents or formalised risk assessments. They might also contain the results of assessments such as HoNOS-LD (Holloway, 2002), which is an outcome measure of treatment specifically designed for use with people with intellectual disability (Roy, Matthews, Clifford, Fowler & Martin, 2002). These records are written by a variety of health care professionals and staff from social care agencies.

2.2.2.2 Care Plans.

A care plan is a 'written document that articulates a plan of care for a person with intellectual disabilities' (Matousove – Done & Gates, 2006). These plans are based on the abilities and needs of a person with intellectual disability and list what support they might need in a particular area. Care plans would also list the objectives and purpose of that particular plan, for example whether it is to reduce an undesirable behaviour or contribute to life skills. These plans are drawn up using the findings and guidance of a variety of health care professionals, labelled the Multidisciplinary Team. They are reviewed regularly at pre-set dates and are also evaluated for their effectiveness at regular intervals.

2.2.2.3 Environmental and Goal Orientated Care Plans.

Care plans are related to the specific needs of the individual when living in a particular environment, incorporating their present and future goals. An example of

this would be a locked door policy care plan. Many units keep their doors locked to protect vulnerable adults and to reduce the risk of absconding. However, this could be seen as a reduction in civil liberty for the people with intellectual disability. A locked door care plan would detail the problem, outline possible situations that might arise from this and describe how these should be handled. Plans generally include a space for staff to record if and when these situations had arisen, and how efforts to manage it worked. An example of a care plan that related to a life goal of the people with intellectual disability would be a meaningful activity plan. This would detail an activity plan for the people with intellectual disability, written with consideration for their likes and dislikes, possibly with contributions from the people with intellectual disability, ways to encourage them and an observation sheet to record any issues that arose. There might also be an agreement or 'contract' form that the people with intellectual disability could sign to say they were happy for this to be handled in this way. Care plans are person centred so the content varies from person to person. However, there might be a care plan that the staff members of a specific unit feel needs to be included in every resident's file, such as visitor monitoring. Figure 2.1. shows an example of an activity care plan:

Figure 2.1.

Example of an Activity Care Plan

1.1.1.Name Jane	1.1.2.D.O.B	1.1.3.Hospital Number

1.1.4.Date and Time Plan Commenced

1.1.5.Need

1.1.6.Jane is a person who should be offered meaningful activity while staying in the unit.

1.1.7.Objective

1.1.7.1.1. To offer Jane a number of activities.

1.1.7.1.2. To encourage Jane to take part in activities so as to have a productive day and an opportunity to socialise.

1.1.7.1.3. To increase Jane's activity interests so if she is unable to take part in her preferred activity she will have other possibilities available to her.

1.1.8.Action Steps

1.1.8.1.1. Jane should be offered activity appropriate to her needs whenever possible.

1.1.8.1.2. Jane should be offered alternative activity and appropriate support if the preferred activity is unavailable.

1.1.9. Data Collection

1.1.10. Monitoring Chart

1.1.11. Implementation Record

1.1.12. Running Record

1.1.13. Evaluation

1.1.14. Weekly

2.2.2.4 Violence and Aggression Care Plans.

Care plans also contain information on violent incidents, when they occur and how they are managed. Often violence, distress, self-harm and restlessness are conventionally recorded in the 'Distress and Agitation Care Plan'. These care plans

would detail the risks of certain behaviours in the people with intellectual disability, and what guidelines for proactive and reactive strategies staff can use to manage this. Some of the guidelines will refer to individual strategies based on observations of that person's behaviour, while others will reference national guidance on management of aggressive behaviour. Behaviours relevant to this care plan would be recorded when they occurred, possibly with how the behaviour was managed and staff explanations/suggestions for the occurrence. Other recording systems for violence kept in the person's file include the Behaviour Baseline Monitoring Form and Control and Restraint records. Both of these are termed as ABC records, looking at the antecedent, behaviour, and consequences of the violent incident. These ask the person who is writing the record to describe the person with intellectual disability's behaviour prior to the incident, what their violent or problematic behaviour was and how it was dealt with. When it has been the case that a physical intervention has been required (where a person has been physically restrained to stop or contain their behaviour), this would be detailed in the Control and Restraint record. The recording of measures that can prevent or stop violent or problematic behaviour is particularly important for devising management systems to deal with these behaviours. Physical restraint is seen as the last resort when managing violent behaviour, due to the potential dangers involved in performing this action (NICE, 2005). The NICE guidelines on dealing with violent behaviour also recommend that any incident involving restraint should be recorded immediately after occurrence using a service specific template, and that the incident should be reported to the National Health Service security management service. Figure 2.2. provides an example of a distress and agitation care plan.

Figure 2.2.

Example of a Distress and Agitation Care Plan

Name Jane	D.O.B	Hospital Number

Date and Time Plan Commenced

Need

Jane is a 34-year-old woman who experiences visual and auditory hallucinations. Jane can be physically aggressive when experiencing these hallucinations.

Objective

To be pro-active in reducing the amount of untoward incidents involving Jane.

To define a consistent approach to dealing with risky scenarios where physical restraint is a last resort.

To generate expertise and recommendations for future service provision.

Data Collection Methods

Behaviour Baseline Monitoring Record

Restraint Monitoring Record

Evaluation Forms

Definition of Behaviour

Jane experiences hallucinations which for most of the time she lives with peacefully, occasionally answering ‘voices’ or asking others if they can see what she can. Staff should be aware when Jane begins to pay more attention to the hallucinations than her surroundings.

Triggers

Changes in routine
Anniversaries
Lack of Activity

Con’t

Cues

Cues are early low risk behaviours that indicate general mood state. It is at

this point where intervention can be used to avert crisis. Jane's cues may include:

Becoming withdrawn
Lack of attention/concentration with activities
Being distracted while in conversation

Behaviours

Behaviours are the responses that put Jane or others at risk of harm.

Flailing of arms and legs
Spitting
Loud shouting and screaming
Barricading herself in her room
Slapping herself in the face and on head
Throwing furniture and property

Post Behaviour

After an incident Jane often seems to 'come to' and realise that she was responding to hallucinations. She is often highly upset at her own behaviour and the damage it may cause to others and property so will be crying and very apologetic.

Action Steps For Proactive Strategies

Unit Environment should strive to reduce risk of stressors.
Low Arousal Approach
Distraction
If possible try to meet Jane's requests

Action Steps for Reactive Strategies

Guide Jane to a less stimulating environment
Remove potential hazards
Physical Strategies
Medical Interventions

A distress and agitation care plan would also have an observation sheet where any occurrences of the detailed behaviour would be recorded. Figure 2.3. provides an example of a written observation of distress and agitation.

Figure 2.3.

Example of a Written Observation of Distress and Agitation

"25/05/2007. 10.30 am. In the living room Jane started talking to no-one and then began to shout. She slapped herself in the face several times. Staff KT asked her to come and join her in playing a game but Jane did not attend and continued to slap herself. Staff KT then asked her if she would like to go to her bedroom where it was quieter. Jane started to follow Staff KT to her bedroom continuing to slap herself in the face. In her bedroom she started to cry and continued to slap, but with a lower frequency. Staff KT offered her PRN diazepam that Jane took. Jane then lay on her bed while KT chatted with her. After 5 minutes Jane calmed and came back to the living room to watch TV.

2.2.2.5 Running Records/General Communications.

Running records are a record of the general day-to-day life of people with intellectual disability. These records are written three times a day, at times when the staff members on shift are replaced by new staff. Although the exact times of writing vary from unit to unit, they are generally written after lunch (as a commentary on the mornings activities) in the evening (discussing the afternoon and post-dinner period), and in the very early morning (observations of how the person was through the night). The information contained in these records usually details the general mood of the person, whether they engaged in or refused activities, how they ate, slept and what their activity was during the shift. These records are written by nurses and health care assistants who are on shift, but can be added to by members of the MDT. Figure 2.3. shows an example of a running record.

Figure 2.4.

Example of Running Record

"25/05/2007. 13:05. Jane was up at 9am and seemed in a settled mood. She had breakfast and then a bath with assistance. During the morning Jane started to become agitated, talking loudly to the air, saying things like 'Go away, I don't need you today' and 'I have lost my pen, I know you took it'. Her voice started to get louder and then Jane began to slap herself in the face while standing in the middle of the living room. She was encouraged to go to her bedroom that she did but continued to slap herself in the face. She was offered P.R.N* Diazepam with good effect. Jane is currently eating her lunch in the dining room and appears settled."

*P.R.N refers to medication which is taken as needed.

These three types of records contain a great deal of information about the people with intellectual disability who live in residential care. These records create a narrative about the person's history, conditions, relationships and behaviours as well as providing information about their everyday lifestyle and activity. The format of the records is standardised within units and to a lesser extent across units, so not only do these records supply huge amounts of information about a person using the service, the similarities in the kind of information kept also make it suitable for comparison across individuals and services.

2.3 Data Collection

2.3.1 Recruitment of Units.

Three residential units for people with intellectual disability were involved in the research. The managers of each unit were initially approached and agreed to take

part pending ethical approval. These units were run by Nottingham NHS Trust, and had initially been approached to take part in the study as they had the highest level of incidents in the trust which provided the rich data source needed for Sequence Analysis. Another unit was excluded due to it being investigated following a serious incident and so could not provide a suitable location for research. All other residential units for people with intellectual disability within the trust were in the process of closure as part of a campus reprovision project, which caused major disruption in the provision of services within these units. As these units were not able to provide a stable or usual service, the units were not included in the research as incidents may have been due to these disruptions.

2.3.1.1 Unit A.

Unit A was a short-term assessment and treatment unit adapted in 2006 from a long-stay unit for 25 residents with intellectual disability built in 1985. It had 12 beds, two of which were only used when patients became acutely disturbed. Patients were admitted by psychiatrists, approximately half under sections of the Mental Health Act. The ratio of men : women is generally 6:4. Reasons for admission varied widely, with the only common factor being a marked change in behaviour or well-being that required investigation. Some were aggressive or violent to others and had diagnoses of autism, personality disorder or mood disorder. Others were confused and sometimes psychotic, self-neglectful in terms of hygiene or nutrition, or actively self-harming. Most had mild intellectual disability, but those presenting the highest rates of violence and aggression were most likely to be diagnosed with severe intellectual disability and autism. Abuse, neglect and loss featured in many personal histories. Unit A drew flexibly on a range of models and types of intervention according to individual need, but a neuro-developmental perspective delivered by a psychologically-minded environment framed Unit A's practice. A few patients had

been admitted more than once. Patients usually stayed for 3-6 months but occasionally over a year: longer stays were associated with placement breakdown when social workers encountered lengthy delays as they attempted to identify and fund a suitable alternative home. Unit A followed a shift pattern where morning staff started work at 7am and finished at 3pm. Staff handover took place at 2pm. The afternoon shift ran from 2pm until 9pm. The unit was staffed with 'waking night' staff that started their shift at 8pm and finished at 7am. Waking night staff members remain awake throughout the night to assist and observe service users. Staff members were registered intellectual disability nurses and health care assistants. Staff could also work all day shifts covering the morning and afternoon. The residents of Unit A received visits from health care professionals such as psychologists, psychiatrists, speech and language therapists and physical therapists. 11 of the residents of unit were included in the study.

2.3.1.2 Unit B.

Unit B was an eight-bedded unit for people with relatively severe intellectual disability and challenging behaviour, created within a large Victorian house. It had been a permanent home for these residents since the early 1990s when the nearby Victorian asylum closed. Unit B was part of a campus re-provision project which required all long-stay NHS residents to move into non-NHS accommodation. It closed during this project. Assent for study participation was obtained from next of kin on behalf of two men still living there at the time of the study: they were middle aged and had moderate intellectual disabilities. Unit B followed a shift pattern where morning staff started at 8am and finished at 2.30 pm. Handover took place at 2pm. The afternoon shift started at 2pm and finished at 9pm. The unit was staffed with 'sleep in' staff that started their shift at 9pm and finished at 8am. Sleep in staff sleep

over night in units to provide assistance if needed. Staff members were health care assistants. Staff could also work all day shifts covering the morning and afternoon.

2.3.1.3 Unit C.

Unit C was a locked, eight-bedded unit for men with mild to moderate intellectual disability, most in their 30s. The majority of the men living in the unit had been involved with the police due to unlawful activity. Residents were referred there by other NHS intellectual disability professionals and stayed approximately 2-3 years, or until they had developed their living skills and were considered able to live in the community. Unit C provided therapy groups that followed the Good Lives model (Ward & Gannon, 2006). Only four of these residents were considered to have the capacity to consent to this research by the responsible psychiatrist, who refused to forward details of the research to next of kin for the others and so prevented the study seeking assent to their participation. All four who were approached agreed to participate, three of whom were detained under a section of the Mental Health Act. Unit C followed a shift pattern where morning staff started at 7.30 am and finished at 2.30pm. Handover was at 2pm. The afternoon shift ran from 2pm until 9pm. The unit had waking night staff that started at 9pm and finished at 8am. Staff members were registered intellectual disability nurses and health care assistants. Staff could also work all day shifts covering the morning and afternoon. Unit C also had a number of in-house professionals such as a speech and language therapist and psychologist.

2.3.2 Data Collection: Recruitment of Participants.

Prior to any of the residents of these units being approached to take part in the research, an application to NHS Research Ethics was made and approved.

Individuals who had been violent or aggressive were identified by the staff team in each unit. In Units A and B, these people were given an informal assessment

of whether they could understand research by their consultant psychiatrist. Those who could understand the research process were approached by their named nurse (nurse responsible for person's welfare). This nurse went through some specially prepared written information about the research with the person with intellectual disability (see appendix). The person with intellectual disability was given a week to think about the research and whether they would like to take part. If they said yes they signed a consent form to opt into the study; if they said no their records were not examined. If after the informal assessment the person was thought not to understand the research, their next of kin was contacted with information about the research and asked if they wanted to assent on their relative's behalf (see appendix). In total, 13 people from Unit A and two people from Unit B had their health records examined.

In Unit C, it was felt by the managers, therapists and psychiatrist that it would not be appropriate to involve those who could not understand research. This left four people who were classed as being able to understand research. These people went through the same consent procedure as Units A and B. They all consented, which resulted in 18 participants across three units who allowed the researcher to examine their records.

2.4 Participant Characteristics

As mentioned there were 18 people with intellectual disability who consented to have their records examined by the researcher. Each participant was provided with an alias to prevent them being identified. Table 2.1 provides more details about the participant group.

Table 2.1

Characteristics of the Participant Population

Participant ID	Gender	Age (at start of study)	Unit	Sectioned - Yes/No	Level of Impairment
Alan	Male	30	A	No	Mild Intellectual Disability
Beverley	Female	28	A	Yes	Moderate Intellectual Disability
Claire	Female	19	A	Yes	Mild Intellectual Disability
Deborah	Female	19	A	No	Mild Intellectual Disability
Edward	Male	32	B	No	Moderate Intellectual Disability
Frank	Male	30	A	Yes	Mild Intellectual Disability
Gina	Female	33	A	Yes	Unspecified with Challenging Behaviour
Helen	Female	47	A	Yes	Moderate Intellectual Disability
Ivan	Male	45	A	No	Mild Intellectual Disability
Jeremy	Male	36	A	No	Mild Intellectual Disability
Kirk	Male	42	B	Yes	Moderate Intellectual Disability
Louis	Male	20	A	No	Mild Intellectual Disability
Melanie	Female	28	A	Yes	Mild Intellectual Disability
Neal	Male	31	A	Yes	Moderate Intellectual Disability
Patrick	Male	36	C	Yes	Mild Intellectual Disability

Quentin	Male	43	C	Yes	Mild Intellectual Disability
Rob	Male	35	C	Yes	Mild/Moderate Intellectual Disability
Steve	Male	28	C	Yes	Mild Intellectual Disability

2.4 Summary

To obtain access to each participant's health records, a lengthy procedure had to be followed. This is understandable when the sensitivity of the information held in the record is taken into account. This did, however, influence the course of the research by limiting the number of units and therefore the participant information being involved in the research.

What is to follow is a description of how the health records themselves were treated in a way that made them suitable for Sequence Analysis to take place, through the construction of a database of violence.

Chapter 3 Database

3.1 Overview

Sequence Analysis usually begins by ‘chopping’ (unitising) observational data into chunks. These chunks are then coded. However, in this research there was an additional stage that happened prior to coding. This was a construction of a database wherein each entry represented a violent incident, constructed from the various existing accounts of each incident.

3.2 Database Attributes

3.2.1 Purpose.

In the health records of people with intellectual disability, there is a large variety of information covering a number of areas such as behaviour, healthcare, history and lifestyle. The focus of this research project is the aggressive incidents that occur in residential homes for people with intellectual disability. Although there are special recording conventions for these incidents, such as Behaviour Baseline Monitoring Records and the Distress and Agitation Care Plans, these focus on a fairly short period of time, usually the brief moments prior to the incident and the incident itself. This leads to very brief observations about the incident being recorded. This briefness and the tendency to discuss only the event itself (rather than the events surrounding the incident) mean that many of the health records, if viewed alone, could give a misleading picture about aggression, as well as being too brief for Sequence Analysis purposes. On the other hand, when these records are viewed collectively they contain a huge amount of information that may or may not be relevant to the research. There are therefore two problems when examining these records on aggressive incidents: one is having aggressive incident reports that are too brief for Sequence Analysis, and the other is having many records on everything else which are very

detailed. The challenge when looking at data of this kind is to find a way to draw a line which will provide the researcher enough information for useful research without being overwhelmed.

One way to approach this problem is by constructing a database. A database is a structured collection of records that is stored on a computer and can be displayed and searched in a variety of formats. Once constructed and the information is entered, databases are very useful and quick ways of collating and searching information. By creating a database for aggressive incidents, all the information pertaining to a single case can be brought together into one entry which provides enough detailed information for Sequence Analysis. The database is also a useful research entity in its own right as it allows for detailed searching of incidents.

3.2.2 Unit of Analysis.

Sequence analysis examines many examples of an interaction or behavioural episode to discover if there are pairs of events that are occurring more commonly than chance. Therefore, the behavioural episode itself becomes the unit of analysis, rather than the person/people doing the behaviour. Consequently, in this research the aggressive incident became the unit of analysis, rather than the people who were being violent. This is in contrast to traditional research trends in intellectual disability and aggression, which examine the individual characteristic of the person doing the aggressive act, such as their mental health diagnosis or the reinforcements of this behaviour.

Sequence Analysis is a data hungry method, and becomes more so when there are more categories of events included in the sequences, which means many observational examples of behaviour are needed to perform it (Clarke, 1982). As this research is on aggressive incidents, it meant that many examples of aggression were

required for the method. Furthermore as the research was focused upon aggressive behaviour in people with intellectual disability, it was important that examples of aggression were from a variety of participants rather than one or a couple of people. If the number of examples were from a very limited pool of participants, the technique would have still worked but the research would have been different in focus. However, as the aggression itself is the unit of analysis, the participant number does not have to be as high as it would have been in quantitative research.

3.3 Data Base: Pilot

3.3.1 Pilot Study.

A database contains a number of fields. A field is a place which holds a specific piece of information, for instance the day of the week the violent incident fell on. The field headings which are entered into a database define the type of information held there, so it is important that the fields are pertinent to the research aim before information is entered. Before the fields could be finalised, a comparison of what was actually contained in the records against the aims of the research needed to take place. In this early stage, an efficient way of accessing the information relevant to the violent incident was also required. As previously discussed, the records do hold a lot of information, some of which will be relevant to aggression and some which will not. In order to use time efficiently and get the most from the records, an effective way of accessing aggressive incidents in the records needed to be written.

3.3.1.1 Data Base: Pilot Study Aims.

The main aims of the pilot study were to:

Examine the details of the information contained in the records.

Develop an effective strategy for accessing violent incidents.

Determine what fields, based on the available information and project aims should be in the database

3.3.1.2 Health Record Content.

When the research was in the conceptual stage of development, there was an awareness of the general types of information contained in the health records to the extent that the records were judged a suitable data source for Sequence Analysis. However, due to confidentiality and ethical constraints, specific records could not be examined until participants or their representatives had agreed to have their records studied. When a record set was released, a selection of running records, care plans and MDT notes that covered the last three months of the participants residence were copied. The first wave of recruitment resulted in five participants agreeing to have their health records examined. These five sets of records formed the basis of the pilot study. By reading these records several times, the researcher became familiar with the kinds of information kept about these people, the format of the information and which kinds of records might be most useful for this research.

3.3.1.3 Effective Strategies for Accessing Aggressive Incidents.

The next stage of developing the database was to find what kinds of information about violence were written, and where in the records was this located. This knowledge would help to use research time effectively and inform which fields should be in the database.

Timelines were constructed for each of the five individuals for the three month period which their records covered. The timelines displayed the available information about activities and events in the people with intellectual disability from the different record types alongside each other. Where each piece of information had come from was also shown. An example of the timeline can be seen in Figure 3.1.

Figure 3.1.

Example of a Time Line for Jane.

Date and Time	Source	Event
25/5/2007 06:00	Running Records	10 pm Jane was loud and vocal and threw a picture from the wall in the games room down the corridor. PRN given and Jane slept for four and half hours.
	P.R.N Record	Night Sedative given at 11:15.
	Distress and Agitation Care Plan	From 21:00 Jane started to talk and shout at the air. She was gesticulating and began to flail her arms. Staff tried to distract Jane through 1:1 but this did not work and Jane was encouraged to go to her bedroom. Jane refused to go and moved to the games room. She continued to shout and other service users were cleared from the room. She began to pace the games room and started to pick up objects. She began to take pictures off the walls. Staff intervened verbally but at this point Jane picked took a picture off the wall and threw it down the corridor while shouting loudly. Jane was encouraged again to go to her bedroom. At 10:15 she went to her bedroom still talking but lower in volume. She was pacing round her room for half an hour and was offered her night P.R.N. She accepted this and allowed staff to assist her get into her night things. She calmed and was asleep by 12:00. Jane is on general observation.
	Observation Levels	
13:05	Running Records	Jane was awake at 4:30 but remained in bed until 9am. She bathed with assistance and after breakfast she went out with staff for a drive to

		the shops. She bought a chocolate bar that she ate on return. Jane appears settled and in good spirits. She is currently eating her lunch.
19:30	Running Records Visitor Record Distress and Agitation	Jane has had a mostly settled afternoon. She was visited by her mum who she talked with in the visitor's room. After her mum left she became tearful, staff talked to Jane about why she was upset. Jane said she wanted to go with her mum and did not like living at the unit. Reasons for Jane's stay in the unit were discussed with her and she seemed to accept this. Later Jane became very vocal shouting and screaming at nothing in particular. She was spoken 1:1 to by staff and remains agitated but calmer. Jane refused her dinner saying she had eaten some snacks with her mum and did not feel hungry. Mum visited Jane from 14:15 until 15:30. Jane became agitated at 17:00 shouting and screaming loudly in the corridor. Staff gave verbal intervention that seemed to calm Jane a little but at time of writing is still agitated.
23:30	Distress and Agitation	Jane was agitated (see previous entry) and was pacing her room occasionally shouting. She moved into the corridor and began to scream while pacing up and down the corridor while circling her hands in the air. When a staff member approached Jane, she hit him in the face with her hand due to her circling her arms. Staff tried to verbally intervene with Jane's behaviour as her screaming was disturbing other residents but she refused to lower her voice or go to her room. At this point she was physically escorted to her bedroom where she calmed.

When viewing these time lines, the types of information about participants that was available became apparent. Care Plans and Running Records provided information about the 'concrete' events that occurred in the people with intellectual disabilities lives such as activity, visits, outings, Doctors appointments and reviews. Although this information was often replicated in the MDT notes, these notes were seen as a secondary or supplementary form of information so it was decided it was not necessary to examine those records when creating database entries. When looking at information on aggressive incidents, the majority of information about aggressive behaviour was recorded, albeit in a brief form in the Distress and Agitation Care Plan. A discussion of the aggressive incident would often be in the Running Records, but as a supplement rather than primary information. There were also occasions when aggression would be mentioned only in the Distress and Agitation Care Plan. Due to this, it was decided that the Distress and Agitation Care Plan entry would provide the starting point when investigating an aggressive incident. However, as these entries are often brief, the date and time information from the Distress and Agitation Care Plan would then be used to build up an account of an aggressive incident. This information was used to write a strategy for entering aggressive incidents into the database which can be seen in Figure 3.2.

Figure 3.2.

Strategy for Assessing Violent Incidents.

- Go to the Care Plan Entry for 'Distress and Agitation'.
- Create a new database entry and add up what is described there to the Incident Database. Include any information written in Baseline Behaviour Monitoring Records and Restraint Monitoring Records if applicable.

- For each of the other care plans, look for details on the date the incident occurred from the time of the incident up to the 24hour period prior to that incident.
- Go to the running records and find the entry that corresponds to the date and time of the incident. Add any additional information that appears.
- Note any inconsistencies in the narratives between records in red in the database.
- If there has been a record of this incident sent to the Sentinel System, get a copy of that record and add to the database entry.

3.3.2 What fields should be in the database?

The fields that comprise a database determine what information will be available for analysis later. The aim was to create as comprehensive as possible account of the events that were involved with the aggressive incidents observed in the records within the constraints of the records content and the aims of the research itself. A comprehensive database would then allow for events which are significantly involved in violence to be found using Sequence Analysis. Any events which are irrelevant but included in the database would not emerge during Sequence Analysis so would not distort the results.

The literature review identified a number of variables and factors that are important when considering aggressive behaviour. These included personal factors such as gender, age, level of intellectual disability, mental health diagnosis and the presence of autistic spectrum disorders. Environmental factors such as setting events, reinforcing stimuli, provocation, frustration, hours of sleep, crowding, pain, number of

qualified staff, location qualities, mood, time and day of the week and activity. Other risk factors were identified from research into forensic inpatient populations who aggress, and suggested dynamic factors such as a change in state, for example becoming confused or agitated.

Personal factors that were available in the records were age, gender, level of intellectual disability and presence of autistic spectrum disorders. These were identified and recorded in the participant database (see section 3.4.1).

The patient records allowed access to a number of the environmental and dynamic risk factors identified in the literature review as important. These were time of day, location, hours of sleep, levels of observation (related to crowding), mood, pain, activities and change of state. Fields were created in the database in order to capture these. Activities, which may cause environmental disturbance such as visits and outings were also recorded. The records also contained descriptions of the aggressive incidents, which held information that was potentially informative about provoking and frustrating events like cancellations and denial of requests, and other variables such as changes in state, so a field was created to hold a narrative of the incident.

There were a number of fields identified in the literature review as important for considering when examining aggressive behaviour that were not accessible through patient records. Information about staff qualifications and who was on shift at the time of aggression was not noted in the patient records and this information was not available to the researcher through other means. Information about the number of other service users and staff members present was also not available. This is due to the way patient records are constructed around an individual. Limited information is recorded about other service users in client records due to confidentiality issues.

Therefore information about potential crowding factors was not available to the researcher.

Record keeping is done for a number of clinical, ethical and legal purposes. Research into clinical record keeping has suggested that this is influenced by the demands of the organisation and may inhibit the recording of the anything which goes against the organisation's purposes (Karkkainen, Bondas & Eriksson, 2005). There is often an assumption that what has not been recorded has not happened, but there are a number of studies which suggest clinical records are often missing essential parts of information about client care and nursing activities (Adamsen & Tewes, 2000). De Marinis et al. (2010) found that only 40% of nursing activities were recorded in clinical records. Clinical records, due to the nature of the information required by organisations, can often exclude the caring part of nurse/service user interactions and record only concrete nursing care such as when someone was bathed or ate a meal (Kirrane, 2001).

There are also issues with the record keeping which means that although theoretically information should be present in the records, human error and memory means some information will not have been included. Record keeping is usually performed at the end of a shift when nurses and health care assistants may be tired. There has also been research which suggests some nurses hold negative attitudes towards clinical records, as they do not reflect the work they do or assist it (Lee, Yen & Ho, 2002). These negative attitudes and levels of tiredness may affect the accuracy or length of records. Nurses and health care assistants can only record what they see, and are also not permitted under record keeping guideline to record any subjective judgements about why an incident has occurred. Potentially, aggressive incidents may

have gone unnoticed and unrecorded, as well as important information regarding the causes of incidents.

It is important to note here that while this thesis is investigating the sequence of aggressive incidents in people with intellectual disability, these sequences have been gleaned from observations made by care staff. There are benefits and limitations to using this type of information which will be discussed in more detail in the conclusions chapter of this thesis.

The layout and fields in the database can be seen in figure 3.3.

Figure 3.3

Fields Included in the Violent Incident Database.

Identifier	Jane
Date of Incident	25/05/2007
Time of Incident	23:30
Day of Week	Monday
Year of Birth	25/12/74
Location	Corridor, Bedroom
Mood Prior to Incident	AM Settled PM Agitated, Upset
Preceding Event Visitor	Yes, mother
Preceding Event Outing	Yes, Drive to Shops
Preceding Event Cancellation	No
Preceding Event Refused Medication	No
Preceding Event Taken P.R.N	Yes, Night P.R.N previous evening
Preceding Event Had Request Denied	No
Preceding Event Refused Something	No
Incident Type	Physical Aggression towards Staff

What HappenedJane was agitated and was pacing her room shouting. She moved into the corridor and began to scream while pacing up and down the corridor circling her hands in the air. A staff member approached Jane, who she hit in the face while circling her arms. Staff tried to verbally intervene with Jane's but she refused to lower her voice or go to her room. At this point she was physically escorted to her bedroom.

Duration	15 minutes
Outcome	Verbal Intervention, Physical Escorting,
Consequences	Calmed
Gender	Female
Current Observation Level	General Observation

Con't

Contributors to Report	KT
Source Reports	Distress and Agitation Record, Running Records
Misc.	After her mother visited Jane became upset and agitated. She was calmed somewhat by staff but had spent the afternoon agitated.

