

**SECLUSION IN MENTAL HEALTH HOSPITALS: EXPLORING  
PATIENT CHARACTERISTICS AND REASONS FOR  
SECLUSION**

**By**

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## **Abstract**

This thesis explores the causes and characteristics associated with seclusion, a restrictive practice used in mental health hospitals. Throughout, the population referred to will be inpatients within various types of mental health hospitals, ranging in security level and age group, as there is insufficient research solely within forensic settings. Literature is outlined detailing the reasons behind the use of seclusion and a focus is placed upon the characteristics of secluded inpatients. It is hoped that this contribution to the research base will compliment current efforts being made to reduce the use of seclusion in these settings. Chapter one outlines the use of seclusion in managing challenging behaviour in mental health hospitals. The impact of seclusion is discussed and in the absence of theories about seclusion, theories of aggression were outlined, as a significant number of these episodes are precipitated by aggressive behaviour. The second chapter considers the utility of the Violence Risk Scale in assessing psychiatric inpatients. A critical analysis of the psychometric properties is detailed and the limitations are explored. It is concluded that research tends to suggest that this measure may be valid and reliable for use in clinical settings. A systematic literature review is outlined in chapter three, describing the reasons for seclusion episodes as well as exploring other factors associated with its use. The review identifies various precipitating behaviours and finds actual violence, agitation and threat of violence to be the most common reasons for the initiation of seclusion. The fourth chapter presents a meta-analytic study on the characteristics of secluded inpatients, focusing upon the prevalence of specific demographics such as gender, diagnosis of psychosis and age. Limitations of this research and potential implications of these findings are discussed. Chapter five concludes the thesis with an overview of the findings in relation to the research base. Future directions for research are detailed and further implications for clinical practice noted.

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## **Chapter 1:**

### **Introduction**

Seclusion is the most restrictive practice utilised in mental health hospitals in the United Kingdom today. Figures about the number of individuals who experience seclusion are extremely difficult to obtain. This might relate to poor communication between the different clinical databases and systems used in these settings making obtaining accurate data challenging (CQC, 2017). It may also be the case that due to the significant efforts being made in services to drastically reduce its use, there is a hesitance to make the current figures publicly available.

Secluded individuals are contained within a locked room with limited furnishings and cannot control the light or temperature of the room. Guidelines dictate that secluded patients are frequently observed by staff and cannot return to the main ward area until a multidisciplinary team has decided it is appropriate for them to do so (NICE, 2015). Seclusion should only ever be considered a ‘last resort’ when verbal de-escalation and other restraint methods have not effectively managed the challenging behaviour. Risks to secluded patients include traumatisation or retraumatisation, escalating feelings of isolation, distrust of staff as well as potentially life threatening outcomes in the most serious of cases. As an example, and unfortunately not an isolated event, in February 2018, in a general inpatient hospital in Coventry, West Midlands, a patient committed suicide whilst secluded. Concerns were then raised about the hospital’s implementation of seclusion policies with a review reflecting failure to increase observations, despite self-harming attempts displayed by this individual in the preceding days (Martin, 2019, April 3).

In May 2019, 2,245 people were inpatients in mental health hospitals across England, a figure that had reduced by 22% since 2015. It was also reported that the government had declared a commitment to this figure being halved by the year 2024 (Mental Health Today, May 2019). However, identifying exactly how many of these

individuals are secluded each year is difficult due to a lack of reliable estimates. Limited information is available and where figures are provided there are highly variable prevalence rates (Dumais, Larue, Drapeau, Ménard, & Giguère Allard, 2011; Janssen et al., 2008). These estimates vary significantly between and within countries. The highest prevalence rates of inpatients being secluded were found in Switzerland, at a reported 8.7% of admissions, Japan, at 4.9%, and Germany, at 3.6%. Research by Steinert et al. (2010) reported that 0.2% of inpatients in England were secluded, while the lowest rates were reported in Norway (0.07%), and Iceland (0%) where seclusion and restraint were abolished decades ago. These figures tend to be similar to or below those found in the United States, in services where initiatives to reduce the use of seclusion have been completed (Hellerstein, Staub, & Lequesne, 2007). However, it is important to acknowledge the potential impact of investigation and publication biases as hospitals with a higher incidence of seclusion may be more likely to carry out and publish research in this area (Bowers et al., 2010).

As discussed in detail later in this chapter, the use of seclusion continues to be a controversial topic, with significant efforts being made to reduce the use of this restrictive practice due to the known negative effects on both inpatients and professionals.

This thesis will begin by defining and describing seclusion in mental health services in the United Kingdom (UK), other restrictive practices used to manage challenging behaviour, the relationship between violence and seclusion, and consideration of other reasons for seclusion.

## **Defining seclusion**

As will be outlined in detail throughout the following chapters, in inpatient settings worldwide the practice of seclusion continues to be a commonly used method of managing aggressive and violent behaviour, as well as other challenging, disorientated or disturbed presentations. As such, it is important to clearly define what is meant by the term ‘seclusion’.

The dictionary definition of seclusion “*the state of being private and away from other people*” originates from the Latin ‘*secludere*’ meaning to shut off (Cambridge Dictionary Online, 2019). The National Institute for Health and Care Excellence (NICE, 2015), whose good practice guidelines govern the policies about managing violence and aggression within healthcare trusts in the UK, define seclusion as “*the formal placing of a service user in a specially designated room for the short-term management of disturbed/violent behaviour*” (NICE, 2015, p. 26).

It is important to note that the Mental Health Act (1983) (i.e., the legal framework providing the authority for patients to be admitted, detained and treated within mental health hospitals in the UK) specifies that seclusion should never be used exclusively to manage self-harming behaviour. It states that where a risk of self-harm co-occurs with a risk of harm to others, professionals should ensure that the requirement to protect others outweighs the increased risk of harm to self and that this risk can be suitably managed. Further, it is noted that seclusion should neither be used as a punishment nor as a threat, and that it should not be utilised as part of a therapeutic programme or due to insufficient staff (Mental Health Act, 1983). It should also be noted that while seclusion guidelines in the UK will be the focus of this thesis, various countries use seclusion in a number of different ways. Historically, informal ‘seclusion’ practices have been utilised in traditional societies that do not

have the same Westernised form of psychiatry, indicating that the practice of isolating those with challenging behaviour is not a recent phenomenon. For example, in Laos, Southeast Asia, when people within the village become ‘baa’ or ‘insane’, and are a danger to themselves or others, the individual is placed in a pit dug in the ground and they remain there until they are deemed ‘better’ (Westermeyer & Kroll, 1978). As such, researchers have described the importance of considering the role of seclusion within the cultural framework in which it is used (Mason, 1993).

In the absence of theories about seclusion, due to the variety of behaviours which may lead to its use, we must draw from theories that cover as wide a range of seclusion-precipitating behaviours as possible. As such, the following section will outline theories of aggression in order to enhance understanding about the source of the behaviour managed through its use (such as aggression, agitation and violence). It is opined that this knowledge will enable professionals to better address challenging behaviour, therefore proactively reducing its incidence as well as the perceived need for seclusion to manage the behaviour.

## **Theories of aggression**

### ***Defining aggression and violence***

As seclusion is very often the outcome when violent or aggressive behaviour is observed in mental health settings, these will be defined and theories will be outlined as appropriate. A number of definitions for aggression and violence have been suggested over the past few decades. Etymologically, the word aggression comes from the Latin, *ad gradī*, relating to moving forward in battle. Some authors broadly define aggression as a goal-directed sequence of behaviour causing intentional harm to another (Anderson & Buschman, 2002; Dollard, Doob, Miller, Mowrer, & Sears,

1939). Others specify that aggression is a behaviour intended to harm an individual who does not wish to be harmed, and describe aggression as an external behaviour that you can see, such as hitting, slapping, shooting, stabbing or cursing someone (Baron & Richardson, 1994). As such, psychologists tend to agree that aggression is not always violent, though can incorporate verbal as well as physical harm to another. Violence, on the other hand, has been described as a form of aggression with extreme physical harm as its goal, such as injury or death (Anderson & Buschman, 2002). The NICE guidelines (2015) describe violence and aggression as “*a range of behaviours or actions that can result in harm, hurt or injury to another person, regardless of whether the violence or aggression is behaviourally or verbally expressed, physical harm is sustained or the intention is clear*” (p.6).

Notably, aggressive and violent behaviour within inpatient settings, often leading to restrictive practices like seclusion, are diverse in nature and therefore can encompass numerous aspects of these behaviours. Various theories have emerged about the causes of aggressive behaviour and violence, which have evolved over the years. The first systematic theory of aggression was proposed by Dollard et al. (1939). Influenced by psychoanalytic assumptions, the authors discussed the frustration an individual experiences when a goal is ‘blocked’ and suggested that “*the existence of frustration always leads to some form of aggression*” (p. 1). This frustration-aggression theory, however, was not supported for long, as it quickly became clear that not every aggressive action is related to an experience of frustration. This theory was subsequently revised and it was posited that frustration can lead to other (non-aggressive) responses and that the chosen reaction will be that which best reduces frustration. This appears to be more logical, particularly in mental health settings, as inpatients may be faced with similar frustrations though do not all respond aggressively.

Evolutionary theories argue that aggression is biological in nature, with Lorenz's (1966) ethological view defining aggression as the fighting instinct present within all species. This line of thinking follows from Darwin's (1859) theory of evolution and implicates aggression as being an instinct used to defend territory and mates from rivals, or maintain dominance in social species. Frustration/anger within most species manifests in a number of ways such as reactive aggression and instrumental aggression, wherein the aggressive act is goal directed, while human aggression is considerably more complicated.

Later research has focused upon a number of biological factors and their association with aggression, including the impact of hormones and neurotransmitters. For example, although it is unsurprising that male testosterone levels are significantly higher than female levels, the relationship between aggression and testosterone applies to both men and women. A positive correlation has been found between the two as well as associated behaviours, like competitiveness, with women being affected by much smaller changes in testosterone levels in comparison with men (Cashdan, 2003).

Notably, Stangor et al. (2014) emphasised the importance of differentiating between causation and correlation, particularly in relation to the observed positive relationship between testosterone and aggression. They indicated that this, however, does not prove that testosterone causes increased aggression and they, in fact, argued that the effect of aggression on testosterone levels is likely to be stronger than testosterone on aggression. Stangor et al. (2014) noted that when individuals engage in aggression, their testosterone levels increase temporarily. Interestingly, they also found that during 'aggressive' games (such as, football) the testosterone levels of the winners increased, while the losers' levels decreased, noting that this could be a factor in 'post-match' rioting from the fans of winning teams in sports.

Further, research into the effect of serotonin on aggression was carried out by Berman et al. (2009). They conducted a study comparing individuals who self-reported a great deal of aggression with those who reported having been less aggressive. The two groups were either administered serotonin or a placebo whilst engaging in a competitive game. The researchers found that the levels of aggression (measured by their willingness to initiate painful electric shocks) significantly increased in those who had taken the placebo, though did not increase in the participants who were given serotonin, suggesting some mediating impact of serotonin on aggression.

Having conducted research into the impact of genetics on aggression, Caspi et al. (2002) described a genetic interaction with aggressive behaviour. By focusing on the monoamine oxidase gene (MAOA), the researchers found that it is involved in influencing the body's production of serotonin, and noted that this neurotransmitter affects hunger, sleep, temperament, as well as inhibits aggression. Their findings, that those individuals with lower activity levels of the MAOA gene were more likely to evidence aggressive behaviours as adults, supported their assertion that genetic factors impact on aggression. Caspi et al. (2002) found that this was, however, only noted in severely neglected and maltreated children. As such, it seems that there is some interaction between genetics and aggression, though it is likely that, as with most behaviours, environmental variables also play a significant role (Stangor, Jhangiani, & Hammond, 2014).

### ***Theories of Social Psychology***

Bandura's (1973) social learning theory contends that aggressive behaviour is learnt through observation, and whether aggression is exhibited depends on an

individual's evaluation of the outcome of that behaviour. As such, Bandura maintains that aggression is a self-regulated behaviour that can be motivated or prevented, with perpetrators using victim blaming or minimisation strategies to justify their behaviour.

Later, Zillman (1979) proposed the excitation-transfer theory, highlighting the impact of physiological arousal that fails to dissipate quickly, and the cumulative impact of two events occurring in quick succession. In other words, arousal from the initial event will enhance arousal from the second event, leading to misattributions by the brain and a disproportionately strong response to, for example, a minor provocation. As such, Zillman argues that often violent acts are considered to have been carried out impulsively in response to rather trivial events. However, the triviality or importance of a situation is entirely dependent on how the situation was perceived by the aggressor and as such it is difficult to make judgements about this as a bystander.

Other researchers, around this time, contested the notion that aggression is always self-regulated and stated that the importance of extreme physiological arousal, or loss of control caused by brain damage or intoxication should also be considered (Zeichner & Pihl, 1979).

In 1988, Frude proposed his model of aggression and emphasised that aggressive acts should be considered in relation to the situation in which they occurred rather than as though having taken place in a vacuum in space. This may be particularly relevant when assessing aggressive responses within inpatient services. For example, Frude states that a number of factors impact on an individual's appraisal of a situation: previous experience, mood state, stress, hormonal changes, personality factors, thresholds for anger, use of substances, etc. Frude highlights the role of internal and social inhibitions, and argues that these factors may contribute to an

individual ‘bottling up’ their anger. This could, in turn, lead to lower inhibition and a heightened likelihood of aggressive behaviour in the future.

The social role model theory suggested that aggression is regulated by the gender roles that are acquired and adopted throughout an individual’s upbringing (Eagly & Wood, 1999). Research in this area argued that the biological sex of a person cannot alone explain gender differences in aggression and instead noted that it relates, more substantially, to the social constructs of masculinity and femininity (Richardson & Hammock, 2007). For example, they noted that the male gender role emphasises assertive and dominant features, which are compatible with, and might encourage, aggressive responses. In contrast, the authors considered that the female gender role incorporates nurturing features, encouraging empathic responses that are less compatible with aggressive behaviour. Campbell (2006) found that when women do behave aggressively they are more inclined to experience guilty and anxious feelings, which they considered supported the notion that aggression is discordant with female gender role expectations.

In 2003, Bandura’s basic model of social learning theory was built upon and reformulated into social cognitive theories of aggression (Anderson & Huesmann, 2003; Huesmann & Taylor, 2006). These theories incorporate “*elements of priming in which a stimulus activates cognitive networks of related concepts, excitation and arousal and the imitation of specific behaviour*” (Ferguson & Dyck, 2012, p. 221).

There is a passive element described in the process of imitation, with the authors noting that children who witness aggression are innately more likely to imitate that behaviour. The authors considered that, over the course of an individual’s life, the experience of aggression leads to the cognitive schema being developed and activated. Further, Huesmann and Taylor (2006) referenced social scripts being

learned when aggression is witnessed, which are later applied and influence their interpretation and response to future encounters.

As such, these responses are considered to be observationally acquired and automatically applied to novel situations. Desensitisation was also referenced, as the authors stated that repeated exposure to aggression leads to a decrease in affective aversion to aggression (Huesmann & Taylor, 2006).

### ***Cognitive theories.***

In the 1980s, cognitive psychologists first began developing their computer-like theory of aggression. The Social Information Processing theory (Dodge & Rabiner, 2004) then highlighted the ‘hostile attributional bias’, describing a tendency for an individual to interpret ambiguous situations, such as a person bumping into another in a busy street, as a hostile action. This bias has been researched extensively and is considered to reliably predict aggressive responses (Warburton & Anderson, 2015).

Berkowitz (1989) reformulated the frustration-aggression hypothesis, in response to improved knowledge about neural connectivity, and the cognitive neoassociation theory was born (Berkowitz, 2012). This suggested that provocations or frustrations (negative events) lead to negative thoughts, feelings and behaviour, corresponding with fight or flight responses. This is in keeping with what might be encountered in psychiatric settings, with the same provocation prompting one inpatient to react aggressively and another to leave the situation. It was hypothesised that the individual characteristics mediate the responses, for example, where a person’s fight response dominates, the reaction is more likely to be angry and aggressive. However, Berkowitz (2012) also highlighted the importance of higher

order processing in moderating aggressive impulses, such as assessing the other person's motives or considering the potential consequences of an aggressive reaction, which in inpatient settings would likely be significant in terms of short (e.g., seclusion) and longer term (e.g., risk assessments/future care planning) outcomes.

Research undertaken by Chen et al. (2019) explored the role of other cognitions, such as self-efficacy and self-control, in aggressive behaviour. They found that there was a negative correlation between self-efficacy and aggressive behaviour, with aggression reducing as self-efficacy increased. Chen et al. (2019) noted that self-control also had a powerful mediating effect on this relationship, with better self-control also being positively correlated with self-efficacy, leading to lower levels of aggression. In addition, the authors found that as individuals got older, their levels of self-efficacy and self-control improved.

The cognitive impact of alcohol has also been investigated and, perhaps unsurprisingly, it has also been found that the consumption of alcohol significantly impacts upon whether an individual reacts with aggression to a provocation (Graham, Osgood, Wells, & Stockwell, 2006). Research suggests that this relates to the impact of alcohol on executive functioning, such as, an individual's capacity to make reasoned decisions, plan, organise and achieve goals, as well as their ability to control their emotional reactions and subsequent behaviours (Séguin & Zelazo, 2005).

Interestingly, researchers have found that expectations can also play a significant role, with one study finding that even an individual's belief that he or she has consumed alcohol increases the likelihood that they will respond aggressively (Bègue et al., 2009).

### ***Integrated General Aggression Model***

The General Aggression Model (GAM) was proposed by Anderson and Bushman (2002) and is still considered to be one of the most comprehensive theories of aggression, integrating and unifying existing ‘mini-theories’. The GAM draws together elements of biological, social and cognitive theories and likely explains the broadest range of aggressive behaviour, highlighting genetics, biology, personal beliefs, behavioural scripts and attitudes, and how these features interact with environmental triggers. This model also suggests that, alongside personal and situational variables, an individual having the time and ability to cognitively appraise a situation, and consider the potential consequences, contributes to whether an aggressive reaction is displayed.

The GAM considered various possible triggers for aggression, as well as highlighting internal psychological processes that take place, the ways in which aggressive behaviour can be acquired and reinforced (such as the role of schemas and scripts) as well as a range of intra-individual factors (Warburton & Anderson, 2015).

The authors argued that the GAM is the most parsimonious theory of aggression, explaining the concepts in simple and accessible terms. They also opined that the consideration of multiple motives for aggressive actions enables better explanation and understanding about the behaviour, for example, accounting for both state and trait-based aggression (Anderson & Bushman, 2002). Relatedly, the authors noted that this broader reflection on impacting factors in aggression will improve targeted interventions for individuals whose aggression is chronic, and as such those who are the most likely to be secluded. Anderson and Bushman (2002) stated that the GAM encourages a more fully encompassing treatment approach, with consideration

being given to incorporating elements of multiple theories that may benefit patient outcomes more successfully than might one single approach.