Phone calls

My View Point Jane seemed to start having hallucinations after she saw her mother – could this be a demonstration of her distress about her living situation? Did the explanation given for staying in the unit satisfy her or was it unrelated.

Incident Information Type A

3.4 Participant Data Base

3.4.1 Purpose.

As discussed in 3.2.2 the unit of analysis for this study is the aggression incident itself, rather than the participants who contributed the examples of aggression from their health records. However, personal factors are also important when considering aggressive incidents so all database entries were labelled with an identifier as to which participant they came from. A second database was created holding details about the participants. This was to allow the investigation of personal factors, or in case the majority of incidents came from a small proportion of the participants in which case a case study approach where individual factors can be taken into account might be appropriate or informative.

This database contained information about the conditions, life history and risk status of the participants, alongside conditions that lead to their admittance to the unit and any problematic behaviour. A full list of the database fields can be seen in Figure 3.4.

Figure 3.4.

Fields Included in the Participant Data Base.

Identifier	Jane
Year of Birth	25/12/74
Date of Entry into Unit	03/09/2006
Date Left Unit	N/A
Gender	Female
Type of Intellectual Disability	Mild
Mental Health Problems	Hallucinations – Auditory and Visual
Genetic Disorders	
Illness	Diabetic
Unit	A
Known Triggers	Changes in routine
Anniversaries	
Lack of Activity	
Problem-Behaviour	Shouting and screaming very loudly. Self harm by slapping herself in the face. Property destruction. Physical harm to staff and service users.
Reason For Admission	Reached a crisis point where her hallucinations were so severe that she was refusing to self-care and was attacking carers.
IQ	60
Score on HONOS	
Thoughts	
Ethnicity	White
Identifier	Jane
Psychiatrist	Dr KT
Previous Living Situation	Living with elderly mother.
Areas of Note	

3.4.2 Participant Demographics from the Database

There were 18 participants in total. Their demographic details can be seen in Table 3.2. The participant group consisted of 12 men and 6 women. The majority of the sample had been classed as having a mild or moderate intellectual disability. Mild intellectual disability refers to an IQ assessment of 55-70 and associated adaptive behaviour problems. Moderate intellectual disability refers to an IQ assessment of 40-55 and associated adaptive behaviour problems (British Psychological Society, 2000). 6 of the participants were also classed as having an autistic spectrum disorder. The participants experienced a range of physical health problems and illnesses with 7 of the participants having hearing problems, epilepsy or illness.

Mental health problems were prevalent in the sample, with 12 out of the 18 participants being diagnosed with a psychiatric problem. 4 of the participants had a personality disorder. 3 of the participants had bipolar disorder and 5 of the participants had experienced or were experiencing psychotic symptoms.

Each of the participants had been described as having problem behaviours and specific personal triggers to these behaviours by the multi-disciplinary team. The problem behaviours will be discussed below, but there was a range of triggers described. The most common of these were changes to routine and environmental disturbance that could include changes to staff and noise. Pressures of group living and interactions were also noted as possible triggers of problematic behaviour. All but one of the participants had been noted as having problematic behaviours. The most common of these were classed as property destruction and verbal aggression or threatening behaviour. Participants were also noted to be at risk displaying self-harm, physical aggression and producing loud or disturbing behaviours. Further information about the participant database can be seen in Table 3.2.

Table 3.2

Participant Data Base – Fields and Characteristics

Participant Name	Number of Incidents	Gender	Intellectual Disability	Known Triggers	Problem Behaviours
Alan	6	M	Mild	Personal Space Issues	Verbal Aggression, Throwing objects
Beverly	95	F	Moderate with autistic spectrum disorder	Changes to environment, Staff intervention and instruction, personal hygiene issues, distressed state	Verbal Aggression, Physical Aggression, Screaming/Loud Noises, Obsession,

Con't

Claire	2	F	Mild, Atypical Autism	Rejection, Money issues, Obsessions with men, pregnancy, relationship, marriage	Physical Aggression – especially to men who have rejected her, Inappropriate sexual behaviour,
Deborah	10	F	Mild	Anniversaries, Family Contact, Christmas, Birthdays, Boyfriends,	Self-Harm, Verbal Aggression, Property Destruction, Loud Noises
Edward	75	M	Moderate	Changes in Routine, Unfamiliar carers, Personal space issues, Loudness, Obsessions with female staff,	Verbal Aggression, Physical Aggression, Throwing Objects, Screaming/Loudness, Inappropriate Sexual

Con't

				Pressures	Behaviour
Frank	21	M	Mild	Situations which cause arousal, Elation	Physical Aggression, Property Destruction, Verbal Aggression,
Gina	70	F	Unspecified with Challenging Behaviour	Changes of routine, Changes of staff team, needs not met, vulnerable peers, jealousy	Self-Harm, Property Destruction, Stripping in public, Stealing food from others, targeting vulnerable peers
Helen	0	F	Moderate		Self-Harm
Ivan	10	M	Mild	Relationship issues, Panic Attacks,	

Con't

				Anxiety	
Jeremy	22	M	Mild with Autistic Spectrum Disorder	Changes to environment, Obsessions, Noise, Living in group homes, anxiety	Suicidal Ideation, Throwing Objects, Property Destruction, Self-Harm through neglect
Kirk	17	M	Moderate with Autism	Pain, Noisy Environment, Mood Change	Verbal Aggression, Gesturing, Stereotyped Behaviour
Louis	1	M	Mild with Autism	Disturbed Sleep, Mood Change, Challenged, Rejection, Anger,	Self-Harm, Threatening, Gesturing, Suicidal Ideation

Con't

				Frustration, Confrontation	
Melanie	7	F	Mild		Poor Self-Care Skills, Self-Harm,
Neal	12	M	Moderate/Severe with Autism	Social Contact, Pain, Loud Noise, Poor Communication	Property Destruction, Self-Harm,
Patrick	11	M	Mild/Moderate	Breaking of relationship, anxiety, stress, frustration, misunderstanding	Verbal Aggression, Physical Aggression, Self-Harm, Property Destruction
Quentin	20	M	Mild	Sexual Behaviour,	Verbal Aggression, Physical

Con't

				Need not met, Complications with diabetes, Lack of motivation, Confrontation, Noise, Room Search, Boredom	Aggression, Threatening Behaviours, Inappropriate Sexual Behaviour
Rob	8	M	Mild/Moderate	Stress, Boredom, Bullying, Misunderstanding, Alcohol Dependency	Threatening, Self-Harm, Physical Aggression, Property Destruction
Steve	11	M	Mild	Boredom, Asked to do things, Peer	Threatening, Property Destruction, Physical

Con't

		Pressure	Aggression, Theft, Inappropriate Sexual Behaviour

3.5 Summary

The observational data that was detailed in the health records of people with intellectual disability provided a large amount of information, some about violence and some about the wider lifestyles of people with intellectual disability living in residential units. There was a variety of observational data about violence in the data, which was collated using a database entry system. The advantages of this are:

- Large amounts of information could be held together, increasing suitability for sequence analysis.
- Observations that were traditionally too short for sequence analysis or too lacking in details could be added to make a complete account.
- Theories about violence in both the general and intellectual disability population could be used to inform field creation.
- Time effective method of looking at and searching through a large amount of observations.

The next step from this is to investigate the content of this database. This would enable a picture of violence in National Health Service facilities to be constructed.

Chapter 4 What Does an Aggressive Incident Look Like?

4.1 Overview

The health records of people with intellectual disability living in NHS units formed the observational data used in this research. Before Sequence Analysis methodology was applied to the data, the health records were collated into a database of aggressive incidents, producing a more thorough account of the incident then if just based on one part of the available information.

An important part of understanding violence it to know what that violent act itself looks like, when it occurs, where it occurs etc. The database, as well as providing a means of preparing the observations for Sequence Analysis, also provided a representation of what violence looks like in National Health Service residential facilities for people with intellectual disability in the Nottinghamshire area.

Once an incident has occurred, the only physical part of it which remains for examination is the record created about it. Another important part of understanding what a violent incident might look like is the consideration of how that incident was recorded, such as what was included and what was missing. Looking at the database in detail also sheds light on the kinds of information recorded and raises possible questions about those recording methods and the clinical utility of them.

This chapter will present the findings from that database. The first part will concentrate on the incidents themselves, such as the type of violence and when it occurred. The second part of this chapter will look at the way the incident was recorded.

4.2 Violent Incident Database

4.2.1. Type A and Type B Incidents.

The violent incident database fields are discussed at length in section 3.3.4. When a new violent incident was added to the database it was designated as Type A or Type B. Type A entries were those which had a large amount of narrative detail or were comprised from several observations. These incidents had enough detail to perform Sequence Analysis. Type B entries had fewer details so could not be deemed suitable for Sequence Analysis, but provided many details about violent incidents and rich contextual information so were included in the database. The violent incident database contained 403 incidents in total; 150 of these were Type A and 253 were Type B.

4.2.2 Comparison of Type A and B Records.

Initially records were split into Type A and Type B based on the level of content the records contained, with the idea that Type B's could be used to check the patterns found in the Type A incidents. In order to be able to do this, it was important to check whether the Type A records were representative of the Type B records. This was assessed by looking at the percentage of the records that were written about each type of violence (see Table 4.1).

There were several differences in the types of violence reported in the Type A and Type B records. The most reported types of violence were physical and verbal aggression to staff (See section 4.3.1). This is reflected in the Type A and Type B records, as both types have physical and verbal aggression to staff as the most commonly reported types of incident. However, when looking at the other types of violence in these two record types, Type A incidents are more commonly those that have involved staff as a target in some way or have involved verbal aggression. Those

incidents that are related to violence from one peer to another tend to be in the Type B category. This is especially noticeable in those incidents involving self-harm. None of these incidents were in the Type A category, which in real terms means that there was very little detail written about the incident; possibly only mentioned in one record source with sparse information about antecedents and consequences. It is important to note here that many of the many of the comparisons being made are regarding very low percentages, equalling the difference between no mentions of self-harm in the Type A incidents compared to nine incidents of self-harm in the Type Bs. However, even with these very low numbers, the consistency of the differences across the categories of violence is striking.

Type A incidents were those that, in the health records, contained more information to put into the database. This meant that Type A records would be more suitable for coding. The Type A records drew from more detailed incident reports, and were mentioned in more sources of information like a variety of reports rather than, as in the case of Type B records, one care plan entry. From a comparison of the percentages of types of violence in the two record types, it would appear that the Type A and Type B records are not directly comparable, though there seems to be distinct patterns in which types of violence have more detail recorded about them. This non-representativeness will be discussed later in this chapter. However, while the Type A records might not be directly representative of the Type B records, when viewed as a whole, the database still provides interesting information about the patterns of violence in care for people with intellectual disability, and these will be explored below.

Table 4.1.

Percentage of Type A and Type B records by Type of Violence.

Type of Violence	Type A
Verbal Aggression to Staff	17.3%
Physical Aggression to Staff	16.6%
Verbal Aggression to Staff, Property Destruction	16.6%
Verbal and Physical Aggression to Staff	16.6%
Property Destruction	6.6%
Verbal and Physical Aggression to Staff, Property Destruction	6.6%
Verbal Aggression to Staff and Peers	6%
Verbal Aggression to Peer	4%
Verbal Aggression to Staff and Peers, Property Destruction	3.3%
Physical Aggression to Staff, Property Destruction	2%
Verbal Aggression to Peer, Physical Aggression to Staff	2%
Verbal and Physical Aggression to Peers, Verbal Aggression to Staff	2%
Physical Aggression to Peer	0.6%
Physical Aggression to Staff and Peers	0.6%
Verbal Aggression to Peers, Property Destruction	0.6%
Verbal and Physical Aggression to Staff, Verbal Aggression to Peers	0.6%
Verbal Aggression to Staff, Physical Aggression to Peers, Property Destruction	0.6%
Physical Aggression to Peers, Property Destruction	0.6%
Physical Aggression to Staff and Peers, Property Destruction	0%
Verbal and Physical Aggression to Staff, Verbal and Physical Aggression to Peers	0%
Con't	0%

Self-Harm	
Property Destruction and Self-Harm	0%
Verbal Aggression, Property Destruction and Self-Harm	0%
Verbal Aggression to Staff, Physical Aggression to Peer	0%
Verbal Aggression to Staff ,Self-Harm	0%
Verbal Aggression to Staff and Peers, Physical Aggression to Staff	0%

Type A incidents were those which contained a lot of recorded information, while Type B incidents were limited in the amount of information contained about an incident. In both classifications of incidents, the highest proportion of incidents recorded were those which involved staff members. Tenneij and Koot (2008) suggested that staff members are more often the target of aggressive behaviour than peers, although this pattern has been suggested to be due to other types of aggression occurring out of sight of staff members (Harris, Humphreys & Thomson, 2004). The above patterns are similar to those found in other studies which have examined the targets of aggressive behaviours.

4.2.3. Number of Incidents per Unit.

There were three units that contributed records for the research from a variety of participants. Each unit contributed a different amount of violent incident data to the study. This was due to the number of participants from each unit and the time span of data collection differing. The time span of data collection and the number of incidents in each unit can be seen in Table 4.2.

Table 4.2.

Number of Incidents per Unit.

Unit	Time Data Spanned	Type A	Type B	Total
Unit A	18 months	97	157	254
Unit B	2 years	18	73	91
Unit C	6 months	34	16	50

Unit A had the highest number of recorded incidents per participants in the sample during the time the unit was included in the study. The number of reported incidents per unit is similar to the prevalence data from other studies, which has found higher number of incidents in inpatient settings when service users have been admitted after placement breakdown than in residential units (Lowe et al., 2007).

4.3 Type of Incident

4.3.1 Type of Incident: Whole Sample.

Property destruction referred to any attempt to break or destroy property regardless of size. Verbal aggression referred to swearing, threats and loud aggressive words that were aimed at another. Physical aggression referred to any attempt to physically harm another person. Self-harm referred to harming oneself; in this sample, it was cutting oneself or irritating wounds by putting things into them.

The kind of incidents occurring was fairly varied. Incidents were split into those which were singular, i.e. one type of aggressive was documented; and mixed incidents, where more than one type of aggression was documented. The most common type of singular aggression was that of physical aggression toward staff, with verbal aggression toward staff occurring second most frequently. Singular incidents involving peers were infrequent.

When looking at mixed incidents, there was a variety of combinations of aggression, most of which happened infrequently. The most common of these was verbal aggression to staff combined with property destruction and verbal and physical aggression to staff. Verbal aggression towards staff members and property destruction was the most common type of mixed aggression documented. The frequency with which these incidents occurred in the sample can be seen in Table 4.3 and 4.4.

Table 4.3

Type of Incident – Singular Ranked by Frequency.

Type Of Incident	Frequency (%)
Physical Aggression to Staff	76 (19%)
Verbal Aggression to Staff	59 (14.75%)
Property Destruction	40 (10%)
Physical Aggression to Peer	20 (5%)
Verbal Aggression to Peer	15 (3.75%)
Verbal Aggression to Staff and Peer	8 (2%)

Table 4.4

Type of Incident – Mixed Ranked by Frequency.

Type of Incident	Frequency (%)
Verbal Aggression to Staff, Property Destruction	38 (9.5%)
Verbal and Physical Aggression to Staff	29 (7.25%)
Verbal and Physical Aggression to Staff, Property Destruction	17 (4.25%)
Physical Aggression to Staff, Property Destruction	7 (1.75 %)
Verbal and Physical Aggression to Staff, Self-Harm	5 (1.25%)
Verbal Aggression to Staff, Self-Harm	5 (1.25%)
Physical Aggression to Staff and Peers	5 (1.25%)
Property Destruction, Self-Harm	2 (0.5%)
Physical Aggression to Staff, Self-Harm	2 (0.5 %)
Verbal Aggression to Peers, Property Destruction	2 (0.5%)
Verbal and Physical Aggression to Staff, Verbal Aggression to Peers	2 (0.5%)
Verbal Aggression to Peer, Physical Aggression to Staff	1 (0.25%)
Physical Aggression to Staff and Peers, Property Destruction	1 (0.25%)
Verbal Aggression to Peer, Physical Aggression to Staff	1 (0.25%)
Verbal Aggression to Staff and Peers, Property Destruction	1 (0.25%)
Verbal and Physical Aggression to Peers, Verbal Aggression to Staff	1 (0.25%)
Verbal and Physical Aggression to Staff, Verbal and Physical Aggression to Peers	1 (0.25%)
Verbal Aggression to Staff, Physical Aggression to Peers, Property Destruction	1 (0.25%)
Verbal Aggression to Staff and Peers, Physical Aggression to Peers	1 (0.25%)
Physical Aggression to Peers, Property Destruction	1 (0.25%)

4.3.2 Type of Incident – By Unit.

The type of incident occurring in each unit was examined. In Unit A, physical aggression to staff remained the most frequent, while the most commonly documented mixed incident was verbal aggression towards staff combined with property destruction. The frequencies for Unit A can be seen in Tables 4.5 and 4.6. In Unit B, property destruction was the most frequent incident, with verbal aggression towards staff and property destruction being the more frequent mixed incident. This can be seen in Tables 4.7 and 4.8. In Unit C, verbal aggression to staff and peers occurred most frequently, and while there were only a small number of mixed incidents, the most frequent of these were verbal and physical aggression towards staff. These can be seen in Table 4.9 and 4.10.

Table 4.5

Type of Incident Frequency – Unit A

Type Of Incident	Frequency (%)
Physical Aggression to Staff	64
Verbal Aggression to Staff	23
Physical Aggression to Peer	17
Property Destruction	15
Verbal Aggression to Peer	4
Verbal Aggression to Staff and Peer	1

Table 4.6

Type of Incident Frequency, Mixed – Unit A

Type of Incident	Frequency (%)
Verbal Aggression to Staff, Property Destruction	24
Verbal and Physical Aggression to Staff	10
Physical Aggression to Staff, Property Destruction	4
Verbal and Physical Aggression to Staff, Property Destruction	3
Verbal and Physical Aggression to Staff, Self-Harm	3
Verbal Aggression to Staff, Self-Harm	3
Property Destruction, Self-Harm	2
Physical Aggression to Staff, Self-Harm	2
Verbal Aggression to Peer, Physical Aggression to Staff	2
Physical Aggression to Staff and Peers	1
Verbal Aggression to Peers, Property Destruction	1
Verbal and Physical Aggression to Staff, Verbal Aggression to Peers	1
Verbal Aggression to Peer, Physical Aggression to Staff	1
Verbal Aggression to Staff and Peers, Property Destruction	1
Verbal and Physical Aggression to Peers, Verbal Aggression to Staff	1
Verbal Aggression to Staff and Peers, Physical Aggression to Peers	1

Table 4.7

Type of Incident Frequency – Unit B

Type Of Incident	Frequency (%)
Property Destruction	24
Verbal Aggression to Staff	7
Physical Aggression to Staff	5
Physical Aggression to Peer	1
Verbal Aggression to Peer	0
Verbal Aggression to Staff and Peer	0

Table 4.8

Type of Incident Frequency, Mixed – Unit B

Type of Incident	Frequency (%)
Verbal Aggression to Staff, Property Destruction	14
Verbal and Physical Aggression to Staff	3
Physical Aggression to Staff, Property Destruction	2
Verbal and Physical Aggression to Staff, Property Destruction	1
Verbal Aggression to Peers, Property Destruction	1
Verbal Aggression to Staff, Physical Aggression to Peers, Property Destruction	1

Table 4.9

Type of Incident Frequency – Unit C

Type Of Incident	Frequency (%)
Verbal Aggression to Peer	9
Verbal Aggression to Staff and Peer	8
Verbal Aggression to Staff	4
Physical Aggression to Peer	2
Physical Aggression to Staff	1
Property Destruction	1

Table 4.10

Type of Incident Frequency, Mixed – Unit C

Type of Incident	Frequency (%)
Verbal and Physical Aggression to Staff	3
Verbal Aggression to Staff, Property Destruction	2
Verbal and Physical Aggression to Staff, Verbal Aggression to Peers	1
Verbal Aggression to Peer, Physical Aggression to Staff	1
Verbal Aggression to Peer, Physical Aggression to Staff	1

4.4. Time of Incident

4.4.1 Time of Incident: By Unit.

In Unit A, the majority of the incidents recorded happened in the PM or afternoon shift. In Unit B, incidents happened more in the AM or morning shift,

peaking around mid-morning and lunchtime. In Unit C, the majority of the incidents in the sample occurred in the PM shift. The frequency distribution of aggression over the shifts can be seen in Table 4.12.

Table 4.11

Frequency of Aggression per Shift in Each Unit

Unit	Unit A	Unit B	Unit C
Shift			
AM	85	49	18
PM	131	29	29
N	33	6	1

Aggressive incidents were more likely to occur during the day than at night, which is similar to findings in psychiatric populations (Barlow et al., 2000; Grassi, Peron, Marangoni, Znachi & Vanni, 2001). Units A and C both had more aggressive incidents in the afternoon than in the morning. Unit B had more incidents in the morning. This difference is potentially due to the different patterns of staff and client interaction and need in each unit

4.5 Hours of Sleep

Sleep disturbances have been suggested as a possible influence on aggressive behaviour in both the general and intellectual disability population (Brylewski & Wiggs, 1999). In residential units for people with intellectual disability, hours of sleep are recorded for some service users. These service users may be new to the unit, experiencing agitation or mania, or on a high level of observation. However, it is not routine to record the sleep data for all participants in all units. Due to the importance

of sleep in aggressive behaviour, where the information was available, sleep data was included in the database.

There was a sub sample of 108 incidents where the hours of sleep the night before the incident had been recorded. In nearly half of the incidents that had sleep information (51), the aggressive individual involved had slept for at least 6 hours. 6 hours of sleep has been suggested to be the minimum that someone should have in order to function to their maximum potential (Anderson & Dickinson, 2010). The rest of the protagonists of aggression in the sample had had less than 6 hours sleep or where experiencing disturbed sleep (repeated waking). The number of hours of sleep prior to incidents or the sleep assessment can be seen in Table 4.13.

Table 4.12

Hours of Sleep before Incident

Hours of Sleep	Frequency
Good Sleep	22
Night Waking	3
9 Hours	2
8 Hours	6
7 – 8 Hours	14
6 – 7 Hours	7
5 – 6 Hours	13
4- 5 Hours	10
3 – 4 Hours	8
2 – 3 Hours	5
1 -2 Hours	1
Few	7
None	1

There is no control information about hours of sleep needed by each participant, or the average amount of sleep they would have had, which makes the interpretation of these results in relation to how sleep might affect aggressive behaviour difficult. Additionally, some participants were recorded as simply having 'good sleep' as opposed to a definite amount of hours. Half of the incidents were preceded by night waking or short amounts of sleep. This may indicate agitation, mental health issues or the effects of medication within the participant, or environmental issues which prevent prolonged sleep on the unit. However, as there is no control data, only speculations may be made.

4.6 Location: by Unit

Each of the Units involved in the study had a different layout. Units A and C were 'built for purpose units' while Unit B was located in a converted house. Building layout has been implicated as important when considering aggressive behaviour as it may cause particular conditions which make aggression more likely (Nijman & Campo, 2002). Examining the location of an incident provides useful information about the context of an aggressive incident, which can indicate factors as to why it occurred. The locations where the most frequent amount of aggressive incidents in each unit will be presented and discussed in terms of their distinguishing characteristics, with a potential hypothesis as to why aggression may occur in that context.

In Unit A, the majority of incidents occurred in the dining room or the acute area. The acute area is where individuals who are experiencing extreme agitation or crisis spend time and consists of a locked area with two bedrooms. There were also a high number of incidents occurring in the bathrooms and bedrooms of the unit. There were far less incidents which 'travelled' or took place in several locations.

Table 4.13

Location of Incident – Single, Unit A

Location	Frequency
Dining Room	17
Acute Area	16
Bathroom	11
Bedroom	10
Lounge	8
Corridor	6
Outside	1
Female Area	1
Male Area	1
Games Room	1
Visitors Room	1
Office	1

Table 4.14

Location of Incident – Mixed, Unit A

Location	Frequency
Bedroom/Corridor	3
Dining Room/Lounge	2
Bedroom/Lounge	2
Bedroom/Bathroom	2
Dining Room /Bathroom	2
Acute Area/Corridor	2
Lounge Bedroom Corridor Male Toilet	1
Corridor quadrangle	1
Activity Room/Lounge	1
Bedroom Corridor Quadrangle Dining Room	1
Toilet/Corridors	1
Bedroom/Dining Room	1

Meal times have been suggested as a time of high service user demand due to problems with eating, as well as a time when there are a high concentration of service users and staff members in one area. The high rate of incidents occurring in the dining room could be due to issues with crowding or frustration at not gaining access to preferred items.

A high proportion of incidents occurred in the acute area. The acute area was utilized in Unit A when a service user was agitated, distressed or aggressive. The acute area was also used as a seclusion area to allow people to calm down after incidents. The high level of incidents in this area is potentially due to the fact that it was occupied by highly aroused service users who were already being aggressive.

Alternatively, characteristics of the acute area may increase the risk of aggression, such being minimally furnished with little opportunity for activity, and involves being highly observed by staff.

In Unit B, the majority of incidents took place in the games room. The lounge was also a common place for incidents, especially when they were of mixed locations.

Table 4.15

Location of Incident – Single, Unit B

Location	Frequency
Games Room	17
Lounge	5
Kitchen	3
Outside	3
Bedroom	2
Dining Room	1
Day care	1
Office	1
Porch	1

Table 4.16

Location of Incident – Mixed, Unit B

Location	Frequency
Lounge/Games Room	3
Lounge/Toilet	1
Dining Room/Bedroom	1
Lounge/Bedroom	1

The most common location of aggression in Unit B was the games room. During the time of data collection, Unit B was being prepared to be closed down and so was operating at a reduced capacity with only 4 residents as opposed to 8. As the unit was large and running under occupancy, it is unlikely that aggression in the games room was due to crowding or lack of access to resources.

In Unit C, there was a slightly more varied pattern of locations for the incidents. The corridor was a common location, but it appeared that there were less typical places for incidents to occur.

Table 4.17

Location of Incident – Single, Unit C

Location	Frequency
Corridor	6
Bedroom	3
Lounge	2
Dining Room	1
TV Room	1
Kitchen	1
Activity Room	1
Front Entrance	1

Table 4.18

Location of Incident – Mixed, Unit C

Location	Frequency
Bedroom/Corridors	6
Lounge /Corridors/ Bedroom	1
Activity Rooms/Gardens	1
Kitchen/Bedroom	1
Lounge/Bedroom	1
Lounge/Corridors/Bedroom/Dining Room	1
Lounge/Corridor	1

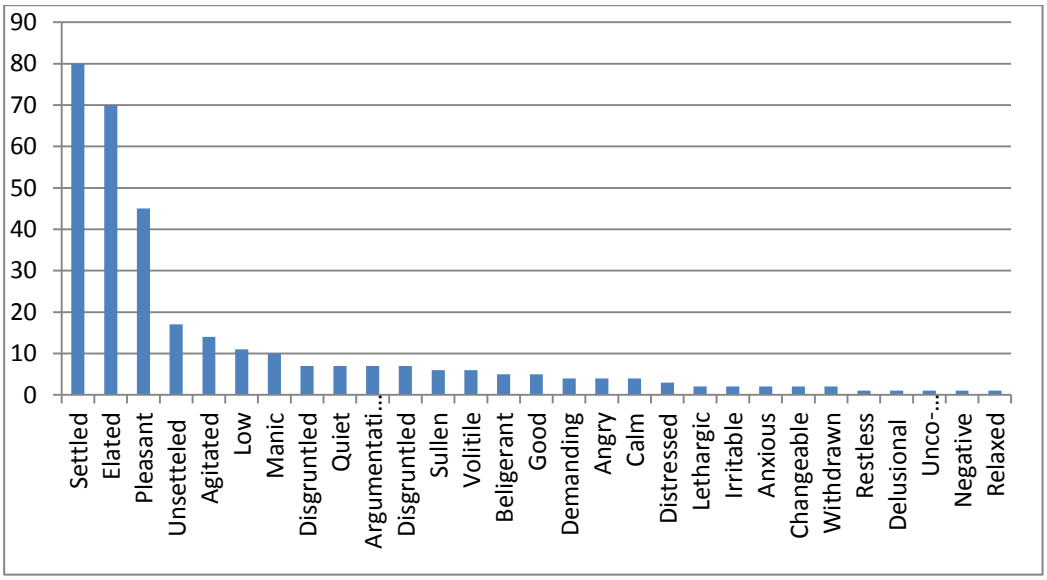
In Unit C, no location has a particularly high number of incidents. This could indicate that the particular room the incident took place in had little influence on the

aggressive act, or that the number of incidents reviewed in this research was not high enough to reveal patterns.

4.7 Mood Assessment

It was conventional in the units studied to record a mood assessment of the participants. This was done either through the person writing the running record about the individual's behaviour during that shift making a judgement on their mood; or for other participants whose mood was a particular focus, a purpose designed grid with mood states pertinent to the individual was created. Some incidents did not have mood assessments written. 320 of the 400 incidents had a mood assessment of the protagonist. In nearly half of these assessments, the protagonist was classed as being calm before the incident occurred. The next most common mood noted was being elated. It was far rarer for the protagonist to appear to be unsettled or agitated. The recorded mood frequency can be seen in figure 4.1.

Figure 4.1Frequiency of Observed Mood State



4.8 Observation

4.8.1 Observation: Whole Sample

In the residential units in the study, each of the participants is placed into an observation category depending on their needs. This observation category determines how the participant is observed; for instance how many times per hour, by how many people and at what distance from them. Research on the function of observations for the service user is limited (Janofsky, 2009), but it could provide many functions for the person experiencing it, such as feelings of safety, being given attention, or producing irritation. It is also an indicator of the level of need of an individual or the resources of a unit.