Relatedly, in their paper, the authors reflected:

*“Science is built up with fact, as a house is with stone. But a collection of fact is no more a science than a heap of stones is a house.” (Jules Henri Poincare, as cited in Anderson & Bushman, 2002, p. 32).*

In relation to this, Anderson and Bushman (2002) argued that the GAM presents a helpful integrative framework for understanding different domains of aggression theories, transforming a ‘heap of stones’ into a house by considering how the theories complement and conflict with one another, and using this knowledge to produce more robust and effective intervention strategies.

As with virtually all theories, there are some who have challenged the GAM’s ability to explain aggression in its entirety. For example, researchers (e.g., Ferguson & Dyck, 2012; Markel, 2018) have criticised the model’s lack of detail in relation to the impact of biological and personality features. They too noted that, in their view, the social cognitive aspects of the model were focused mainly on learning only theories.

They recognised the model’s intention of integrating positive elements from various models, though considered that the outcome appeared to be heavily weighted towards social learning constructs (Ferguson & Dyck, 2012; Markel, 2018). However, despite these valid concerns, the APA (2011) continues to support the use of GAM as a framework for considering a wider range of theoretical views. As such, and while taking stock of these perceived limitations, the GAM continues to be a well-respected and broadly accepted model that has likely proven most helpful, as a starting point, for

this current thesis, particularly in terms of applying theories of aggression to working with inpatients in mental health hospitals. Specifically, the GAM is straightforward, accessible and draws on a variety of areas of research, encouraging staff to consider a range of possible factors in working with inpatients.

It would seem, from the evolution of these theories, that professional thinking around the causes of aggression have changed over the past few decades, from simplistic standpoints, to more integrated and holistic theories such as the GAM. Theories about aggressive and violent behaviour provide important and helpful information when looking at the practice of seclusion in mental health settings for several reasons. Firstly, many inpatients are faced with similar potentially frustrating situations, though not all will become frustrated in response. Further, patients who do become frustrated do not all present homogenously (by, for example, acting in a violent or aggressive manner). For example, as will be outlined in the systematic review chapter below, behaviour that precedes the initiation of seclusion can incorporate verbal threats, disorientation, or agitation as well as aggressive actions such as actual violence towards others (staff or inpatients) and the destruction of property. What these actions all have in common, however, is that they are expressions of an inpatient's internal experience, including possible feelings of upset, unease, frustration, confusion, anger or any number of other unquantifiable emotions.

As such, where this behaviour is particularly prominent, such as inpatient hospitals, clinicians utilise risk assessments that include static and dynamic risk factors but cannot perfectly predict future acts of aggression or violence. These risk assessments, such as the widely used Historical Clinical Risk Management guidelines (HCR-20 V<sup>3</sup>: Douglas, Hart, Webster, & Belfrage, 2013) and the Violence Risk Scale (Wong & Gordon, 2000) are constantly evolving in line with developments in

knowledge. Risk assessments of this type assess known risk factors, such as demographic factors, previous offending, situational factors, internal psychological processes, support network etc. They assist clinicians in making more objective and evidence-based judgements about an individual's likelihood of recidivism in various settings (Gray, Taylor, & Snowden, 2008). As such, these tools can provide helpful information to professionals in terms of managing challenging behaviour that may, for instance, precede a seclusion episode.

As such, the GAM, in combining and incorporating elements from decades of theorising around violence and aggression, brings arguably the most helpful model to this area of research. It considers an individual's biological predispositions, values, beliefs, schemas and prior experiences, and how these all interact with environmental triggers, with the outcome then mediated by the appraisal of a situation.

In terms of the relevance of these theories in understanding and, working towards reducing the use of seclusion in the future, it is important to recognise how these theories have evolved and their impact upon professional thinking about challenging behaviour. It is hoped that as research has shown that the basis of violence and aggression is not straightforward, staff will be encouraged, when managing this behaviour, to consider a wider, more integrated view, incorporating biological, social and environmental factors, as well as personal appraisal.

Clearly, all psychological theories, including those in relation to aggression, are necessarily subject to continual re-evaluation, being shaped through the effects of newly acquired knowledge and understanding as research in these discrete areas progresses. However, it is pertinent to remind oneself that early theories (such as Bandura, 1973; Zillman, 1979;) though perhaps now viewed as dated, do not become obsolete, as later theories are often built on these underpinning foundations.

Emerging social influences, cultural change, and novel circumstantial events are all contributing factors in the essential, ongoing critique and directional adjustments that occur in evolving psychological theories.

In summary, review of these theories suggests that the GAM offers an integrative framework, and most helpfully enhances our understanding of violent behaviour, including aggression, actual violence, destruction of property and threatening behaviour, which are all common reasons for seclusion. However, at this point, it will be important to briefly describe the less restrictive interventions that ought to be attempted to manage challenging behaviour prior to the use of seclusion.

## **Seclusion in modern times**

### ***De-escalation techniques***

Seclusion has a long history of use in the area of psychiatric care as a means for dealing with behaviour that is considered potentially dangerous or unpredictable (Hodgkinson, McIvor, & Phillips, 1985; Wadeson & Carpenter, 1976). Notably, in the United Kingdom, the Mental Health Act (1983) makes it clear that initial attempts to manage behavioural disturbances should proceed from the least restrictive practice towards more restrictive practices only when initial attempts have not been successful. For example, restrictive interventions such as manual restraint, rapid tranquillisation, de-escalation and seclusion should only be considered where other de-escalations attempts have “*failed to calm the patient*” (p. 116).

As noted above, challenging behaviour in psychiatric settings occurs with considerable regularity and, as a result, it is necessary for strategies to be in place to effectively manage this. In the first instance, professionals in this area of work are provided with some level of training in ‘de-escalation’. De-escalation, also referred to as ‘talking-down’ or defusing, involves a number of psychosocial techniques that aim

to calm disruptive behaviour and prevent escalation into aggression or violence (Stevenson & Otto, 1998). Verbal de-escalation is a complex process wherein a service user is “*redirected to a calmer personal space*” (NICE, 2005, p. 50). This can involve encouraging a service user to move to a less confrontational area which might be a specially designed area for de-escalation, such as a quiet room.

All approaches, however, stress that staff should be aware of signs that the individual is experiencing agitated or angry feelings. Further, it is emphasised that service users should be approached in a calm and controlled manner, be given options to choose from and their dignity should be maintained. Other approaches suggest that the staff members should make use of individual facets of their own personality as well as their personal relationship with the patient in order to improve interactions with the individual. Unfortunately, there are some contradictory findings into the effectiveness of such approaches to de-escalation (NHS Protect, 2013a)

De-escalation efforts are often effective, though there are inevitably situations that cannot be adequately managed at this level. At this point in the de-escalation process, sometimes inpatients will be given pro re nata (PRN) medication, meaning, ‘in the circumstances’, in order to manage challenging behaviour. However, the most recent NICE guidelines (2015) indicate that there is little evidence that PRN medication has a great deal of efficacy in managing challenging behaviour occurring prior to violent or aggressive acts. The use of observations in psychiatric care are also governed by these guidelines and are an important part of seclusion use. The room is designed to allow observation of all parts of the suite and frequent observations are made by staff in order to protect the patient, assess their psychiatric presentation and to make decisions about their future care (NICE, 2015).

Observation, which is described as “*regarding the patient attentively*”, whilst also minimising the level to which the individual feels they are under surveillance, is a key feature in psychiatric treatment (Addressing Acute Concerns, 1999, p. 2). While observations are generally undertaken in relation to risks of suicide and self-harm, it has been noted that observations are also important in the short-term management of disturbed behaviour. For example, NICE guidelines (2015) indicate that observations can also be used to help staff to recognise agitated or disturbed behaviour which can better equip staff to prevent this behaviour from escalating into violence or aggression. Some concerns, however, have been raised that healthcare trusts across the United Kingdom vary greatly in their practices of observation and about whether staff members are appropriately trained to carry them out (Addressing Acute Concerns, 1999). As such, it has been noted that where policies and procedures are not consistently implemented across the board, the feasibility and effectiveness of observation to manage and de-escalate aggression or violence is reduced (Addressing Acute Concerns, 1999).

The NICE guidelines (2005) indicate that in circumstances where de-escalation is not considered to have been sufficiently effective, physical intervention can be utilised. However, it is noted that these methods should be used only where other less restrictive strategies have been exhausted and have failed to calm the individual. Physical interventions, therefore, should not be regarded as a primary treatment technique and the guidelines highlight that the intervention selected must be reasonable and proportionate to the risk posed by the service user (NICE, 2005). The most common physical intervention used for managing disturbed or violent behaviour in the United Kingdom is manual holding, which is a hands-on form of physical restraint used to safely render the service user immobile. This intervention is

undertaken by trained and skilled healthcare professionals to prevent patients from causing harm to themselves or others, while mechanical control devices such as handcuffs, belts and body vests are used only in exceptional circumstances, often within high secure settings.

Control and restraint continue to be used across the NHS; however, techniques have been modified to be more appropriate for therapeutic care, such as Management of Actual and Potential Aggression (MAPA) therapeutic holding. Therapeutic holding involves a hierarchy of restriction, from least restrictive, allowing staff to prompt and guide the patient (for example, away from the cause of distress), to the most restrictive, wherein all movements are limited (Black Country Partnership, NHS Foundation Trust, 2016). More restrictive methods of de-escalation involve rapid tranquilisation, sometimes referred to as urgent sedation (Broadstock, 2001).

Rapid tranquilisation is used in situations where staff are required to rapidly control outbursts of agitation or aggression and the desired outcome of rapid tranquilisation is not sedation, but rather a state of calmness, whereby the service user remains conscious. Its use should be restricted to situations where other less coercive methods have failed to calm a service user and is more often used to manage severe mental and behavioural disturbance.

In situations where rapid tranquilisation is not considered appropriate by professionals or where service users have previously expressed a preference (i.e., within a signed collaborative care plan) to avoid medication for the management of disturbed behaviour, seclusion is utilised (NICE, 2005). Although it is recognised that seclusion is unpopular amongst service users, in some circumstances it is a preferred course of action in order to prevent long periods of alternative physical intervention such as manual holding. NICE guidelines (2005) encourage staff to collaborate with

inpatients to increase their awareness of their own triggers for aggression, violence and agitation in order for them to express their wishes for care should restrictive practices be deemed necessary. Similarly, Mind (2015) indicated that a service user's care plan should detail how best to prevent incidents from occurring in the first place, how staff should de-escalate the situation, and manage appropriately/safely should incidents take place.

### ***Impact of coercive measures on inpatients***

Research has highlighted that utilising any coercive method, such as seclusion, manual holding, and rapid tranquilisation to deal with threat of violence, is traumatic for a service user (NHS Protect, 2013a), and this itself can trigger an aggressive reaction rather than the service user's cooperation and a successful de-escalation (Daffern, Mayer & Martin, 2006; Fisher, 2003; Muir-Cochrane, O'Kane, & Oster, 2018). Due to the known negative effects of seclusion on patients, there are strict NICE (2015) guidelines that must be followed post-incident.

### ***Post-incident reviewing***

Following the conclusion of a seclusion episode, NICE (2015) note that a debrief should be carried out collaboratively with the secluded patient and should take place as soon as the secluded individual is able to engage with this. This debrief should focus on identifying and dealing with physical harm to self, as well as other service users or staff. It is noted that the patient must be given the opportunity and encouraged to discuss the emotional impact of their experience for themselves and the staff involved. In addition, providing staff with the patient's perspective on the incident and allowing the individual to understand the event is considered essential. It is noted that the debrief should aim to enable staff to anticipate and reduce future

aggression throughout this collaboration, which should focus on the contributing short- and longer-term factors to prevent further incidents, inform care plans, and aid risk assessments.

### ***Controversy surrounding seclusion***

The use of seclusion has always been a controversial part of patient management. Some early researchers considered seclusion to be a therapeutic intervention utilised until a person regains equilibrium (McCoy & Garritson, 1983), and a space in which other psychiatric interventions can take place (Kilgallen, 1977). Conversely, others viewed seclusion as a method of retaliation and control and considered it to be a punishment (Pilette, 1978), describing it as a remnant of the past (Topping Morris, 1994). Further, there has been much debate about whether there is a place for seclusion in modern psychiatry, particularly in light of patient deaths during seclusion episodes (HMSO, 1992).

This polarising debate has been ongoing for at least five decades, and in the 1990s some inpatient facilities were removed seclusion altogether from inpatient hospitals (Morrison & Lehane, 1996). However, the counter argument from clinical staff was that removing seclusion could lead to staff and patients in these settings being exposed to extreme danger (Morrison & Lehane, 1996). More recent research suggested that this was not necessarily the case, with Lewis, Taylor and Parks (2009) finding a 75% reduction in the use of seclusion and restraint in mental health settings without any increase in injuries to staff or other service users. This finding has been replicated in a cross-cultural integrative review on the use of the Six Core Strategies for the Use of Seclusion and Restraint (6CS; Huckshorn, 2005; Te Pou o Te Whakaaro

Nui, 2014) which are best-practice guidelines covering the required changes to organisations, staff development, inpatient input into their own care and research-based practices. This research found that where 6CS was consistently put in place in Western nations, seclusion use was minimised without any increased risk to staff (Te Pou o Te Whakaaro Nui, 2014).

As far back as 1977, ethical guidelines explicitly stated that seclusion should be reduced (World Psychiatric Association, 1977). This coincided with patient rights groups who actively opposed the use of seclusion, considering it akin to physical violence. The therapeutic benefit of its use was also queried as well as consideration as to whether it represented means of control and subjugation (Chamberlin, 1985; Fisher, 1994). Further, later evaluations also found that coercive measures were no more effective in managing aggression and agitated behaviour than other forms of treatment that do not require the seclusion or restraint of patients (Muralidharan & Fenton, 2006; Nelstrop et al., 2006). This literature suggests that the negative impact of seclusion and other restrictive practices may not be necessary in managing challenging behaviour and suggests that further research into its use is warranted. In order to explore this, it is important to understand the frequency and impact of challenging behaviour within inpatient services.

### ***Prevalence and impact of challenging behaviour in inpatient settings***

The management of challenging behaviour such as violence and aggression within psychiatric services is an important area of research for a number of reasons, not least because of the regularity with which it occurs, but also due to the serious and wide-ranging consequences of this behaviour in such settings (Bourn, Maxfield, Terry, & Taylor, 2003; Flood, Bowers, & Parkin, 2008; Muir-Cochrane, O’Kane, & Oster, 2018). Preventing and managing violence and aggression is a complex task, as there

are numerous intrinsic and extrinsic factors involved. Intrinsic factors include personality characteristics, mental distress and difficulties with general emotional regulation. Extrinsic factors, on the other hand, relate more to contextual factors such as the environment and social settings where aggression or violence tends to occur. Improving understanding about how contextual factors interact with previous behaviour in the development of violence is therefore important in informing the way professionals prevent and manage this difficult behaviour (Dack, Ross, Papadopoulos, Stewart, & Bowers, 2013).

As previously noted, there are a number of general policies in place surrounding the management of violence and aggression within the National Health Service in the United Kingdom. However, integrating these can be problematic due to the wide variety of contexts in which violence and aggression occurs. While managing this kind of behaviour is a centrally important part of the criminal justice system, it has not always been at the forefront in health and social care, despite the fact that violence and aggression in forensic mental health occurs with alarming regularity in these settings. Where criminal justice meets health care, managing this behaviour can become increasingly difficult as health and social care has tended to exercise a ‘zero tolerance’ approach to violence and aggression (Bourn et al., 2003). However, this approach has been described as anomalous as a result of the very significant impact of violence and aggression in mental health, in terms of how it impacts both professionals and other service users (NICE, 2005).

Budd (1999) found that exposure to violence and aggression can lead to anger, anxiety, depression, disrupted sleep patterns and fear in other service users. Some researchers have reported that violent incidents can have a negative effect on how staff members view service users, which can have a deleterious effect on the overall

experience of care (De Benedictis et al., 2011) as well as a significant negative impact on staff-patient relationships (Muir-Cochrane, O’Kane, & Oster, 2018). In addition, physical violence experienced by staff understandably negatively impacts morale, leading to increased absences and higher rates of staff turnover (Garcia, Kennett, Quraishi, & Durcan, 2004; Needham et al., 2005). This, in turn, can trigger a negative cycle in that decreased staff numbers and the presence of temporary or ‘bank’ staff can contribute to inpatients feeling unsettled and more episodes of aggression occurring (Bowers et al., 2005). Gerace and Muir-Cochrane (2019) further noted that nurses reported feeling only moderately safe at work and being faced with stations that made them feel threatened on a regular basis. Further, they considered the use of these methods was also often related to a lack of available resources to manage patients. The wider consequences for the mental health sector also relate to increased costs of providing secure care, as well as economic pressure more generally (Flood et al., 2008).

More recent research has shown that, unfortunately, violence and aggression in the workplace continues to present a serious problem within the National Health Care system, with statistics indicating that, in 2014, 17% of NHS mental health staff reported having been the victim of physical violence committed by service users in the previous year (NHS England, 2014). In 2014, more than 60,000 physical assaults were annually reported against NHS staff within the UK (NHS Protect, 2013b) with 43,699 occurring in mental health or learning disability settings. Some studies utilising staff surveys have found that between 75% and 100% of nursing staff on acute psychiatric units have been assaulted by a service user during their careers (Caldwell, 1992; Hatch-Maillette, Scalora, Bader, & Bornstein, 2007).

Looking more specifically at the inpatient literature, Bowers et al.'s (2011) meta-analysis of this research found that the overall incidence of violence occurring in psychiatric hospitals was more than 30%, with this number increasing in forensic settings. Rates of violence and aggression in medium secure settings were found to be higher than in low-secure settings and staff were found to be the victim of aggression twice as regularly as service users. A study in a high-secure hospital by Uppal and McMurran (2009) found that 400 service users were involved in 3,565 violent incidents over a sixteen-month period, wherein staff and service users were just as likely to have been the victim. Notably, however, in both of these studies it was reported that a small number of service users, proportionally, were responsible for a disproportionately high number of violent incidents and as such these results may not be presenting an accurate picture of the prevalence of violence that can be generalised to inpatient settings on the whole.

International data indicate that these findings are not unique to the United Kingdom. It has been found that, worldwide, nurses are three times more likely than any other professional staff group to be exposed to violence (International Labor Office, 2002) and in the UK, 72% of nursing staff report that they have felt unsafe at work (Royal College of Psychiatrists, 2007). More recent research into workplace violence was carried out by Spector, Zhou, and Che (2014). They found that across Europe, England, Asia and Middle Eastern regions, on average over 31% of nurses had experienced physical violence, while almost 63% had been exposed to aggression in the previous year.