Out of the 403 incidents recorded, there was an observational style recorded for 211. The most frequent type of observation style was Intermittent. This means that a named person checks the participant several times an hour. The next two most frequent observation styles were General, where a service user is free to be alone within a unit; and Level 2 Intermittent, where checks are made at a higher frequency than normal. The more intense the observation style, the less frequently participants experienced it before aggression. The frequency of observation types can be seen in Table 4.22.

Table 4.19

Type of Observation and Frequency

Type of Observation	Frequency
Intermittent	69
General	40
Level 2 - Intermittent	36
Intermittent (1-1 in acute area)	20
30 min obs	16
1:1 with hourly checks	12
15 minute obs	11
Eyesight/Arm's length	4
1 to 1	2
10 min obs/Level 2 Intermittent	1
Total	211

The majority of incidents took place while the participant was on a level of observation where they would be checked upon several times an hour. There has been little research into the effects of observation levels on any aspects of service user experience. Observation levels are assigned to the need level of the service user, with so those who are more distressed or challenging in their behaviour assigned higher levels of observation. As observation levels were recorded, it is difficult to know whether the assigned level reflected the actual amount of contact that staff members had with service users. For example, a person may be recorded as receiving one-to-one observation where a staff member is assigned to them at all times. In reality, what this actually looks like is impossible to gauge; i.e. if the staff member engages the service user in activity, talks to them, or keeps them in eye sight whilst doing other tasks. Research has suggested that psychological space is essential in reducing

aggression in inpatient environments. High levels of observation may prevent the access of psychological or even personal space for the service user, which results in aggression intended to get staff members away or to access seclusion. Escape from task demands and social interaction has also been suggested as a reinforcement of challenging behaviour. However, a higher rate of observation was not correlated with higher rates of challenging behaviour in this sample of recorded incidents.

4.9 Typography

A typography is something which suggests the characteristics involved in a particular type of entity. In terms of the data involved in this research, which was looking at lots of different kinds of aggression as a whole, typography can be a particularly useful way of pulling out the most pertinent parts of information related to each type of aggression, therefore giving an indication of the things which have been involved in that particular kind of aggression previously.

The most commonly occurring types of aggression in the data set were examined for the mood of the protagonist, the time of day, the gender of the protagonist, the location of the aggression, the observation level, the preceding events and the outcome. The most commonly occurring factors were noted and can be seen in Table 4.23.

Each of the different types of aggression have slightly different things associated with it. This provides a snap shot of what each type of aggression would most commonly look like.

4.9.1 Physical Aggression towards Staff.

When people with intellectual disability were physically aggressive towards staff, they tended to be women who were elated or distressed and being observed intermittently. Physical aggression towards staff occurred more often in the morning,

in bathrooms or bedrooms. Prior to the incident the protagonist was experiencing intimate care, had been asked to do something or was behaving unusually. The aggression would involve hitting out or slapping staff. The outcome of this incident would either be physical restraint using Timian or being taken to the acute area.

4.9.2 Verbal Aggression towards Staff.

When people with intellectual disability were verbally aggressive towards staff, they tended to be male who were calm or elated, being observed intermittently. Verbal aggression towards staff occurred more often in the late afternoon, in the dining room, lounge or bedroom. Prior to the incident the protagonist had been spoken to by staff regarding their behaviour, or had been asked to do something. The aggression would involve verbal abuse and personal threats. The outcome of the incident would be verbal intervention, isolation in their bedroom or medication.

4.9.3 Property Destruction.

When people with intellectual disability destroyed property, they tended to be male, either agitated or calm, on general observation. Property destruction occurred more often around lunch time or early afternoon, in the games room or dining room. Prior to the incident, the protagonist had been involved in another incident, been refused something by staff or been angered or upset by other people's behaviour. The aggression would involve throwing furniture and other items or pulling curtains down. The outcome of the incident would be verbal intervention or medication.

4.9.4 Physical Aggression to a Peer.

When people with intellectual disability were physically aggressive to a peer, they were mostly female, elated or agitated, on intermittent observation. Physical aggression to a peer occurred more often around lunchtime, in various locations in the units. Prior to the incident, the protagonist had behaved unusually or been angered or

upset by other people's behaviour. The aggression would involve kicking, hitting and pushing over peers. The outcome of the incident would be taking to the acute area.

4.9.5 Verbal Aggression to a Peer

When people with intellectual disability were verbally aggressive to a peer, they were mostly male, calm and on intermittent observation. Verbal aggression to a peer occurred more often in the afternoon, in various locations in the units. Prior to the incident, the protagonist had been angered or upset by other people's behaviour. The aggression would involve being verbally abusive. The outcome of this incident was verbal intervention.

4.9.6 Verbal Aggression to Staff and Peers.

When people with intellectual disability were verbally aggressive to staff and peers, they were mostly male, at arm's lengths observation. Verbal aggression to staff and peers occurred throughout the day, in corridors or dining rooms. Prior to the incident, the protagonist had been spoken to about their behaviour. The aggression would involve being verbally abusive. The outcome of this incident was verbal intervention or being isolated in their bedroom.

Each of the incident types involved a slightly different combination of protagonist qualities and environmental factors. This will be discussed in more detail in Chapter 9, but it seems to indicate that there are different factors involved with different types of aggression which would be useful in management and risk.

Table 4.20

Summary of factors involved with Aggression by Aggression Type

	Verbal Aggression to Staff and Peer	**Verbal Aggression to Peer**	**Physical Aggression to Peer**	**Property Destruction**	**Verbal Aggression to Staff**	**Physical Aggression to Staff**
Mood	Agitated	Mostly Calm	Mostly Elated or Agitated	Either Agitated or Calm	Calm	Mostly elated or distressed
Time	During Day	Afternoon/Evening	During the day, around lunchtime	During the Day	During Day	During Day, more common in Morning
Gender	Mostly Male	Mostly Male	Mostly female, few male	Mostly Male	Mostly Male	Mostly Female
Location	Corridors, Dining Room	Various	Various	Games Room or Dining Room	Various	Various
Observation Level	Arm's Length	Intermittent	Intermittent	General	General or Intermittent	Intermittent
Proceeding Event	Verbal Intervention	Peer Behaviour	Unusual Behaviour, Peer Behaviour	Being Refused Something by Staff	Verbal Intervention, Asked to do Something	Asked to do Something, Intimate Care, Unusual Behaviour
Outcome	Verbal Intervention, Isolation	Verbal Intervention	Taken to the Acute Area	Verbal Intervention, P.R.N	Verbal Intervention	Timian, Taken to Acute Area

Con't

4.11 Recording Style

The previous sections focused on the physical properties of the violent incidents as indicated by the information held in the health care records and transposed to the violent incident database. This section will now turn to look at the actual records themselves and what they might indicate about the way in which people record violent incidents.

4.11.1 Type A and Type B.

In section 4.2.1, the type of aggression recorded compared to the type of record: i.e. detailed versus non-detailed was discussed. What was demonstrated was those incidents involving staff were more likely to be classed as Type A, and therefore were more detailed than Type B incidents. Type B incidents were more likely to involve peer-to-peer aggression, property destruction or self-harm.

In order to explore this pattern further, contributions and contributors were looked at. For each of the database entries recorded, the source health care records (contributions) and authors of these records (contributors) were noted. When looking at the total number of incidents in the database, the average number of contributions that source health care records apart from general communications for each incident was 1.7. When this was split into Type A and Type B incidents, the average number of health care records written about each incident for Type A was 1.82, and for Type B 1.7.

When looking at the total number of incidents, the average number of contributors to the source records was 2. When this was split into Type A and Type B incidents, the average number of authors of health care records for Type A incidents was 2.02 and for Type B incidents 1.97. Both of these findings indicate that, on average, the same number of source records and same number of authors contribute to

the Type A and Type B records. Therefore, when considering representativeness Type A does seem to be representative of Type B records in regards to the contributors and numbers of health care records involved.

The criteria on which database entries were categorised A or B was the length of the record; specifically the length of the 'What Happened' entry in the database alongside other information fields being completed. This was done at the discretion of the researcher based on her knowledge of the type of record needed for Sequence Analysis. More incidents involving staff members were reported than those involving other types of aggression. What this might mean in terms of how people report incidents will be discussed later, but there is an indication that more detail and reporting effort might be given to those incidents involving staff members.

4.12 Summary

This chapter is entitled 'What Does a Violent Incident Look Like' and set out to produce a representation of the reported aggression happening in residential units for people with intellectual disability. Frequencies of various factors involved in the aggression have been presented, both looking at the whole database and from a unit by unit perspective. The picture that is starting to emerge from these descriptions is that aggression in intellectual disability is not homogenous, just like the people that produce this aggression. Aggression data in intellectual disability is often collected in large scale surveys, or through recording systems that require tick boxes or categories to be chosen. These are understandable methods to use in a difficult research area like aggression and intellectual disability, but these methods can make it difficult to understand the interactions between things occurring which might be more pertinent to understanding aggression than looking at something as a stand-alone entity. By producing a typography of aggression based on very detailed accounts drawn from a

number of sources, such as the one presented in this chapter, we have a way, perhaps, not just of understanding why aggression has occurred, but knowing what it looks like. It is too ambitious to suggest that this typography, drawn from only 400 case,s could provide guidance on management to people involved with intellectual disability care, but it does point out areas of consideration for the units involved. Although there is an acknowledgement that the records used in this study were by no means a perfect data source, they are still representative of a system of record keeping very much alive in the National Health Service. It is indicated by the length and depth of detail involved that the type of aggression has an influence on the records content. The possible reasons and explanations for this are manifold and will be discussed, alongside the other questions raised in this chapter, later in this thesis.

The database of aggressive incidents produced a great deal of detail which has been described in this chapter. This thesis will now move to analysing this detail. The first step in the analysis is coding the written detail of aggressive incidents, and the process that this involves is detailed in the next chapter.

Chapter 5 Coding Scheme

5.1 Overview

Sequence Analysis uses many observations of the same interaction or behavioural episode to discover groups, usually pairs, of successive events that reoccur more often than would be likely by chance. In Chapter 2 the observational data on violent incidents in people with intellectual disability that will be analysed using sequence analysis was introduced.

There are three stages involved in Sequence Analysis methodology: unitising, classification and statistical analysis. In this chapter the practicalities of the first two stages, unitising and classification, will be introduced and discussed in terms of their application to this data.

5.2 Stage 1: Unitising

When examining a behaviour or interaction from a Sequence Analysis perspective, the behaviour itself is first defined. In this thesis, the sequence being studied involved recorded incidents of aggression carried out by people with intellectual disability who live in residential care, and was created by the staff and health care assistants who work with them. The sequence of this aggression is in the database of aggressive incidents which has been formed from the written observations of health care professionals. These sequences of recorded violence detail chains of events that occur one after the other. Unitising is the process where these chains of events are ‘chopped up’ or separated into their component events. It is only when the events have been separated that the links between recorded events can be examined.

In many cases, observational sequences have fuzzy boundaries between events. For example, it might not be clear when one event ends and another begins, or

if two might be occurring simultaneously. This presents a challenge for the researcher in how to approach the unitising, as there is a possibility that event information may be lost. The observations of violence that are used in this thesis often had clear-cut boundaries due to the reporting style of the records. For example, some of the records were specifically designed to include concrete events such as visitors, outings and other activities. In these cases, the sequence was already unitised in a very clear way. The format of the database itself unitised the observations further as the fields included looked for specific events. This was an intentional design feature of the database. Other parts of the sequence were not as straightforward to unitize due to the written accounts containing less obviously unitized information. However the writing conventions of the records, such as short passages, short sentences and reliance on observable events rather than conjecture about the internal processes of the individuals involved, meant that in most cases the accounts contained a clear cut event structure. While this does not suggest that there were no other events happening at the same time as the ones mentioned in the account, or even that all the possible information would be contained in the sequence, the sentence structure of the accounts recorded events sentence by sentence.

5.3 Stage 2: Classification

5.3.1 Classification.

In sequence analysis, each sequence of recorded behaviour is seen as unique due to its occurrence in a unique time period and under a unique set of circumstances. For example, take the sequence of driving to work. Although the route taken and time set off every day might be the same, each journey is unique due to all the things that have the potential to be different. These might be the weather, other road users, the condition of the car, whether there is a school holiday, the mood of the driver, the

condition of the road, what the driver had for breakfast and many other issues. Therefore while each of those drives to work might involve the same route and the same actions, the circumstances and the time that the journeys occur in are unique. This unique quality of an individual sequence makes it impossible to replicate.

If sequences are unique, comparing them as like-for-like entities in order to find a non-random pattern of events is not possible. Neither is trying to re-create the conditions of a sequence for comparison. Instead of approaching sequences as comparable or repeatable units, Sequence Analysis theory contains the view that each time a behavioural or interactive sequence occurs, it is one example of the many possible ways that a sequence could take place, and although those examples might contain a huge number of events, the pattern of events that are the essence of that sequence will be present in those examples in some form. By comparing many of these examples, the non-random patterns (the essence) within those sequences will start to emerge.

If an observation is a unique example of a sequence, the events that comprise it are also unique to that observation. However, if these events share enough characteristics with events in other observed sequences, we can group them together into broadly similar groups. These groups of broadly similar events then become the beginnings of comparison in order to find those non-random patterns of events. This process is called classification.

Classification means that each event in a sequence is assigned to a group or category. For example, listening to the radio, watching TV and playing computer games could all be assigned to the classification ‘using home entertainment’. Through classification, the unique events in each sequence are placed into groups with which they share similar or common characteristics. It is the transitions between these groups

which are then compared, rather than the single events themselves, providing a large enough sample size to allow the patterns to emerge.

When classifying events, each classification group is given a code. A coding manual is then written that lists the classifications, their corresponding code and examples of these. This process converts the observation of behaviour into a sequential list of codes that represents the classified events.

5.3.2 Classification Scheme - Existing or Written for Purpose: the Distinction.

When using classification schemes, researchers can either use an existing scheme or develop their own. An existing classification scheme will have been developed by other researchers for their own aims but is also suitable for one's own data. Using an existing scheme or developing one's own both have particular advantages and disadvantages, but the decision of which to use comes down to the aims of the researcher and the research question itself. The advantage of using an established scheme is primarily that it should be reliable and valid, with clear evidence to prove this (Bakemann & Gottman, 1997). Writing a scheme can be time consuming and difficult, so using an existing one would avoid this. However, a classification scheme is usually written by a researcher to answer a specific question, which could limit its application to other research. Unless the aims of an established scheme are very similar to a present research question, it would not be appropriate to use it. When conducting novel research it is hard to find an established scheme that would be suitable to apply to the data. This could be because there was a new research population being studied or new research parameters. In these cases it is more appropriate for the researcher to write their own scheme.

In this research it was felt more appropriate to write a classification scheme. This was due to a number of factors. Classification schemes, while often used in research, frequently go unpublished or documented in papers as it is the results of the work rather than the scheme itself that is the focus of interest. In research on people with intellectual disability, classification schemes focusing on observations of behaviour are rare and fairly specific to purpose. Although a scheme could have been drawn from another population, this might be too removed from the lifestyle of people with intellectual disability to truly reflect their lives. In order to fulfil the aims of the research correctly, it was decided a purpose-made scheme should be developed, which would be tailored specifically for the research population and to best answer the research question.

5.4 Development of the Coding Scheme/Manual

5.4.1 Step One: Research Question.

The coding scheme was developed using the guidelines in Bakemann and Gottmann (1997). The first stage of this development is to decide upon a clear research question.

The research question chosen was:

What events are involved prior to and during aggressive incidents?

This question was seen as a distillation of the aims of the thesis, fitting the research endeavour as well as setting out the clear intention to look at the events. The term ‘events’ was purposefully left with a very broad definition. This would allow the initial draft of the codes to encompass the very varied nature of the events involved in the incidents. In this initial stage, the term ‘event’ referred to anything that had happened which was recorded in the database.

5.4.2 Step Two: Draft Coding Manual.

Once the research question had been established, a selection of 20 records was taken from the 150 type A records in the database. These records were reviewed and all novel events were documented, which resulted in a list of events that had occurred over the 20 incidents. These events were grouped under common headings that formed the first draft of the classifications. There were also some classifications included that had been mentioned specifically in the thesis aims, such as parental interaction. These classifications were each assigned a unique letter from the alphabet. These were then drafted into a coding manual. This manual was used to code 6 entries from the database. These 6 coded entries were then used as a comparison set in the following reliability checks.

5.4.3 Step Three: Reliability Checks.

Judge A was recruited to test the inter-rater reliability of the coding scheme. Judge A is a 26-year-old woman working as an assistant psychologist with people with intellectual disability. She was instructed to code 6 database entries (ones coded by the researcher in the previous section) using the coding manual provided, but to add or amend codes if she felt that there were no suitable ones to use (Instructions – see appendix). She was also asked to comment on the codes themselves about any issues that she felt were important.

Judge A's codes were compared to the codes assigned by the researcher. 28 of the codes given by Judge A matched the researcher assigned codes. 20 codes given by Judge A did not match the researcher assigned codes. 15 of the codes in the researcher assigned codes did not appear in Judge A's codes. This resulted in a 52.8% agreement between Judge A and the researcher when the percentage agreement was calculated.

When the differences between the two raters codes were investigated further, this revealed problems in the coding scheme. Judge A had assigned fewer codes to the database entries than the researcher. It was felt that this might be due to not having enough examples in the coding scheme to alert the Judge to what they needed to code. She often used the code for 'physical restraint' instead of 'physical movement' or vice versa. The code of 'physical restraint' was meant to indicate when someone was held in one place to restrain them from acting further, while physical movement was meant to indicate when someone was lead or moved by staff to another area. Due to the confusion shown by Judge A with these two codes, they were refined with more examples to make them clearer. When comparing Judge A's responses with the researcher assigned codes, it became apparent that some of the classifications could only occur in the presence of another event, for example, "gets upset due to being reprimanded". When the researcher had been coding the database entries, this problem went unnoticed, but when Judge A coded some of the entries as an unfamiliar observer, this non-independency of codes was highlighted. It was felt that classifications that relied on the presence of other events were not appropriate, and that classifications should be independent of one another. When a classification relies on the presence of two events for it to occur, when analysed it can indicate a circular relationship between the events; i.e. that one always follows the other indicating a very strong relationship, when it is actually only present because of dependent classification schemes.

Judge A also mentioned that she struggled to make a distinction between severe and mild types of violence, which was reflected in the disagreement between Judge A and the researcher for these classifications. Examples of severe or mild violence were expanded in the coding manual to give a clearer guide as to which was which.

The researcher also tested her own intra-rater reliability by calculating her percentage agreement of her own ratings over time. A week after coding 6 database entries, these were re-coded. Intra-rater reliability was poor. Intra and inter-rater reliability measures indicated that the coding manual was not yet fit for purpose.

5.4.4 Step Four Revised Coding Scheme One.

Due to the above issues with reliability, the coding manual was revised. More examples of events were added to the manual to make it easier for people to use. Examples of mild and severe violence were made clearer as this was something that Judge A had highlighted as a difficult distinction to make. Some of the codes had relied on previous events to make sense of them. These were either removed or revised so they could occur independently of other codes. The 6 database entries were re-coded using the revised manual by the researcher. In total there were 46 codes applied to the 6 entries.

The reliability experiment used in stage one was repeated using the revised coding scheme. Instructions remained the same. The raters in this experiment were Judge B, a male 25-year-old PhD student at the University of Manchester; Judge C, a male 22-year-old PhD student from the University of Nottingham; and Judge D, a female 24-year-old PhD student from the University of Nottingham.

Judge B – Judge B assigned 52 codes to the 6 entries. Judge B and the researcher assigned codes matched 14 times. 39 codes did not match the researcher assigned codes, which resulted in a 30.4 % agreement between Judge B and the comparison set.

When Judge B's responses were examined further, it was found that to each database entry he had assigned three codes at the beginning of the sequence that were not mentioned in the entry. These were the codes for mood change, mood

deterioration and disruptive behaviour. Due to this and the large disparity between Judge B responses and the researcher assigned codes, Judge B was possibly inferring what had occurred in the database entry rather than coding it explicitly. For example, when reading an entry about how someone had attacked a member of staff, one might infer that this person was in an agitated mood even if this was not stated. However, the object of the coding schedule was to code what was stated rather than to make a judgement about what had happened before the entry.

In the comments section, Judge B mentioned that the passages he had been asked to code were often hard to read and had grammatical errors which could make their meaning ambiguous. The passages that had been provided to the judges to code were taken straight from the database entries, which in turn were occasionally taken verbatim from the original record that already contained linguistic errors. Judge B's comments suggested that, although true to the original material, this did not make it an easy task when trying to code this information.

Judge C – Judge C assigned 35 codes to the 6 entries. Judge C's responses and the researcher assigned codes matched 15 times. 20 codes did not match the researcher assigned codes, which resulted in a 32.6% agreement between Judge C and the researcher assigned codes.

Judge C had fewer responses than both Judge B and the researcher assigned codes. Often this seemed to be due to Judge C missing details in the passages. For instance, when the researcher assigned code stated 'physical move – property destruction – calmed but later had another incident', Judge C stated 'physical restraint – agitated'. In this example Judge C had assigned similar but not the same codes to 'physical move' and 'calmed but later had another incident', but had missed the detail of property destruction completely. This may have been due to the examples in the

manual not being explicit enough and the level of detail in the passage not being clear enough to be read properly.

In the comments section, Judge C mentioned that he often wanted to code more about the protagonists' emotional and verbal responses, but found that there were not the codes available to him to do this.

Judge D – Judge D assigned 32 codes to the 6 entries. Judge D and the researcher assigned codes matched 20 times. 13 codes did not match, which resulted in a 43.5% agreement between Judge D and the researcher assigned codes. Judge D shared many of the same issues as Judge C. She had a lower level of detail and assigned similar codes, for example stating something was 'mild verbal aggression' rather than the 'severe verbal aggression'.

5.4.5 Step Five – Back to the Drawing Board.

The stage 4 reliability tests using the revised coding manual were as disappointing as with the original. It was at this point that a number of issues that might be problematic with the coding manual were tackled.

5.4.5.1 Coding Manual.

The coding manual currently being used was presented as a list of codes. However, this method of presentation is both conceptually ambiguous and visually unclear, as people have to search through the lists to find what they need. Bakemann and Gottman (1997) highlight the distinctions between classification schemes which look at physical gestures, such as walking, sitting and facial expressions, and those that are socially based, such as looking at things like interactions and friendly or aggressive gestures. The classification scheme being evaluated here, although often looking at very physical gestures, is based on social behaviours. The physical gestures often represent something that can only be made sense of when social conventions and

understanding are applied to them. For example, when someone walks away from a social group and goes to a space on their own, one can see the physical gestures involved but conclude, in social terms, that the person is isolating themselves. Conceptually, social behaviours can be thought of as occurring in different groups, such as interventions or interactions, and the classifications were not currently reflecting that.

The coding manual was reorganised so that groups of codes where presented in conceptual classification groups. For example, all codes representing violence classifications where put together into a 'violence' group. This helped orient the researcher into what was being covered by the classifications and as well as areas where more or reorganised classifications would be appropriate. A new sample of incidents was examined to help facilitate this and to make sure the classification scheme was as comprehensive as possible. Shorter classification schemes are often preferable as they lend strength and power to analysis (Bakeman & Gottman, 1997). However, when devising a classification scheme it is advisable to have a comprehensive set of classifications that, if necessary, can be reduced later, for example by collapsing coded events together. This led to an increase in the number of classifications, especially those of interactions between protagonists and their peers and the staff that worked with them. It was at this point that more environmental features were included in the classification scheme. The time of day of the incident was part of the original coding scheme, but now meal times, times of care and therapy were also included.

By organising the coding manual into conceptual hierarchies, it became much easier to read, understand and use. Instead of searching for a code through a large list,

anyone using the scheme could go to the classification group that was relevant to search for a suitable code.

5.4.5.2 Judges.

The previous reliability experiments showed only low agreement between the researcher and the Judges coding. There were several possible reasons for this. The first was that the coding manual itself was not adequate for purpose. This issue was resolved through the inclusion of more classifications, which were presented in the coding manual with more examples and in a clearer structure. Judges also mentioned some issues with the nature of how the task was presented to them, which is discussed in the presentation section below.

There may have also been some issues with the Judges themselves. The Judges were all from a similar high achieving educational background, but only one of those Judges had had any experience with people with intellectual disability and/or aggressive behaviours. None of the Judges were familiar with record keeping. The researcher has experience with working with people with intellectual disability and record keeping independent from the extensive experience that this thesis provided. While reliability of coding schedules is very important, trying to make a coding scheme that anybody could reliably use to code the database might not be as important as making one which was reliable for the researcher and relevant to their work. By making the scheme too reliable (so a layman would be able to use it) a lot of important detail might be removed from the incidents. Therefore, it was decided that people of a similar background to the researcher (i.e. those who had worked with violent people with intellectual disability or had experience of using and writing health records) would be a better pool to draw the Judge group from. In this way, any discrepancies between raters could be seen as the fault of the coding manual and not the raters'

differences, as well as a means of keeping as much detail in the classification scheme as possible.

5.4.5.3 Presentation.

The material to be coded and the instructions given were evaluated in light of the various comments made by the Judges. In the first two studies, Judges had mentioned that they found the passages hard to read. This might have affected their ability to pick up on details in the passages as detail was masked by poor grammar or poor spelling. To solve this issue the passages were re-written from paragraphs into lines that were double-spaced. They were also slightly re-written to avoid any ambiguous grammar while preserving the essence of the events that were occurring.

The instructions were made more explicit. For example, Judges were instructed to read each sentence and the coding manual carefully. They were told that each sentence would require at least one code, and there should be as many as they felt necessary. There was also a short questionnaire added to the instructions designed to capture the experience level of the Judge (see appendix).

5.4.5.4 Reliability.

There were several issues that have already been mentioned with the reliability of the coding manual; namely that there has been low intra and inter-rater agreement. Percentage agreement had been used to examine how similar each raters set of codes were. However, percentage agreement measures tend to be misleading as they can indicate that raters had a higher rate of agreement then they actually did. This is due to the way percentage agreement only looks at the overall level of agreement between two raters rather than their level of agreement on individual items. In this way, even if two raters disagree on every single item, if overall they both rated 5 items out of 10 the same way they would be said to have 50% agreement. A more

precise way of examining rater agreement that indicates the extent to which the ratings overlap, as well as agree, is the Kappa coefficient (Howitt & Cramer, 2008). Subsequently two more reliability experiments were suggested: one for intra-rater reliability and one for inter-rater, both of which would be assessed using the Kappa coefficient.

5.4.6 Step Six - Revised Coding Scheme/Manuel Two

The first test for the revised coding manual was to assess its intra-rater reliability. This was done by the researcher coding 6 type A database entries. A week elapsed and the researcher coded these entries again. Cohen's Kappa was calculated to be 0.93, which indicates a strong agreement between the researcher's codes over time. There were slight differences in the codes for physical intervention and physical movement. Originally a distinction was made between these two types of physical intervention as they differ in intention and severity. For instance, if someone is physically escorted it means that they are held on the arm by one or two staff members in a loose hold and walked to another part of the building and released upon arriving there (Timian Training and Development, 2008). Physical restraint refers to a number of techniques where an individual is held by one or more staff members in an effort to prevent harm, both to the individual and others until the behaviour that is causing issue ceases. The disagreement in coding shown by the kappa occurred when the researcher had labelled physical restraint as physical movement in some cases in the first coding and then in the second coding reversed this. This indicated to the researcher that she needed to be especially vigilant and clear in her inclusion criteria when coding these types of events.

5.4.6.1 Judges Results.

Judge E is a 26-year-old female assistant psychologist working in children's services. She is educated to Masters' level and has worked with adults and children with intellectual disability and challenging behaviour for over three years. Over the course of this work, she has written behavioural reports and ABC forms for the aggressive and challenging behaviour she witnessed. The Kappa coefficient between this Judge and the researcher's codes was 0.81, indicating a strong agreement between the two.

Judge F is a 30-year-old female Occupational Therapist trainee. She is educated to masters' level and has worked with adults with intellectual disability for over a year. As part of her duties in this post and in other clinical areas in which she has written behavioural reports and reported aggressive and violent behaviour. The Kappa coefficient between this Judge and the researcher's codes was 0.87, indicating a strong agreement between the two.

Judge G is a 25-year-old female assistant psychologist working in children's services. She is educated to masters' level and has worked with children with intellectual disability for six months. As an assistant psychologist she writes and reads behavioural reports and has written some about violent behaviour. The Kappa coefficient between this Judge and the researcher's codes was 0.83, indicating a strong agreement between the two.

In all three cases, the Judges showed strong agreement with the researcher on the codes that they assigned to the events in the sequences. Disagreement centred on codes dealing with different types of violence and the type of intervention that had been implemented. However, these areas had already been recognised as problematic

and measures put in place to combat this. As the agreement was so strong, the coding scheme was accepted as reliable over time and across Judges.

5.4.7 Step Seven - Group Violence Ratings.

The most problematic classifications to clarify had been those that related to the level of aggression; namely whether the physical, verbal and violence to property being displayed were mild or severe. It was felt that this distinction was important to make, as there may be specific event patterns that lead to different types of aggression. Therefore, these distinctions were included in the classification scheme but, due to the very nature of aggression, the distinction between severe and mild aggression could be idiosyncratic to the person judging the violence.

Often, when a classification scheme is being devised, it is done by a team of researchers. In this way classifications can evolve through discussion, argument and collaboration. The classification scheme for this research was devised by one researcher, so when issues arose, a collaborative way of solving these was not available. To overcome this problem, a study was devised to get an alternative viewpoint on the issue of severity of violence in the database.