All of this research serves to strengthen the argument that attention must be paid to the factors that contribute to these figures and to establish best practice

methods that help to manage challenging behaviour and the occurrence of violence, aggression and subsequent seclusion in psychiatric settings.

### **Aims and hypotheses of the thesis**

This thesis will explore the causes and characteristics associated with seclusion; the most restrictive practice used in mental health hospitals. Literature is outlined detailing the reasons behind its use and a focus is placed upon the characteristics of secluded inpatients in order to deepen understanding about this demographic to enable better outcomes for inpatients, with an aim of reducing its use in these settings.

Chapter one will begin by outlining the use of seclusion in managing challenging behaviour in mental health hospitals. The impact of seclusion will be explored and due to the absence of theories about seclusion, theories of aggression will be outlined, as this is a common reason for seclusion use.

The second chapter considers the utility of the Violence Risk Scale in assessing psychiatric inpatients. A critical analysis of the psychometric properties will be detailed, and the limitations will be explored. The aim of this chapter is to assess the validity and reliability of this measure and its utility in assessing risk in inpatient settings.

A systematic literature review will be presented in chapter three, examining the reasons for seclusion episodes as well as exploring other factors associated with its use. This review aims to provide information about the causes for seclusion cross-culturally and to establish whether the guidelines dictating the use of this intervention are adhered to in clinical settings.

The fourth chapter will present a meta-analytic research project in which the characteristics of secluded inpatients is undertaken. A meta-analysis of studies will be undertaken with the aim of assessing the prevalence of specific demographics upon the predictive risk of gender, a diagnosis of psychosis and the impact of being a younger inpatient. Limitations of this research and potential implications of these findings will also be discussed.

Chapter five will be comprised of an overview of the findings, which will then be considered in relation to the research base. Future directions for research will then be detailed and further implications for clinical practice discussed.

## **Chapter 2:**

### **The Use and Critique of The Violence Risk Scale**

#### **Abstract**

This chapter provides an overview and critique of a third-generation risk assessment, the Violence Risk Scale (VRS; Wong & Gordon, 2000), used to assess psychiatric inpatients in mental health hospitals. The dynamic and static risk factors are summarised, the purpose and underpinning theory is outlined and the psychometric properties (e.g., reliability and validity) of the tool are assessed. The research tends to suggest that the measure is valid for use in these settings. However, the findings are limited by the authors having conducted a large proportion of the validating research.

## **Introduction**

The process of assessing and predicting risk has been continually changing and evolving over the course of time, resulting in generations of various risk assessment tools (Bonta, 1996). The first generation of risk assessment was based solely upon unstructured professional judgements (Douglas, Cox, & Webster, 1999). Naturally, the predictions of risk varied according to the individual assessing them, their experience and background, and these subjective assessments resulted in poor predictive accuracy.

The second-generation risk assessment tools followed, such as the Static 99 (Hanson & Thornton, 1999), which tended to relate to static factors or fixed risk markers such as forensic and family background history. Unfortunately, these purely actuarial assessments were restricted by the limited data available at the time. Further, their focus on historical variables failed to capture any changes in risk and, therefore, they were limited in the information they could provide in terms of treatment needs, responsibility and progress. It was noted that these tools “*may be more prediction friendly, (though) they are not treatment friendly*” (Wong & Gordon, 2006, p. 280). Third-generation risk assessments, therefore, emerged in order to address some of these limitations by using dynamic factors that, by definition, change over time. These changeable risk factors have been found to predict risk as well as static variables and tend to predict general criminality.

This chapter focuses upon a third-generation risk assessment, the Violence Risk Scale (VRS), which was developed by Wong and Gordon (2000). The dynamic and static risk factors of this measure will be outlined and summarised, the purpose and theoretical underpinnings will be addressed and, finally, an evaluation of the reliability and validity of the psychometric tool will be undertaken.

### **The Violence Risk Scale (VRS)**

The authors of the Violence Risk Scale (VRS), Stephen Wong and Audrey Gordon (2000), argued that a client's assessment and treatment should not be carried out in isolation from one another. They considered that assessment and treatment should be integrated, and noted that the results of the assessment should inform the risk level and treatment targets. Wong and Gordon (2000) further indicated that the results of the intervention should similarly be reflected in the level of risk post-treatment. As such, the VRS was developed in conjunction with their Violence Reduction Program, which aimed to decrease the incidence rates and severity of violent behaviours, decrease antisocial attitudes that support aggression and enable participants to learn more adaptive interpersonal, and cognitive skills to reduce future risk of violence (Wong & Gordon, 2000).

### **Purpose for developing the scale**

Wong and Gordon's (2000) purpose for developing the scale was described as assessing violent offending rather than general offending, i.e., identifying treatment targets and personal strengths; assessing readiness for treatment, progress of treatment; and quantifying the risk both before and after treatment. They further stated that one main objective of the VRS was to assess risk of violence in individuals being considered for progression from an inpatient setting to the community. The VRS purported to be "*gender and race neutral*" (Wong & Gordon, 2006, p. 14) and could be undertaken by those employed in the criminal justice system after completion of "*1 to 2 days of intensive training*" (Wong & Gordon, 2006, p. 14). It is noted that no professional qualifications were required (such as those needed to make diagnoses) in order for this measure to be utilised.

## **Overview of the tool**

### ***Static and dynamic risk factors***

The authors noted that both static and dynamic risk factors were critically important in terms of providing a comprehensive evaluation of a person's violent risk and documenting the changes in risk that occur during treatment. The VRS, therefore, included 6 static and 20 dynamic variables and it was noted that these factors formed a helpful basis for clinicians in terms of conceptualising the individual and enabling more effective management in inpatient settings. As in the second-generation tools, the static factors, such as history of offending, were considered to be important predictors of future violence that did not change throughout the course of treatment. Dynamic factors, on the other hand, such as criminal attitudes and interpersonal aggression, were also deemed centrally important in predicting risk, and could act as targets for treatment. The authors noted that changes in these areas therefore reflected changes in the individual's risk.

The static factors on the VRS were current age, age at first violence conviction, number of young offender convictions, violence throughout lifespan, prior release failures or escapes and stability of family upbringing. The dynamic factors included violent lifestyle, criminal personality, criminal attitudes, work ethic, criminal peers, interpersonal aggression, emotional control, violence during institutionalisation, weapon use, insight into violence, mental disorder, substance abuse, stability of relationships with significant others, community support, being released back to high-risk situations, violence cycle, impulsivity, cognitive distortion, compliance with community supervision and the security level of the anticipated release institution.

Each of the variables, for both static and dynamic factors, were rated on a 4-point scale (0, 1, 2 or 3) with higher ratings indicating the individual's risk of violence

was higher. An example of a static factor was ‘Violence throughout Lifespan’, whereby a rating of 0 was given when “*the individual had no previous history of violence*”, a rating of 1 when “*the individual was involved in one previous violent incident*”, a rating of 2 where, “*the individual may have had a few incidents of violence up to the present time but a pattern of continuous or escalating violence is not evident*”. Finally, a rating of 3 was attributed when “*the individual demonstrated a pattern of violence beginning in childhood or early adolescence... continuing relatively unabated until... the most recent institutionalisation or conviction. Escalation in severity of violence may also have been evident*” (Wong & Gordon, 2000, p. 28).

An example of a dynamic factor was ‘Work Ethic’. Here, the user was provided with detailed descriptions for ratings of 0 and 3 which will be summarised as follows. A score of 0 related to “*a desire and willingness to work for a living rather than live a parasitic lifestyle*”. An individual being “*in favour of or willing to work*”, evidenced by enrolment in education or training programmes. A rating of 1 was described as “*less positive than 0*” and a rating of 2 as “*less serious than 3*”. A rating of 3 was provided for individuals who “*used violence or other socially inappropriate ways of financially supporting him or herself*”, where an individual “*tends to look down on legitimate employment, or may feel entitled to have his or her needs met without having to work for them*” (Wong & Gordon, 2000, p. 38).

According to this measure, therefore, the higher the score, the higher the risk of violent recidivism. The authors noted that individuals who scored highly on this measure were good candidates for intervention in this area and stated that this reflected the ‘Risk’ principle of the Risk Needs Responsivity model (Andrews & Bonta, 1998). Furthermore, it was noted that, by having the treatment programme

target those dynamic variables on which the individual scored 2 or 3, they were addressing the ‘Need’ principle as these scores reflected important risk markers, whereas scores of 0 were not appropriate targets for treatment as they represented areas of strength. For example, where an individual achieved a score of 2 on emotional control, this indicated that they required intervention work focused upon this area of need.

Wong and Gordon (2006) considered that it was important for professional judgement to be incorporated into the assessment. As such, a ‘clinical override’ section was included within the tool where clinicians could account for situations and circumstances not included in the risk variables (Wong & Gordon, 2006). The merit of this being included within the tool was that it brought a ‘human’ analysis element into the assessment based upon the rater’s prior knowledge and understanding of the potential contributing factors which could not be otherwise captured.

### ***Assessment of treatment readiness and change***

In producing the VRS, Wong and Gordon (2000) attempted to operationalise the stages of change noted in the Transtheoretical Model of Change (Prochaska & DiClemente, 1984), namely, the pre-contemplation, contemplation, preparation, action, and maintenance stages. The authors maintained that as an individual is seen to be evidencing improved motivation and commitment to change, they progress from one stage to the next, which in turn results in improvements in the treatment target. The authors sought to describe the behaviours they considered to be typically characteristic of changes in each of the dynamic risk factors in order to utilise behavioural cues from the client’s journey through the stages of change and provide a quantitative measure of risk reduction. However, importantly, Burrowes and Needs (2009) conducted a critique of the TTM and suggested that this is largely an outdated

model. They instead proposed the Readiness to Change Framework, which will be outlined in the critique below.

Within this assessment, progression from one stage to the next, translated to a 0.5-point reduction in risk rating, with the maximum progression being 3 stages, resulting in a 1.5-point reduction. The authors stated that by aligning treatment targets with an individual's stage of change was not only more effective in reducing risk but also less harmful, as engaging a client in work beyond their current stage was unhelpful and could result in disengagement. For example, a client who started treatment at the preparation stage and ended up at the maintenance stage, post-treatment, would have progressed through 2 stages and would obtain a reduction in risk of 1 point (i.e.,  $.5 \times 2 = 1$ ). For every dynamic risk variable targeted for treatment, the pre-treatment risk rating minus the change score was the post-treatment risk rating for that dynamic variable. At the end of treatment, the post-treatment risk was the total post treatment dynamic variable scores plus the total static variable score; with the latter remaining unchanged (Wong & Gordon, 2000).

## **Research Base**

### ***Static and dynamic factors***

Wong and Gordon (2000) reported that the factors identified and included in the measure resulted from an extensive literature review into the areas of risk assessment and treatment. They further noted that those factors selected for the assessment tool were either linked to risk of violence, empirically or theoretically. Within the VRS manual, a literature review was outlined to support each of the static and dynamic factors in turn. For example, the first static factor, current age, was supported by the assertion that young age has “*repeatedly emerged in the literature as one of the most robust predictors of violent and general recidivism*” (Wong &

Gordon, 2000, p. 98). This was supported by various research outlined which found age to be significantly inversely related to violent recidivism (Wong & Gordon, 2000), which will be expanded upon later in Chapter 4 (Meta-analysis).

### ***Stages of change***

The VRS metric was reported to be predicated on the psychology of criminal conduct (PCC), a theory of criminal behaviour, which was researched by Andrews and Bonta (1994, 1998, 2003), and has been supported by other empirical research. This theory emerged through a combination of cognitive behavioural principles, social learning and social cognition. It purported that violence and other antisocial behaviour is the result of “*personal control through antisocial attitudes, interpersonal control through social support for crime provided by antisocial associates, non-mediated control established by a history of reinforcement of criminal behavior, and/or personal predispositions*” (Andrews & Bonta, 2003, p. 10). The assertion that this tool was theoretically driven is supported by the static and dynamic factors included within the VRS which related directly to the above, such as ‘criminal attitudes’, ‘stability of relationships’, ‘criminal personality’.

The assessment was also reported to be derived from a modification of the Transtheoretical Model of Change (Prochaska & DiClemente, 1984) which assesses an individual’s readiness for treatment, and the changes that occur over the course of treatment. This model was supported by substantial research and outlined that no matter the type of treatment being undertaken, individuals progressed through the pre-contemplation, contemplation, preparation, action, and maintenance stages.

Burrowes and Needs (2009) argued that the theoretical basis underpinning the TTM was flawed in terms of understanding readiness to change and they also questioned the validity of the discrete stages, as described in the model.

Research has not consistently supported the assertion that there are five treatment stages, with Elder et al. (1990) noting that the pre-contemplation stage may be the only discrete stage. Sutton (2001) reported that individuals are frequently found to be in multiple stages simultaneously. Stage skipping is also noted (Littell & Girvin, 2002) and moving backwards through the stages is reportedly common, though the TTM does not account for this. As such, the validity of the assumptions that are central to this model were not considered to accurately predict and explain behaviour, as they are largely untestable. As a result, these authors suggest that categorising an individual's stage of treatment may not be helpful in and of itself, as little information is provided regarding social circumstances, for example, and potential treatment pathways.

As an alternative, Burrowes and Needs (2009) proposed the Readiness to Change Framework (RCF; Burrowes, 2006) arguing that this framework enables a broader conceptualisation in terms of assessing readiness to change, as well as identifying the key constructs. Contrary to the TTM, the authors argued that the strengths of the RCF lie in the emphasis on context, and the addition of guidelines to help professionals to understand the reasons for an individual's current readiness to change. In describing the framework, Burrowes and Needs (2009) first outline the Barriers to Change (BCM) by utilising a river metaphor. They noted that "if change is like a river then the barriers to change are the obstacles that can prevent the river from flowing in a similar way to a lock gate or dam" (Burrowes & Needs, 2009, p. 44). They described ten barriers that they considered acted as obstacles for individuals who

were attempting to change their behaviour. These included 1) perceived importance of change in comparison with conflicting goals, 2) perceived need for change, 3) perception of personal responsibility to change, 4) perceived cost/benefit analysis of change, 5) urgency to change, 6) ability to change, 7) ability to maintain the change, 8) costs associated with means to change, 9) perceived suitability and efficacy of means to change; 10) the realities of change.

In summary, these authors noted that BCM within the RCF has far-reaching implications in terms of accurately measuring and promoting an individual's readiness to change (Burrowes & Needs, 2009). They noted that all of the aforementioned barriers have the capacity to halt progress and, as such, each of these barriers need to be accounted for. It was emphasised that simply having a treatment pathway (such as an intervention programme) is insufficient to enable change. Rather, it is essential to utilise a comprehensive approach to change, allowing for the impact of internal blocking factors, enabling the individual to move forward, working through these blocks as and when they arise.

## **Reliability**

### ***Internal Consistency***

The Cronbach Alpha coefficient for the VRS total was reported to be .93, and the dynamic item and static item totals were .94 and .69, respectively (Wong & Gordon, 2000). When internal consistency is reported to be very high, it is important to note that this does not always relate to robust scale properties and may be an artefact, resulting from item overlap and repetition (Cattell & Kline, 1977). As such, it is necessary to interpret these findings with caution.

The item-total correlations between the VRS total score and individual item scores were found to be over .60 for 16 of the items, while the lowest correlation

observed was .20 for the item, ‘mental disorder’. The authors noted that this was expected due to the sample mostly consisting of general offenders, and only a small number of mentally disordered offenders.

### ***Interrater Reliability***

Interrater reliability, relating to the degree of homogeneity or agreement between raters, was assessed for the VRS and two raters independently rated a subsample of 45 cases. Using interclass coefficients, Lewis (2004) yielded correlations of .92 and .97. An earlier study (Gordon, 1998) rated a sample of 60 cases and found that the Pearson correlation of the ratings was .87. A correlation of 1 would be considered a perfect correlation, wherein all raters were in total agreement, as such, a correlation of 0.87 would suggest that there was 87% agreement between the raters. Importantly, however, although these are extremely high correlations, they may not be statistically significant as neither study reported the significance levels.

In the study carried out by Gordon (1998) both raters’ scores (either 0, 1, 2 or 3) for each item on the VRS were compared to one another to assess the differences in ratings. They found that only fifty-eight percent of the items were rated identically and thirty-five percent differed by one point. This kind of discrepancy in user variation is particularly concerning as these scoring differences, cumulatively, might lead to significantly different risk assessment scores. In inpatient settings, these scores might form an important part of the decision-making process about a service user’s care plan, and impact upon, for example, whether a patient is granted escorted or unescorted leave from hospital.

A study by Dolan and Fullam (2007), however, also investigated interrater reliability using ultra class correlation coefficients which were found to be satisfactory, with the authors reporting the alpha scores of the VRS static, dynamic

and total as .96, .85, and .89 respectively. Again, however, in this study the significance levels were not reported. As such, the extent to which staff ratings may differ, is not entirely clear.

## **Validity**

Although research would appear to indicate that the VRS has reasonable internal consistency and interrater reliability, this does not ensure that the tool is valid in terms of correctly measuring what it purports to measure. As such, the validity of the VRS must also be examined.

### ***Face Validity***

Face validity, i.e., the degree to which a tool appears to measure the phenomena that it has set out to measure, was also assessed. As outlined above, although the VRS is described by the authors as theoretically-based which would suggest good face validity, the theories generally relate to the basic principles of impulsivity and aggression. Further, the authors utilised vague terms such as ‘criminal thinking’ which presented some difficulties in terms of assessing whether the measure achieved face validity. It is acknowledged that measuring face validity is subjective as this is not something that can be measured directly or scientifically. Notably, if it is difficult for the person completing the measure to understand what is meant by the factor or to determine whether it is present, this could result in inaccuracies. It is important, therefore, that the manual is properly consulted when this measure is being completed as it provides detailed information necessary for the evaluator to make clinical decisions about each factor. Furthermore, because this measure can only be completed in clinical settings by individuals who have completed the necessary training, it would be hoped that this could ameliorate some of these potential difficulties. In addition, the fact that this measure is completed by a clinician

rather than in a self-report format by the individual being assessed, this avoids difficulties caused by response bias or skewed information that might otherwise occur.

As this measure appears to have been operationalised, with the theoretical constructs outlined in terms of the research base, the VRS might be considered to have face validity. However, there are ambiguous items in this psychometric that indicate a great deal of overlap. As such, this reduces the face validity of the tool as items are required to be mutually exclusive in order to properly assess that which they purport to measure cumulatively.

### ***Concurrent Validity***

Concurrent validity is a measure of how well a psychometric assessment correlates with another test which states that it measures the same phenomena. Therefore, an assessment tool claiming to measure a certain construct should correlate with other assessment tools purporting to assess the same construct (Cronbach & Meehl, 1955).