Examples of verbal and physical aggression where taken from the database entries. These examples were listed in a random sequence alongside a Likert rating scale. Undergraduate students from the University of Nottingham were approached to take part. 25 third year psychology students (20 female and 5 male, mean age = 22) were asked to read a vignette describing Ted, a person with mild intellectual disabilities living in a residential home. The description listed Ted's age (30) and a brief description of his day-to-day life. The description was included to set the behaviour in a context. Participants were then asked to rate how severe they thought Ted's behaviour towards a staff member was on a Likert scale (1-7). There was no

reason given for Ted's behaviour in order to reduce the likelihood of participants rating Ted's behaviour as less severe due to having a valid cause. The participants were asked to think about the aggression happening to another person, as identifying with the victim when rating violence may lead to higher rates of blame, and therefore a lower severity rating (Lawrence & Leather, 2003). The examples of verbal and physical aggression were kept separate and the students were asked to rate the verbal aggression first. A mean result of severity was calculated for each example of violence. This resulted in a hierarchical list of violent acts, where the higher the mean score, the more severe the violence was rated as. This list could be consulted when there was doubt about the classification of a particular type of violence (see Table 5.1. and 5.2. for classification hierarchy). Students where approached rather than people who had experience working with intellectual disabilities, as those working with people with intellectual disability who are aggressive have been shown to habituate to aggression in some cases or to view aggression as more severe if they attribute intention within the service user (Dagnan, Trower & Smith, 1998).

Table 5.1

Verbal Aggression Hierarchy

Aggression	Place in Hierarchy	Overall Score	Mean	Variance
Stating ‘I am going to kill you’	1	126	5.25	3.69
Racist Comments	2	123	5.13	3.11
Telling Someone ‘I wish your family member was dead’	3	122	5.08	5.33
Threats to physically harm	4	121	5.04	2.08
Threats to ‘Smash face’	5	116	4.83	4.06
Threats to ‘Smack Someone’	6	113	4.71	3.21
Threats to hit someone	7	113	4.71	3.12
Scream and Shout verbal abuse at someone	8	113	4.71	2.87
Swear repeatedly at someone	9	108	4.5	2.79
Threats to tip wardrobe on someone	10	107	4.46	2.33
Threats to destroy someone’s property	11	107	4.46	3.17
Bullying someone	12	105	4.38	3.07

Calling someone a fat bitch	13	98	4.08	3.08
Verbally Aggressive	14	93	3.88	2.18
Swear repeatedly	15	91	3.79	2.42
Threats to destroy bedroom	16	90	3.75	2.44
Threats to kick off	17	84	3.5	2.83
Shout at someone	18	81	3.38	2.23
Swore at someone	19	80	3.33	2.56
Making Accusations	20	80	3.33	1.64
Call someone names	21	78	3.25	2.35
Stating you hate someone	22	77	3.21	2.08
Belligerence	23	74	3.08	1.83
Shouting/Screaming Loudly	24	73	3.04	2.21

Table 5.2

Physical Aggression Hierarchy

Aggression	Place In Hierarchy	Overall Score	Mean	Variance
Hit on Body Repeatedly	1	136	5.44	2.97
Hit Someone on Face	2	124	4.96	4.48
Slapped and Hit Several Times	3	124	4.96	4.36
Bite Someone on Breast	4	124	4.96	4.36
Attempted to Punch Someone	5	116	4.64	4.31
Threw Key in the Face	6	115	4.6	3.48
Throw Plate	7	114	4.56	3.85
Attempt to Pull Sink Off Wall	8	113	4.52	3.85
Attempt to Bite	9	112	4.48	3.45
Spat at Someone	10	109	4.36	4.07
Dug Nails into Someone’s Arm	11	103	4.12	3.23
Threw Chairs	12	101	4.04	3.39
Tipping Chairs and Tables Over	13	101	4.04	3.24

Pulling Someone's Hair	14	101	4.04	2.76
Pushed Someone Over	15	100	4	3.56
Scratch	16	98	3.92	3.19
Pushing Someone Out of the Way	17	98	3.92	3.19
Throw Drink over Someone	18	94	3.76	3.70
Throw Slippers at Someone	19	90	3.6	2.96
Hit Out	20	88	3.52	2.59
Kicking Doors	21	86	3.44	2.81
Banging Furniture	22	82	3.28	1.48
Slamming Doors	23	79	3.16	2.53
Pinched Someone	24	77	3.08	1.99
Throwing Belongings Around	25	76	3.04	2.44

5.5 Coding

5.5.1 Results.

In total there were 147 violent incidents in the database that were suitable for coding. Once coded, this resulted in 2,556 codes being applied to the data, at an average of 17.39 codes per entry. The frequencies of how these codes were distributed can be seen in Table 5.3.

Table 5.3

Coding Distribution.

Code	Classification	Number
A	Start	147
B	End	147
C	Start Incident	147
D	End Incident	147
K	Staff intervention/Verbal	126
V	Verbal Aggression/Mild	124
AG	Moves	112
AC	Property Destruction/Mild	88
PM	Afternoon	80
Q	Isolation	80
E	Mood Change	80
Y	Physical Aggression/Mild	70
P	PRN	61
G	Agitated Mood	59
BJ	Makes Request	54
X	Verbal Aggression/Severe	54
BN	Refuses to do what is asked	48
AM	Morning	45
O	Move/Physical	45

BM	Is asked to do/refrain from something	44
H	Calm	37
BS	Time Passed	37
L	Staff Intervention/Physical	34
AE	Challenging Behaviour	33
BB	Visit	28
T	Tuesday	27
BH	Belligerent	25
F	Friday	25
M	Monday	24
BK	Request Denied	24
W	Wednesday	24
AJ	Accusation	24
AN	Withdrawn	23
AY	Meal Time	23
BR	Given Alternative	23
S	Saturday	19
Su	Sunday	19
J	Escalation	19
AA	Self-Harm/Mild	18
BC	Outing	18
BD	Negative Interaction – SU to Peer	18
AD	Property Destruction/Severe	16
N	Night Time	16
R	Room Cleared	16
AK	Pain	15
Z	Physical Aggression/Severe	15
AT	Cancelled	12
AL	Apologetic	11

AQ	Earlier Incident	11
AW	Care	11
AI	Suicidal Ideation	10
AX	Therapy	10
BP	Need not met immediately	10
I	Tearful	9
BE	Negative Interaction – Peer to SU	9
BO	Does what is asked	9
Th	Thursday	9
BL	Request Met	8
AZ	Day Centre	8
BF	Argument Peer	7
BQ	Request PRN	7
U	Privilege Removed	6
AF	Sexually Inappropriate	6
AP	Incontinent	6
BG	Peer Interaction/Neutral	6
BI	Peer Staff Interaction	6
BA	Phone Call	5
BT	Handover	5
BV	MDT Attended	3
AR	Environmental Disturbance	3
AB	Self-Harm/Severe	2
AO	Day Sleep	2
AS	Routine Change	2
AU	Incident	2
AV	Peer Agitation	2
BX	Staff Entered Space	1

5.5.2 Sequence Example.

The codes are an attempt to turn a recorded observation of an aggressive incident into a coded sequence representing the events that were recorded as part of the incident. Below is an example of an observation and what it would look like when coded.

Observation.

Another service user was involved in a violent incident.

CC was asked to stay in the lounge for safety reasons, due to already happening violent incident.

CC ignored staff requests to stay in the lounge and went to her bedroom.

She threatened to ‘kick off’ to staff.

She went to the male toilet and tried to lock herself in.

CC was moved back to the lounge by staff using physical restraint techniques.

While CC was being escorted she dug her nails into staff members arm.

When in the lounge she remained belligerent and moved to her bedroom as soon as it was safe to do so.

Coded Sequence.

AU – A violent incident with a peer occurred

BM – Is asked to do/refrain from something

BN – Refuses to do what is asked

AG – Moves

V – Mild Verbal Aggression

AG – Moves

AE – Challenging Behaviour

O – Physically Moved

Y – Mild Physical Aggression

BH –Belligerent

AN – Withdraws

5.6 Summary

When working with observational data, the type of coding scheme used is crucial to the analysis success. If the coding scheme is too broad then the level of detail in the data could be lost, but if the coding scheme is too detailed then there are too many categories for a useful analysis.

The classification scheme went through several different manifestations. The aim was to create a classification scheme that would then form the basis of a coding manual that would code the database entries and make them suitable for sequence analysis. As the aim of this thesis is to explore the event sequences that lead to violent and aggressive behaviour, classifications were devised to focus on these events. The coding manual has proved suitable for purpose by being reliable, both inter and intra, holding detail from back translation and being comprehensive enough to code the variety of incidents that have occurred in the data.

The next stage of analysis was to take the coded sequences of violence and analyse them with Sequence Analysis techniques. The methodology and rational for this is discussed in the next chapter.

Chapter 6 Methodology of Sequence Analysis

6.1 Overview

Sequence Analysis methodology consists of three stages: unitizing, classifying and analysis. This chapter focuses on the third stage of this process: the analysis technique. The theoretical background, principles and aims of Sequence Analysis will be presented and the methodological techniques used discussed.

6.2 Sequence Analysis Aims: Introduction

The aim of Sequence Analysis is to discover non-random patterns in sequences of behaviour. This is done primarily by looking at the transitions between events in many observations of similar behavioural sequences. The term ‘transition’ refers to a pair of events that occurred in chronological order within a sequence. In Chapter 2, the observations of behaviour and their qualities was discussed, including how the sequences were unitised. In Chapter 5, the process of how the unitised sequences had their component events classified was described. This process of unitising and classification resulted in a set of qualitative records about violent incidents being transformed into coded sequences representing many examples of violent incidents. It is these codes that are used in Sequence Analysis.

6.3 Transitions as a Unit of Analysis

6.3.1 Event to Event Transitions in Sequences.

As discussed in Chapter 5, there was a total of 150 Type A database entries that were suitable for coding. Each of the database entries regarding a violent incident were coded into component events. This meant that each violent incident was transformed into a ‘string’ of codes, representing the chronologically sequential events

that occurred in the incident. Within this string, each event could be considered as part of two pairs, one with the preceding event and one with the proceeding event.

For example in the code sequence below, code ж forms a preceding pair with code д and a proceeding pair with code ф.

ж→ ф → (й → д)→ ж

ж→ (ф → й) → д → ж

It is this transition from one event to another in the sequence that forms the unit of analysis in Sequence Analysis; this is the place where the nature of the sequence, the chain reaction as it were, is captured.

6.3.2 Event-to-Event Transitions in the Data Set.

Section 6.3.1 discusses the transitions that occur between events in single sequences; for example, the sequence of events that occur when a service user hits a member of staff. This transition or pair of events has been noted as the unit of analysis for Sequence Analysis, however this technique is not applied to single sequences. As Sequence Analysis seeks to find the non-random patterns in sequences, looking at the transitions within a single sequence, although interesting, does not provide enough information to discover the non-random patterns in that type of behaviour.

In order to find these non-random patterns in sequences of behaviour, a large enough set of transitions need to be analysed. If single sequences were examined in isolation, this information would not be in-depth enough to allow certain events or transitions to be ruled out as noise. Instead single sequences, such as one of a violent incident, are viewed as a possible example of one of the ways in which an incident of that type could unfold. This property of sequences is discussed in section 5.3.2 but what is important to note here is that if sequences are viewed in this way, then the

number of transitions that are available for analysis increases to the point where non-random patterns might start to emerge.

Sequence Analysis looks for non-random patterns; i.e. in these event pair transitions, are there events which are more likely to be proceeded by another event, over and above what we would expect? This idea might be made clearer by considering the null hypothesis of Sequence Analysis.

The null hypothesis of Sequence Analysis is that the probability of finding a given event is always the same regardless of the previous events. Sequence Analysis asks the question 'what if these two events are not independent of one another?'. This is not to claim that an interdependence of one event upon another would imply causality, but it would indicate that the two events are part of a recurring pattern for a particular kind of behaviour. For example, if we go back to our driving sequence, the event 'turn on the right indicator light' might be followed by the event 'turn right'. This doesn't imply that turning on the indicator causes someone to turn right, but it is strongly interdependent with the action of turning right. The statistical methodology behind this idea will be discussed later in this chapter, but essentially Sequence Analysis seeks to find the probability of one event following another through examination of transitions. This can happen in two ways: B follows A because it is the most common sequitur to A.; or B is more common after A than other alternatives.

6.4 Finding the Pattern: Sequence Analysis Technique

The process of Sequence Analysis consists of several steps, which help transform raw coded data strings into statistical results which are then interpreted. This next section describes each of these methodological steps, with pauses along the way to examine the statistical reasoning behind these steps.

6.4.1 Finding Transitions: the AdTAT Program.

All the transitions between events in the coded data set need to be tallied. To find these transitions by hand would be time consuming and prone to human error. A more convenient way of doing this is to use a concordance program. A concordance program is a way of analysing text to find particular letters, words or phrases and the immediate context that they appear in. Concordances are often used in the study of linguistics to perform such activities as comparing how a word is put to different uses or word frequencies. A famous example of this is work done on the word frequencies of the late Iris Murdoch's literary output. Analysis on word frequency revealed that as Murdoch entered the early stages of Alzheimer's prior to diagnosis, her vocabulary became more limited as compared to her earlier works. This suggests that Alzheimer's might have limited her creative output before she was showing any diagnostic symptoms (Garrard, Maloney, Hodges & Patterson, 2005). Concordance programs can also reduce the complexity that comes from looking at large paper work by converting it into a readily searchable data format (Davidson, 1990).

The Adelaide Text Analysis Tool (AdTAT, 2007) was used to search for all the possible transitions that had occurred when the data were coded. This was done by searching for each of the codes in turn. This produced a list of the all the transitions in the data.

6.4.2 Transition Matrix and Standard Normal Residuals.

The results from the AdTat tool were entered into a transition matrix. The transition matrix produces a list of all the possible transitions which could occur and shows how often each of them did. Each cell in the matrix therefore represents a possible transition and how many time it actually happened. The transitional matrix represents transitions which are chronological in nature; that is, the events that go

down the left hand side of the matrix are antecedents and the events that go across the top of the matrix are sequiturs, as in Figure 6.1.

Figure 6.1

Example Transition Matrix

	A	B	C	Total
A	5	7	2	14
B	4	11	3	18
C	6	0	67	73

A Chi-Square calculation was run on the whole matrix. The Chi-Square value indicates whether there are cells in which transitions are occurring more often or less often than chance within the matrix. The next step to finding these interesting transitions is to determine which individual cells in the matrix contributed to this Chi-Squared value. To do this, when running the Chi-Square calculation in SPSS, instruct SPSS to display the standard normal residuals for each cell. This number represents how much each cell (or transitional pair) has contributed to the overall Chi-Square statistic. A higher number indicates more contribution and conversely a lower number indicates less contribution. This means that individual cells with a high standard normal residual are representative of transitions which occur more frequently than one would expect, and large negative values indicate which transitions occur less frequently than one would expect.

6.4.3 Criterion Number.

The standard normal residual is a number that represents how much the observed frequency of that transition differs from the expected frequency, under the null hypothesis that events within a transition are interdependent on one another. A

high standardised residual indicates that transitions from one event to another would have a high degree of interdependence. Due to the chronological nature of the transitional matrix, this means that when a cell in the matrix is indicated as being interdependent it is the second event (the one from the rows) which is viewed as being interdependent on the first.

Although a high standard normal residual value indicates an interdependent transition, and a low negative standard normal residual value indicates those transitions where one event might inhibit another, how is it known what counts as a high or low value? This is done by calculating a criterion value (Figure 6.2). The criterion value represents a value which the standard normal residual of a cell would have to be the same as or higher to be judged as making a strong contribution to the significance of the Chi Square.

Figure 6.2.

Criterion Value Equation.

$$\sqrt{\frac{df\ Chi\ S}{no\ of\ cell}}_{q} = \text{Criterion Number}$$

The result of this equation was a criterion number of 1.03. This means that any pair of events which had a standard normal residual number higher than 1.03 was worthy of investigation.

6.4.5 Criterion Number: Problem of a Sparse Data Set.

The criterion number is dependent on the number of cells in the matrix, as this determines the value of the degrees of freedom. When the matrix is exceptionally large, as was the case of this one, there is a high degree of freedom value. When calculated from such a large value, the criterion number was quite low. This coupled

with the fact that the data was strongly sequenced meant that the more interesting transitions in the data set (based on unexpectedness) might be obscured. In order to be able to see the transitions that are interesting in terms of the story that they may be able to tell about a violent incident, it was felt the selection criteria needed to be more stringent than this criterion number. The number of cells in the matrix was reduced by creating a new code to replace any code that appeared 10 times or less. These infrequent codes were then collapsed into one code 'XX'. Any code pair that had one or both of this kind of code was removed from the transition matrix and re-entered as 'XX'. This reduced the number of codes to 53. The meant that the matrix was reduced to one of 2,809 cells. The criterion number was recalculated as 1.86. As this analysis uses standardised normal residuals, zero codes in a cell are not an issue as the overall p-value, which would be affected, is not of interest.

To make sure the indicators of dependence were strong, transitions were only reported if they met two criteria: the first was that the standard normal residual had to be equal or above 2 as this was the criterion value rounded to a whole number. The second was that the observed values needed to be to the value of 5 or more. This method stopped the criterion value being misleading as in some cases the standard residual was high, but this was based only on one observed case. If the data set was larger, these high standard normal residual but low observed/expected pairs of codes might have shown more robust results, but to prevent the results from being misleading they were not included in further discussion. 5 observed values were chosen as a criteria because it was large enough to remove isolated events which are likely to be random noise but small enough so that many transitions exist to be analysed, therefore allowing richer sequences of events to be discovered. An additional reason for choosing the value of 5 relates to the assumptions of Chi-Square

testing. These assumptions recommend that for results to be valid, there needs to be expected values of 5 or more in 80% of the cells (Bryant & Satorra, 2012).

6.5 Principles of Sequences

So far the aims of Sequence Analysis and the techniques used in the methodology have been outlined. At this point, the researcher has a list of transitions between pairs of events which are occurring more than one would expect, and are potentially interdependent of one another. How does this list of interdependent transitions become something which might be used to assist in understanding behaviour? The diagrammatic side of Sequence Analysis will be discussed later in this chapter, but as an introduction as to how patterns can be discovered in human behaviour, two important principles of sequences need to be mentioned.

6.5.1 Principle 1: Stationarity.

Stationarity means that the sequence is described by a set of transitional probabilities which are constant (Bakeman & Gottman, 1997). This means that the interdependence of events are constant characteristics of sequence, no matter when they occur. For instance in the sequence below, if the data is stationary, Event B will follow Event A with the same level of dependency whether Event A occurs at the beginning, middle or end of a sequence.

AB̲D̲F̲H̲B̲A̲C̲AB̲H̲G̲AB̲

6.5.2 Principle 2: Homogeneity.

Homogeneity means that the level of dependence between two events, i.e. the degree to which Event A will be followed by Event B, is the same across sequences (Gottman and Roy, 1990). For example in the sequences below each transition from Event A to Event B has the same amount of dependency, no matter which order they occur in.

ABÇKHIAGGD

GFEABKKLID

BBÇABADLMD

These two principles of sequences means that the transitions which emerge as interdependent are not just relevant for considering the links within the data analysed, but also for thinking about the patterns which might be constant in other examples of this type of behaviour.

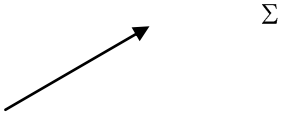
6.6 Sequence Diagrams

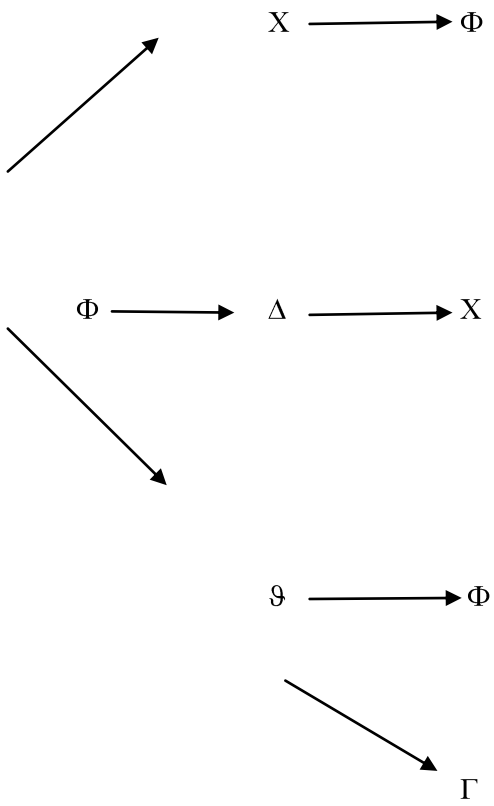
6.6.1 Introduction.

Sequence Analysis methodology results in statistical indicators of which transitions, from many examples of transitions, are part of the pattern or script of a behaviour. While these transitions are interesting in their own right, one of the unique benefits of using Sequence Analysis to investigate behaviour is that it is used to produce visual results in the form of Sequence Diagrams. Sequence Diagrams use the information about interdependence of transitions to create diagrams that represent the non-random patterns in the data.

6.6.2 Diagram Construction.

The most basic way to construct diagrams is to take the transitions between two events and to build them up into event strings. For example, in the diagram below the transitions from event Φ to events X, Δ, ϑ and their subsequent transitions have been noted.





The arrows on the diagrams represent the sequential direction in which the events occurred. These pairs are 'built' up into sequences by looking at the relationships between those pairs which have high criterion values. This can be done 'forwards'. This is where an event is taken as the beginning of a sequence, and all the subsequent sequiturs from that event are mapped in the diagram.

6.7 Summary

In this chapter, the aims, principles, data analysis and data presentation methods of Sequence Analysis have been introduced and discussed, both in general terms and with examples from the research presented in this thesis. Sequence Analysis looks for patterns, and these start to emerge from the application of statistical techniques to coded data. The most interesting patterns come from those transitions which are unexpected, or which do not make sense when thinking about the sequence involved. If we go back to the driving example mentioned previously, we might

expect to see a strong interdependent transition between ‘indicating right’ and ‘turning right’. However, if the strong interdependence was actually between ‘indicating right’ and ‘emergency stop’ then it might lead to questions about the ability of the drivers in the sample. The next step to getting the rich contextual results of Sequence Analysis was introduced in section 6.6 and regards diagram construction. Chapter 7 goes on to introduce and discuss the diagrams which resulted from this work.

Chapter 7 Sequence Analysis Results

7.1 Overview

Sequence Analysis produces a statistical value that indicates which transitions occur more or less frequently than one would expect. This is called the standardised residual. These values are used to represent the transitions graphically in a Sequence Diagram. In this chapter the sequence diagrams that resulted from the analysis will be presented and discussed.

7.2 Sequence Diagrams

As mentioned previously, the diagrams were constructed from the results of the sequence analysis that took place on the coded database entries of violent incidents. Transitions between events were included if they had a standardised residual value of 2 or above, with an observed value of 5 or above. Any values that were below this would be based on such a small amount of real world data that it was felt including them in the diagram would present a distorted picture. Each rectangle on the diagram represents a coded event. The arrows indicate the direction of the transition between two events. As the coded events could, on the whole, happen anywhere in the sequence, occasionally there are interesting transitions both ways between events. For example, A followed by B and B followed by A. If this occurs this is represented on the diagram by two arrows.

The transitions between pairs of events will be discussed in terms of antecedent event and sequitur. If an antecedent has more than one sequitur event, then these will be presented in order of the strength of the relationship between the two. The relationships between antecedents and sequiturs will be discussed in terms of the ‘real life’ meanings of the sequence; i.e. why it might be particularly unusual for an event sequence to emerge. In all sequences of behaviour, there are things that one

would expect to follow another. However, of particular interest here are the events which follow another that one would not expect to see or hold significance for a particular behaviour. It is these types of events that will be remarked upon here. Next to the arrows are numbers that represent the standardised residual value. The higher this number, the more unexpected this transition is statistically.

The sequence diagrams presented here are based on first order transitions; the transitions are from one event to another, for example A being followed by B. The sequence diagrams are then 'built' by linking the transitions together. For example, if A followed by B is an unexpected transition, and B followed by C is an unexpected transition, in the sequence diagram this would appear as A followed by B followed by C. This process produces the sequence diagram, a representation of some of the event chains thought to be a key part of that particular behaviour. However, it is important to note here that this can produce a slightly misleading picture. Although A followed by B is a likely transition, and B followed by C is a likely transition, it does not automatically mean that A followed by B followed by C would be likely to happen. In order to do this, higher order transitions would need to be examined. This would take into account the likelihood of A and B being followed by C and so on. This would be an incredibly complex procedure and very data hungry, so was not possible to perform on the data used in this research. First order sequences like those that are presented here are very useful for indicating the initial sequence chains important for understanding behaviour (Dawkins, 1976).

The sequence diagrams are based on the values of the standardised residuals, the critical value having been set by the criterion number and in the case of this research, a further condition of having an observed value of 5 or more. This means that, to some degree, the format of the diagrams is not absolute, and could take a

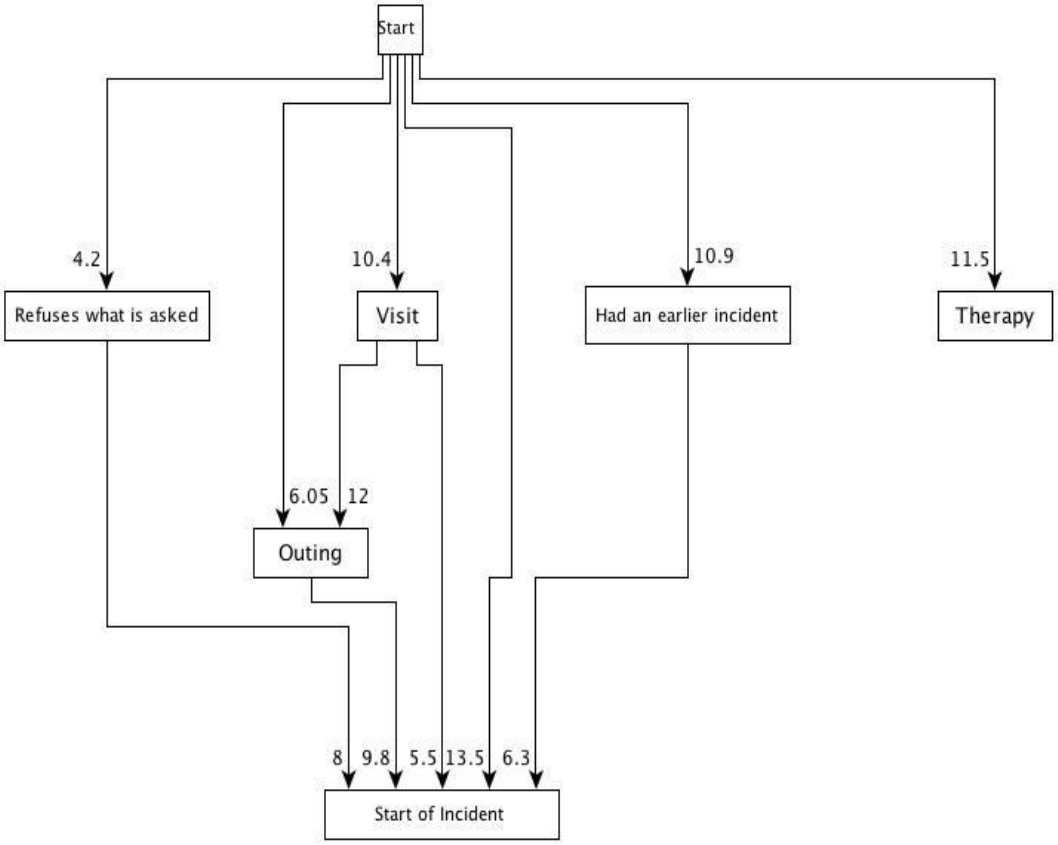
number of possible forms. Some formats are easier to ‘read’ than others, and can also be constructed in a variety of ways. For transparency of meaning, what is being presented and how will be introduced before each diagram in this chapter.

7.3 Start of Entry to Start of Incident

When compiling the database entries, events were split into those that had occurred in the previous 12 to 24 hour period before the incident, and the incident itself. The incident itself was classed as the short-term violent incident: i.e. a period which included less than one hour before the incident and the incident itself. Anything before this ‘incident’ period was also coded, but classed as occurring before the incident started. These events were often those that are longer term or less detailed, such as ‘visit’, rather than the short term ones which would be included in the incident itself, such as ‘positive interaction with peer’. Figure 7.1 was constructed from the transactions from ‘start of entry’ (Code A) until the code for ‘start of the incident’.

Figure 7.1

Sequence Diagram of Transitions from the Start of an Entry to the Start of an Incident.



The most striking thing about this diagram is that the most common sequitur after the start of the entry is 'start of incident'. The sequences of aggression are drawn from clinical records about aggressive behaviour, namely the distress and agitation record (see Chapters 2 and 3). This type of record required a description of the aggressive incident but did not ask for information prior to the incident occurring. This property of the distress and agitation record may have biased the type of information available, leading to a suggestion that there were not many events occurring prior to a recorded incident of aggression. Lack of events before aggression starts could also be

due to the incident being in the early morning before there has been much opportunity for action, or it may be an indicator of a lack of activity, which has been suggested as a reason for challenging behaviour in this population (Mansell, Beadle-Brown, Macdonald & Ashman, 2003).

The second striking thing about this diagram is that the third most frequent sequitur of violence is the protagonist already having been involved in an incident earlier in the day. Although violence is more common in people with ID than other clinical groups, and that some people are more violent than others, one would expect from a management perspective that if someone had an incident earlier there would have been measures put in place to calm or correct the situation. This could indicate that management strategies for violence, while being effective at preventing further violence during the moment, are not as effective at preventing violence later. Or it could indicate that the individual responsible for the violence is in a particularly volatile position such as being in a manic phase, where their actions are hard to predict. It is most likely a combination of both of these things as well as other factors, but from a management perspective it might indicate certain time periods where violence is more likely.

Services for people with intellectual disability living in care are often criticised for not providing enough meaningful activity for those in their charge (Mansell, et al., 2003). This is often cited as a reason for violent or challenging behaviour, so it is very interesting to note that two common antecedents to a violent incident were receiving visitors and going on outings. This would go against the expected results that the more visits and outings someone had the less violent incidents they would be involved in. This may also be an artefact of the observations used in the research. Visits and outings are concrete events, with their own monitoring

forms. It may have been easier or more appropriate for the writers of the records to note these events down rather than others. However, when looking through the daily communication records regarding the lives of the participants, visits and outings appear to be a fairly limited occurrence.

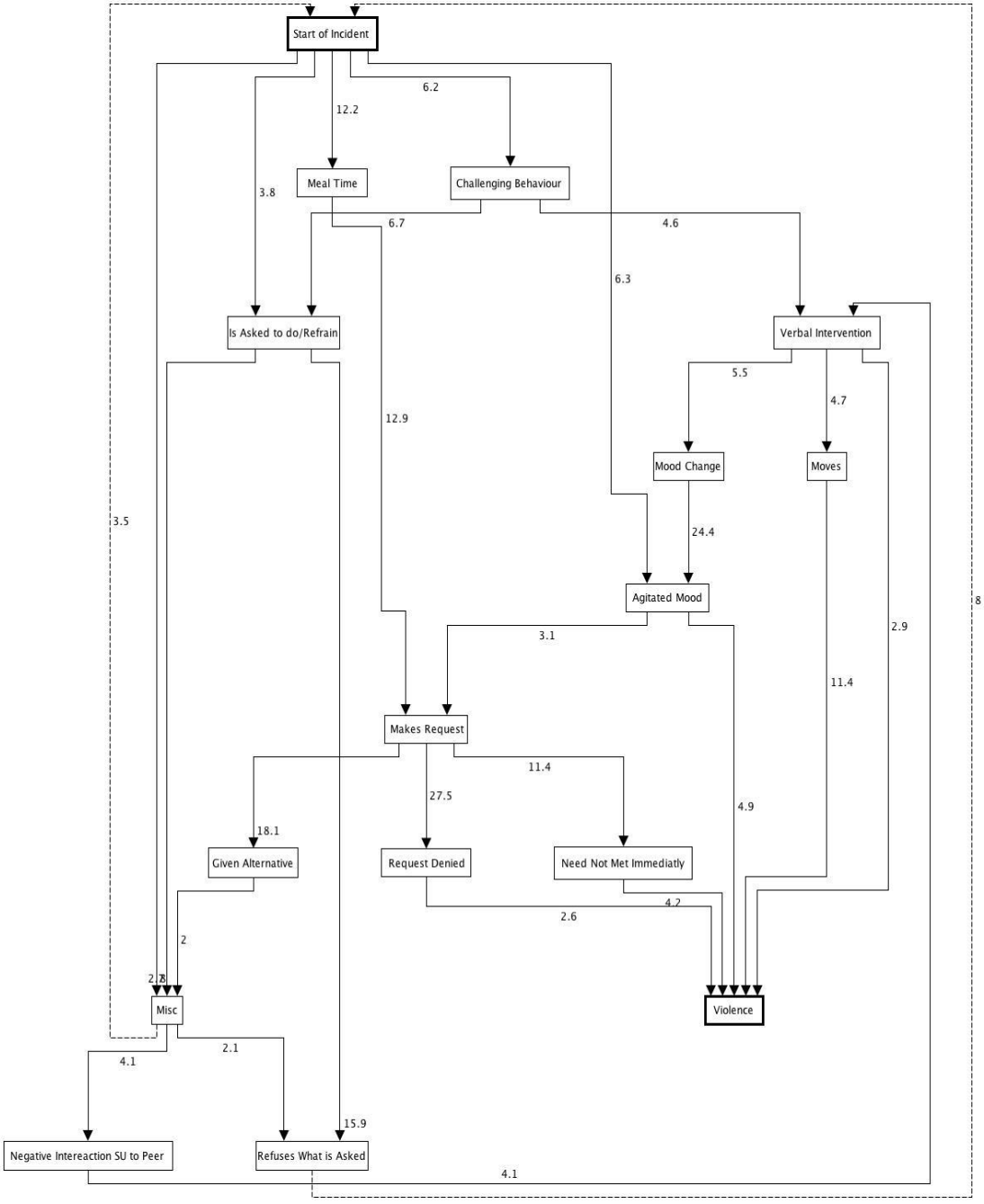
On the diagram, the code for therapy (including occupational therapy, psychologists' visits, aromatherapy and music therapy) is indicated as occurring prior to violent incidents, but does not have a 'next step'. This is due to the way the diagrams are constructed, with the previously mentioned inclusion criteria of standard residuals and observed values. What this indicates is that therapeutic activities are a common part of the lives of the people with intellectual disabilities that were in the sample. However, this also indicates that within the range of events/activities which took place after therapy, the transitions between therapy and other events did not reach the inclusion criteria. This could potentially be because the range of events following therapy was particularly diffuse. In this sequence, the code for therapy referred to a number of therapeutic activities such as music therapy, a psychologist visit or working with the occupational therapist. Different therapeutic activities may have be followed by different events, which meant when therapies were combined together the events which followed them did not show up as significant. Very little is known about the effects of different types of therapy on aggressive behaviour in people with intellectual disability. Targeted therapeutic interventions to reduce aggressive cognitions (Rose & West, 1999) and behavioural therapy (see Chapter 1) have been efficacious, however the therapeutic activity of the participants in this sample was not aimed at challenging and aggressive behaviour. The various therapies being conducted in the units were collapsed into one category as there were not enough examples of each individual type of therapy to include in the analysis, and so individual effects of the event of therapy upon following events could not be examined.

7.4 Violence Collapsed

In the initial coding scheme, violence was coded into subcategories such as ‘mild verbal aggression’ or ‘self-harm’. However, the sample size for each subcategory was fairly small, so in order to look at the chains of events that might be relevant to violence as a whole, the violence subtypes were collapsed into a Violence Code (V). When the diagram was compiled, its size made it very difficult to observe so, in for clarity the diagram has been split from ‘Start of Entry’ (Code C) to Violence (Code V) in Figure 7.2 and Violence (Code V) to End of Incident (Code D) in Figure 7.3.

Figure 7.2

Sequence Diagram of Violence Collapsed: Start of Incident to Violence


Start of Incident
6.2
12.2
3.8
Meal Time
Challenging Behaviour
6.7
4.6
6.3
Is Asked to do/Refrain
Verbal Intervention
5.5
4.7
12.9
Mood Change
Moves
3.5
24.4
Agitated Mood
8
3.1
2.9
11.4
Makes Request
11.4
27.5
4.9
18.1
Given Alternative
Request Denied
Need Not Met Immediatly
4.2
2.6
2
2.8
Misc
Violence
4.1
2.1
15.9
Negative Intereaction SU to Peer
Refuses What is Asked
4.1

7.4.1 Violence Collapsed: Start of Incident to Violence

Some of the most interesting event transitions here seem to be centred on 'making a request'. Making a request is a code that refers to any point when the protagonist asked for or to do something. When this is met with a negative reaction, i.e. the requested item is not provided immediately, this is linked strongly to an act of violence. However, when the protagonist is given an alternative, this transitions to another pathway. It is also interesting to note that there was a code for request met in the scheme, however as this does not make an appearance here, it would indicate that not having a request satisfactorily met is an important factor in violence.

Example from violence observations:

"Agnes asked to call her mother. This was denied as her mother was at work. Agnes pushed a staff member over and went to her room."

Making a request is transitioned with the events "meal times" and "agitated mood". Units often provide menu choices and diet plans for those in their care, and involve them in meal planning. However, issues with catering and healthy eating mean that not every want can be provided for. Making mealtime requests such as 'can I have a different soup?' or 'can I have another pudding?' might not be fulfilled due to the option not being available, or someone being on a diet plan that excludes that particular food. This might provide a particular challenge to services as they cannot provide all options for all people.

Example from violence observations:

"Brenda was eating her supper at 9 pm. She asked for some sweets. Staff reminded her of her diet plan and Brenda became verbally abusive."

Agitated Mood is linked to the events of making a request and violence. Agitated Mood refers to when someone is emotional, distressed, or acting in an agitated manner such as pacing the unit. This agitation may lead to them making unreasonable requests or by providing a management challenge as to how to deal with the behaviour. It may also point to an underlying dissatisfaction with the situation that they are in, which is especially relevant to those people with intellectual disability who have poor verbal communication skills, or those who have poor relationships with staff members and peers and cannot discuss their problems.

Example from violence observations:

"Clive* became elated. He moved to the lounge area where he began to swear at staff. He then kicked the doors in the unit and broke his bed frame."

Verbal Intervention is implicated in transitions to violent events, mood change, and movement. Verbal Intervention refers to an attempt from a staff member to calm or discuss a problem with the protagonist. Verbal Intervention is the recommended initial stage of intervention, before isolation, PRN or physical restraint. However, in the above diagram it appears to have direct, albeit weak, transitions to violence as well as instigating mood change and movement. Of course, this method does not take into account how many times verbal intervention was successful, as it only looks at event chains of violence rather than non-violence, but it does appear that it is not successful in every case. This also indicates that when another trigger or sequence leading to violence has occurred, verbal intervention fails to prevent violence.

Example from violence observation:

* Names have been changed

"Delia started claiming peers belongings as her own. Staff intervened and explained these were not her things. Delia started swearing and shouting and moved to the lounge where she threw a beaker at a staff member."

Movement was another interesting transition that emerged. Movement refers simply to the protagonist moving to another area of the unit. However, it is interesting as this could indicate that protagonists are moving themselves to an area where violence can take place because it is less observed, easier to perform, nearer the target of aggression, or to get away from a difficult situation.

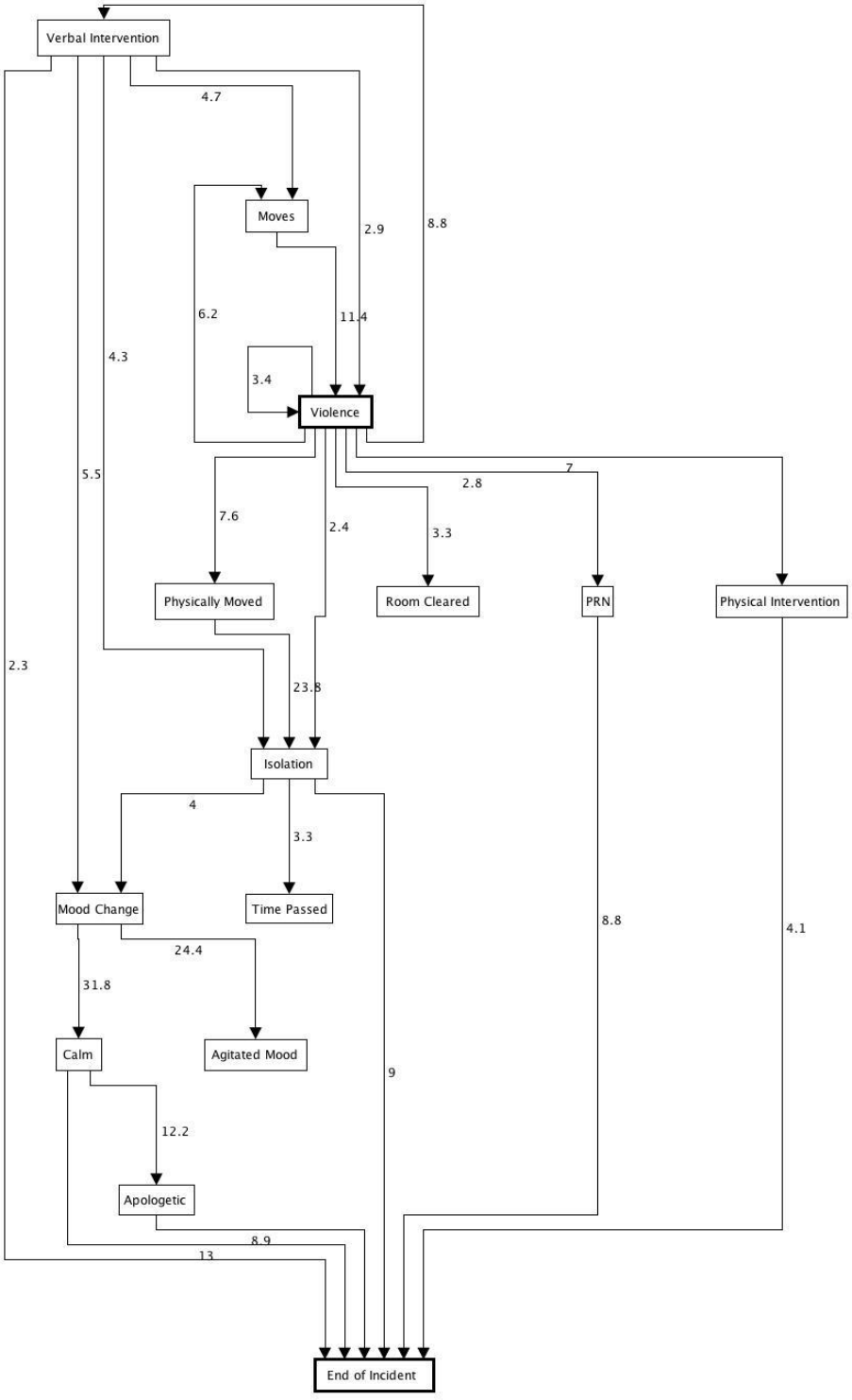
Example from violence observations:

"Eric was verbally abusive and staff verbally intervened. Eric was encouraged to go and calm down. Eric then went to the bathroom. After this he informed staff that he had flooded the bathroom and defecated on towels."

One event transition that was surprising because of absence was that of care situations. Care situations such as intimate bathing, toilet use and dressing have been implicated in violent behaviour both in literature (Strand et al., 2004) and in the database discussed in Chapter 4. This could indicate that care situations are not written about with much detail in the records used for this study.

Figure 7.3

Sequence Diagram of Violence Collapsed: Violence to the End of the Incident.



7.4.2 Violence Collapsed: Violence to End of Incident.

Understanding the sequence of events that is involved in violence can be useful for management and prediction purposes. However, because the data collected

often included how violence was managed, there is an opportunity to observe which the most common ways of managing violence are and, potentially, which events seemed more effective in bring an incident to a close. Due to the nature of the record format in the observations, an incident was judged to have ended when the violent act ended. There were many cases where additional information about the aftermath of violence was recorded, such as Behaviour Monitoring Forms and General Communications.

Violent behaviour was most typically followed by some sort of intervention. This is to be expected, as this is the recommended strategy for dealing with violent behaviour. As one would also expect, the most common of these was verbal intervention followed by physical movement, which meant removing the person from the situation to one where they could calm or have their needs met.

Example from violence observations:

"Felicity was undoing the bolts on doors. She was asked to stop this and she became agitated. She threw a cup that hit a staff member in the eye. She was escorted to a low stimulus environment away from peers. She calmed."

What is interesting about this diagram is what it tells us about how violence is reported. The intervention used to manage violence was commonly noted, however it is hard to discern what effect this intervention might have had; i.e. there was little post intervention follow up noted in the records. This is demonstrated by the lack of event transitions between intervention and end of incident. Out of the interventions mentioned, only isolation and verbal intervention have transitions associated with them, and these are state changes of the protagonist such as becoming calm or apologetic. This observation is not a criticism of the records, or those who write them, but without the information about how particular interventions work for the

protagonists of violence being noted, there would be no evidence of what the most suitable way of managing that particular behaviour would be.

7.5 Violence Sub-Types

There were eight codes that covered the various types of violence that were reported in the health records. The above diagrams represent the analysis when these subtypes of violence were collapsed together to form a separate code. Different types of violence are often thought to have different motivators or causes (Emerson & Bromley, 1995), and so the sequences that are related to them might also be different. Incidents are recorded after the event and so there is potential for detail to be missed or recalled differently. There is also the potential for "recording fatigue" to set in, which may mean that certain acts of aggression, especially those that have been frequent and not serious, go unrecorded (Shah, 1999). Recording may also be weighted in favour of incidents that are seen as serious, such as physical aggression or extreme property destruction (De Niet, Hutschemaekers & Lendemeijer, 2005). For example, when recording behaviour involving mild verbal aggression and extreme physical aggression, staff may only record the more aggressive of the two behaviours. Staff beliefs about aggression and challenging behaviour may also influence the type and amount of behaviour that is recorded (Hastings, 1995). This means that behaviour that was seen as being out of control of the individual was not recorded as frequently as behaviour that was deemed to be the individual's fault. However, clinical guidelines for record keeping in intellectual disability state that all challenging behaviour should be recorded, so it is impossible within the scope of this research to estimate what proportion of aggressive incidents were not recorded from the three units involved. Behavioural approaches have stressed the importance of examining types of behaviour, as well as potential functions of that behaviour, as they can reveal important factors in the shaping and maintenance of that behaviour (Emerson, 2001).

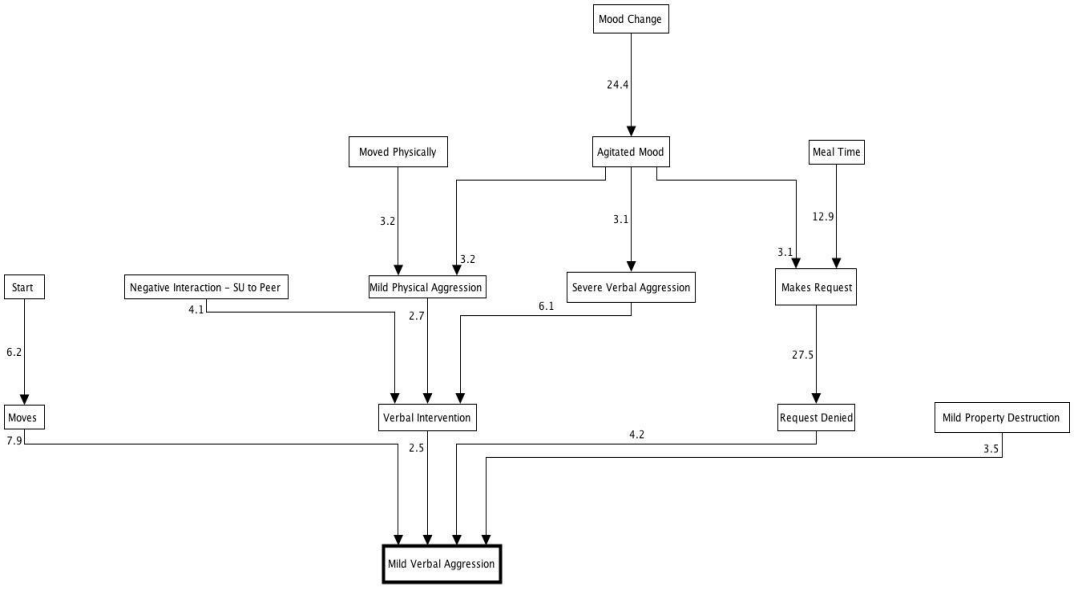
When the violence sub-types were collapsed, this meant those types of violence with very small sample sizes such as self-harm could still be included meaningfully in the analysis. However, when looking at sub-types of violence, those that had very small numbers were excluded. The subtypes that diagrams could be constructed for were mild verbal aggression, mild property destruction, mild physical aggression and severe verbal aggression. For each sub-type the antecedents and sequiturs will be presented in two separate diagrams for clarity and discussed.

7.5.1 Mild Verbal Aggression.

Mild verbal aggression refers to when a protagonist swears, makes mild threats or insults someone. Figure 7.4 is a sequence diagram of the transitions that occur before mild verbal aggression.

Figure 7.4

Sequence Diagram of Antecedents to Mild Verbal Aggression.



Like violence in general, mild verbal aggression is commonly preceded by movement, verbal intervention and having a request denied. When considering the latter two event categories, what is classed as mild verbal aggression could be in retaliation to the verbal intervention and request denial. The way the records are constructed as folders or dossiers kept on individuals does not promote the recording of interactions, either between staff and the individual or peer to peer, so it is difficult to understand the manner in which these denials or interventions are handled. It is also not clear from these results whether requests were appropriate in nature, and whether verbal intervention was justified for a certain behaviour. It may be that for some individuals the loss of perceived liberty experienced by living in a unit, especially one such as Unit A, which is short term, might mean efforts to curtail behaviour is reacted to negatively with verbal aggression.

There is little evidence of reactive aggression towards peers. Sharing an environment with others is often fraught with difficulties and this is compounded when both the individuals and those he/she shares with have complex needs (Low, Draper & Brodaty, 2004). However, this was not evident in this research. This could

be due to there not being enough in-depth records to provide this type of information, as discussed in Chapter 4, but could also be evidence of individuals preferring to take out their frustration and aggression about not being able to have or do things on staff members.

Example from violence observations:

"George came out of his bedroom at 11:15pm demanding to watch DVDs all night. Staff explained to him that this was not possible. George then began to swear and shout at staff, stating he did not like the rules on the unit, and wanted to watch DVDs all night like he did at home."

Figure 7.5

Sequence Diagram of Mild Verbal Aggression

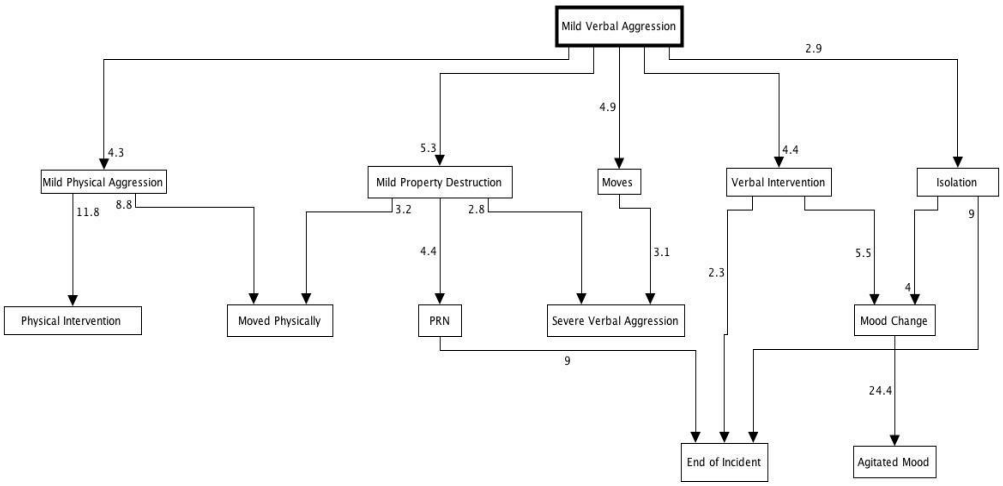


Figure 7.5 shows the sequiturs of mild verbal aggression. What is striking about these transitions is that mild verbal aggression escalates to mild physical aggression and mild property destruction but not severe verbal aggression. One might expect to see an escalation of verbal aggression if behaviour is escalating in the same

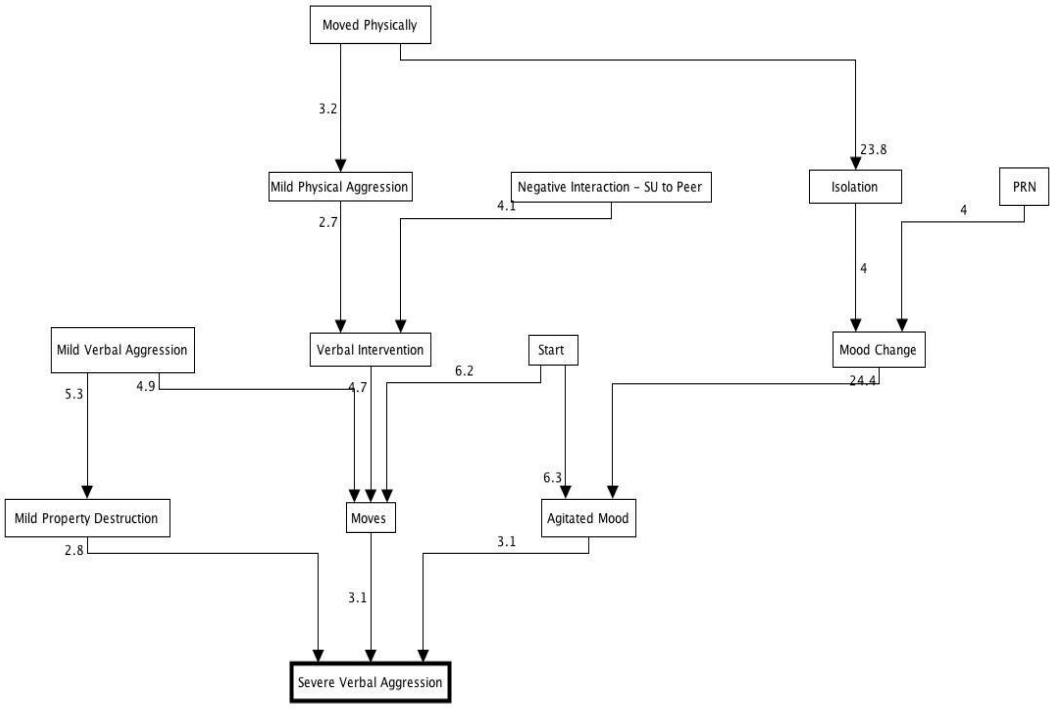
modality. It may be that in reporting verbal aggression, if it gets worse or more intense this is not noted when other behaviours are also occurring alongside it.

7.5.2 Severe Verbal Aggression.

Severe Verbal Aggression refers to when a protagonist makes sustained threats, racial insults, and shouts or screams while doing so. Figure 7.6 is a sequence diagram of the antecedents to severe verbal aggression.

Figure 7.6

Sequence Diagram of the Antecedents of Severe Verbal Aggression.



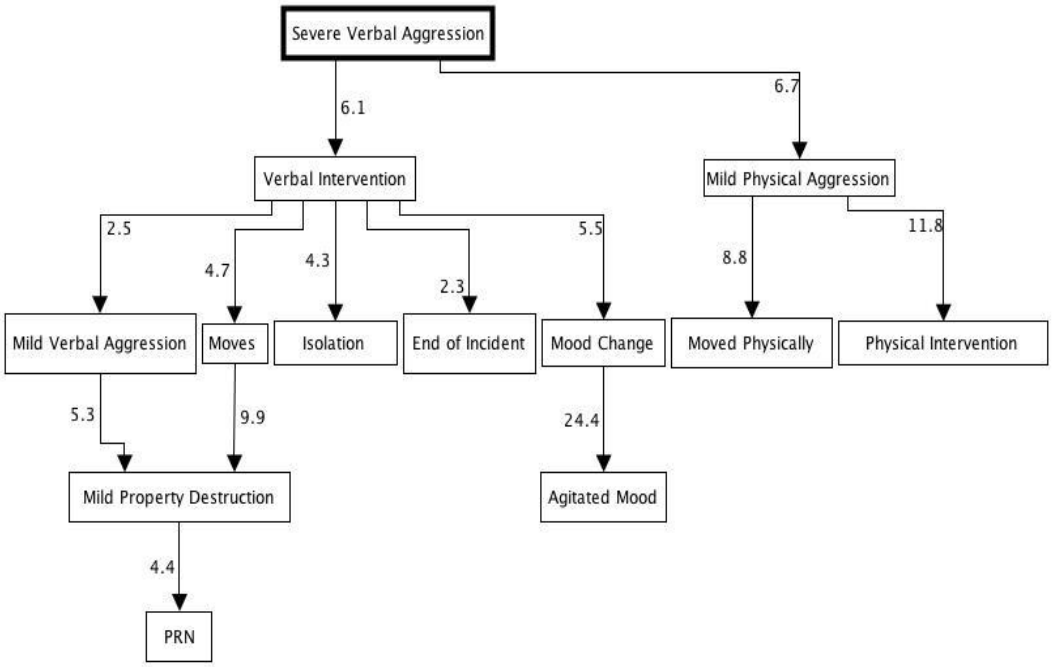
As seen in Figure 7.5 there is no direct escalation between mild verbal aggression and severe verbal aggression. Severe Verbal Aggression does not seem to occur directly after verbal intervention, but after the protagonist has moved as a result of verbal intervention. This could indicate that after a protagonist has been reprimanded for behaviour, they move away from the person who did this, or towards a target (who could be the person who reprimanded them or another) to then become severely verbally aggressive.

Example from violence observations.

"Harry came into the dining room at lunch time. He began to shout and swear at staff when he saw there were no free seats. Staff tried to discuss this with him but he ran to his room where staff could hear him screaming and shouting. He then made racial slurs and threats to staff member A."

Figure 7.7

Sequence Diagram of the Sequiturs of Severe Verbal Aggression.



Severe Verbal Aggression is most likely to be followed by verbal intervention and mild physical aggression. Having an awareness that severe verbal aggression is likely to be followed by physical aggression is important from a management perspective as it opens the potential for management systems to be put in place. Violence subtypes or typographies are often examined in isolation of one another, with expected escalations taking place through the potential severity of the subtype (Lowe et al., 2007) so a method which can link more than one subtype to another sequentially is useful.

It is important to note that verbal aggression of all types is associated more with people who are classed as having mild intellectual disability (Croker et al., 2007).