In validating the VRS, therefore, Wong and Gordon (2006) compared the VRS static, dynamic and total scores with the Psychopathy Checklist – Revised (PCL-R), the General Statistical Information for Recidivism (GSIR) and the Level of Service Inventory - Revised (LSI-R). It was reported that this was appropriate due to the PCL-R and LSI-R being considered assessments measuring both violent and non-violent recidivism that have been validated by a large number of studies (Andrews & Bonta, 1994; Hare, 1991, 2003). The GSIR, on the other hand, predicts recidivism in general and has also been validated through research (Bonta, Harman, Han & Cormier, 1996).

The correlations, as reported by Wong and Gordon (2006), indicate that the VSR total scores were most strongly correlated with the PCL-R total score and the

LSI-R total score, yielding a correlation of .83 for both which were highly significant ( $p = .01$ ). This indicates that these measures are strongly correlated and supports the assertion that the VRS tests the same constructs relating to violent and non-violent recidivism. It is, however, also important to note that there is great discrepancy between some of the sample sizes utilised (VSR:  $n = 918$ ; GSIR:  $n = 918$ ; PCL-R:  $n = 809$ ; LSI-R:  $n = 30$ ). Furthermore, although the PCL-R is a risk assessment tool, like the VRS, it is most commonly used to assess the presence of psychopathy in individuals, and as such it is highly likely that these two measures are not assessing the same phenomenon. As such, these high correlations may be artefacts and these findings should be considered with caution.

### ***Predictive validity***

The term predictive validity relates to whether or not the psychometric assessment predicts future behaviour. In assessing the predictive validity of the VRS, Wong and Gordon (2006) carried out correlational analyses of the VRS scores (static, dynamic and total) and all reconvictions for follow up times of 1, 2, 3 and 4.4 years. The highest correlations for static, dynamic and total scores were found in the 4.4 year follow up period with the highest correlation overall in this time period for all convictions ( $r = .43$ ). Although the authors reported that all of the correlations were significant ( $p = .001$ , two tailed), even the strongest correlation was found to have a weak to moderate linear relationship. Further, across the four different follow up periods, the correlations between VRS total scores and violent recidivism had a greater range ( $r = .28-.40$ ) than for non-violent recidivism ( $r = .33-.39$ ).

A validation study was also carried out by Dolan and Fullam (2007) utilising a British forensic sample of patients in medium security hospital settings. The ratings were based upon case file information, which limited the study as it could not account

for consistency of data quality and missing information. However, the authors reported reasonable confidence that the available data was sufficiently detailed to enable reliable ratings. These authors compared the predictive accuracy of the VRS with the Historical Clinical Risk Management - 20 (HCR-20) and found that both measures had moderate predictive accuracy for subsequent violence at 1 year follow up for the 80 cases analysed. The correlations were all found to be highly significant ( $p = <.001$ ), though the highest was noted for the HCR-20 total and the VRS total ( $r = .92$ ). In terms of the subscale scores, the strongest correlations existed between the VRS dynamic subscale and the three subscales on the HCR-20. Furthermore, it is of note that the correlations between the VRS dynamic subscale were very similar across each of the scales of the HCR-20 (historical .74, clinical .77, and risk .75) indicating that these results might be artefacts.

A study was carried out by Doyle, Carter, Shaw, and Dolan (2011) in the UK using a sample of 114 male and female community patients with a follow up time of 20 weeks. The authors found that the VRS significantly predicted violent recidivism [area under the curve (AUC) = .66;  $p < .02$ ] in males and females across all ages. It was noted that logistical regression was utilised to control for gender and age (adjusted OR = 1.064;  $p < .002$ ). Doyle et al. (2011) found that, in terms of recidivism outcomes, the “*correlation coefficients and the AUCs for this sample (r from .13 to .28 and AUC from .58 to .66) were substantially smaller than for the normative sample, noting that there is no overlap in the respective range scores (r = .31 - .40 and AUC from .71 to .75*” (Wong & Gordon, 2006, p. 15). Notably, however, this research used a short duration follow up period, a small sample size and the area under the curve is only poor to moderate which, combined, limit the findings of this study.

Wong and Parhar (2011) carried out a prospective study assessing the predictive validity of the VRS in a community sample. Until then, a prospective study with a relatively long follow-up period had not been conducted using different outcome measures for recidivism. The seven-year prospective study utilised a sample of sixty offenders who were residing in the community subsequent to conditional release. They found that the VRS ratings were significant predictors for the following recidivism outcomes: Any and Violent Reconvictions, Days Until Reconviction, and Frequency/Severity of New Reconvictions (Wong & Parhar, 2011). The authors argued that these results suggested that the VRS could be used to correctly identify individuals suitable to be considered for release, whose risk and recidivism was lower than average. A further validation study was carried out by Lewis, Olver, and Wong (2013) which found that the measurements of risk reduction from dynamic scale scores predicted the reduction of violent outcomes. However, although significant, this correlation was small ( $r = -.21$ ,  $p = .01$ ).

In conclusion, research into the VRS's predictive validity has suggested moderate predictive accuracy at a one-year follow up period, with the highest correlations found at the 4.4-year mark. Studies have found that the VRS correlates with each of the three scales of the HCR-20, that male and female recidivism could be predicted moderately accurately and prospective research supported the predictive validity of this measure. However, the results ought to be considered with due caution as a result of the similarity of the HCR scale correlates suggesting artefacts as well as noted methodological issues.

Another important factor to consider in assessing the predictive validity of the VRS related to 'clinical override'. Clinical override, present in various structured professional judgement tools, allows clinicians to consider risk factors that the tool

does not measure, which may be judged to have clinical significance in terms of the individual's risk. Although this can be an important aspect of assessment tools, allowing a clinician to 'override' the risk assessment with subjective clinical judgement significantly increases the chance of the scale being invalid as this leads to deviations from the empirically tested methodology. As such, the validity of the scale would vary according to the clinician's experience, knowledge and personal biases.

### ***Construct validity***

Dolan and Fullam (2007) assessed the construct validity of the VRS using the HCR-20 assessment in a sample of 80 cases rated on the same information. They found that the static and dynamic subscales of the VRS were significantly correlated ( $r = .50, p < .001$ ). Furthermore, the authors reported that an individual's total scores on the VRS and the HCR-20 had a highly significant correlation ( $r = .92, p < .001$ ). The authors reported that the VRS and the HCR-20 could distinguish between violent and non-violent groups within the sample with reasonable effect sizes ( $d = .72, d = .80$  respectively). Item ratings measuring similar variables on the two scales were found to have highly significant correlations ranging from .78 (previous violence) to .99 (mental illness, prior supervision failure, and juvenile delinquency). These findings suggest that the VRS is a reasonably valid measure of violent risk. However, as noted the estimates and, as such, is likely to be useful in this area of assessment.

### ***Normative samples***

In order that an assessment can be useful, it is first necessary for the tool to have a normative population, a group of individuals who are representative of the population for the intended subjects of the test. The normative sample allows clinicians and researchers to meaningfully interpret the scores that are yielded. These statistics provide us with information about the expected range of scores for the

population being investigated and, without this, the interpretation of the data, either at an individual level or a group level holds no meaning.

The authors of the VRS collected data from 918 adult male offenders in three provinces of Canada (Alberta, Saskatchewan and Manitoba) who were serving prison sentences. Sixty-one per cent of the total sample were a randomly selected sample of male offenders with prison sentences of 2 years or more, the majority of whom had not received high intensity treatment. A small subsample of 30 men were selected from smaller prisons (offenders with sentences of two years or less). The authors reported that the remaining individuals comprising the sample were convicted offenders who had been admitted to a forensic inpatient setting for assessment or treatment of presenting problems (e.g., violence or mental disorder). Within this group, the majority were taking part in a high-intensity violence reduction program (Wong & Gordon, 2013) for individuals who primarily had a diagnosis of antisocial personality disorder (>90%) and substance use (>90%). Notably, although less than half of the population the assessment has been validated on have diagnoses of mental disorders, this is the group the measure purports to target in terms of enabling robust decision making around community release.

The sample was insufficiently described by the authors, noted to be a group of older offenders who had committed offences during their teenage years. No details were provided by the authors regarding the mean age, range or standard deviation. It was reported that the offenders were approximately thirty at the time of their index offence commitment and were released at around thirty-five years old having completed their sentence. They were noted to have recidivated somewhat and had a history of numerous violent and non-violent offences prior to being involved in the study (Wong & Gordon, 2000).

In terms of cross-cultural generalisability and validity, Wong and Gordon (2000) noted that over half of their sample were Caucasian (55%) and the majority of the remaining sample were described as individuals from ‘First Nations’. The authors noted, in the manual, that in order to ‘guard against cultural biases’ raters should be sensitive to “*culture-specific behaviours*” (Wong & Gordon, 2000, p. 17) such as the impact of a person’s culture on their willingness to engage in open and honest conversations about offending behaviour. However, this advice is extremely vague advising only that raters discuss cross cultural matters with “*knowledgeable colleagues*” prior to rating (Wong & Gordon, 2000, p. 17). As such, this tool may not be suitable to assess individuals of various cultural backgrounds.

The authors reported that only males were included in the study due to the requirement for a sufficiently large sample to satisfactorily validate the measure (Wong & Gordon, 2000). They indicated that future research should extend to include female offenders. This is a very clear limitation of the tool and concerning as the authors describe the measure as ‘gender neutral’ despite not having included any women in the normative sampling. Notably, a systematic literature review has questioned the accuracy of risk assessment tools in predicting violence and recidivism in female offenders (Geraghty & Woodhams, 2015). They reported that the risk factors, though perhaps similar, for females and males, may differ in terms of how they are expressed by female offenders. As such, there appears to be a need for due caution in interpreting the VRS assessment conclusions for use with female inpatients as it cannot be considered valid or reliable due to the exclusively male normative sample.

## **Conclusion**

The Violence Risk Scale is a risk assessment tool comprising static and dynamic factors and in clinical settings it can be completed by clinicians who have attended the relevant training. The VRS aims to provide professionals with a scale to specifically assess violent offending, identifying both areas of weakness and strength, readiness for and progress in treatment. In addition, the measure purports to provide clinicians with a quantifiable risk prediction for an offender both pre- and post-treatment, with a particular focus on assessing those offenders being considered for release from inpatient settings.

Studies on the validity of the tool suggest that the measure may be valid and reliable for use in clinical and research settings. The internal consistency has been noted as ranging from .69 to .94 and the interrater reliability ranged between .85 to .97. As such, according to Kline's (1986) characteristics of a 'good test' this would be considered to meet the necessary criteria. However, when internal consistency is reported to be very high, it is often a reflection of a bias present in the construction of the scale inflating the reliability. Cattell and Kline (1977) refer to this as 'bloated specifics' and note that reliabilities exceeding .9 tend to be the products of artefacts. That is, the findings do not reflect the real world but are an unintended outcome of measurement error. Also of concern are the extremely high reliabilities noted, which are suspicious and may relate to overlapping or repetitive items. As outlined previously, in several studies where strong correlations were reported, significance values were not provided. In addition, the authors of the VRS were involved in a large proportion of the validating studies, which might have introduced some bias, contributing to uncertainty about the findings.

This risk assessment tool is one of many which attempts to quantify an individual's risk of re-offending. Although this measure reports that it differs from other assessment tools in terms of its focus being on violent rather than general offending, the concurrent validity of the VRS with the PCL-R, HCR-20, GSIR and LSI-R indicates that there is significant overlap in the constructs of these measures and does not distinguish itself as measuring a separate concept. The predictive accuracy of all of these assessments tends to be moderate as they all include aspects of past behaviour and elements of impulsivity, which is a significant limitation of risk assessment measures.

It appears as though the VRS is a measure that may have some utility in predicting later violent recidivism in individuals who have a significant violent history. However, this prediction is based almost entirely from the offender's history of violence. This appears to be a rather tautological explanation, with the basic premise being that a person who has been violent in the past is more likely to be violent in the future. However, in this way, it is difficult to argue that the assessment can measure treatment progress when it does not consider the factors that drive an individual to commit a violent act or provide any rich information about the function violence serves for the individual.

As such, although there may be some utility in the use of the VRS in everyday risk management, it is arguable that risk assessments, as we know them today, may well become redundant in the years to come. The initial risk assessments, based purely upon the unstructured professional judgements were highly subjective and had poor predictive accuracy. These were then developed and static risk assessment tools were born, however, these failed to account for dynamic changes and capture an individual's progress. As such the third-generation attempted to overcome these

shortfalls, providing a tool incorporating professional judgement with static and dynamic factors. However, in relation to the VRS, the ‘clinical override’ element is arguably a shortfall of the measure and would make defending the results of this very difficult in a legal setting, as the outcome would be swayed by individual clinical opinions, which might significantly differ according to the person using the measure.

To conclude, although it is acknowledged that these tools can provide helpful information in inpatient settings, particularly where resources are scarce, it is questionable as to whether they will ever sufficiently account for the levels of individual differences that present themselves in the range of offenders assessed using the tool. The gold standard risk assessment would, therefore, be a formulation driven, rational and comprehensive assessment incorporating static and dynamic factors, in a way that is collaborative and person-centred rather than being a ‘one size fits all’ tool.

## **Chapter 3: Systematic Review**

### **Reasons for the use of seclusion in mental health hospitals**

#### **Abstract**

*Aim:* The aim of this systematic review is to examine the research which details the reasons for the initiation of seclusion episodes in inpatient mental health hospitals, in addition to identifying any other factors that contribute to its use.

*Method:* Utilising a systematic search strategy, a search of electronic bibliographic databases was carried out. The studies which were identified were then excluded or included based on pre-defined criteria before being quality assessed. The information from the final included studies were synthesised and the findings discussed.

*Results:* Eight studies meeting the inclusion criteria were included in the review. The results suggested that, although a number of different approaches have been utilised in order to obtain information about the phenomenon of interest, the most commonly used method was a retrospective chart review of pre-existing data. The main findings were that actual violence and agitation were the most common reasons for seclusion, closely followed by threat of harm to staff and others, destruction of property, threats to destroy property and self-harm (the latter of which is no longer a valid reason for seclusion according to NICE guidelines, 2015).

*Conclusion:* There is a lack of clarity as to whether seclusion is appropriate for agitation/disorientation, as some of the included studies provided insufficient and inconsistent descriptions for these terms. Additionally, services using different terms to describe these behaviours. As the guidelines state it should be used as a last resort, and only if there is an otherwise unmanageable risk of harm, it is therefore unclear whether these reasons are appropriate for secluding a patient. However, this literature indicated that seclusion appears to be used appropriately (i.e., in line with NICE guidelines) in managing actual violent behaviour (or threat of violence) towards patients and staff which was found to be as common as agitation/disorientation.

## **Introduction**

As noted in the preceding chapters, it is clear that seclusion continues to play a significant role in the management of challenging behaviour within mental health inpatient settings. As per the NICE guidelines (2015), which state that the least restrictive practice should be utilised, seclusion should only be considered a ‘last resort’, after verbal de-escalation, medication, physical and mechanical restraints have failed to manage the difficult behaviour. This systematic review aimed to explore decision making in the use of seclusion in inpatient psychiatric settings.

### ***Impact of seclusion***

It is important to note that the psychological impact of experiencing seclusion has been studied by researchers and described as a serious problem that cannot be ignored (Kaltiala-Heino, Tuohimaki, Korkeila, & Lehtinen, 2003). Researchers have noted that seclusion can provoke negative emotions as it is often viewed by the patient as a form of punishment (Brown & Tooke, 1992; Fisher, 1994). Studies that have investigated patient experiences of seclusion have found that this harm includes feelings of shame, abandonment, a sense of unfairness as well as post-traumatic symptoms (Holmes, Kennedy, & Perron, 2004; Lazarus, 2001). In addition to these reported negative outcomes, there is a lack of research indicating that seclusion practices are improving outcomes for patients later in their care, or that seclusion has a role in changing patients’ behaviour or adaptation strategies (Donat, 2002; Fisher, 1994). More recent research has continued to find that unsurprisingly, coercive measures have deleterious effects on inpatients and the professionals involved in their care, both physically and psychologically (Hine, 2007).

### ***Environmental and situational factors***

Due to the clear importance of improving understanding about incidents of aggression and associated behaviours that lead to seclusion and other restrictive practices, various researchers have focused on exploring other impacting factors. For example, environmental and situational determinants have been explored in this area, with a number of studies highlighting important findings. Temperature, time of day as well as the day of the week have been found to be related to incidents of aggression and agitation that require the use of coercive measures (Bushman, Anderson, & Wang, 2005; Depp, 1976; Torpy & Hall, 1993). Haller and Deluty (1988) found that violence was more likely to take place where patients were congregated in situations such as mealtimes, when altercations are more likely to occur. It has been noted that this may relate to overcrowding provoking violence and is in keeping with literature noting that violence is more likely to occur in communal areas (Depp, 1983; Pearson, Wilmot, & Padi, 1986). Research by Busch and Shore (2000) also supported this, finding that seclusion is more likely to occur where there is overcrowding of patients and during transition times, where a higher number of patients are in close proximity (Busch & Shore, 2000). Findings also show that fewer incidents of violence occur over weekends and more take place on Mondays which might relate to patients being required to take part in activities following a weekend of inactivity (Armond, 1982).

### ***Staff factors***

In terms of staff factors, some researchers have found that staffing levels are a potentially important contributing factor to violence and aggression, with serious incidents of aggression being more likely to occur where there are poorer staff-to-patient ratios (Busch & Shore, 2000; Mattson & Sacks, 1978; Shah, Fineberg, & James, 1991). However, this finding has not been consistently replicated (Singh et al., 1988). For example, more recent research by Bowers et al. (2010) found that

seclusion use was associated with higher numbers of qualified staff on shift as well as an increased number of male staff.

Research by Busch and Shore (2000) also found that higher rates of seclusion were associated with staff factors such as gender, level of experience and education. In addition, poor communication between staff and patients, and the presence of younger and insufficiently trained staff on the ward have been found to be related to increased levels of seclusion within these settings (Gadon, Johnstone, & Cooke, 2006; Hopton, 1995; Welsh, Bader, & Evans, 2013). Other staff factors cited in terms of the decision to seclude also include confidence in managing patient aggression (McGowan, Wynaden, Harding, Yassine, & Parker, 1999), as well as staff and organisational attitudes towards the use of seclusion (Hopton, 1995). A number of studies have noted that ward overload can impact on seclusion rates and other studies have found that reduction in privacy for the patients (Phillips & Nasr, 1983) and a perception that there are too many patients on the ward that present as restless or disruptive can also play a part (Cangas, 1993). This research suggests that numerous factors associated with staffing and the ward environment might contribute to challenging behaviour. The following section will explore the differing views of professionals tasked with secluding individuals who are demonstrating this kind of behaviour.