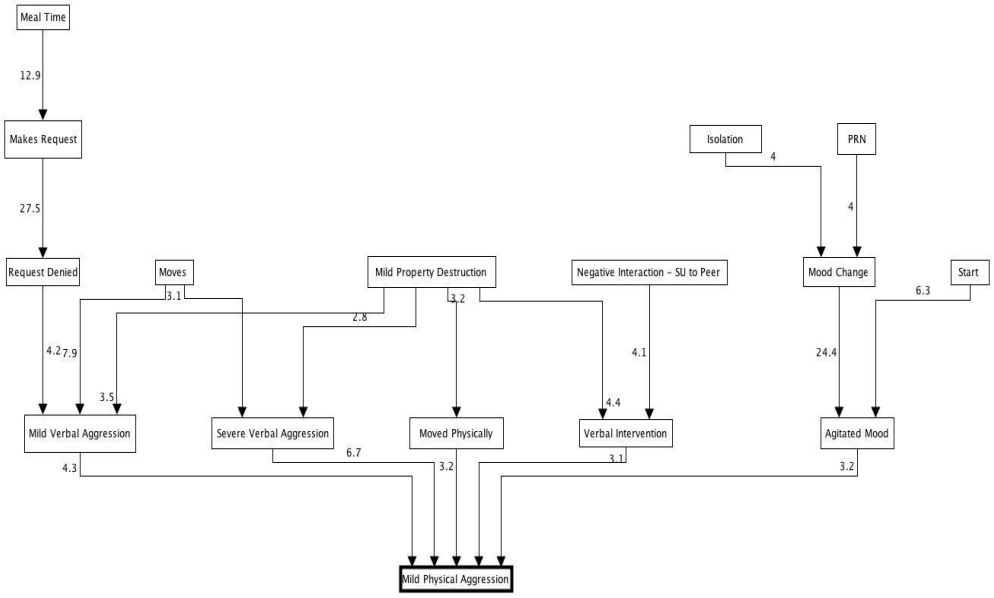
In this research, verbal aggression has been the most common form observed, which fits with the characteristics of the research population. There were fewer examples of physical aggression, property destruction and self-harm, which means it was harder to draw links between these, although they might exist.

7.5.3 Mild Physical Aggression.

Mild physical aggression refers to when a protagonist hits, slaps or scratches another once, or pushes at someone with gentle force. Figure 7.8 shows the antecedents to mild physical aggression.

Figure 7.8

Sequence Diagram of the Antecedents to Mild Physical Aggression



Interestingly, mild physical aggression is preceded by being physically moved. This is when a protagonist is physically escorted to a different area, usually to remove them from a situation. This could be a physical reaction to the act of being forcefully moved. Being physically moved is a very disempowering situation, and it has been suggested that when people with intellectual disability are shown their lack of power in such situations such as being forcefully bathed or moved, they react against this with aggression (Brockman, 2002). This could also be due to the fact that when people are physically moved, they are often removed from an area where they are trying to damage property. Frustration at not being able to achieve their goal, or the thing that was causing them to try to damage property in the first place, may make them turn to being physically aggressive to others.

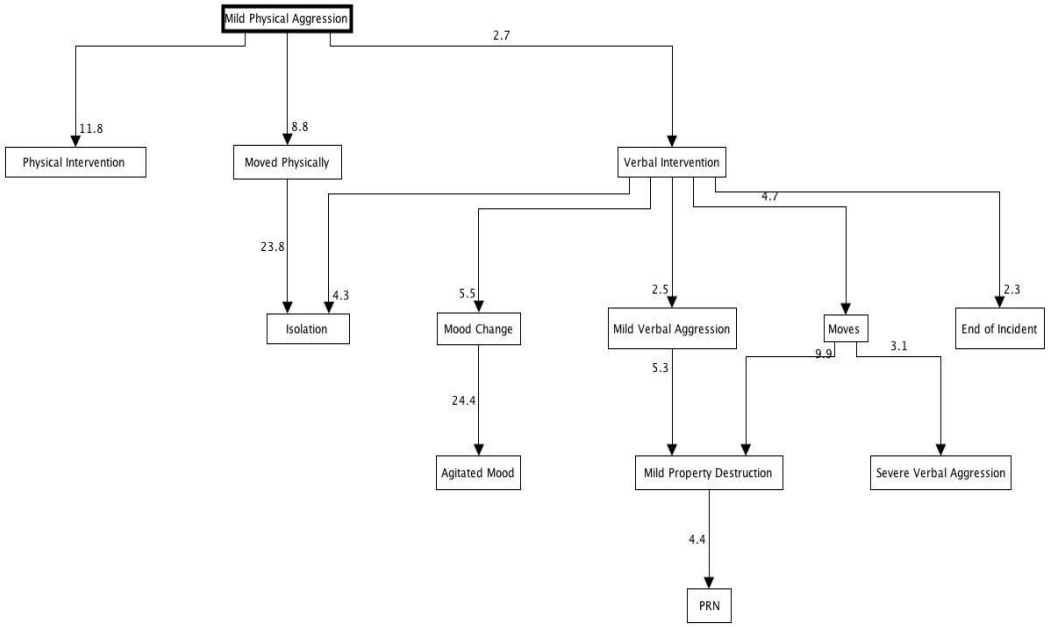
Example from violence observations:

"Ian had become agitated and was kicking the doors and punching windows in the lounge. Ian was escorted to a quiet area to reduce the risk to staff and peers. He then attempted to punch a staff member and slapped staff member B."

Both mild and severe verbal aggression is followed by mild physical aggression. This might be indicative of a pattern of escalation if these go unchecked, or may be a pattern of how some people with intellectual disabilities see their violent behaviour evolve in certain situations.

Figure 7.9

Sequence Diagram of Sequiturs to Mild Physical Aggression.



Mild physical aggression is more likely to result in some sort of physical hold, be it Timian physical intervention or physical movement. Timian physical intervention refers to a set of physical interventions commonly used in care units for people with intellectual disabilities, which avoids being painful or punishing and attempts to maintain the dignity of those involved while managing behaviour. Physical movement

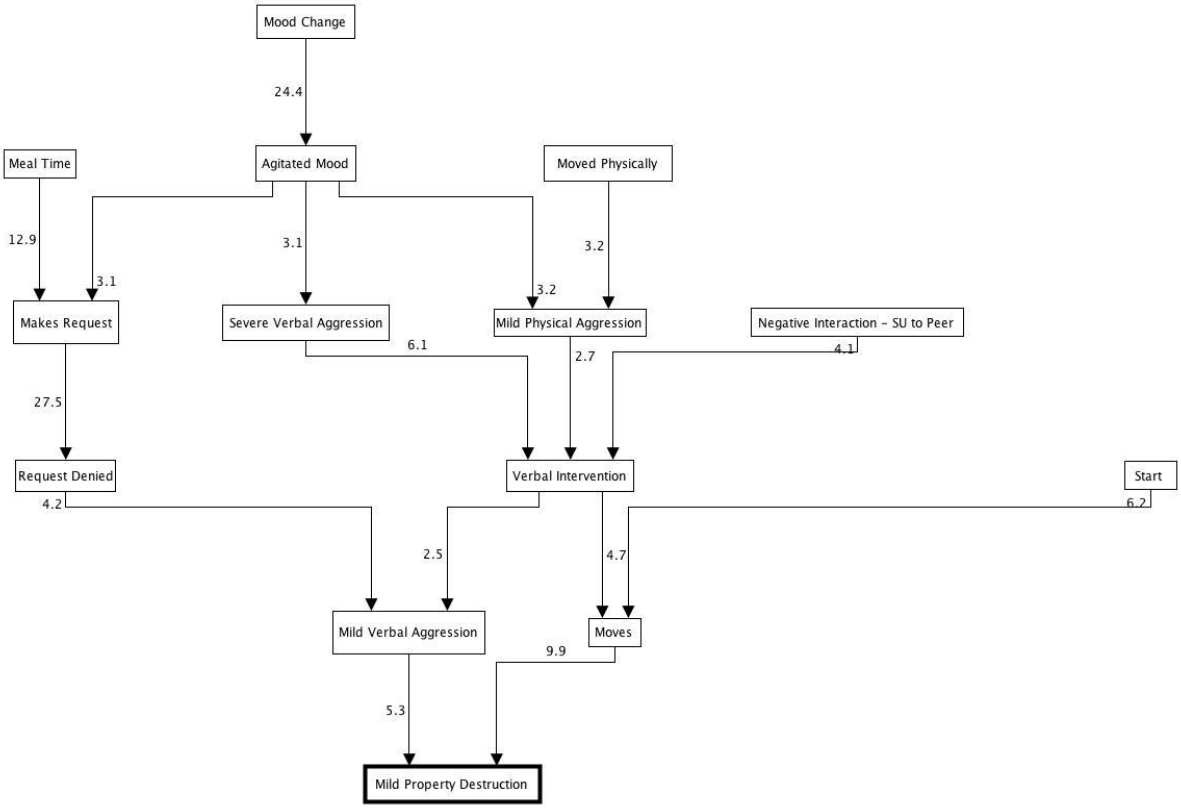
refers to a specific type of Timian hold which enables people to be escorted with minimal risk to another area. Although physical interventions are recommended as the last course of action, it occurred frequently in the reports of aggressive incident. This may be due to physical intervention being regarded as such a last resort form of intervention, which is high in health care risks to the service user, that when this is used it is more often documented than less risky interventions. Out of these two responses, physical movement is likely to result in isolation, whereas physical intervention did not seem to have any statistically significant sequiturs. This might make being moved physically away from a situation into isolation a more preferable response for protagonists and staff. Physical intervention is found to be unpleasant for those involved (Sequeira & Halstead, 2004), dangerous, and of little meaning to the person with learning difficulties (Hawkins, Allen & Jenkins, 2005). As both physical interventions and isolation led to the same end state (i.e. the end of the incident) and because of the associated problems with physical intervention, isolation may be a more appropriate response to physical violence when possible.

7.5.4 Mild Property Destruction.

Mild Property Destruction refers to tipping furniture, banging on doors, pulling down curtains and throwing items. Figure 7.10 shows the antecedents to mild property destruction.

Figure 7.10

Sequence Diagram of Antecedents to mild Property Destruction.



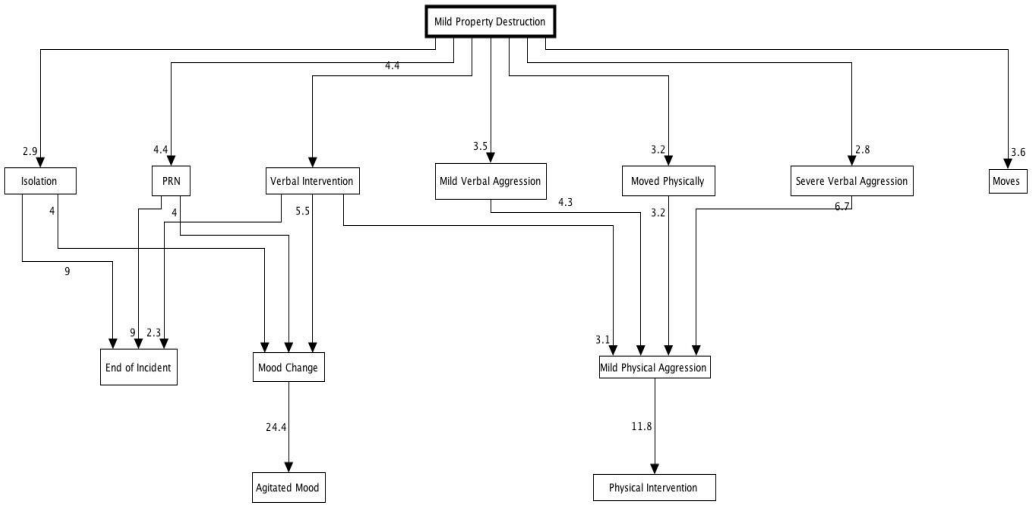
Mild property destruction has the least direct transitions associated with it when compared to the other kinds of violence. Displaying mild verbal aggression seems to be the biggest risk factor for someone becoming destructive of property.

Example from violence observations:

"Jack began to become more elated during the morning. He was threatening to staff, saying he was going to punch them. He was also swearing under his breath. He then began to kick and bang the corridor doors."

Figure 7.11

Sequence Diagram of Sequiturs of Mild Property Destruction.



Mild property destruction was associated with the widest range of interventions when compared to other types of violence, but was not significantly followed by physical intervention. This could be a reflection of the fact it was prevalent in all the units, and so was tackled in the way most appropriate to each unit. If the property destruction is mild in type then the risks to others would be low, negating the use of physical restraint. It is also the only type of violence out of the four subtypes that is likely to be followed by the administration of PRN. PRN refers to pro re nata medication, which is given as and when required. In the records there was evidence of self-medication cycles; where an individual who refuses medication 'self-medicates' by requesting PRN. The records showed examples of people who refused their general medication being offered PRN when they are distressed. Mild property destruction, such as throwing a cup or tipping a chair, with the associated low risk and low concern about it, might bring about being offered PRN. This might be especially useful to those with poor communication skills and more moderate types of intellectual disability who may lack the cognitive capacity to request medication verbally.

7.6 Summary

This chapter has presented sequence diagrams based on the most likely event transitions in violent incidents found by the Sequence Analysis methodology.

The sequence diagrams have highlighted several event chains that might be important for understanding violence in people with intellectual disability, both as a whole and when split into sub-categories of violence.

People with intellectual disability who are violent are often experienced as being unpredictable, with no reason or pattern to their behaviour (Bromley & Emerson, 1995). These sequences show that there are potential patterns to this behaviour, for example, by noting the frequency that visits and outings, in a world where these are uncommon, occur prior to violence. The sequences also show how the causes of violence in people with intellectual disability are similar to those of the general population, by their frustration with not having their requests fulfilled and by being potentially provoked in the form of verbal intervention. However, unlike the general population, the aggressive response of a person with intellectual disability are stronger and need to be managed in some way.

Common strategies used to deal with this violence were highlighted, with a notable lack of management strategies such as losing privileges, having outings cancelled or rooms cleared out. P.R.N medication was used primarily after property destruction. Property destruction did seem to escalate to other forms of violence, so P.R.N might have been a useful response towards this type of violence in order to avoid escalation. However, due to the great deal of evidence which suggests medication for violent behaviour is ineffective (Brylewski & Duggan, 1999), as well as the time delay in taking a medication before it can become effective, it might not be the medication itself which is causing the escalation or ending of violence but rather

another type of process. This process could be placebo in nature, or a reinforcement of a procedure where the person with intellectual disability believes that the medication will help them and so ceases their behaviour.

The sequences presented here focused on violence as a whole and four subtypes of violence, mild and severe verbal aggression, mild physical aggression and mild property destruction. This is due to there being very few examples of the other subtypes of aggression in the data set. However, this also serves as a demonstration of what the inside of a unit for people with intellectual disability is like, for both staff and service users. People who live and work in these units may have to experience being sworn at, threatened and slapped. Although the behaviours detailed here are not always serious offences, they are very different to what many of people would call tolerable, and those who live and work in these units should be accorded respect for the difficult situations they navigate on a daily basis.

The sequences of aggression described here are based on written reports by nurses and health care assistants rather than direct observations. Issues with clinical record keeping such as recording fatigue may have influenced what information was available, which may make the sequences less accurate in documenting the sequences of aggression than was possible. This limitation will be discussed in more detail in Chapter 9.

Chapter 8 Temporal Patterns of Aggressive Incidents

8.1 Overview

Log Survivor analysis uses the information about intervals between target incidents to try and discover patterns in their occurrence. The distribution of time intervals between incidents is highlighted allowing patterns to emerge, which could then potentially be used to inform when an incident is most likely to happen after a previous one has occurred. This chapter discusses work using log survivor analysis on an alternative data source to contribute to the knowledge about violence in people with intellectual disability.

8.2 Log Survivor Analysis

So far discussion has been concerned with understanding and predicting violent incidents through the sequences of events that occur prior to them. Health record information has been examined to discover those sequences, which rely on event information to show the typical 'script' or sequences involved in violent behaviour. Another way of investigating and understanding violence is by looking at the temporal patterns of this behaviour (Nelson, Bromley & Thomas, 2001).

Log Survivor analysis is used to look at events that occur periodically, from volcanic eruptions to microbe death. This involves using the length of time between events to investigate the pattern of reoccurrence. These patterns can indicate the likelihood of another event occurring, while taking into account delayed effects. I.e. whether a volcano erupting increases the likelihood that another eruption will occur in three years' time.

Sequences of events are part of a complex amount of information that can be used to predict violence. There are examples that suggest that an important factor in

predicting when another incident might occur is the presence of a previous one. An example on an individual level would be that the main predictor for self-harm behaviour is whether a person has self-harmed recently. This would indicate that the occurrence of self-harm was, at least in part, interdependent on a previous occurrence of self-harm. Knowing that an incident that occurred earlier in the day is a possible predictor of further violence from the same person is a useful way of being able to set up management strategies.

The idea that a violent incident might 'set up' a person for further violence, or be indicative of a change of state in the individual that mean further violence is likely, is a useful thing to know in terms of prediction and management. This idea could also be extended to a whole unit or system level. By examining the violent incidents in a whole unit, all incidents by all residents are included in analysis without distinction between individuals. Units might have a 'state' or point in which a previous violent incident, combined with the environment of the unit and after a certain time interval has elapsed, where violence is more likely. Looking at the temporal patterns across units is informative, as if these different units have different patterns of violence, it would indicate an influence of the dynamics of the unit on whether violence might occur. This could also be a useful source of information for an individual unit as it would indicate when the risk of violence might be high in that particular environment (Beale, Clarke, Cox, Leather & Lawrence, 1999).

Log Survivor analysis is used to discover the temporal patterns in event occurrences. As discussed in Chapter 1, this technique is used in a wide variety of areas and is performed on real world observations of temporal data. This technique, although used in some psychological research, is not widespread in the discipline (see Whitaker et al., 2006 for an example). However, it seems an appropriate way of

investigating temporal patterns in violent incidents, complementing results from the other strands of the study. Log Survivor analysis would also be a new way of using the Sentinel database (discussed below) that could prove fruitful for other health and National Health Service researchers.

8.3 The Sentinel Database

8.3.1 The Sentinel Database: Introduction.

As discussed in Chapter 2, there are a large number of health records written about people with intellectual disability. In residential units for people with intellectual disability there are various mechanisms for recording violent behaviour. These include care plans relevant to violence and aggression, ABC forms and intervention reports. These health care records, although required legally, are idiosyncratic in format to the individual unit they are written in. A health record that is standardised across units is the Sentinel System.

Sentinel is an incident reporting and risk management system (National Health Service, 2008). Violent incidents have been recorded using this system in the units involved in this research from October 2004 (see table 18.1 for a list of what is classed as a violent incident). Sentinel Records differ from usual health care records in that they are specifically designed to look at risk and, rather than being kept in a patient's file, they are stored in a central database.

Table 8.1

Violence listed in the Sentinel System

Violence
Threat of Physical Violence
Physical Assault
Verbal Abuse
Aggressive/Hostile
Attempted Assault
Inappropriate Behaviour
Racial Harassment
Sexual Harassment
Damage to Property
Sexual Assault
Alleged Assault
Injury During Restraint
Harassment
Restraint of a Patient
Play Fighting
Other

When an incident occurs it is recorded as soon as possible onto an IR1 form, which is a recording form for any untoward incident. An untoward incident could be anything that is classed as a risk issue, including medication mistakes or physical risks such as accidents. This form is then sent to the risk department of Nottinghamshire National Health Service Trust and entered in a centralised system that holds all records from the trust. The Sentinel database therefore holds information about the

incident: who was involved, the actions taken by those involved and any other information that was thought relevant. This could include dates, times, the unit it occurred in, victim status and location. Sentinel is used within the trust for a number of purposes, including audit and research.

8.3.2 Participants.

The Sentinel System is designed for risk management, audit and evaluation. Whenever an incident is entered onto a Sentinel form it receives a serial number which, if it is related to a violent incident, is recorded in the healthcare records of whoever it concerned. However, when the incident is processed into the centralised system, the details of those involved become anonymised. Due to this, and the access the researcher already had to many of the health care records in each unit, *all* violent incidents by *all* residents were searched for. This means that for this section of the research, there was a different participant group than the one discussed in previous chapters, although it encompasses those participants. This provided a much larger sample of data, as needed for this type of analysis, but it means that potential comparisons between the two data sets were limited.

8.3.3 Search Strategy.

The Sentinel Recording system was implemented in 2004, so all incidents classed as violent from October 2004 until December 2008 where searched for in the database.

For the purposes of this study, the following information was accessed from the database about the three units discussed in Chapter 2: the date of the incident; the time; incident location; and the incident reference number. The number of incidents occurring in each unit over the search period can be seen in Table 8.2.

Table 8.2

Frequency of Incidents in Each Unit

Unit	Frequency of Incident
Unit A	605
Unit B	1564
Unit C	606

8.4 Analysis/Results

Time interval analysis was the proposed method to examine the data from the search. However, in order to build a clear picture of the data and to examine other kinds of temporal information, frequency data regarding days of the week and time of day of violent incidents was also calculated.

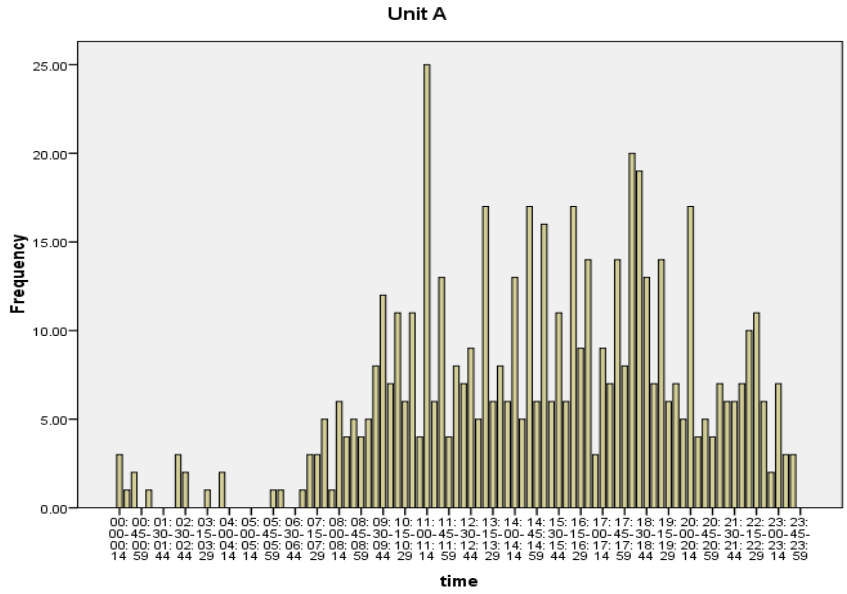
8.4.1 Frequencies

8.4.2.1 Time of Incidents.

Figures 8.1.,8.2. and 8.3. show the frequencies of the time of day that incidents occurred in the three units. In Unit A, incidents peaked during the mid-morning (10am to 11am) and around late afternoon/early evening (5pm to 7pm). The rate of incidents dropped during night hours and there were no incidents in the early hours of the morning.

Figure 8.1.

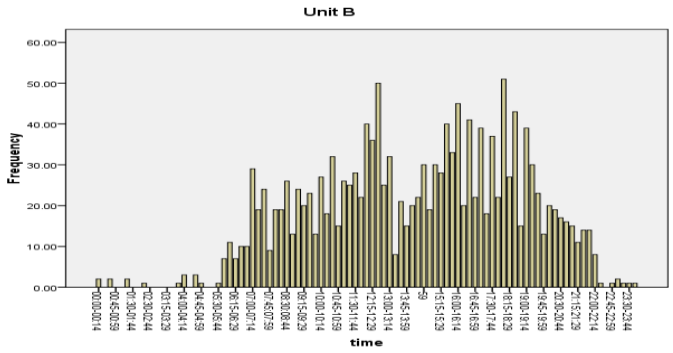
Frequencies of Incident on Time of Day in Unit A



In Unit B, incidents peaked at midday (12pm to 12.30pm) and also in the early evening (6pm to 7.30pm). As in Unit A, there were very few incidents during night hours but the rate of incidents declined earlier, from 10pm onwards.

Figure 8.2.

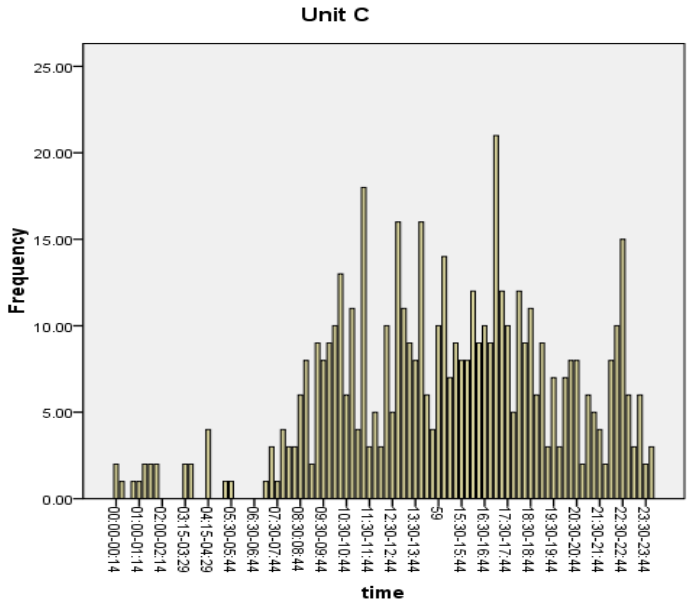
Frequencies of Incident on Time of Day in Unit B



In Unit C, the rate of incidents peaked mid-morning (10.45am to 11.15pm) and in the late afternoon (5pm). In Unit C, the rate of incidents was lowest during the night, with no incidents in the early morning (6am to 7am).

Figure 8.3.

Frequencies of Incident on Time of Day in Unit C



All of the units had a higher number of incidents during the day than at night. This is consistent with findings from other studies into the daily frequencies of aggressive incidents. In each of the units, all service users had their own bedrooms

which other service users were discouraged from entering, and staff did not routinely enter service user bedrooms. This may have accounted for the lack of recorded incidents during the night. Also, as service users are 'out of sight' of staff members during the night, there may be incidences of aggression which go unrecorded, giving a misleading prevalence rate.

Each unit had a pattern of frequency of aggression peaking in the morning and in the early evening. These were not times of handover, which had been hypothesised as being potential factors in aggression. However, the early evening peak coincided with the time of the evening meal in all units, and the point when all residents would be on the unit. For those in Unit A, day services provided outside of the residence ended before 5pm, which was the case for Unit B. In Unit C, day care was provided on-site but residents were able to leave the unit during the day for a variety of activities. The peak in evening aggression therefore may be due to a high number of staff and service users all being in the unit at the same time, and also have links with mealtimes. The peaks in the AM of each unit are harder to hypothesis as there is no supporting information about timetables of activities in each unit at those times.

8.4.2.2 Day of the Week.

Figures 8.4., 8.5. and 8.6. show the days on which incidents occurred in the three units. In each of the units, the number of incidents per week day was evenly spread with few peaks or troughs shown by visual inspection. There was no statistically significant difference between any of the days and the frequency of aggressive incidents, in any of the units.

Figure 8.4.

Frequencies of Incident on Days of the Week Unit A

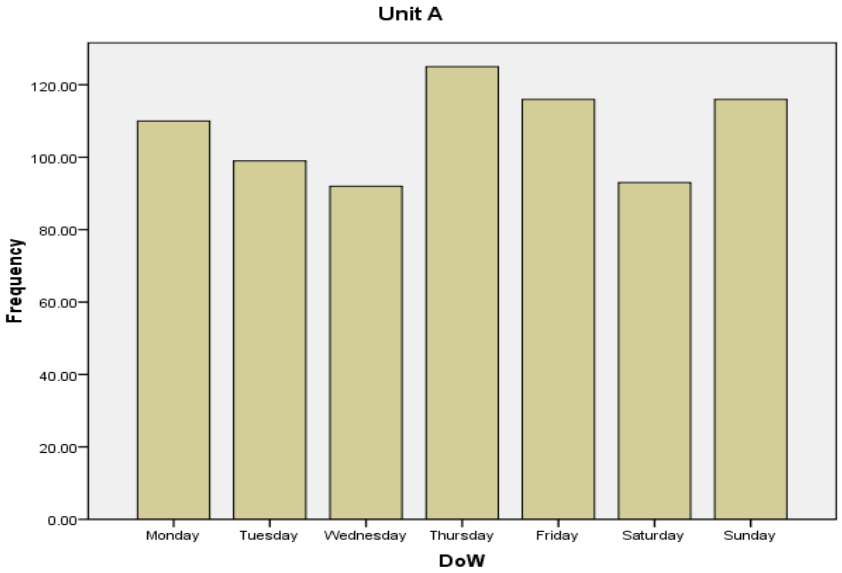


Figure 8.5.