### ***Professionals' views on using seclusion***

Professionals responsible for initiating seclusion have expressed conflicted feelings about its use as seclusion exists, in part, to protect them from risk or threat of violence (Hesketh et al., 2003). However, staff report that this can feel at odds with the ethical principles underpinning their work (Bonner, Lowe, Rawcliffe, & Wellman, 2002; Hall, 2004; Terpstra, Pettee, & Hunter, 2001). This relates to a belief that the

patients in their care are a vulnerable client group requiring treatment according to the principles of beneficence and non-maleficence (Colaizzi, 2005). Other researchers have found similar difficulties among staff in these settings who have noted that deciding whether to seclude a patient often poses an ethical dilemma. The member of staff is responsible, ultimately, for providing a safe ward environment for both patients and staff, while simultaneously protecting the integrity of the patient presenting with difficult behaviour. In this situation, staff members often describe feeling as though failure to seclude the patient might lead to staff and patients being put in harm's way, though utilising seclusion may breach the patient's freedom and cause further harm (Morrison, 1990). As such, some researchers have indicated that a utilitarian perspective should be utilised, such that the action is justified if it benefits other individuals (McCoy & Garritson, 1983). Other authors disagree with this weighing up of the decision, noting that if a patient's behaviour is disturbing to the ward environment, then seclusion should always be implemented (Pilette, 1978). However, this is an early opinion that may not be in line with current seclusion guidelines today.

### ***Reasons for seclusion***

As seclusion has been used for many decades, inevitably the reasons for its use have varied over time. In 1987, Gutheil described three justified motivations as control, protection and treatment. Gutheil (1987) noted that seclusion is warranted to prevent a patient from harming themselves, removing a patient from an interaction that could increase their paranoid thinking or in order to reduce sensory overload. As such, the role of seclusion would be either to improve the patient's wellbeing, to prevent danger, or a combination thereof. Notably, this is in keeping with the current Mental Health Act, 1983 (Department of Health, 2005) guidelines which indicate that

restrictive practices should be used to immediately control a potentially dangerous situation or to reduce harm to the patient or others.

However, the most widely reported reason that seclusion is used at present is the occurrence of actual or threatened violence, rather than prevention of escalating behaviour or because it is a necessary part of treatment (e.g., managing seriously disturbed behaviour, such as a psychotic episode). In these cases, seclusion would be regarded as a last resort when other means have been exhausted. This presents its own difficulties though as it necessitates defining and properly assessing what is meant by 'threat of violence'. Many studies have found this to be a difficult concept to operationally define and scale, and such difficulties have been the source of controversy in terms of whether it is always appropriate for individuals to be secluded for this reason (Angold, 1989; Fisher, 1994).

While violent behaviour is clearly one of the most accepted reasons for seclusion, Brown and Tooke (1992) synthesised the findings of seventeen studies on reasons for seclusion noting that six of these papers found agitation to be most common reason, with only two implicating the occurrence of violence or threat of violent behaviour. Agitation is considered to be non-violent disturbed behaviour being observed, though this is not, altogether, well defined. As such, it is not always clear whether 'agitation' would meet the NICE (2015) guidelines for the implementation of a seclusion episode.

Disorientation is also a commonly cited reason for seclusion, though disorientation and agitation are difficult to disentangle. Disorientation tends to be noted when a patient exhibits confusion, chaotic behaviour or uncontrolled sexual behaviour. Examples of these behaviours may include spreading faeces, unpredictable behaviour or undressing publicly (Kaltiala-Heino et al., 2003). Other authors have

noted that placing an individual exhibiting agitated or disorientated behaviour (e.g., active psychosis) in seclusion relates to protecting the equilibrium of the ward by reducing the interaction of such individuals with other patients (Swett, 1994). Other reasons for the use of seclusion included patients not cooperating with staff, though some authors have noted that this explains less than five per cent of episodes recorded (Walsh & Randell, 1995).

In sum, the overarching aim of this review was to explore the psychological concomitants (i.e., behaviours and symptoms) that lead to seclusion events in order to establish whether any reasons were more common, and improve understanding about what leads to the use of the most restrictive practice.

## **Method**

### *Scoping exercise*

Before this review commenced, several databases were searched in order to establish whether similar previous reviews existed or had been planned to be carried out. The Cochrane Database of Systematic Reviews (CDSR), the Campbell Collaboration, the Centre for Reviews and Dissemination (CRD), and the International Prospective Register of Systematic Reviews (PROSPERO) were searched and the need for this review was confirmed as this search did not identify any existing or planned reviews on this topic. Further, a scoping search was undertaken on PsycINFO to establish the viability of the study and to ascertain information about the depth and breadth of information expected in relation to this topic. Basic free text terms (outlined below) were used for this search capturing commonly used terms for the reasons for seclusion and decisions made about its use:

“seclu\*” OR “containment” OR “isolation” AND “factor\*” OR “decision” OR “reason” OR “purpose”

Through carrying this basic search, articles were identified that indicated that there was sufficient relevant literature for a more comprehensive review to be carried out.

### ***Overview of search strategy***

The search for the current review was carried out in three stages. First, three major electronic databases were searched including: PsycINFO (1967 - present); EMBASE (1974 - present) and MEDLINE (1946 - present). All searches were conducted on 9 July 2016 and updated on 27 April 2019. In addition, the reference lists of full text articles that met the inclusion criteria were hand searched in order to identify any other articles with potential relevance. Furthermore, recognised experts in the field of mental health were contacted (see Appendix 4b), to request any pertinent studies that may have been missed and to request any studies that were in press or had not yet been published. No experts had responded at the time of submission of this review.

### ***Search terms***

For this review, three bibliographic databases (PsychINFO, EMBASE and MEDLINE) were searched which were accessed via the OvidSP platform. Free text words were utilised which could be located in the title, abstract or main text of the articles on each database. Although this process led to a higher number of ‘hits’ than would have been found utilising the subject headings, it was considered that this process would enable all relevant articles to be discovered as it was difficult to qualify the disparate topic of ‘decisions about seclusion’ into any narrow subject heading.

This had also been confirmed during the scoping exercise where it became apparent that terms relating to seclusion and psychiatric inpatients have changed and adapted over time. During this scoping exercise, relevant papers were identified which enabled the key terms to be captured and assisted in defining the search syntax.

Through the scoping exercise and examination of the key terms used by experts in the field, it was noted that the term ‘seclusion’ was widely used and as such, a helpful search term. However, there were some complications in that seclusion is often referred to in the context of restraint, which necessitated accessing all papers referring to restraint, and excluding when the study was found not to be relevant to seclusion.

In terms of capturing professionals’ reasons to seclude, by examining the literature in the area, it became clear that terms such as ‘reasons’, ‘purpose’ and ‘decision’ were typically used and as such these were also fairly easily defined search terms and there did not appear to be a great deal of variation within this. Similarly, although there were initially concerns that there may be cross-cultural differences and various words may be used to describe ‘seclusion’ this did not appear to be the case when extensive use of adjacency during scoping was used.

A number of different search terms were piloted before the final search syntax was decided which was considered to identify the papers that were relevant, without providing an excess number of irrelevant studies. The final search terms are presented below, which utilised the Boolean operators ‘OR’ (for synonyms) and ‘AND’ (to combine the three separate search concepts). The same search terms were used for each of the databases.

factor\* OR reason\* OR purpose  
AND  
mental\* OR patient\* OR psychiat\*  
AND

seclu\* OR restrain\*

A sample set of search syntax that was used on the PsycINFO, EMBASE and MEDLINE are attached at Appendix 1. After each search was completed, the results were exported into Mendeley Reference Manager.

### ***Screening and selection of studies (applying the inclusion/exclusion criteria)***

When all of the above searches had been performed, 4,051 citations had been identified. Firstly, all duplicate references were identified, before being removed from the selection process ( $n = 212$ ). Secondly, the titles and abstracts of the remaining papers ( $n = 3,584$ ) were screened in order to exclude the records that clearly did not meet the inclusion criteria outlined below in the screening and selection tool (SST – see Appendix 2 for full details). The reasons for these exclusions are noted in appendix 3. This led to 255 papers remaining. However, four papers were not obtainable during the period of review ( $n = 4$ ) (See Appendices 4 and 4b). As such, the full copies of the remaining citations were accessed and the inclusion/exclusion criteria were applied ( $n = 251$ ). The Selection and Screening Tool criteria were applied to each paper leading to 243 citations being removed ( $n = 243$ ). Following this process, the reference lists for each remaining paper were hand searched, which returned no further papers. In total, eight papers were included in this review ( $n = 8$ ). This process is described in Figure 1.

### ***The screening and selection tool (SST)***

The SPIDER (Sample, Phenomenon of Interest, Design, Evaluation, Research type) framework is a tool that is appropriate for qualitative evidence synthesis. It is a tool that can be utilised where the widely used, PICOS (Population, Intervention,

Comparator, Outcome, Study) tool is less appropriate. Both of these frameworks are used in systematic reviews to refine search terms and review questions as well as to establish criteria for the inclusion and exclusion of studies. For this review, it was considered appropriate to use the SPIDER framework, as the PICOS is more suited to assessing intervention studies (Schardt, Adams, Owens, Keitz, & Fontelo, 2007). Further the SPIDER framework is beneficial for qualitative and mixed methodologies (Cooke, Smith, & Booth, 2012). A summary of the main inclusion criteria contained in the screening and selection tool are outlined below in Table 1.

<i>Sample:</i>	Male/female adults (18-65) in an inpatient psychiatric hospital setting
<i>Phenomenon of Interest:</i>	Seclusion – reasons or purpose of seclusion, factors associated with seclusion episodes, behaviours or symptoms noted, factors associated with decision making (i.e. staff or patient factors)
<i>Design:</i>	Cohort study; retrospective chart review/survey; exploratory; prospective
<i>Evaluation:</i>	Questionnaire or chart review
<i>Research Type:</i>	Qualitative or quantitative research

*Table 1:* Screening and selection tool – Inclusion criteria

A decision was made to exclude studies that:

1. Had an exclusive sample of individuals under the age of eighteen, intellectually disabled individuals or older adults (65+). To reduce heterogeneity, this decision was made as adults make up the majority of inpatient populations, with a lower age limit of 18. Studies with a small proportion of geriatric patients were included as this is representative within inpatient settings
2. Were unpublished (theses, dissertations, grey literature) due to the difficulty in accessing these kinds of studies and lack of peer review

3. Were published prior to 1983 (due to the implementation of the Mental Health Act in 1983 which led to changes in seclusion policies in use in mental health trusts)
4. Were not published in English
5. Focused on the reduction of seclusion or alternatives for seclusion (such as psychoactive medications or other de-escalation techniques)
6. Focused solely on the attitudes, views or opinions of both staff and patients regarding seclusion
7. Focused solely on physical / mechanical restraint or combined incidents of seclusion and restraint
8. Discussed the impact of seclusion on treatment outcomes
9. Discussed the decision-making process in isolation
10. Were narrative reviews or existing meta-analyses of studies

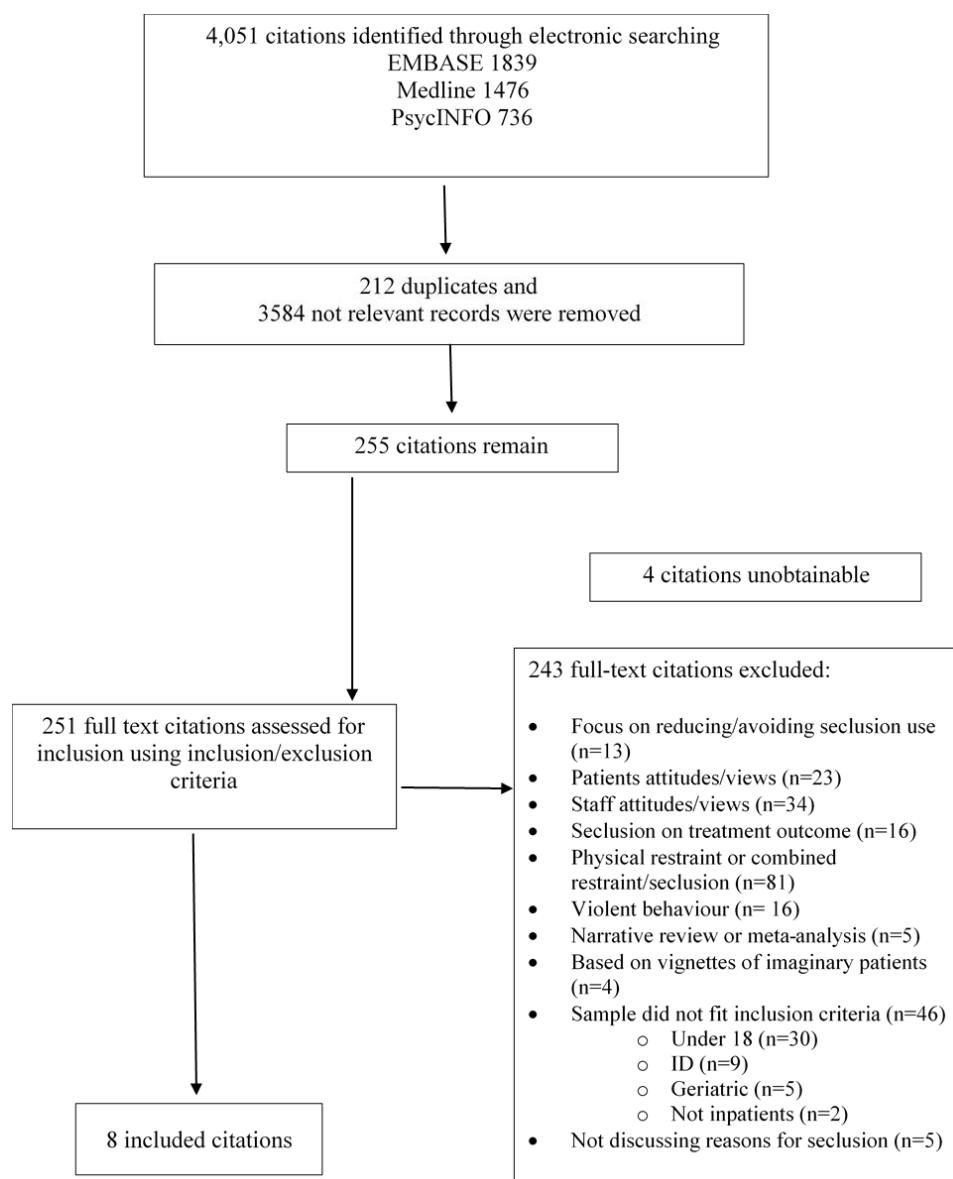
During the process of applying the inclusion/exclusion criteria, one study was identified that utilised a hospital sample which included a small number of individuals with an intellectual disability and geriatric patients. The decision was made to include this study in the review as this would be representative of a hospital inpatient population.

### ***Quality assessment***

Once the SST had been applied, 8 studies remained. In terms of the research design, five of these were retrospective cohort studies (retrospective chart reviews), one was an exploratory qualitative study (interviews and focus groups), one used mixed methodology (retrospective chart review and interviews) and one was a prospective chart review.

Due to the variability of research designs across studies, it was decided that a generic ‘one size fits all’ quality appraisal tool would not be able to capture all the relevant information necessary to assess the quality of these studies. However, the Critical Appraisal Skills Programme (CASP, 2013) provides a methodological checklist which identifies key criteria relevant to systematic reviews of various study designs. As such, for this study, the cohort study checklist was amended as necessary to best meet the aims of this review and a quality appraisal score (see below) was given to each study. This tool can be found in Appendix 5.

*Figure 1:* Flowchart of the review selection process



Each study was allocated a score (2, 1, 0) and then a percentage quality score was calculated. Due to the mixed methodologies of the studies, the final highest possible score was amended slightly in order for each study to be fairly assessed. For example, for each retrospective cohort study, the sample sizes of seclusion episodes were assessed. However, in the exploratory qualitative study the sample size referred to the number of staff members included in the analysis and so these numbers could not be compared like for like. In these cases, the breadth of information elicited from the staff was the more important factor and so these were marked as ‘not applicable’ and were excluded from the study’s overall highest possible score. For articles where necessary information was omitted or difficult to deduce, a score of zero was attributed, such as in one study where demographics about the sample were not provided and so it was impossible to assess how well the authors accounted for confounding variables such as sex, race, diagnosis etc.

As the final number of included studies for quality assessment were rather low ( $n = 8$ ), no studies were excluded on the basis of a defined ‘cut-off point’.

### ***Data extraction***

For this review a data extraction form was developed to consistently extract the most relevant and pertinent information from each included study (see Appendix 6). The information extracted related to the following:

- General information (title, author, year, source, country)
- Characteristics of participants (population, sample size, location)
- Study characteristics (study design, aims/objectives, reliability and validity)
- Study results (analysis used, results, conclusions)
- Strengths and weaknesses

## **Results**

### ***Overview of Studies***

Table 2 below summarises the data from the eight included studies in this review, which allows for comparisons to be made about the documented motivations behind the initiation of seclusion episodes, as well as highlighting any patterns of seclusion use and other contributory factors.

### ***Methodological and study characteristics***

These results came from various countries around the world with the most studies emanating from the UK (four studies). Two studies were conducted in New Zealand and one study each in Australia and Canada. The dates of these studies varied with the earliest study dated back to 1993 (Mason, 1993) and the most up-to-date article was published seven years ago (Tyrer, Beckley, Goel, Dennis, & Martin, 2012). In terms of the designs used for these studies, there was some variety between the included studies. The most common design was a retrospective chart review, with five studies carried out in this way and one study conducting using a similar, but prospective, methodology (El-Badri & Mellsop, 2002). The remaining studies were carried out by Mason (1993) who conducted a cross-sectional study utilising content analysis of focus group discourse, and Roberts, Crompton, Milligan, and Groves (2009) who carried out a mixed-methodology study including chart review and content analysis of focus groups.

*Table 2.* Characteristics and quality assessment scores for the included studies (See appendix 7)

<b>Author, year &amp; country</b>	<b>Aims of the study and design</b>	<b>Sample / Population</b>	<b>Outcome Measures</b>	<b>Findings</b>	<b>Strengths and limitations</b>	<b>Quality assessment score</b>
1. Larue, Dumais, Drapeau, Menard & Goulet (2010) Canada	The purpose of this study is to describe the nursing practices recorded in reports of patient episodes of seclusion, with or without restraints.  Retrospective chart review	<u>4863 episodes of seclusion</u>  622 patients secluded  All adult patients <i>secluded</i> in a psychiatric unit between April 1, 2007 and March 31, 2009, were examined.  572 ‘adult psychiatry’, 9 ‘frequently secluded’ (nine patients generated 666 seclusion reports – 53.5% of all episodes in sample) 41 ‘cognitive impairment’  No other demographics provided about sample  Although 6.6% of this sample were individuals with cognitive impairment – this study was included as it a representative sample in terms of inpatient populations	Descriptive analyses were performed	The main reasons for seclusion were agitation, disorganization and aggressive behaviour. The alternative methods that were attempted included stimulus reduction, extra medication, and working with the patient to find a solution.	+ Large sample from three well-defined catchment areas  + very detailed descriptive analysis  - did not distinguish between males and females nor diagnosis	69%
2. Mason (1993) United Kingdom	This paper outlines the role of seclusion practice within the Special Hospital cultural setting and identifies a format of action research initiated to	Not provided - The information provided about the sample is very limited as it was a pilot study	Action research was to establish in the context of working practice the values underpinning decisions regarding seclusion use, identify dilemmas within professional discourse, and	Although the study is in the early stages of development, and this is an early report, interpretations of transcripts led to the following themes which emerged from the focus group.	+ Forensic sample – Ashworth Hospital  + not simply looking at the reasons for seclusion but complexities within the decision-making process also	63%

	produce the basis for changing practice.  Cross-sectional design – focus groups	feedback to the participants various interpretations regarding the inherent ideological conflicts. It was anticipated that this dialectic approach would lead to the possibility of alternative practices.	Reasons for seclusion: - actual or threatened danger - preventative reasons - to protect self - for the sake of others on ward (frightened) - nurses' necessity to 'control' - retribution - 'machismo – displaying toughness	Reasons against seclusion: - pressures to reduce seclusion use – administration i.e. paperwork involved	- method provided limited information about the sample  - pilot study so limited in value and final conclusions and analysis not presented
3. Morrison & Lehane (1996)  United Kingdom	The aim of the investigation reported here was to study the official records of seclusion to see what could be learned about the practice of seclusion at a local level  Retrospective chart review	Official records over a 2-year period  Stage 1: <u>690 seclusion episodes</u>  268 patients secluded - - 68% male - 32% female - 85% non-forensic - 13% forensic  Stage 2: <u>225 episodes of seclusion</u>  447 patients secluded - 81.8% male - 18.2% female - 22.7% forensic - 77.3% non-forensic	Stage 1) Survey – frequencies of seclusion and admissions over 4-year period: no other details were recorded in data  Stage 2) Detailed analysis of seclusion records over 2-year period: info about the time in seclusion, sex, legal status of patient, reasons for seclusion etc  Authors carried out a detailed analysis of all the official records of seclusion. Findings were presented quantitatively and qualitatively	Physical assault on staff 20.8%  Threats to staff 13.7%  Self-inflicted injury 13.7%  Damage to property 13.7%  Disturbed behaviour 13.3%  Physical assault on patients 10.6%  Threats to patients 8%  Self-seclusion 5.7%	+ Detailed analysis provided more information  + good sample – males/females /forensic/non-forensic  - variation within the records in terms of detail provided
4. Roberts et al. (2009)  Australia	The aim was to identify existing patterns and reasons for use of seclusion in our acute mental health facility. We also sought to elicit staff and consumer	Phase one: Does not state numbers of episodes of seclusion or patients secluded only states "Our facility's seclusion data	Phase One: Qualitative survey data from individual nursing staff;  Phase Two: conducting focus groups to identify	Staff generally viewed seclusion as appropriate and potentially therapeutic	+ provided good information about staff views on the use of seclusion  - flaws in the method: information was very limited

	<p>perceptions, with the aim of developing an informed and sustainable reduction in the use of seclusion in the clinic.</p> <p>Mixed methodology: Retrospective chart review and cross-sectional focus groups (which were analysed for content)</p>	<p>were recorded during the retrospective chart audit."</p> <p>Phase 2: Qualitative reflections involved <u>71 members of staff</u></p>	<p>factors contributing to seclusion use</p>	<p>about the sample of secluded patients in phase 1 and the staff in phase 2</p>
5. Savage & Salib (1999) United Kingdom	<p>Find out about the patterns of seclusion and the factors associated with its use</p> <p>Retrospective chart review</p>	<p><u>230 episodes of Seclusion</u></p> <ul style="list-style-type: none"> <li>- 52% female</li> <li>- 48% male</li> </ul> <p>115 secluded patients Mean age = 27 16-60 years old - 37% female - 63% male</p> <p>All seclusion episodes over six years</p>	<p>Information was extracted from seclusion forms</p> <p>Reasons for seclusion given were:</p> <ul style="list-style-type: none"> <li>- violence to staff (23%)</li> <li>- disruptive behaviour (15%)</li> <li>- threats of violence (5%)</li> <li>- violence towards other patients (9%)</li> <li>- damage to property (3%)</li> <li>- in 42% of seclusion episodes more than one of the above reasons was cited</li> </ul> <p>indications for seclusion include:</p> <ul style="list-style-type: none"> <li>- prevention of imminent harm to self or others</li> <li>- prevention of substantial damage to the environment</li> <li>- a contingency to aim in controlling or modifying dangerous behaviours</li> <li>- removal from over-stimulation at the patient's request</li> </ul>	<p>+ the data was collected over a five-year period</p> <p>+ the data comprised both male and female secluded patients</p> <p>+ forensic population</p> <p>- the data did not involve any qualitative analysis and so the information gleaned is limited to reasons given on a pre-existing form and figure counts</p> <p>- quite an old study (1999)</p>

6. Tyrer et al. (2012) New Zealand	This study aimed to examine the frequency of seclusion intervention and factors associated with its use  Retrospective chart review	<u>30 episodes of seclusion</u>  23 secluded patients - 78% male - 22% female  Included information about diagnosis  Data collected over a 12-month period (between 2007-2008)	Analysis of seclusion records	Three-quarters of the seclusion episodes were initiated because of considerable marked agitation manifested by the patient, usually associated with threats of assault. There was a tendency for younger people to have physically assaulted someone before being secluded but this only occurred on five occasions.	+ the study covered a large catchment area  - although mentioning reasons for seclusion the main focus of the research appeared to be regarding length of time and factors affecting this	69%
7. El-Badri & Mellsoop (2002) New Zealand	The aim of this study was to prospectively examine the frequency of use of seclusion and the factors associated with its use in the acute general adult psychiatric wards serving the Waikato area.  The authors gathered data on all inpatients newly admitted during the study period and then compared those secluded with those that were not secluded, whom they considered the 'control' group.  Prospective study whereby information on the use of seclusion and relevant demographic data were collected.	<u>129 episodes of seclusion</u>  84 secluded patients: 80% Male 20% Female  Included information about  Data collected over a 9-month period	For new patients admitted during study period, information from Overt Aggression Scale (OAS), ICD-10 diagnosis and other characteristics of patients and details of each seclusion episode was obtained.  Specific seclusion information included reasons for and the duration of seclusion, patterns and timing. Characteristics of patients included ethnicity, gender, age, marital status, length of hospital stays and the number of previous admissions.	Of the 539 patients admitted to the unit during the study period, 84 (16%) were secluded in 129 seclusion episodes.  Reasons for seclusion: - threats of violence involving staff (55%) - actual violence to staff (24%) - threats of violence to other patients (5%;) - threats of violence towards property (2%) - actual violence to other patients (9%) -actual violence to property (12%)  'Other reason' accounted for 26% and included: - threats to other people - disorganized or agitated behaviour  Multiple reasons were recorded in 10 seclusion episodes.	+ by simultaneously analysing patterns and reasons for seclusion and characteristics of those secluded, the authors accounted for various factors such as gender, race, diagnosis, sex, marital status and age  - no qualitative element  - some missing information in terms of reasons for seclusion, described as 'other reasons'	94%

8. Salib, Ahmed & Cope (1998)  United Kingdom	This study aimed to examine the trends and factors associated with the use of seclusion over a five-year period within a large psychiatric hospital serving the population of North Cheshire, UK.  Retrospective chart review	<b>186 episodes of seclusion</b>  94 patients secluded  Female patients (37%) accounted for 52% of episodes while male patients (63%) accounted for 48%.  Data collected over a 5-year period	Data was collected retrospectively.  Information was extracted from data collected routinely for all seclusions. The details that were unavailable on the forms were obtained from computerised patient records.	Of the 612 admissions into the unit during the 5-year time period, 94 patients were secluded (15.5%).  The reasons for seclusion were found to be:  - 'multiple reasons' (44.1%) - violence to staff (22.6%) - non-specific aggression (15.6%) - threats of violence (5.4%) - actual violence to patients (9.1%) - actual property damage (3.2%)	+ the 5-year time period provides a more helpful insight into the patterns of seclusion  - no qualitative element of study  - the reporting of 'multiple reasons' without information detailing the various reasons in detail makes comparisons more difficult	69%

### ***Participants / sample***

The greatest age range described by the authors was investigated by two studies whose samples were comprised of 16 to 60-year olds (Salib, Ahmed & Cope, 1998; Savage & Salib, 1999). Savage and Salib (1999) reported that the mean age of the secluded sample was 27, with El-Badri and Mellsop (2002) reporting a mean age of 34. Tyrer et al. (2012) reported the median age as 34.5. The remaining studies offered more limited information about the ages of the sample, with three studies noting only that the data was gathered from an adult psychiatry ward (El-Badri & Mellsop, 2002; Larue, Dumais, Drapeau, Menard, & Goulet, 2010; Tyrer et al., 2012). One of these studies did, however, assign each secluded individual to a group: either ‘under 30 years’ or ‘30 and over’ for comparison purposes (El-Badri & Mellsop, 2002). The three remaining studies provided no data about the ages of the sample (Mason, 1993; Morrison & Lehane, 1996; Roberts et al., 2009).

In terms of the number of individuals secluded, there was a considerable range between the included studies with Larue et al. (2010), including data from 622 secluded individuals while Tyrer et al. (2012) used the data from only 23 secluded patients. Notably, however, not all studies specified the total number of individuals secluded (Mason, 1993; Roberts et al., 2009).

The highest number of seclusion episodes was 4,863, analysed by Larue et al. (2010), followed by 690 episodes investigated by Morrison and Lehane (1996) in the first stage of their research. The lowest number of seclusion episodes (30) was described by Tyrer et al. (2012). One study did not state how many episodes were analysed (Mason, 1993).

When the data were available, it was possible to calculate the average number of seclusions per patient. This number ranged from 1.3 (Tyrer et al., 2012) to 7.8

(Larue et al., 2010). These notable differences likely related to the substantial difference in sample sizes used for the research. Notably, the remaining averages were less variable with three studies finding an average of two seclusions per patient (Morrison & Lehane, 1996; Salib et al., 1998; Savage & Salib, 1999) and El-Badri and Mellsop (2002) reporting an average of 1.5 seclusions per patient.

In terms of the locations from which the participants were drawn, five of the included studies utilised a sample from psychiatric clinics with two specifying that the data came from acute care wards (Roberts et al., 2009; Tyrer et al., 2012). Two studies utilised a forensic population (Mason, 1993; Savage & Salib, 1999) and one had a mixed forensic and general sample (Morrison & Lehane, 1996).

Finally, the time period of the data collected in the studies ranged from nine months (El-Badri & Mellsop, 2002) to five years (Savage & Salib, 1999).

### ***Study focus/ aims***

The focus and aims of the research varied somewhat across the studies. The most commonly occurring aim of these studies was to find out about the factors that influenced seclusion use and any arising patterns or trends in its use (El-Badri & Mellsop, 2002; Salib et al., 1998; Savage & Salib, 1999; Tyrer et al., 2012). The focus of some of the other studies looked into the role of seclusion within the psychiatric hospital setting and what could be learned about its practice (Mason, 1993; Morrison & Lehane, 1996). Others still described a sole focus of evaluating the reasons for using seclusion (Larue et al., 2010; Roberts et al., 2009).

### ***Quality of included studies***

The quality ratings for those studies included in this review ranged from 63% to 81%, with a mean score of 69.4%. There was not a great deal of variability noted between these studies. One limitation of this quality assessment was that, although

addressing a similar research question, some of the included studies utilised a different methodology (Mason, 1993). The majority of the included studies were retrospective chart reviews, which utilised various sample sizes and episodes of seclusion examined, with the number of episodes ranging from 30 (Tyrer et al., 2012) to 4,863 (Larue et al. 2010). However, the remaining studies incorporated qualitative methods with one study carrying out exploratory focus groups using two groups of six members of staff (Mason, 1993). As such, the samples of these studies were not sensibly comparable and their points on this quality assessment criterion were omitted. Other issues affecting the assessment were missing demographic data, potential associated confounding variables and poor methodological reporting.

It is acknowledged that the research undertaken by Mason (1993) is limited in that it lacks many details of the sample such as demographic information. However, this paper, which utilised a qualitative, exploratory design, was included in this systematic review due to the insights it provided into the decisions to seclude. This differentiated Mason's (1993) study from the remaining papers which were mostly limited by the data that could be extracted retrospectively and were not exploratory in nature.

### ***Narrative data synthesis and key findings***

Due to the variation in the aims, samples and methods within the included studies, it was not considered appropriate to synthesise this data in the form of a meta-analysis. As such, a narrative synthesis of the data will be provided which highlights the key findings of the studies and relates these to the aims of the review.

### ***Methodologies***

The majority of the studies used a retrospective chart review method (Larue et al., 2010; Morrison & Lehane, 1996; Roberts et al., 2009; Salib et al., 1998; Savage &

Salib, 1999) to determine the number of episodes, reasons for seclusions as well as patient characteristics with varying depths of information gleaned. One of the included studies used a prospective methodology, examining the information for all newly admitted patients in order to compare the characteristics of secluded and non-secluded groups as well as assessing the reasons for seclusion (El-Badri & Mellsop, 2002). Further, Roberts et al. (2009) also utilised a voluntary self-report survey completed by staff which included the reasons for the seclusion being initiated as well as any associated factors.

Similarly, Tyrer et al. (2012) conducted an audit which consisted of gathering details about the use of seclusion, as well as demographic data. However, these authors collected the data over a twelve-month period and they examined the events preceding the episode as well as other options utilised prior to the seclusion being initiated. This method, unlike the retrospective review of records, helpfully allowed the authors to collect the specific information required for their study rather than relying solely on information from pre-existing records.

Mason (1993), on the other hand, conducted action research groups (similar to focus groups) which were comprised of nursing staff responsible for initiating seclusion. All of these individuals volunteered to take part and the groups were designed to capture the views of those who deal with seclusion on a daily basis, to gather information about the psychological concomitants of the episodes, and to discuss any other factors that may have influenced practice.

### ***Reasons for seclusion episode***

These studies showed some variation in terms of the reasons identified for the initiation of the seclusion episode. El-Badri and Mellsop (2002) found that threat of violence involving staff was the most common reason for seclusion comprising 55%

of the seclusion episodes. The authors noted that ‘other reasons’ were the second largest category (26%). This category was not explained fully, although it was noted that other reasons included threats towards others and disorganised or agitated behaviour. Actual violence to staff comprised twenty-four percent of instances (24%), with smaller numbers of episodes being initiated due to damaging property (12%), actual violence to other patients (9%), threats of violence to other patients (5%) and threatening to damage property (2%). Further, it was noted that the authors reported a tendency for younger individuals to have physically assaulted someone before being secluded, though this occurred only on five separate occasions. Multiple reasons were recorded in 10 seclusion episodes.

Salib et al. (1998) found that the most common reason for seclusion related to ‘multiple reasons’ i.e. one of the reasons cited above, (44.1%), though no further information was provided about this category. The next most common reason for seclusion related to violence to staff (22.6%), non-specific aggression (15.6%), actual violence to patients (9.1%), threats of violence (5.4%) and actual property damage (3.2%).

Morrison and Lehane (1996) reported quite different findings, reporting that actual violence made up 46% of the episodes (21% directed towards staff, 11% towards patients and 14% towards self). They found threat of violence to be the second most common reason for seclusion (22%), with 14% of threats directed towards staff and 8% towards other patients. Damage to property was the next most reported, in 14% of cases and disturbed behaviour accounted for 13%. Self-seclusion was noted in relation to 6% of the episodes.

Unfortunately, Morrison and Lehane (1996) did not describe what was meant by ‘disturbed behaviour’ in detail, nor did they provide any examples about this. They

noted that the term ‘disturbed behaviour’ referred to notes made by staff in the pre-existing seclusion data. They further reported that attempts were made to have this term clarified; however, when staff were approached about this, they were unable to provide further details. Further, Morrison and Lehane (1996) found that consultation of the records did not provide any more information about the characteristics of this behaviour. The authors surmised that this sometimes related to ‘nuisance’ behaviour such as inpatients repeatedly asking staff for items or being obstinate in some way.

Savage and Salib’s (1998) results were similar to Morrison and Lehane (1996), with actual violence leading to 32% of seclusions (23% towards staff and 9% towards other patients), followed by disruptive behaviour (15%), threats of violence (5%) and damage to property (3%). It was noted that in 42% of episodes more than one reason was noted. Further details about this were not provided. Notably, the authors did not define what was meant by disruptive behaviour, as such it was unclear how this differed from ‘disturbed behaviour’.

Less information could be gleaned from the remaining studies, with Tyrer, Beckley, Goel, Dennis and Martin (2012) noting only that agitation comprised 75% of the seclusion episodes (which included threats) and that actual violence was reported in 20% of seclusions. The remaining 5% of the seclusion episodes were unexplained. It may be that these episodes were unclassifiable due to missing information, however, this was not clarified.

Larue et al. (2010) found that agitation was present in 92% of episodes, aggression in 77.5% and self-harm in 21.6%. The results of this study were somewhat difficult to compare since some secluded patients were counted in more than one category (e.g., they presented with agitation and aggression, or agitation and self-harm). The authors also identified a ‘frequently secluded’ group of patients which

were analysed separately, noting that nine patients accounted for 666 seclusion reports. Of these patients, self-harm was reported to occur most commonly, in more than two thirds of episodes (64%), which is a much higher proportion than in the general adult psychiatry group previously described.

In summary, of the six studies with similar methodologies and categorisation, whose results could be compared, two noted actual violence to be the main cause of seclusion, with both studies finding that staff were most often the target (Morrison & Lehane, 1996; Savage & Salib, 1999). Two studies found that agitation was the main reason for seclusion (Larue et al., 2010; Tyrer et al., 2012) and the remaining two studies reported threat of violence and ‘multiple reasons’ to be the most common reason for seclusion.

The two studies which utilised a different methodology also discussed reasons for seclusion use the results of which will be summarised. Mason (1993) carried out a more explorative study and the findings were not accompanied by information about the proportion of staff who held these views. Mirroring the findings from previous studies, staff noted that actual or threatened danger was an important reason for the use of seclusion, with some staff noting, “*what would happen if you did not seclude... The patient would eventually kill you*” (p. 419). Some staff described seclusion as a preventative measure noting that sometimes patients are secluded for staff safety, describing “*you would end up with more injuries if you didn't seclude some of the patients*” and also for the sake of other patients who may be “*afraid of one patient who is unwell*” (p. 419). Cultural factors also arose from the discourse, with some staff referring to peer pressure to seclude on the basis of feeling as though they needed to “*display toughness*” (p. 421) and others describing the nurses’ necessity to control. For example, staff members commented, “*they need to dominate*”, stating “*if we didn't*

*have seclusion they would run rampant, seclusion stops them – at least to some degree*” (p. 420). These findings highlight aspects of Lorenz’s (1966) early ethological theory which noted that aggression may be an individual’s attempt to defend territory and maintain their sense of dominance.