Frequencies of Incident on Days of the Week Unit B

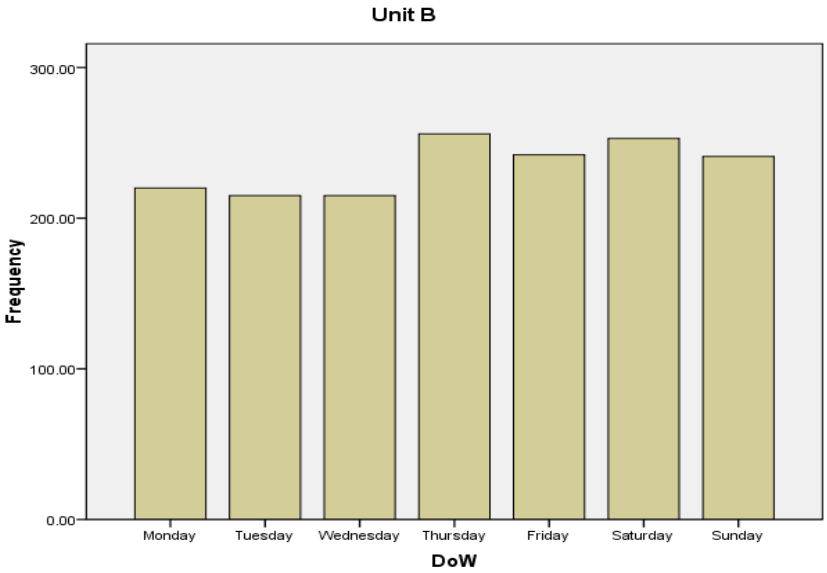
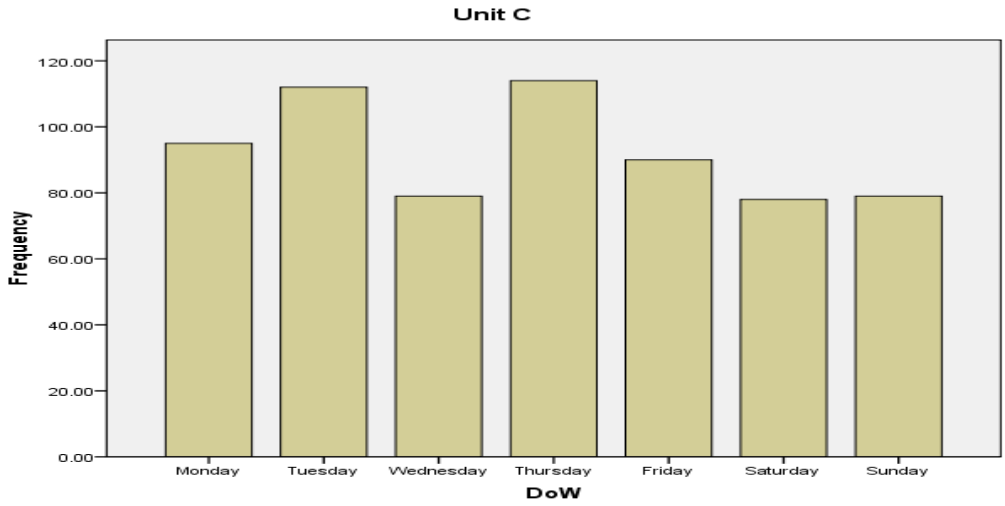


Figure 8.6.

Frequencies of Incident on Days of the Week Unit C



There was no distinctive pattern of incidents in the units when the frequency of incident was compared over the days. This finding is contrary to research which has examined the frequency of aggressive incidents on different days of the week. A number of papers have found higher rates of homicide in prison populations on Fridays, Saturdays and Sundays (Jayewardene & Doherty, 1995), and higher rates of aggressive incidents in general at weekends (Porporino, Doherty & Sawatsky, 1987). In psychiatric populations findings have been mixed, with little evidence to suggest patterns across days of the week in aggressive behaviour (Gaddon, Johnston & Cooke, 2006). Studies which have examined time of day of aggression have been more robust in their findings (Daffern et al., 2003). The differences in prison violence over the days of the week was suggested to be due to availability of activity. This may not have had as much of an effect of the incidents in this study as activity patterns may not be as affected by the weekend as in prison populations. For instance, none of the residents of the unit work and external day care services are not provided every week day, which may minimise the differences between week and weekend days.

8.5 Log Survivor Analysis

The next stage in understanding the temporal nature of violent incidents occurring in these units was by applying Log Survivor analysis.

Log Survivor analysis works on the principal that when events of a single type are randomly distributed through time, the intervals between these events will follow a negative exponential distribution; i.e. that events occur continuously, independently and at a constant average rate (Phillips, 1981). When this distribution is plotted as a log survivor function graph, it would appear as a straight line with a slope proportional to the probability of a new event occurring with the passage of time since the last event.

However, the intervals between behavioural events do not follow such simple distributions and usually occur in bouts, with brief intervals being common and long intervals being rare (Slater & Lester, 1982). This means that when the Log Survivor function is plotted on a graph, the line changes shape. Concave lines indicate that there is a high probability of another event, while gentler slops indicate a low probability of another event occurring.

A bout of behaviour can be thought of as a behaviour pattern which occurs in a temporal cluster; where the same act is repeated several times in succession (Martin, 1993). By plotting the Log Survivor function on a graph, bouts of behaviour which do not fit the negative exponential distribution can be clearly seen as deviations from a straight line. This then indicates dependence between the timings of consecutive events (Martin, 1993).

Research into temporal patterns of aggression have indicated that certain types of aggression may lead to further aggression in the absence of other factors (Katerndahl, Burge, Ferrer, Becho & Wood, 2010). By investigating whether bouts of

aggressive behaviour are occurring in the units in this study, this would indicate that aggressive behaviours are not occurring independently, and may also indicate periods of high risk for individual units.

8.5.1 Procedure

The time intervals between violent incidents were calculated in minutes, hours and days for each of the units involved in the study. The survival rate of incidents happening over time was calculated as a percentage of the total number of incidents. For example, if the percentage of the total number of incidents that were classed as having occurred a minute or more apart was calculated it would have been 100%. If this was calculated for 15 minutes apart that percentage would drop and so on. This resulted in a list of percentages that decreased the longer the interval between incidents was. If these values had been plotted straight onto a graph they would have formed an exponential curve under the null hypothesis that the second event occurs with constant probability, whatever the interval since the first.

The survival rate of the intervals between incidents was converted into log values. These were then plotted onto graphs. Owing to the great number of incidents in this study, there were a lot of data points to be plotted. All of the units had a high frequency of incidents that occurred less than 24 hours apart, so it was decided that they should be split to make interpretation easier. The time intervals that were under 24 hours where plotted for each unit, then the time intervals that were over 24 hours between incidents were plotted for each unit.

8.6 Time Interval Analysis Results

8.6.1 24 Hours

Figures 8.7., 8.8. and 8.9. show the log plots of each of the units' time intervals when the interval between each incident was 24 hours or less. In each graph

the small box represents where 50% of the sample fell. The larger box represents where 90% of the sample fell. After 90% the sample size becomes so low (due to the survival analysis) that results might be misleading. Discussion will focus primarily on the first 50% as it is the most robust. The straight line is the comparison line for the null hypothesis

In Unit A, 50% of the incidents occurred less than six hours apart. From 0 hours to 6 hours, the intervals between incidents appeared to be happening at a constant average. After 6 hours the intervals between incidents start to space out, which indicates that 6 hours after an incident, there is less likelihood of another occurring, than when the time interval between incidents is less than 6 hours.

In Unit B, as in Unit A, 50% of incidents had an interval of 6 hours or less between them. However in Unit B there was an increased risk of another incident occurring up to 2.5 hours after an incident, after which chance falls back to average rates. Unit B, again as in Unit A, shows a pattern of intervals ‘spacing out’, indicating that there is less risk of an incident following another after the 6 hour mark has been reached.

In Unit C, 50% of incidents happen with a less than 4 hour interval between them. In fact, 30% of the total number of incidents happens with an interval of less than 1 hour between them. This risk of an incident occurring after a previous one begins to lessen after the 4 hour mark.

Figure 8.7.

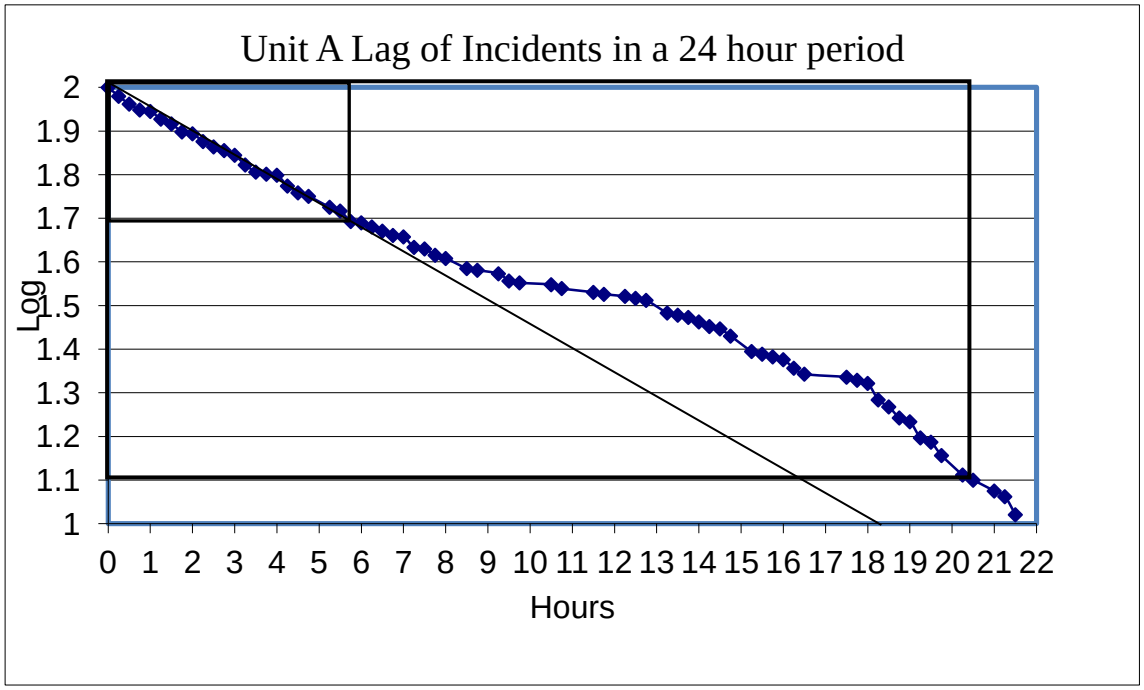


Figure 8.8.

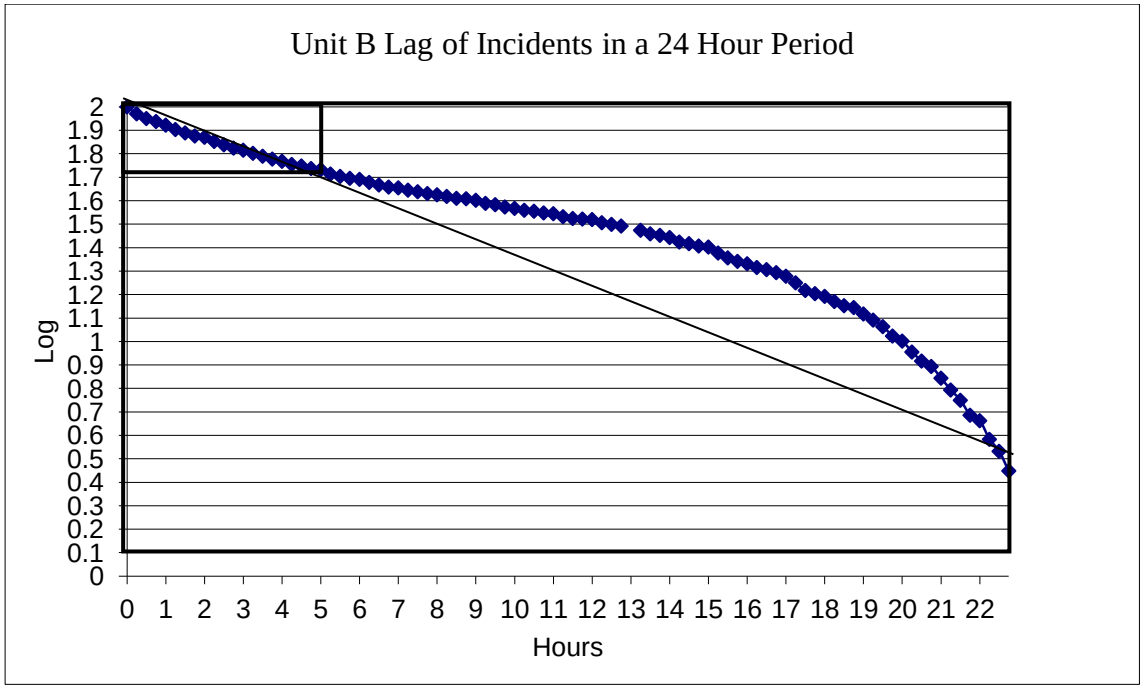
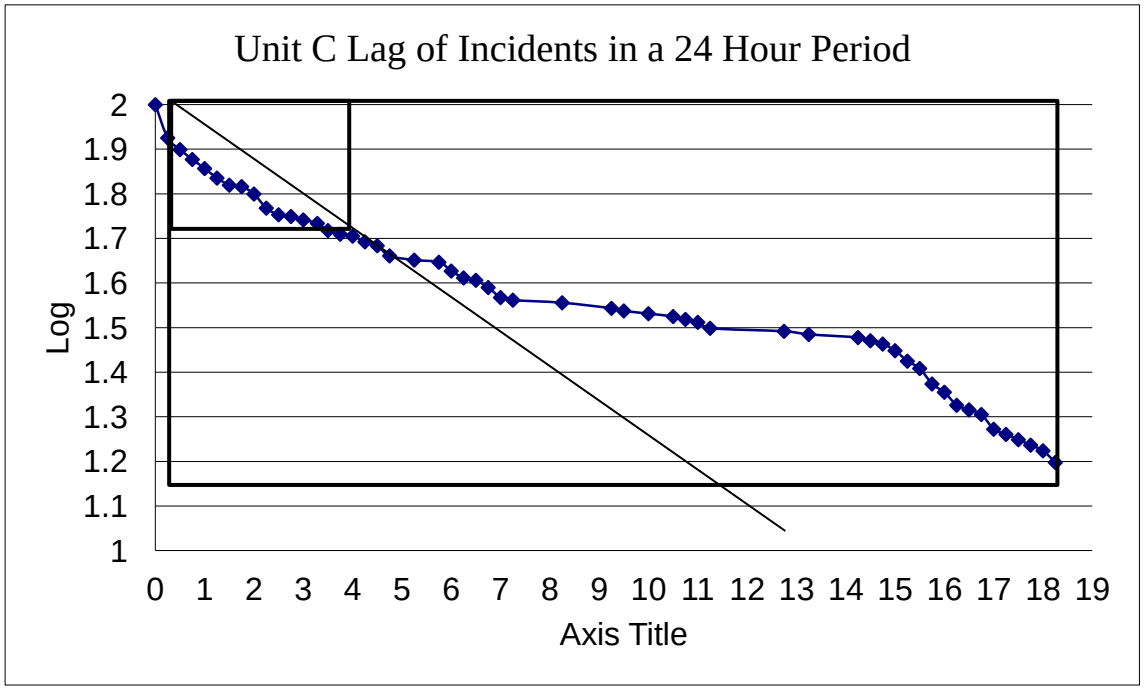


Figure 8.9



8.6.2 Days

Figures 10, 11 and 12 show the log plots of intervals of more than 24 hours. In Unit A, after the first 24 hours, which is where 50% of the intervals were, there is a decreased risk of an incident occurring. In Unit B, as in Unit C, the risk of an incident occurring seems to be consistent with what would be expected if the incidents had been occurring at a constant average. An interesting point that this result raises is that Unit B had a total of 1,564 incidents over the search period, which on average is just under one per day. However, most of the intervals between incidents are much lower than this period, indicating that although there might be a few incident free days, in this unit, there is a pattern of repeated incidents occurring with little space between them.

Figure 8.10

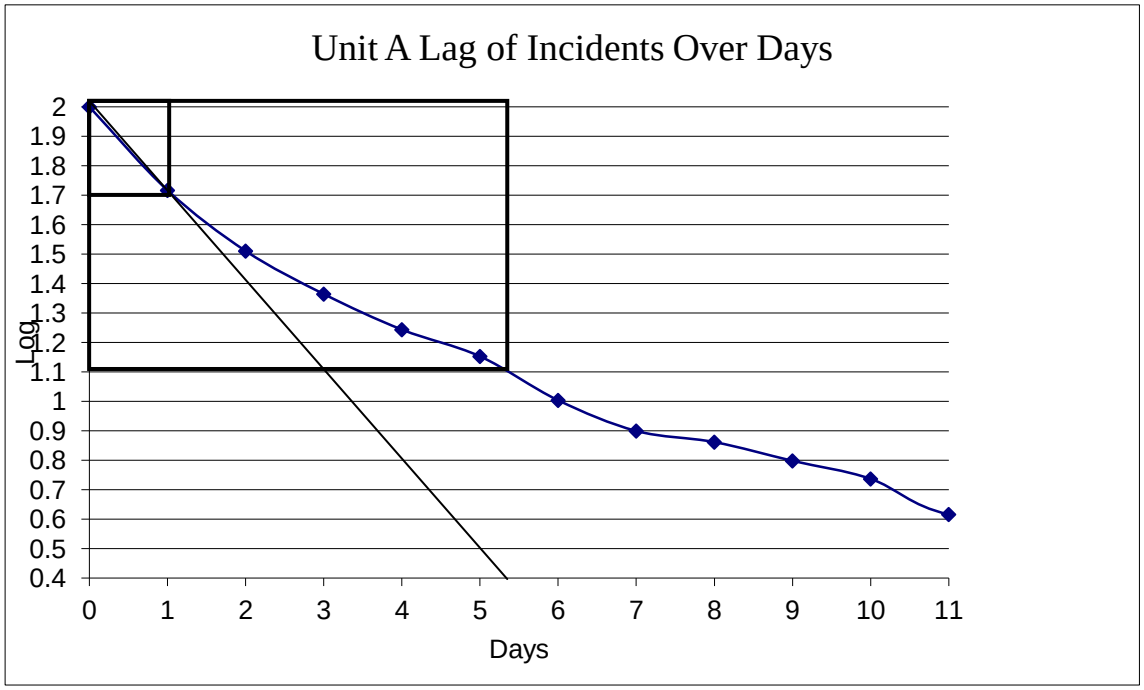


Figure 8.11

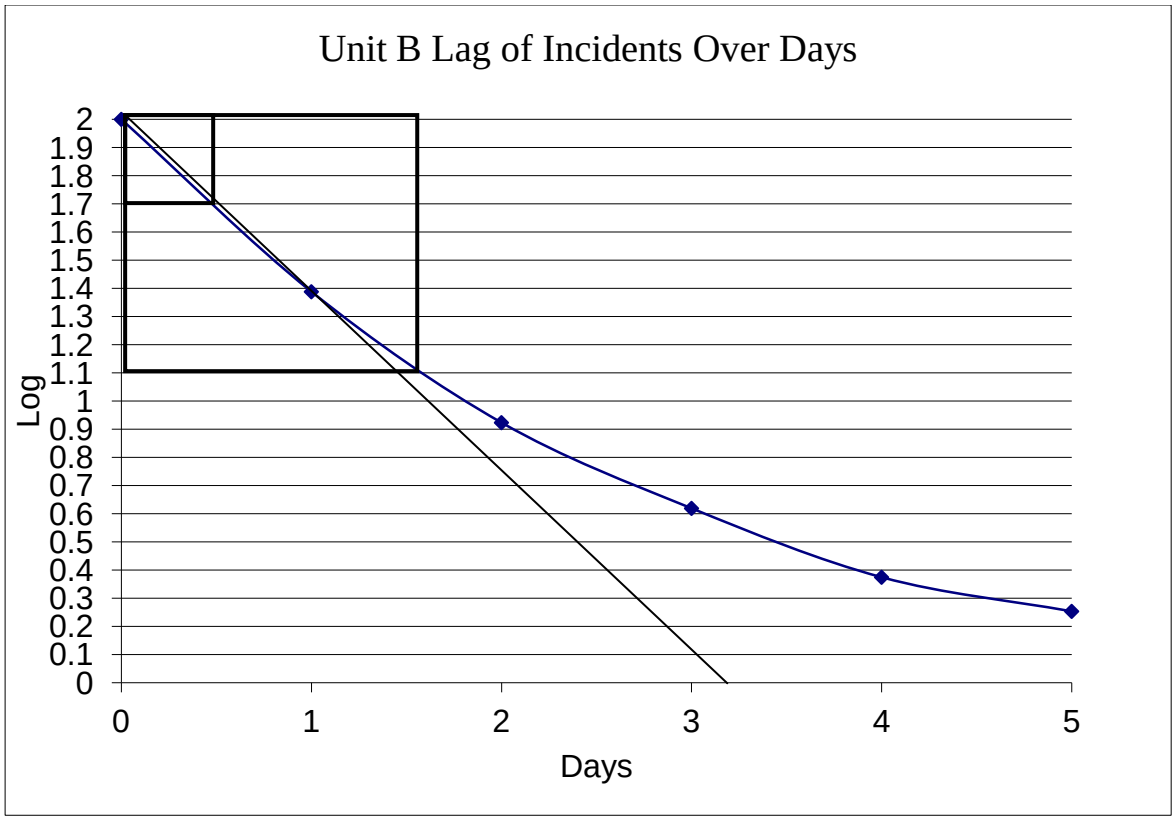
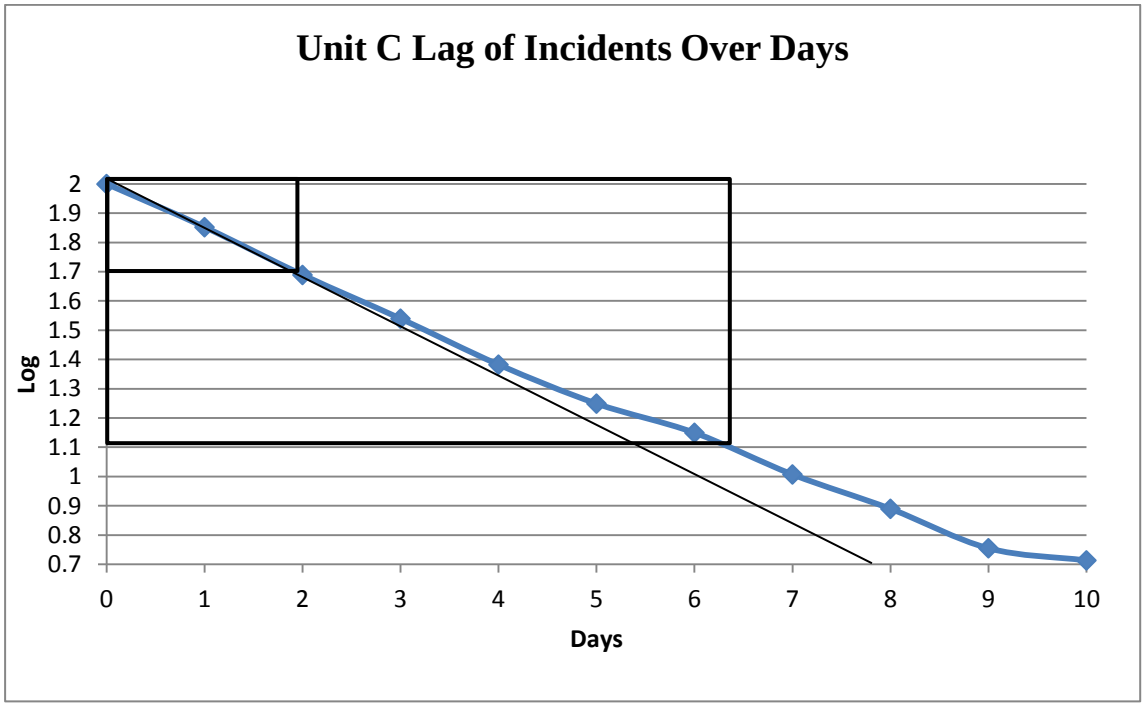


Figure 8.12



8.7 Unit Profiles

The frequencies and time interval analysis has shown some interesting patterns about the time violent incidents occur in the three units. A way of examining these patterns usefully might be by constructing Unit profiles. These are similar to the Violence Typographies demonstrated in Chapter 4, and help draw the strands of information together. Table 8.3. contains a summary of the temporal patterns of violence in the three units.

Table 8.3.

Unit Profiles.

	Time of Day	Time Interval Between Incidents
nit A	Start to increase around 6am, two peaks, one at 11am and 6pm, fairly steady in-between these times, start to fall after 6pm	Most incidents occur with 6 hours or less between them but with no specific interval of increased risk
nit B	Start to increase around 5.30 am, steady rise to first peak at 12.30, sharp decrease at 1pm followed by steady increase to second peak at 7pm, sharp decrease in incidents after 8pm	Increased risk of one incident occurring up to 2 and a half hours after another

nit C	Start to increase around 7.30 am, increase to peak to 10.30 am, remain fairly steady until second peak at 5.30 pm, remain steady until peak at 10.30 pm	Very increased risk of one incident occurring one hour after another, lesser but still increased risk up to four hours after another

8.8 Summary

Within a residential environment, a person's time and space are organised. This makes temporal aspects of aggression important to understanding aggression. Focusing on the time that an aggressive incident occurs allows the identification of 'hot spots' where intervention can be delivered.

The analysis detailed in this chapter examined all of the aggressive incidents that had occurred in Units A, B and C from October 2004 until December 2008. The frequency of aggressive incidents over times of the day revealed similar patterns to those in other inpatient units where aggression is a problem. This information could be used to highlight times when there is higher risk of incidents occurring. There was little difference in the frequency over aggression during the days of the week.

Log Survivor analysis is a way of looking at the temporal patterns of incidents, which might help to indicate, after one incident has occurred, the point when there is most risk of another incident occurring. This data potentially provides the most robust indication of temporal patterns of violence in these units, and as it is collected as a matter of good clinical practice, might be a very useful place for units to start investigating how to predict and manage violence. The analysis performed on this

data has provided a profile of incident occurrence for each unit, which could be used as a means of investigating why violence happens in that unit at that particular time, day or post-incident interval.

Chapter 9 Discussion

9.1 General Introduction

The main aim of this thesis was to document the patterns of aggressive behaviour in people with intellectual disability in order to examine what factors may be involved in increasing the risk of aggression in this population. Previous research into aggression in people with intellectual disability has tended to focus on aggression as a communication or as a result of mental health issues.

This thesis consisted of three parts which investigated patterns of factors involved in aggressive incidents people with intellectual disability. The first part examined the frequency of the types of events recorded, as well as the locations of aggression, sleep data and mood. The second part analysed reports of aggressive behaviour using sequence analysis methodology, looking at the recurring events within the recorded sequence of aggression. This enabled an in-depth examination of the types of factors involved in aggressive behaviour in units for people with intellectual disability. The third part of the study examined temporal patterns of aggressive incidents.

This discussion is split into several parts. The first will examine the aims of the thesis, and consider the findings of each phase of the research in terms of those aims. The research findings will be placed in the context of existing research literature. The second part will discuss the research process and the implication this might have for the findings of this research and research into people with intellectual disability as a whole. Limitations of the research will be discussed, along with how this may affect the findings and how they could be addressed in future research.

9.2 Thesis Aims

The main aim of this thesis, as has been mentioned, was to document the sequences of aggression in order to investigate what factors might be involved with increasing the risk of violence in this population. The study was split into three parts. The findings from each of these will now be discussed.

9.2.1.1 Part One*: *Individual Event Frequency

In Chapter 4, the records of people with intellectual disability were entered into a database and the kinds of information they held was explored. This method of looking at the frequencies of factors associated with aggression is common both in learning disabilities research and psychiatric inpatient research (Sigafoos, Elkins, Kerr & Attwood, 1994).

The main things that emerge from this analysis are information about what is recorded in aggressive incident reports, the time that incidents occurred, the main locations of incidents and the mood of the aggressor prior to incident.

As discussed in Chapter 4, violent incidents were split into two types, Type A (in depth incident reports) and Type B (brief incident reports), depending on the level of detail contained in the source reports. In both types of incidents, the number of contributors and source data was around the same; i.e. both long and short incidents were compiled from a similar number of sources from a similar number of contributors. What was interesting about the Type A and Type B incidents is that the majority of recorded incidents involved verbal or physical aggression aimed at staff members.

There are several reasons why this might have occurred. The most practical is that violence involving peers or self-harm may be done in private, or deliberately out of sight of staff members. This would make it difficult for staff to report in any detail

what had happened without fabrication. Another practical reason is the level of culpability and responsibility in which staff are held for service users' actions. Staff members are often held to account for violence on their shift (Allen & Tynan, 2000) and may feel they need to record their own or other staff members' actions in detail in order to safeguard themselves and service users.

At this point it is interesting to note research by Findoff, McGovern, Wall and Gerberich (2005) that indicated that even when reporting systems were in place for recording violence, there were certain characteristics or qualities in a range of health care workers that made it more likely violence would be reported. For example, if someone experienced verbal aggression, asked the perpetrator to stop, and they didn't, it would be more likely that this incident would be recorded than if the perpetrator had stopped. Although there was an overall trend for violence towards staff to be reported in more detail, this could be an artefact of the people recording; i.e. some people would write more in general no matter what kind of violence was occurring and some would write less. The type of detail recorded could also be because of staff members' attributions about the protagonists. There are a number of factors that influence how staff members attribute the causes of violence in people with intellectual disability. These include the level of intellectual functioning of the protagonist, an assessment of intent and gender of those involved (Dilworth et al., 2011). It is not known how these attributions, usually found by asking staff members to rate causes of violence in fictional individuals, translates into their attributions in the 'real world'; i.e. with the people that they work with. However, it is reasonable to argue that, in part at least, these attributions would be present in a member of staff's feelings towards those they are caring for. This factor could also, across individual reporters, affect the amount of detail recorded. Members of staff and service users build up relationships which can

be positive or negative, just as in any work place, which might have an influence on recording style.

In this research, there were a higher number of incidents recorded which involved staff members. Staff members may be a target for aggressive behaviour as they are the potential sources of frustration in units, which has been cited as a factor in increasing the likelihood of aggressive behaviour (Kahn-Greene et al., 2000; Tyrer et al., 2006). For example, service users may have to ask staff members for access to items, their bedrooms, for outings and food. If these things cannot be delivered for any reason, service users may become frustrated and lash out at staff to release this frustration. Therefore, the high number of incidents involving staff may indicate frustration as an antecedent to aggression in this population.

Incidents were more common during the day than at night, consistent with findings in both aggressive intellectual disability populations and other aggressive inpatient populations (Grassi, et al., 2001). This has been suggested to be the result of increased staff and service user interactions. These interactions may have increased the possibility for frustrating and provoking incidents to take place, as well as more demands being placed on the people with intellectual disability, who have needed to use aggression as a means of escaping.

The main incident locations recorded were the dining room and games room. These are areas where there is an increased risk of interaction, both with peers and staff members. High levels of interaction lead to crowding and forced interaction with other people (Ng et al., 2001). This high frequency could also be due to a recording convention in the aggression reports. Common rooms are more likely to have staff members in them than the private spaces of bedroom and bathrooms, and so aggressive incidents could be more visible in these spaces. However, as there was a

high number of incidents recorded where staff members were targeted, it would be less likely that they would go unrecorded, even in more private situations. There were not a high number of incidents recorded as taking part in bathrooms. Intimate care has been suggested as an area of high frequency of challenging behaviour but this was not found using this analysis.

The mood of the aggressor was recorded prior to the incident in 320 of the total incidents recorded. In 39.1% of these incidents the protagonist was rated by staff members as being settled or pleasant prior to an incident, and in 21.9 % of the incidents the protagonist was rated as being elated. Mood has been suggested as an important factor in why someone becomes aggressive, and it is a product of personal and environmental factors related to aggression. Elated mood has been suggested to be a dynamic risk factor in aggressive behaviour as it may indicate a change in mental state, and was indicated in 21.9% of these incidents. Elated mood has been suggested as a dynamic risk factor when predicting aggressive behaviour (Ogloff & Daffern, 2006). However, the mood state recorded prior to aggression was not one that has been linked to aggressive behaviour in the majority of incidents. This could be for several reasons: mood judgements were made by staff at the end of a shift; mood or emotion may have changed a couple of times throughout the shift, but the last one noted by a staff member was the one recorded. Another explanation is that when people were classed as being settled or pleasant they were, but there was an incident which occurred, such as provocation or frustration, which caused an aggressive response. This finding is in contrast to McGill et al. (2003), who found a high association between challenging behaviour and sad, depressed and angry moods.

9.2.1.2. Part Two: Sequence Analysis

Phase two of the research formed the main body of the thesis. This was an attempt to use a method of data analysis, Sequence Analysis, which has not been applied to this particular data source previously, to explore the sequential nature of recorded aggressive incidents. People with intellectual disability are often described as being unpredictable in their behaviour by staff (Bromley & Emerson, 1995). This can make it difficult to conceptualise ways of managing and predicting violence, as if one views a group as inherently unpredictable treatment methods might be reactive rather preventative. This also can lead to negative appraisals of those who display behaviour termed as unpredictable (Magliano, De Rosa, Fiorillo, Malangone, & Maj, 2004). There are several patterns of event pairs resulting from this analysis which may be important for understanding the factors involved in aggressive behaviour in people with intellectual disability.

9.2.1.2.1 Impact of Visits and Outings

One of the most interesting findings was that visits, outings and visits followed by an outing were implicated as often happening prior to violent behaviour. Examples of visitors would include parents and siblings, friends and carers from previous placements. Although there was an option in the coding scheme to include visits from professionals, these were so rare that they were collapsed into the general visit category. Generally within the sample of observations, visits were a rare occurrence. This was similar for outings. Outings could include a drive to the park, a trip to the shops or a visit to day care. Although visits and outings formed part of the general inpatient experience in the three units in the study, they were not particularly routine.

Meaningful activity is often suggested to be lacking in the lives of people with intellectual disabilities, and making sure this is incorporated into any care package is seen as important (Mansell et al., 2002). It could be possible, at least in this study, that activity in the form of outings was not a satisfactory event for those involved or that the outing itself was problematic. This happened in several of the cases; for example, one individual was cautioned for shop lifting, while another had to be brought home early as they had made inappropriate sexual advances to a member of the public. This might also be the case for the visits which people received. In some cases these visits from parents with whom the protagonist had a fractured relationship ended in tears and frustration; in other cases the protagonist did not want their loved one to leave. These outings and visits might stir up emotions which are difficult to manage and express, which coupled with lack of power over one's living situation might lead to lashing out. However, it should be noted that some of the participants in this study were under a section which meant they could not leave the unit without special assistance, and some were unable to leave the unit alone due to their limited cognitive capacity. This limit of recorded visits and outings does not mean there was a lack of other, unit-based activities.

9.2.1.2.2 Meal Times

Meal times combined with making a request were implicated as being important factors prior to violent behaviour. Eating behaviours in people with intellectual disability are often classed as dysfunctional, including such behaviours as excessive eating, 'bolting' one's food and refusing to behave appropriately at meal times (Fonna, 2006). Eating in people with intellectual disability is also coming under increased scrutiny as understanding about how morbidity and food intake increases. People with intellectual disability have high levels of preventable diseases, often

caused by a lack of health behaviours such as keeping weight down or physical activity (Bhaumik, Watson, Thorp, Tyrer & McGrother, 2008). Therefore, with meal times, people with intellectual disability and those who care for them are faced with a situation that is potentially difficult to manage.

Meal times present the opportunity for challenging behaviour; they are in a group setting so there are many service users to monitor at once and who need provision for their complex needs. This is therefore a situation where there is crowding, and a high level of demands being made on staff members. Unusual eating behaviours might present risks such as choking, and individuals may need assistance in cutting and eating their food. Staff are spread most thinly at this time, so anything else that needs dealing with, such as answering the door or phone or doing paper work, may push the delicate balance of staff to service user ratio. In the units in this study, meals were provided by in-house catering, either by a member of staff or by service users with staff assistance. Although meals are planned in advance, there are occasions were the meal is not quite what is written on the menu. There are also occasions where one service user might have a different meal to another, possibly due to a healthy eating plan.

Food and meal times can be important for people with intellectual disability, forming an exciting part of their day. In the study data, when a service user made a request during a meal, they were often requesting something different, more food, or another dessert. More food was a request often denied service users who were on healthy eating plans or when more food was unavailable. This may have led to a situation of frustration for the service user as they were unable to access their goal. Aggression may have resulted as the service user expressed their frustration. There were also times when the menu stated that a particular food item would be available.

In these situations, service users expected a particular food and another was served. This also may have created a frustrating situation for those involved.

Meal times are a situation that has the potential to be fraught, tense and full of dissatisfaction, where there is a strain on staff to manage a challenging situation while negotiating the balance of the health needs of service users with their desires. In the aggressive incidents recorded in this research, meal times were not only potentially difficult, they *were* difficult, with service users often disgruntled about food.

9.2.1.2.3 Requests

When requests were made and not met immediately or were denied outright, there were strong links with aggressive behaviour. However, when an alternative was offered this seemed to lead to another pathway of behaviour that, potentially, could be non-violent. Request denial has been linked to theories of frustration and aggression in the general population (Anderson & Bushman, 2002). In these cases, frustration at not being able to have/do what an individual wants leads to a feeling of powerlessness, which in turn causes aggressive behaviour. The lives of people with intellectual disabilities are characterised by a lack of power, both in the choices they are able to make about their own life styles and the influence which they have over the people who make decisions for them (Strand et al., 2004). When people with intellectual disabilities became aggressive after having a request denied or deferred, this could potentially be due to frustration at their own lack of power in their living situations. Having a request denied could also be a provocation, depending on how this was suggested to the service user. The way in which a request is denied and alternative contingencies provided can have an effect on subsequent acceptance of this (Mace, Pratt, Prager & Pritchard, 2011). The ways these denials were phrased was not detailed in the records and may have had different implications for how a person

would react; for example, in a cruel and dismissing way. This is difficult to ascertain from the records. When people with intellectual disability made requests, the most common reaction was to deny this outright. This may indicate that the request was denied as it was impossible or totally inappropriate. For example, one violent situation took place after a male service user wanted to go into the female area at night; in another example, a service user wanted to get up and eat breakfast at 3.30am. Both these requests were denied because they were not possible in the situation. However, the manner in which this was done may have also exacerbated the situation.

In terms of management of violence, the notion that being given an alternative is a possible route away from violence is useful. Although there are always going to be times when a request can neither be fulfilled or a satisfactory alternative given, it appears that this might be the most appropriate way of preventing this frustrating situation. When a need is not met immediately, such as by stating to someone they can go out later, this understanding of time can be difficult for someone with a limited cognitive capacity (Owen & Wilson, 2006) and so might lack meaning.

Overall, what is important to note is that the Sequence Analysis of the recorded incidents of aggression did indicate some factors which are linked to aggressive behaviour, which have also been implicated in other research populations and research in to aggression. These factors were situations that were potentially frustrating, provoking and during times of high demand, such as mealtimes. Although environmental factors have been suggested as important areas of research in aggression in intellectual disability, there has been little investigation into when these factors actually occur. Although the amount of influence these factors may have in aggressive behaviour cannot be calculated using the above research findings, the exploration of factors involved in aggression has suggested areas of further

investigation. The most robust findings were linked to factors which could be considered antecedents or proximal factors of aggression, those which happened just before an aggressive act. This could also be of benefit to researchers using functional approaches to aggression as possible antecedents to aggressive behaviour are complex, and research into these is a useful starting point for experimentation (Carr, 2004).

9.2.1.3 Part Three Temporal Patterns of Aggression

The third phase of this study used a method called Log Survivor analysis to investigate the temporal nature of aggressive incidents. Within a residential unit such as the ones in this study, time and space are organised by the organisation which controls the unit. Therefore, the time an incident takes place becomes a dynamic risk factor, as different times of day, week and month present different patterns of activity, opportunity, staffing patterns and occupancy. Understanding the temporal nature of incidents provides another way of describing aggressive behaviour in people with intellectual disability. However, rather than looking at the frequency of events in an incident, or how those events might occur sequentially, this method examines how the incidents themselves are distributed over time. Looking at the frequency of aggression over time allows for the times most associated with incidents to be identified. Units were considered on an individual basis due to the large amount of data that was available about aggressive incidents. Looking at patterns in individual units may provide useful for information management.

All three units were more likely to have aggressive incidents during the day than at night. This is consistent with findings from a number of populations, and is potentially due to increased interactions taking place between peers and staff members. Simply having more interactions may increase the likelihood that more aggression will occur in an aggressive population as it presents more opportunity.

Increased interaction also increases the potential for frustrating and provoking situations, difficult situations such as mealtimes, and more demands and requests.

Log Survivor analysis was also used to investigate times of greatest risk after an aggressive incident had occurred. Knowing when an aggressive incident is likely to follow a previous one would be useful information for units in predicting risky times, as well as for management and intervention strategy. Each unit had a unique pattern of elevated risk after an aggressive incident. What contributes to this risk will be specific to the individual unit, the resident characteristics, the staff members, how aggression is managed by the team and a host of other factors. The data presented here may provide a useful starting point for more in-depth analysis of these factors, as well as in providing a way of monitoring efficacy of intervention strategies by times of risk being decreased.

9.2.3 Management Recommendations

Information about risk factors involved in aggressive behaviour is often utilised to help predict the risk of future aggression, and create management and intervention guidelines. This research was exploratory, and sought to investigate the presence of factors involved with aggressive incidents rather than assess how they might be utilised in intervention. However, a consideration of the practical applications of these findings can be helpful, especially when considering dynamic risk factors.

In terms of how incidents are recorded, there are potential additions or areas of importance which could be added to recording systems. Recording sleep and mood data for all individuals may provide helpful information about dynamic risk. Although sleep information was recorded for some individuals in the study, this was done when problems began rather than throughout the course of someone's stay in a unit. If this

was recorded, then deterioration in sleep patterns could indicate that increased assistance is needed, as well as track whether sleep is associated with aggressive behaviour in that person. This would also be the case for mood. Mood, especially when a person has been diagnosed with a mental health problem, may indicate when that person is more likely to be at risk of being aggressive, especially in the immediate future (Nicholls, et al., 2006).

The Sequence Analysis of aggressive incidents suggested strong associations with outings and visits, meal times and denial of requests. Requests were often made around meal times and were associated with a high amount of aggressive behaviour. To reduce aggression at meal times, extra staff may be required to cope with demands; there may need to be more flexibility and choice in the food available to counter frustration; and quiet areas offered as an alternative place to eat to allow escape from noxious stimuli.

Denials of requests and how they were managed were linked to aggressive incidents. Being offered an alternative reduced the risk of immediate aggression compared to the request not being met immediately or denied. In people with intellectual disability, a concept of time is not always well developed (Owen & Wilson, 2006) so providing alternative ways of understanding the concept of later, such as a visual time table, may be helpful in reducing frustration at this point. Within the records, how denials of request were made was not reported. It may be helpful for the exact wording used to be documented.

The time series analysis suggested that it was possible to estimate the risk of an aggressive incident occurring after another for a particular unit. This information is easily accessible if kept on a large scale recording system such as Sentinel, and can provide useful information about risky times on units following an aggressive

incident. This information could be used to create management systems relevant to the people and environment of a particular unit.

One of the findings from looking at the observational records was that, generally, although the type of intervention was noted, there was little detail regarding how that intervention was carried out or the efficacy of that intervention. How interventions are carried out will impact on their effectiveness.

There are several possible interventions recommended in national guidelines, and there is an emphasis on person-centred approaches to dealing with violent or aggressive behaviour. In the research literature there is debate over what are effective interventions, with most evidence highlighting the lack of efficacy of medication interventions (Kiernan, Reeves & Alborz, 1995). In this research, P.R.N intervention did come at the end of some incidents, however, as there was little written evidence of what happened after the interventions, it is difficult to assess what might be the process that ends the violent incident. It might be that when P.R.N is provided this signifies an 'end of incident' moment for the writer, or that the P.R.N. does act on the individual's behaviour. More focused recording of how interventions and more generally how incidents are resolved may provide evidence for effective strategies for the ending of violent behaviour.

9.3 Limitations

There were a number of limitations in this research which should be taken into account when looking at findings.

9.3.1 Record keeping

Clinical records are a legal requirement for services that provide care, both to document the care that is provided and to provide information about what type of care is appropriate for that individual. However, the form, function and what is contained

in the records is down to the service that is creating them. The records used in this thesis therefore differed in content and style across the units. Records were also written by different members of staff, who will have had different styles of recording as well as different perceptions of what was important to be documented, and different levels of detail were included by different writers. Interpersonal relationships between staff members and service users may have also been influential in the way incidents were recorded.

Although this research was interested in what factors contribute to aggression in people with intellectual disability, there were certain factors with an evidence base which were not included in the records, such as the number and qualifications of staff. This information, although ethically available, was almost impossible to obtain as records were kept progressively (who will be on shift in the next month) rather than retrospectively, and not kept on record at the unit. There was also a lot of missing data, such as the time of the incident, the location or the mood of the person involved. Recording was not consistent across individuals or units, which give a misleading picture of what may be involved. There may be certain issues which are thought to be more important to be recorded than others. For instance, nurses and health care assistants may feel it is more important to record times when medication was refused than when someone had an argument, as the medication is part of that person's medical care.

All of the units recorded a proportion of aggressive behaviour in Antecedent, Behaviour, Consequence forms (ABC). This technique derives from functional analysis and is designed to capture the immediate antecedents and consequences of a behaviour in order to determine the function and reinforcement factors involved. This reflects an ideology of behavioural approaches to aggressive behaviour in the units in

this study as forms designed to capture this information was being used. This way of recording data also encourages a focus on immediate antecedents and consequences (Emerson, 2001). While this is perhaps useful from a behavioural perspective, it potentially encourages entries which only focus on those areas, resulting in entries which were very short and lacking in detail. For example, an entry into the recording sheet for distress and agitation may read, 'Ann walked across the room and slapped staff member BB. She was taken to the acute area.' Many entries did not even contain the detail to assess immediate antecedents and consequences. Clinical record conventions also 'chunk up' data prior to the researcher assessing it, which makes adding additional factors to the sequence difficult.

This research was interested in patterns of aggression and this data source may have not been the most suitable to provide this information. Clinical records do not always provide the level of detail required for sequence analysis, as there is a tension for what needs to be included in a clinical record and the level of data required for sequence analysis. Prior to the research beginning, the suitability of the records were assessed for this purpose by a highly experienced clinical psychologist and an expert in sequence analysis research who both felt that the level of detail would be sufficient to reveal patterns. However, just after data collection had been completed, Care Quality Commission reports were conducted on Units A and C. The Care Quality Commission reviews how units meet a number of standards proscribed as needed for good levels of care. Both Units A and C failed on the standard of record keeping, which is a public acknowledgement that the information recorded was not detailed enough to provide the information for quality care.

Alternative ways of collecting data for this research could have been to design a structured recording system or to look at different ways of collecting observational

data, such as through video recording. Both of these methods also carry limitations. The construction of a structured recording system would have involved a great deal of research which would have been outside the scope of this study. Using a pre-written system would have added extra burden to the staff members involved in data collection and would not allow for the retrospective examination of incidents. When different recording systems are introduced alongside an existing one, an initial increase then drop in incidents is observed (De Niet et al., 2005). This has been suggested to be due to the novelty of new methods, as well as the performance effect caused by taking part in research. As these effects wear off, the rate of recording incidents also reduces. Observations made by other means such as videoing or placing a researcher in the unit would have provided more detailed observations, but also had a number of ethical and practical issues. Video observations would have required the consent of the entire unit, which was not available in this case (See section Access to Participants). There would also have been ethical issues in placing cameras in people's bedrooms and bathrooms. Following an incident from room to room would have also proved difficult. Placing the researcher in the unit would have changed the conditions in the unit by introducing a stranger, which may make people uneasy, or people may have wanted to interact with the researcher. Researching within the unit would have also made observing more than one service user at a time extremely difficult and there would have been times when this observation was not appropriate.

The aims of this study were to document aggressive incidents in people with intellectual disabilities and the factors that were involved with them. Clinical records were chosen as a data source because they had been assessed as being suitable, and if guidelines for content are followed, they should contain a great deal of information. By using an existing data source, research in units can still take place without increasing burden on staff members. While the data has a number of short comings as

an exploratory analysis, a number of factors which may be important for considering in future investigations have been identified.

9.3.2 Access to Participants

Due to the research being based in National Health Service units using the health records of vulnerable adults, ethical approval was sought. However this did not mean that the researcher had access to all residents' data. Each resident of the unit was asked if they wanted to opt into the research. If they were not judged capable of making that decision. their next of kin was asked.

This lead to several areas of concern when trying to get a representative sample. The majority of the participants in the study in Chapter 3 would be classed as having a mild to moderate intellectual disability. This means that their IQ would be around 50-69, as well as having some adaptive behaviour skill deficits. This group is classed as having the capacity to make their own decision about taking part in research. It could be that the high proportion of mildly impaired participants was due to them being more straightforward to entice into the study. Often when next of kin were contacted they were slow to respond, or chose not to. In some cases the identity of the next of kin or responsible adult representative was unclear and so there was no person to contact. These two issues might have skewed the sample of participants to be more representative of mildly impaired people with intellectual disability. This could be problematic, as people with different levels of impairment have shown different types of violent behaviour; for example, people who have limited communication are more physically violent (Tyrer et al., 2006). However, the data came from 75% of the residents of Unit A and 2 out of 3 residents at Unit B (during the time data was collected), so whilst the sample might be focused more on mild than

other types of intellectual disability, it is representative of the kinds of people using those services at that time.

Another practical issue regarding recruitment of participants is concerned with Unit C. In Unit C the management felt that those who were unable to consent to research should not be approached to take part. Although there were clauses written into the ethical procedure to account for this, it did not fit with the ideology of the unit and so these residents did not have their next of kin approached. Again, these residents were those who were more intellectually impaired, which might have led to the violent incidents being examined being slightly skewed in favour of those being displayed by people with mild impairment. This also leads to a problem noted by other researchers, where people who are severely impaired with no next of kin fall through the net of research (Stalker, 1998). As there is no one to assist with their assent, their views and experiences cannot be accessed by researchers, leading to a hidden part of the intellectual disability population. However, this does not invalidate the findings and recommendations of this research, only highlights that caution needs to be taken when applying the findings, as it needs to be taken with all intellectual disability research to a very heterogeneous group.

9.3.3 Sequence Analysis Methodology

Sequence Analysis methodology requires a large number of observational sequences in order to discover the non-random patterns in the data. If the amount of data entered into the analysis is not large enough, then important pairs of events may be missed. The results of this research focus on first order sequences; this means that interesting event transitions from A to B are identified in the data. Second and third order sequences would identify whether A + B are more likely to be followed by C, and A + B + C are more likely to be followed by D, respectively. Identifying these

types of sequences in the data would be useful for considering the interactions of factors which led to aggressive behaviour beyond immediate antecedent analysis. However, the higher order the sequences, the more data which is required for analysis. Although the three units involved in the study had been identified as having the most aggressive behaviour out of services for intellectual disability in the healthcare trust taking part in the research, the number of incidents recorded combined with the low level of detail regarding descriptions of how aggressive behaviour occurs meant this analysis was not possible.

As there was no control group or control incidents studied, it was very difficult to make any definite conclusions about the observed findings. Using a control condition would have enabled the amount of times a factor implicated in aggression, such as denial of request, didn't lead to violent behaviour, therefore helping to establish the importance of this factor. This could have been done by comparing times when a factor happened to a particular individual and it resulted in aggression or no aggression. However, as data was collected from clinical records, which were in part designed to focus on the factors causing aggression, it is doubtful that the times this didn't lead to aggression would have been documented, as clinical records are problem focused.

This methodology identifies sequential pairs of events which are highly correlated with one another. In order to do this, the unique events which are observed in each sequence are put into a coded category of highly similar events; for example, verbal aggression, meal times, and being given medication. Some events which were described in the aggression reports happened very rarely. These were collapsed into a single category to reduce the number of statistical test being carried out, and therefore increase statistical power. However, this meant these events could not be investigated

as part of the final analysis. This is a limitation of the analysis technique, as some events which may be revealed as important with a larger data set cannot be revealed here. In particular, the coding for severe self-harm was collapsed as there were only two examples of this behaviour in the data set. As this is an event with potentially serious outcomes, it would be advantageous to investigate what events precede it. Using a larger data set, one would be able to investigate these sequences further. If this event is particularly rare, then a combination of methodologies may be more appropriate to investigate this, such as functional assessment, measures of trait anger and coping skills with dynamic risk assessment.

9.4 Final Conclusions

The three parts of this thesis have identified potential risk factors which are associated with aggressive behaviour in people with intellectual disability. These risk factors are consistent with factors identified in research into aggression in the general and intellectual disability populations. Most recorded incidents of aggression involved staff members and took place in crowded locations. Meal times, visits and outings were associated with aggressive acts. Denial of requests was also correlated with aggression, however it appeared offering an alternative may help prevent immediate aggression. Finally, it was seen that after an aggressive incident there was an elevated risk of further aggression. The duration of elevated risk varied between units. These factors may be useful areas for further research and informing management considerations of aggression.

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Appendix A

Participant who can consent Information Sheet

New Ways of Predicting Violent Incidents

I would like you to take part in a research study at the University of Nottingham. I am doing this for PhD, which is a university degree that shows I know how to do good research. Before you decide whether or not to take part you to be in it you need to understand what the study is and what it involves for you. Your key worker is going to go through some of the information about the research with you.

Ask your key worker if you need them to explain anything or tell you more about it.

I know that people who live in (the Old Hall/the ATU) find it very difficult when people they live with get angry. This study wants to find out more about what causes people to get angry.

Why me?

I will be asking everybody who lives in the Old Hall/ the ATU if they will take part. It's up to you if you want to take part. Your key worker will tell you about the study and at the end there will be a form for you to sign. You will have a week to think about it, so you can talk to staff or family or friends before you make up your mind. If you don't want to take part, or you change your mind later, don't worry. No one will mind, and it will not make any difference to the way you are treated on the unit.

What will happen if I agree?

I will look at your file and make a photocopy of parts of it. I will read the notes made each day about what has happened in your life, and how you have been. I will put all the things that happen to you and the other people in the study into a computer. Your name will not be in the computer, so nobody will know it is about you. Then I will look at everything that has happened to all the people in the study, to see if I can learn useful lessons about why people get angry from time to time. I will write a book about what I find out. Your name will not be in the book so no one will be able to tell it is about you.

What Happens if I Say Yes?

If you say yes, that means I have your permission to look at your file. If you say yes now, but later on change your mind, that's ok. I will stop reading your file. But because I will be analysing the information that has already been put into the computer as I go along, it will not be possible to take out the information I have already stored.

What if I have Questions?

If you are worried about the study or have questions you can ring me or tell a member of staff to ring me for you on 0115 9515294. If you don't want to talk to me about it you can ask a member of staff or ring PALS: 9770000 they'll give you direct no.

Will Anyone Else Know I Am Taking Part?

No one else that you know, apart from the staff, will know you are taking part. When I copy your records I will keep them in a safe place that no one else can get too. If I write anything down about you in my book I will make sure no one can tell it is you that I am writing about. When I finish my book, parts of it might get published so other people can read it. I will write what I found out down for you to look at with a member of staff.

Thank you for reading this.

Version 2 Prepared 23/04/2008

Appendix B

NHS Ethics Documents

Information about the Research

Study Title: New Ways of Predicting Violent Incidents in Learning Difficulties

I would like to ask you to assent to potential participant **taking part in a research study. Before you decide I will explain why the research is being done and what it would involve for you and** potential participant**. Please take time to read the following information carefully. Talk to others about the study if you wish.**

(Part 1 tells you the purpose of this study and what will happen to potential participant **if you agree to taking part. Part 2 gives you more detailed information about the conduct of the study).**

Part 1

What is the Purpose of the Research?

The aim of the research is investigate violent behaviour by people with learning difficulties in an effort to understand and predict these behaviours. It will be submitted for an academic qualification (PhD) with the University of Nottingham. The research will be done by using a method called Behavioural Sequence Analysis. This takes information like daily records, codes them into events and then enters these event into a computer program in order to work out what events are 'triggers' or causes of violent behaviour. Information about triggers over a longer term than is usually possible can then be incorporated into prediction strategies which enable care teams to manage and prevent further violent incidents.

Why Have I Been Contacted?

You have been contacted because as potential participants' **next of kin, you are deemed able to make the decision as to whether or not they take part in the**

research. All residents or their representatives of (name of unit) between dates x & y are being approached to take part.

Does potential participant **have to take part?**

It is up to you to decide. The study will be described in full in this information sheet. If you do wish for potential participants **to be included in the study there is a form for you to sign and return in this pack. You are free to withdraw** potential participant **from the research at any time, without giving a reason. If you do not wish for** potential participants' data **to be included in the study this will not affect the standard of care they receive or have any repercussions on you.**

What will happen if I agree for potential participant **to take part?**

If potential participant **is included in the study** they **would not be required to do anything to take part in the study as it is using record data already kept by the care team. The researcher will simply access and analyse their data. This would be their daily report files, any incident reports and other information such as diagnosis and life history information. The researcher will photocopy this information, anonymise it and input it into a computer program for analysis. Anonymization will be done by assigning each participant a code identifier. This will only be used as a means of recognising each participants' records as a data set. Data will be entered into the computer without identifiers and the results produced will not be about specific participants. Only the researcher will have access to these files and all information will be anonymous if results are shown to any other groups. The information used would span from the date of admission to the unit up to either** potential participants **termination of stay at the unit or the end of the study (approximately 04/10), whichever came first.**

Are there any risks to potential participant **if I consent on their behalf?**

As the research is examining routine record data, it does not create any risks to potential participant.

What are the potential benefits of taking part?

There are no benefits to potential participant **if you agree to them taking part. It is hoped the findings from the research will aid understanding of the lives**

of those with a learning difficulty so it may benefit people like potential participant **in the future.**

What happens when the research stops?

When the research finishes, all photocopies of data will be kept in a locked filing cabinet by the researcher. Only the researcher will have access to the data. When the researcher finishes her PhD and moves on, the data will pass into custody of Dr Jennifer Clegg who will keep it in a locked cabinet for 7 years before it is destroyed.

Will my decision about potential participant **taking part be kept confidential?**

Yes. I will follow ethical and legal practice and the decision you make will be handled in confidence. If you do chose for potential participant **to take part then this will only be known to the care team at the unit and the researcher, other residents will not be aware of your decision.**

If the information in Part 1 has interested you and you are considering consenting on potential participants' **behalf, please read the additional information in Part 2 before making any decision.**

Part 2

What happens if I decide I don't want potential participant **to carry on in the research?**

If at any point you decide that you don't want potential participant **to take part in the research, you are free to withdraw them at any point without having to give a reason. However, because the data will be being entered into a computer program, it will not be possible to remove the data entered about a participant. Therefore, any data entered up to the point of withdrawal from the study will remain in it.**

What if I have a complaint, enquiry or there is a problem?

If you have a concern about any aspect of this study you can contact the researcher, Katie Turner on 0115 9515294 or by email at lpxkt3@nottingham.ac.uk. If you would rather talk to an independent party you can contact PALS (Patient Advisory Liaison Service) on 0115 9770000. PALS works to sort out queries and complaints on an informal basis.

What will happen to the results of this research study?

This research is primarily being undertaken for an academic qualification (PhD). Initially the results will be written into a thesis by the researcher to qualify her for her PhD. It is also proposed that results from the study will be written into several papers for publication in journals and also presented in the form of posters and speeches at academic conferences. The results of the research will also be presented to the care team and next of kin of participants in the form of information sheets and a possible mini-conference.

Who is organising and funding the research?

The researcher's PhD is being jointly funded by the ESRC and Nottinghamshire NHS Trust. The ESRC stands for European Social Research Council and it is a very common funder of PhDs in psychology.

Who has reviewed the research?

The research was thoroughly reviewed by the ESRC before the grant was awarded. All research in the NHS is also looked at by independent group of people, called a Research Ethics Committee to protect your safety, rights, wellbeing and dignity. This study has been reviewed and given favourable opinion by Nottingham 1 Research Ethics Committee.

Further Information and Contact Details

General Information about Research in the NHS

http://www.dh.gov.uk/en/Policyandguidance/index.htm

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Information about the Research Project

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