Staffing factors were also noted with resources mentioned by some staff who suggested that staff shortages led to the use of seclusion, in some instances to reduce ward overload. Interestingly, some staff also discussed reasons not to seclude, such as institutional pressures to reduce seclusion use (through policy, for instance) and the ‘rigmarole’ of having to fill in the paperwork led to one staff member questioning “*whether you should bother*” (Mason, 1993, p. 419).

The study by Roberts et al. (2009) found that 54% of staff considered seclusion to be an appropriate therapeutic measure, with the majority of staff noting that seclusion created a low-stimulus environment that successfully de-escalates aggressive behaviour. Staff reported that seclusion promotes the safety of patients and noted that one clear reason for using seclusion related to managing aggressive or disruptive behaviour. The authors did not report the views of the remaining staff. In keeping with Mason’s (1993) findings, these researchers agreed that seclusion could be used in order to protect other patients, particularly those who are vulnerable, as well as staff. It was also noted that seclusion could protect from indirect harm to other patients, with some opinions being expressed that seclusion enables the “*preservation of a therapeutic environment... by removing an otherwise uncontrollable or disruptive individual*” (p. 28). Some emerging themes also included the notion that seclusion can be used to “*modify consumer behavior and enforce medication adherence*” (p. 28), though staff on the whole rejected the notion that seclusion was a punitive measure.

### **Patient factors**

El-Badri and Mellsop (2002) found significant gender differences, noting that male patients accounted for 80% of the seclusion episodes, which constituted 23% of the males admitted to the facility whereas only 7% of the female hospital population were secluded at least once.

Salib, Ahmed and Cope (1998) found that females accounted for 52% of episodes despite making up only 37% of the total secluded patients. Male patients, on the other hand, made up 63% of the population and accounted for 48% of seclusion episodes. Helpfully, the authors explained that these figures were influenced by one female patient who was secluded on 49 occasions, comprising 25% of the total episodes included in the study. Tyrer et al. (2012) found that more male patients were secluded more than female patients (78% vs 22%) female. The authors found this statistic to be significant ( $p < 0.005$ ) after accounting for the difference in male and female patient numbers (138 and 116 respectively). They also noted that only one of the five females was secluded more than once, whereas five of the 18 males were secluded two or more times.

In phase one of their research, Morrison and Lehane (1996) found that the patterns of seclusion coincided with the patterns of admission for the male/female forensic and male/female non-forensic groups. They did, however, find that male forensic patients comprised 14% of seclusion episodes, despite accounting for only 9% of admissions, whereas female non-forensic patients made up 29% of the seclusions (though 35% of admissions). In phase two, these findings were mirrored with male patients accounting for 76% of admissions and involved in 81.8% of seclusions. Female patients made up 24% of admissions, though only 18.2% of seclusions.

Interestingly, Savage and Salib's (1999) findings were inconsistent with the data from other studies. They reported that female patients accounted for 52% of seclusion episodes despite making up only 37% of the sample, while male patients accounted for 48% of the episodes though the sample was 63% male. The discrepancy in this finding in comparison with the remaining studies is unknown, however, it highlights the danger of making generalisations about inpatient populations based on research from one service.

In summary, of the eight included studies, five reported data about the differences in seclusion episodes for males and females with four studies finding that men accounted for more episodes than women and one which found that women were secluded slightly more often (52% female, 48% male). However, not all studies provided information about the proportion of male and female admissions and as such the information that can be inferred from this is limited.

Some of the studies in this review discussed environmental factors that were considered to have impacted upon the use of seclusion. Morrison and Lehane (1996) highlighted aspects about the facility within which the data was collected. The ward was described as "*small and cramped, usually smoke-filled and overcrowded*" (p. 231) and it was noted that the staff acknowledged that the lack of facilities contributed to much "*bad feeling*" (p. 231) amongst the patients, associated with boredom and noted that this made the days "*long and tedious for patients*" (p. 231). These conditions and their implications in terms of seclusion might relate to early theorising, detailed in Chapter 1, noting that aggressive responses leading to seclusion are often caused by frustration (Berkowitz, 1989). They also highlight the importance of taking a more complete view of a challenging situation, rather than considering the behaviour in isolation or having occurred within a 'vacuum' (Frude, 1988).

Another study by Roberts et al. (2009) also reported on the lack of a smoke-free space and too few single rooms as factors that may have increased seclusion use. Notably, in the United Kingdom there has been ongoing implementation of a ‘smoke free NHS’ initiative with all hospitals preventing smoking indoors since 2007 and now extending this to outdoor areas of NHS hospitals and facilities (Selbie, 2017). The impact of this initiative could be helpful in terms of reducing the number of inpatients who are dependent upon nicotine. This might therefore have minimised frustration caused by missed smoking breaks due to insufficient staffing, for example. However, currently e-cigarette use is permitted and as such these environmental factors may continue to impact on the challenging behaviour staff are required to deal with.

Following completion of Morrison and Lehane’s (1996) study, the ward was closed and a new ward built. Aspects of this new building were designed with the aim of reducing seclusion in mind, and included individual bedrooms, improved recreational facilities and reduced noise, overcrowding and confinement. Similarly, Savage and Salib (1999) noted that the number of seclusion episodes reduced significantly upon inpatient relocation to a purpose-built unit that was more spacious and comfortable, and had more single room beds, affording patients more privacy and dignity.

It was also noted by Morrison and Lehane (1996) that professionals working in the improved unit felt that an increased ratio of staff to patients (12 patients to 17 nursing staff) had significantly contributed to significantly less seclusion episodes since the unit opened. Changes in staffing patterns were also described as impacting positively, including deserting the previously common ‘long day shift’ system. Roberts et al. (2009) also considered skill mix, collective experience and the expertise of the staff team to be important predictive factors in the use of seclusion.

### ***Diagnosis***

Savage and Salib (1999) found that patients diagnosed with a personality disorder accounted for more than 40% of total seclusion episodes. They found that a secondary diagnosis of a learning disability increased this figure. Diagnoses of schizophrenia or affective disorders contributed to significantly fewer episodes of seclusion. The authors also found that, of the diagnostic groups, seclusion resulting from actual violence was most common in individuals with organic disorders, while patients with affective disorders were secluded more often due to threatened violence (wherein approximately half were threatening self-harm and half made threats towards staff). Diagnoses of schizophrenia or substance use-related disorders were most common in seclusion, motivated by agitation or disorientation (Savage & Salib, 1999). Similarly, El-Badri and Mellor (2002) found that although substance abuse accounted for the highest proportion of diagnoses among the secluded patients (30%), 28% of the individuals with a diagnosis of schizophrenia were secluded and 29% of those with a diagnosis of bipolar affective disorder experienced seclusion.

In contrast, when comparing secluded and non-secluded individuals, Salib et al. (1998) found that 30% of patients with diagnosis of schizophrenia, bipolar or substance abuse were secluded, in comparison to less than 10% in other categories. However, the authors indicated that due to the diagnostic distribution of the patients, schizophrenia, bipolar and substance abuse accounted for 48%, 27% and 14% of the total number secluded, respectively.

Morrison and Lehane (1996) did not provide much detail about the impact of diagnosis on seclusion except to note that individuals with a diagnosis of paranoid schizophrenia were secluded more often than other diagnoses in their sample.

Tyrer et al.'s (2012) findings were consistent with Morrison and Lehane's (1996) finding that more secluded patients had a diagnosed psychotic illness, particularly referencing schizophrenia, schizoaffective disorder and mania. It was reported that within this sample, all inpatients with bipolar affective disorder were secluded during a stage of mania. The authors noted that over 20% of the secluded patients had a non-psychotic illness such as an adjustment or conduct disorder, or substance misuse. They found no relationship between diagnosis and reason for seclusion. Other noted factors from the studies included Tyrer et al.'s (2012) finding that younger people tended to have been secluded for physical violence more often than older patients, though this occurred on only five occasions.

## **Discussion**

### ***Main findings of this review***

This systematic review explored the reasons for the use of seclusion as noted by various professionals with the authority to initiate a seclusion episode. The overall findings of the review were that the most common reasons for seclusion were agitation/disorientation, actual violence and threat of violence.

The definition of the agitation/disorientation category was not entirely clear from the literature with authors failing to provide detailed descriptions. Some authors acknowledged that although agitation and disorientation were different concepts, they are difficult to disentangle after the episode has occurred. Others referenced disturbed or disruptive behaviour, however, a lack of clarifying information made it impossible to decipher whether these were capturing similar behaviour to the agitation/disorientation category noted in other studies.

It was clear that individuals secluded for agitation/disorientation were not threatening or committing violence, as each study had distinct categories for actual

and threatening behaviour. However, it is acknowledged that agitation does escalate to threatened or actual violence in some instances. As such, it is unsurprising that this review found actual violence to be an equally common reason for seclusion, with almost two times more violence being directed towards staff than other patients. As was outlined in detail in Chapter 1, various factors contribute to the seclusion-precipitating behaviours which relate to any combination of biological, social, beliefs, schemas and their interaction with environmental triggers (GAM; Anderson & Bushman, 2002). As noted here, these responses can vary greatly, however, are commonly expressed as violence, aggression, agitation, threatening behaviour or disorientation.

Due to the wide variation in terms of the types of hospitals, some of which were general psychiatric and others forensic hospitals, the impact of the reasons in the different environments could not be differentiated. However, research has found that the rates of violent and aggressive incidents were greater in medium-secure hospitals, compared with low-secure services (Dickens, Picchioni, & Long, 2013). Further, in a high-secure hospital, researchers have reported over 3500 incidents of violence over sixteen months, in just under 400 service users (Uppal & McMurran, 2009).

As such, based on the reasons for seclusion, it seems that some of the studies would meet the current NICE (2015) guidelines, which state that seclusion should be used only as a last resort in circumstances where an individual could pose a risk of harm to themselves or others. However, other findings relating to agitation / disorientation indicate that, in practice, seclusion may not always be used in accordance with these guidelines.

Interestingly, in terms of other influencing factors, it would appear that the environment is very important. Several studies noted that a lack of quiet rooms and

smoke-free spaces, in addition to few single rooms for patients contributed to an increased likelihood of seclusion. This was further supported by evidence that newly built facilities addressing these environmental factors had reduced incidences of seclusion. This is positive as many of these dated facilities that are not fit for purpose are no longer in use. However, future research may wish to investigate the records to investigate whether the finding that renovations and purpose-built facilities leading to reduced episodes of seclusion is replicated.

By including studies with varying methodologies, the review provided different kinds of information. The retrospective chart reviews provided helpful information about the proportion of seclusions for different categories, while the studies with exploratory aspects provided richer information about other factors involved in the decision to seclude. The use of open discussions and focus groups appeared to successfully elicit different types of information about other factors such as staff numbers, experience and skill mix, rather than focusing solely on the documented reasons for seclusion.

In terms of the process of carrying out the review, one strength noted related to the extensive nature of the search as it was carried out across three different platforms: PsycINFO, EMBASE and MEDLINE, in addition to hand searching. The papers that were excluded from the review focused upon different aspects of seclusion, such as reducing the use of seclusion, staff or patient views about whether seclusion should be used, its therapeutic effectiveness, the actual process of decision making etc. There were also several papers that were excluded due to the focus on the reasons and factors associated with restraint.

A weakness of this review relates to the fact that some studies could not be accessed. Further, due to the increasing interest in this area of research, it was

considered important to contact experts in the field to ascertain whether any unpublished papers or studies pending publication could be included in the review. Unfortunately, the response from experts was very poor and no further papers were obtained via this approach. Efforts to acquire these papers and garner information from experts were again made prior to the final submission of this review and no responses were received.

Furthermore, the difficulty with the wide variety of samples means that the results may not be representative, particularly as the samples in these studies originated from hospitals in numerous countries. As such, this makes it very difficult to generalise the results to a worldwide psychiatric population and suggests that further research is required in this area in order to provide more information about how differing psychiatric populations vary in terms of the reasons for seclusion.

Another factor that may have influenced some of the findings outlined in this review relates to the age of the studies. The paper by Mason, for example, was published in 1993, at a time where seclusion guidelines described using the least restrictive practice to manage behaviour, though did not explicitly state that this seclusion was to be used as a very last resort. The policies have evolved over the last two decades and as such it would be important to carry out an updated study to acquire up-to-date information about professionals' reasons for using seclusion as well as other factors they consider important. Further, the findings from one study noted that, for patients with multiple seclusions, the episodes tended to be initiated in relation to agitation/disorientation at first, though violence was the reason for seclusion mainly in later episodes of seclusion. There appears to be a paucity of evidence in relation to this and, as such, further research into this area is likely warranted.

In terms of the NICE guidelines (2015) around the appropriate use of seclusion as a last resort, it would appear that some of the inpatient services adhered to these, however, where agitation and disorientation were poorly defined there was less certainty as to whether the use was appropriate. Indeed, this systematic review indicates that seclusion episodes continue to frequently relate to patient agitation (Brooke & Tooke, 1992), which would not seem sufficient for its use under these guidelines, despite the fact that it remains one of the most common reasons for seclusion. As such, there is evidently a need for clearer and more comprehensive instructions for staff in the appropriate use of seclusion.

It would seem that staff training in early identification of escalating behaviour is vitally important, as well as utilising effective de-escalation techniques. In addition, clinicians are expected to be mindful of using the least restrictive practices to provide their service users the best possible care. At the managerial level, it appears to be important for the correct staff mix to be present, in terms of the ratio of staff to patients as well as skill level and experience (Roberts et al., 2009).

In sum, the existing literature indicates that inpatients are most frequently secluded due to agitated or disorientated behaviour (Brooke & Tooke, 1992), which are poorly defined terms. This behaviour often escalates to threatened or actual violence towards staff or service users which are also common reasons for seclusion. It is noted that violence and aggression occur more often in medium secure settings in comparison with low-secure (Dickens et al., 2013), which is unsurprising due to the differences in offending behaviour that has contributed to their hospitalisation. Other influencing factors that have been considered relate to the hospital environment with inadequate facilities and overcrowding increasing the incidence of challenging behaviour that leads to seclusion. It is positive that improvements are being made to

these facilities, with many being refurbished or rebuilt entirely, as this will hopefully ameliorate some of the associated influencing factors.

Finally, some of the studies provided information about the demographic of secluded inpatients, though there was no clear consensus between studies regarding how these clinical characteristics impacted the likelihood of seclusion. For example, some authors noted that more males were secluded whereas others found females were at a higher risk of seclusion. In addition to understanding the precipitants of seclusion, it is important for professionals to improve knowledge about whether individual characteristics are associated with seclusion.

## **Chapter 4:**

### **Meta-Analysis Examining the Characteristics of Secluded Inpatients**

#### **Abstract:**

**Aim:** This meta-analysis aims to explore the characteristics of secluded inpatients in mental health hospitals. Research undertaken, to date, has not resulted in conclusive findings that might enhance clinical understanding in this area. As such, gender, age and psychosis were investigated in relation to whether they had any impact upon seclusion rates.

**Methods:** The searching of numerous databases was undertaken, yielding 326 citations. Following the application of exclusion criteria, ten papers were identified, and the data extracted providing a total sample of 9,028 male and female inpatients. The data were meta-analysed using a random effects model and the following hypotheses were investigated: are younger patients more likely to be secluded than their older counterparts; are women more likely to be secluded than men; are inpatients with a diagnosis of psychosis more likely to be secluded in comparison with other diagnostic categories.

**Results:** The meta-analysis found that male inpatients were no more likely to be secluded than female inpatients. It also found that a diagnosis of psychosis was not more common than other diagnostic categories. The synthesis did, however, find that younger inpatients were significantly more likely to be secluded than their older counterparts.

**Conclusion:** Due to the nature of a meta-analysis, the findings are more likely to be reliable than those of individual studies. The results of the meta-analysis suggest that younger age is likely to be a risk factor for seclusion and contests the findings of many individual studies which found that males and those with psychosis were at higher risk of seclusion. That said, the limitations of a meta-analysis are acknowledged and the results, though promising, remain tentative due to the lack of heterogeneity across the studies and the varying methodologies and settings in the included papers.

## **Introduction**

As outlined throughout chapter one, it is evident that the use of seclusion has a significant impact on individuals, as well as on organisations at a financial and staff level (Muir-Cochrane et al., 2018). Chapter three then presented a systematic review of available literature discussing the reasons for the initiation of seclusion. The following chapter presents a meta-analysis examining the characteristics of the most frequently secluded patients. This is an important area of research due to inconsistent findings across a number of papers published in this area, most notably those investigating the influence of gender, psychotic disorders and age on the use of seclusion, which are also the most widely researched factors in the literature.

In line with the previous chapter, a notable overlap between seclusion and aggression was found, with the various forms of violent and aggressive behaviour being very common reasons for its use. As such, this meta-analysis began by exploring the characteristics considered to be associated with aggression, before outlining what was currently known about the characteristics of inpatients subject to restrictive practices and finally outlining research specifically focused upon a secluded population.

The specific aims of this meta-analysis were to examine the available data in order to establish whether female patients, younger patients or those with a diagnosis of psychosis were more likely to be secluded than their counterparts.

### ***Characteristics of violent inpatients***

There seems to be disagreement across researchers regarding the role of gender as a risk factor for violence in inpatient settings, with some authors finding that men were more likely to commit violent acts than women, though the reasons for this

finding were not explored (Dack et al., 2013; McNeil & Binder, 1991). However, Larkin, Murtagh, and Jones (1988) found females to be violent more often than males and Hodgkinson, McIvor, and Phillips (1985) found no difference in the proportion of violent incidents between men and women. It also appears from some literature that male and female inpatients differ in the type of violent behaviour expressed, with men tending to physically assault others using their fists, and women more often throwing objects at staff (Armond, 1982).

In a study examining the relationship between diagnosis and violent behaviour, research conducted by Swanson (1994) found that the lifetime prevalence rate of self-reported violence was significantly higher in individuals with a diagnosis of schizophrenia or major affective disorders compared with a mentally ‘healthy’ control group. This finding appears to have been stable over time, with more recent research continuing to find that a diagnosis of schizophrenia is associated with risk of violence (Dack et al., 2013) and psychosis with aggression (Cornaggia, Beghi, Pavone, & Barale, 2011). Further, a systematic review by Bulgari, Ferrari, Pagnini, de Girolamo, and Iozzino (2018) found that diagnosis of a personality disorder was significantly associated with aggressive behaviour. Other research has also found a relationship between active symptoms of psychosis, including command hallucinations and paranoia, and aggression (Daffern et al., 2010), with aggression tending to precede seclusion (Bullock, McKenna, Kelly, Furness, & Tacey, 2014).

There is, however, some disagreement about the relationship between mental illness and violence, with some authors reporting that most individuals with a mental health problem never commit violent acts and are, in fact, at increased risk of being the victim of assaults (Pettit et al., 2013). Nevertheless, other research states that

mentally ill inpatients are more likely to be violent than the general population (Joyal, Dubreucq, Gendron, & Millaud, 2007).

In terms of behavioural features, Cornaggia et al. (2011) found that impulsiveness and hostility were also markers of aggression in an inpatient setting. Authors have also found violent behaviour to be associated with self-harm and risk of suicide (Cornaggia et al., 2011; Dack et al., 2013).

Literature has, unsurprisingly, found that previous history of violence is an established marker for future violent acts both in psychiatric settings and in the community (Bulgari et al., 2018; Dack et al., 2013; Depp, 1976; McNeil, Binder, & Greenfield, 1988).

Backgrounds of substance and alcohol use have also been found to be markers of aggression in inpatient settings and significant predictors of future violence (Bulgari et al., 2018; Cornaggia et al., 2011; Dack et al., 2013). Swanson (1994) found that individuals with a diagnosis of schizophrenia or major affective disorder, and a comorbid substance use disorder, were at significantly higher risk of future violence in comparison with inpatients with these diagnoses without any substance use difficulties.

Historically, studies have found that younger inpatients are more likely than older inpatients to be aggressive in psychiatric settings (Pearson et al., 1986; Tardiff & Sweillam, 1982). These findings, as previously noted in Chapter 2, have continued to be replicated with more recent studies suggesting that young age is a robust predictor of violent recidivism and reoffending more generally (Dack et al., 2013; Wong & Gordon, 2000).

In terms of other demographic features, some authors found ethnic origin and being unmarried were not found to have a relationship with violence (Noble & Rodger, 1989). However, other research has shown that unmarried inpatients were more likely to be aggressive than their counterparts and that being admitted to hospital involuntarily was a predictive characteristic of aggressive inpatients (Dack et al., 2013).

### ***Characteristics of secluded/restrained inpatients***

Research looking more specifically at the characteristics of inpatients subjected to restrictive practices has also been carried out, with most of this research combining seclusion with physical/mechanical restraint and rapid tranquilisation. A variety of features, such as ethnicity, involuntary admission to hospital, previous aggressive behaviour, and attempts to abscond have been found to be associated with seclusion and restraint (Beghi, Peroni, Gabola, Rossetti, & Cornaggia, 2013).

Most commonly, however, the research has tended to focus upon gender, diagnosis and age. For example, research was carried out by Keski-Valkama et al. (2010) assessing the clinical characteristics of secluded and restrained psychiatric patients over a 15-year period in Finland, and whether these changed across the timespan of the study. They found that the majority of inpatients had a diagnosis of schizophrenia which was later supported in a systematic review of 49 studies, which also found a predictive relationship between schizophrenia and seclusion (Beghi et al., 2013).

Keski-Valkama et al. (2010) found that seclusion was also common in the substance use group, which was slightly more predictive of restraint and seclusion. These authors noted that the mood-disordered group and other diagnostic groups were

less likely to be subjected to restrictive practices and they hypothesised that this related to the fact that mood-disordered individuals did not tend to present with violent or disturbed behaviour. Keski-Valkama et al. (2010) considered that schizophrenic inpatients, on the other hand, presented more frequently with unanticipated and disturbed behaviour and the management of such behaviour necessitated the use of restraint and seclusion. Another study found that higher incidences of seclusion and restraint were associated with a diagnosis of borderline personality disorder, though did not find an association with bipolar disorder (Beck et al., 2008).

Keski-Valkama et al. (2010) found no association between gender and prevalence of restraint/seclusion, with almost identical rates for males and females. However, Beghi et al.'s (2013) systematic review of 49 studies found that being male was strongly linked to the use of coercive measures.

In terms of the impact of age on restrictive practices, Keski-Valkama et al. (2010) found that the number of the youngest patients (between 18 and 29) tended to increase as their 15-year study progressed and that, overall, these patients had the highest prevalence rates of restraint and seclusion. The lowest rate was observed in the oldest group (patients between 50 and 64 years). This finding has been replicated within the literature (Beck et al., 2008; Beghi et al., 2013; Dumais et al., 2011; Knutzen, Sandvik, Hauff, Opjordsmoen, & Friis, 2007; Thomas et al., 2009; Tunde-Ayinmode & Little, 2004).

### ***Factors associated with seclusion***

Looking particularly at the features associated with seclusion (as opposed to combined coercive measures), a variety of patient characteristics have been assessed by researchers. The findings in this area appear to be somewhat conflicting, with no

clear consensus on whether any characteristic has predictive power in understanding the patients most impacted by seclusion (Happell & Koehn, 2010).

Some researchers have found ethnicity to be a significant predictor of seclusion (El-Badri & Mellsop, 2002) while others have found no such relationship (Angold, 1989). Happell and Koehn (2010) found significant differences in relation to the indigenous status of inpatients in Australia, finding that indigenous inpatients were more likely to experience seclusion in comparison with their non-indigenous counterparts. Other authors found no significant predictors of seclusion in relation to employment status, educational background, marital status or living situation (Tunde-Ayinmode & Little, 2004; Van De Sande et al., 2013).

In terms of the more researched characteristics, many studies have reported upon the predictive effect of gender. There have been inconsistent findings within the literature in relation to males and females, with some researchers finding that secluded patients were significantly more likely to be male (Barnett et al., 2018; El-Badri & Mellsop, 2002; Happell & Koehn, 2010; LeGris, Walters, & Browne, 1999; Morrison & Lehane, 1996; Sorgaard, 2004; Thompson, 1986; Van De Sande et al., 2013). Other studies, however, have found no significant difference between male and female seclusion rates (Angold, 1989; Happell & Gaskin, 2011; Kaltiala-Heino et al., 2003; Knutzen et al., 2007; Smith et al., 2005; Tunde-Ayinmode & Little, 2004).

Contrastingly, research by Mason (1998) found that female inpatients, although comprising a smaller proportion of the population, accounted for the majority of seclusion episodes. Other research has replicated this, finding that females were more likely to be secluded than males (Ahmed & Lepnurm, 2001; Beck et al., 2008; Cullen et al., 2018). Although it is clear that a significant amount of research

has been conducted into the effect of gender on seclusion rates, there does not appear to be any literature hypothesising about this difference, and how it might relate to seclusion.

Several older studies have found that inpatients with a diagnosis of schizophrenia were more frequently secluded than other diagnostic groups (Mattson & Sacks, 1978; Oldham, Russakoff, & Prusnofsky, 1983; van Heeringen et al., 1995). More up-to-date research by Tunde-Ayinmode and Little (2004) also found schizophrenia or other psychotic disorders were related to seclusion. Furthermore, El-Badri and Mellsop (2002) found diagnosis to be a significant predictor for the use of seclusion with almost one third of inpatients with schizophrenia, bipolar, or substance use disorders being secluded, in comparison with fewer than one tenth of those in the remaining diagnostic categories. Interestingly, research by Steinert, Bergbauer, Schmid, and Gebhardt (2007) combined two predictive factors, and found that although younger age was associated with seclusion, this predictive feature disappeared when the sample was comprised of exclusively schizophrenic patients. Notably, however, some papers have found no association between seclusion and schizophrenia (Barnett et al., 2018; Thomas et al., 2009; Van De Sande et al., 2017).

Symptoms of psychosis have also been researched and have been found to be related to seclusion, including mania, paranoid delusions, and confusion (Ahmed & Lepnurm, 2001; Binder, 1979; Campbell, Shepherd, & Falconer, 1982; Gerlock & Solemons, 1983; Hafner, Lammersma, Ferris, & Cameron, 1989; Morrison & Lehane, 1991; O'Brien & Cole, 2004; Russell, Hodgkinson, & Hillis, 1986; Schwab & Lahmeyer, 1979; Soloff & Turner, 1981).

Research into the relationship between mood disorders and seclusion has also produced inconsistent findings, particularly in relation to bipolar affective disorder

(Dumais et al., 2011; El-Badri & Mellsoop, 2002; Prinsloo & Noonan, 2010). For instance, research by Stolker et al. (2005) found that a higher proportion of secluded inpatients had a diagnosis of bipolar disorder, and other researchers supported this finding, also noting a significant predictive effect in relation to depression (Happell & Koehn, 2010; van Heeringen et al., 1995). Other literature concluded that inpatients with a personality disorder were more likely to be secluded (Van De Sande et al., 2013). Moreover, additional studies found no significant relationship between diagnosis and risk of seclusion (Cullen et al., 2018; Happell & Koehn, 2010).

Evidently, there is a great deal of inconsistency in terms of whether specific diagnoses increase the risk of seclusion. However, psychosis and schizophrenia appear to be one of the most researched areas, with studies indicating that inpatients who are floridly psychotic present a higher risk of violent or aggressive behaviour and, as such, are more likely to be subjected to the most restrictive practices.

A large research base exists examining the relationship between age and seclusion. Of these papers, some older papers found age to be negatively associated with seclusion, with the most common age of a secluded patient falling between 28 and 38 years of age (Angold, 1989; Gerlock, 1983). Similarly, Van De Sande et al. (2013) concluded that inpatients between the ages of 18 and 35 were at the highest risk of being secluded while Tunde-Ayinmode and Little (2004) reported that the mean age of the secluded group was 33 years. The non-secluded group's mean age was significantly different at 37 years of age.

A great deal of research has replicated this finding, reporting that patients in seclusion were significantly younger than their non-secluded counterparts (Bullock, McKenna, Kelly, Furness, & Tacey, 2014; Happell & Koehn, 2010; Kirkpatrick, 1989; Morrison & Lehane 1996; Plutchik, Karasu, Conte, Siegal, & Jerret, 1978;

Schwab & Lahmeyer, 1979; Smith et al., 2005; Sorgaard, 2004; Stolker et al., 2005; Tardiff, 1981; Thomas, Daffern, Martin, Ogloff, Thomson, & Ferguson, 2009; Thompson, 1986; Tunde-Ayinmode & Little, 2004).

Indeed, compared with other factors, age appeared to produce the most consistent findings. However, despite repeated evidence that younger age predicted seclusion, a more recent study by Barnett et al. (2018) found no such association between seclusion and age. Similar findings were also found elsewhere in the literature (El-Badri & Mellsop, 2002; Happell & Gaskin, 2011).

As noted above, a number of studies found a strong association between younger age and increased likelihood of seclusion. This is unsurprising as younger age is a known risk factor for increased violence in psychiatric inpatient settings (Cornaggia et al., 2011; Dack et al., 2013; Iozzino, Ferrari, Large, Nielssen, & de Girolamo, 2015). However, Cullen et al. (2018) adjusted for multiple behaviours preceding seclusion and did not find younger age to be a predictor. As such, the findings cannot be fully explained by the fact that younger patients tend to be more aggressive. The authors noted that this could relate to bias in decision making in inpatient settings, such as the perception that younger inpatients present a higher risk, or might perhaps relate to other factors that were not investigated during their study (for example, severity and frequency of violence).

This meta-analysis included only these papers relating to the characteristics of secluded patients. This decision was taken in order to attempt to reduce heterogeneity between the papers resulting from confounding variables that might arise if utilising a variety of restrictive practices. This author was not able to identify any existing meta-

analyses on this topic and considered this was an important area of research due to the conflicting findings within the literature.

Numerous methodological issues arise when looking at seclusion research, with particularly problematic issues being small sample sizes and the studies having been carried out in limited settings (Kaltiala-Heino et al., 2003). In addition, research has been limited by the difficulties involved in accessing and analysing complex records, which requires merging various databases to extrapolate the necessary information.

As such, the present meta-analysis focused upon the characteristics of patients who are secluded, in order to establish whether women, younger individuals or those with psychosis were more likely to be secluded than their counterparts. A meta-analytic approach was adopted in order to synthesize the evidence currently available into a structured and thorough review of the research in this area. By utilising a meta-analytic approach, it is possible to allow for a clear estimation of the effects of seclusion while accounting for variations in methodological quality as well as capturing the idiosyncrasies of patient characteristics inherent in the primary studies. Meta-analysis enables the researcher to evaluate the impact of moderator variables on the reported effects (Rosenthal & DiMatteo, 2001) and, as such, it is a helpful tool for summarising literature as well as hypothesis testing regarding the causes of variation in effect sizes between the studies. The objective of the meta-analysis was to enhance the understanding of the impact of these characteristics to enable clinicians to better identify, *a priori*, patients who are most likely to be secluded. In doing so, more targeted interventions could be developed and utilised with specific populations, where required, in order to contribute to an overall reduction in the use of seclusion in these settings. This was considered particularly pertinent due to the known deleterious

impact of seclusion on patients, as outlined previously, as well as the wider organisational and financial costs associated with its use.

## **Methods**

### *Identifying Primary Studies*

#### *Search of Electronic Databases*

A search of the Cochrane and Campbell Systematic Review databases was undertaken to ascertain whether any meta-analyses or systematic reviews in this area existed. No reviews regarding the characteristics of secluded patients were found, justifying the need for this review and meta-analysis. A scoping search was then undertaken in order to capture commonly used terms and to establish the viability of the research question.

The following online bibliographic databases were first searched on the 24 May 2018: PsychINFO (1967 – May 2018), MEDLINE (1946 – May 2018), CINAHL and EMBASE (1974 – May 2018). These searches were re-run on 5 March 2019 and no additional papers were identified meeting the required criteria. The use of free text words enabled searching to locate matches in the abstract, title or main text of each article. This led to a higher number of articles being returned, enabling the author to maximise the opportunities to return all relevant papers. The scoping exercise aided the development of the final search syntax. Boolean operators were utilised: ‘OR’ to capture synonyms and ‘AND’ to combine separate search concepts. The following search terms outlined in Table 3 were utilised for each of the databases:

<b>Construct</b>	<b>Free Text Search Terms</b>	<b>Method of Search</b>	<b>Limits</b>
Seclusion	“seclu*”	Free search terms	Peer reviewed
Inpatient	“patient” “psychiatr*” “mental*”	All search terms combined with <i>OR</i>	articles 1967-March 2019

Characteristics	“characteristic” “feature” “predict*”		
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Table 3: Search Strategy

### ***Inclusion Criteria***

Full inclusion/exclusion criteria are described in Table 4. In order to gain an overview of the characteristics of secluded inpatients within adult psychiatric populations the criteria were kept quite broad due to the heterogeneity of the research base. The main criteria included any study providing data about the characteristics of secluded and non-secluded adult patients in a psychiatric setting, in order to establish whether there was any impact upon the likelihood of the patient being secluded. Restrictions on study design included the exclusion of existing meta-analyses or syntheses of data, due to difficulties extrapolating the original data, as well as very low sample sizes, in order that an effect size could be calculated. Restrictions were also made in relation to the setting, with emergency inpatient and non-inpatient settings excluded.

Inclusion criteria	Justification
<i>Phenomenon of interest:</i>	
Studies that provided data regarding the characteristics or features of patients who were secluded and a comparison of those who were not secluded. Research that assessed various predictors of seclusion.	This is to ensure that the data extrapolated from the studies could be meaningfully compared and event rates could be calculated.
The following were excluded: - Papers assessing the characteristics of individual subjected to physical / mechanical restraint or forced medication.	Although aggressive/disruptive behaviour can result in seclusion, restraint or forced medication, it is not possible to know whether the individuals subjected to these interventions are homogenous, due to insufficient research assessing the differences between secluded/restrained/medicated individuals.

Inclusion criteria	Justification
- Studies assessing the characteristics of individuals subjected to seclusion with/or without restraint (where seclusion data could not be extrapolated)	As such, only those studies focused solely on seclusion were included within the search, in order to reduce heterogeneity within the data.
- Where seclusion was assessed exclusively following acts of aggression.	This was due to literature outlined in the systematic review (see Chapter 3 noting that many seclusions occur due to agitation/disorientation. As such, these studies would not have captured all of individuals secluded for reasons other than aggression.

#### *Participant focus / characteristics*

- Studies utilising an adult population (18+). Studies with a sample exclusively comprised of individuals under 18 years old, with intellectual impairment or geriatric adults (65+) were excluded.	Adults were deemed the appropriate population for this review due to the focus being on inpatient settings, where the lower age limit tends to be 18. Sole child / adolescent populations were excluded to reduce heterogeneity within the data set.
	Studies with a sample that included a small number of geriatric patients were not excluded, due to this being representative of inpatient populations.

#### *Outcome data*

The studies are required to report frequency counts of male and female characteristics of secluded individuals.	To ensure that outcomes can be calculated into raw proportions and relative risk ratios.
Where different research papers utilised the same data, only one paper was included in this research.	This decision was made because utilising the same data multiple times would be misleading in terms of the outcome when comparing these papers.

#### *Type of article*

The following article types were excluded: unpublished dissertation / thesis / meta-analysis / narrative reviews / theoretical papers / commentaries / clinical guidance / non-	These articles do not provide the outcome data needed for this meta-analysis.
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Inclusion criteria	Justification
outcome focused studies i.e. longitudinal / association studies / case studies / qualitative papers.	
<i>Setting</i>	
Psychiatric inpatient settings were included within this review including: acute, medium secure, low secure, mixed wards, long term.	The heterogeneity would be too difficult to manage within a meta-analysis where one setting is substantially different from another. Although a study may utilise an inpatient psychiatric setting, if for example a facility is described as overcrowded with patients (relative to the number of beds), where staff are described as having insufficient training to manage difficult behaviour or where there is no legal regulation of the use of seclusion, the study will be excluded.
The following were excluded:  - Emergency inpatient and non-inpatient settings were excluded. - Settings where there is patient overcrowding / unregulated use of seclusion / insufficient staff training (e.g., Malawi)	
<i>Outcome Data and Study Design</i>	
Studies were excluded where comparable data was not provided. Research with a sample size of less than 50 was excluded.	This is to ensure that raw proportions and relative risk estimates can be calculated with sufficient power.
Papers published / data collected after 1998 or not in the English language were excluded.	The year 1998 was chosen as the arbitrary cut-off for including studies in order to make the search more manageable and up-to-date clinically (by including only research from the past twenty years), whilst still capturing the necessary information for this research. Furthermore, the policies for seclusion use change over time.

*Table 4:* Full inclusion and exclusion criteria

The database searches yielded a total of 326 citations and duplicates were then removed ( $n = 25$ ). The titles and abstracts of the remaining papers were then screened

using the exclusion criteria. The most common reasons for exclusion were a child or adolescent sample ( $n = 13$ ), where seclusion could not be separated from other coercive experience ( $n = 8$ ) and data being older than 1998 ( $n = 10$ ). The titles and abstracts that did not meet the inclusion criteria were excluded ( $n = 235$ ). Of the 75 papers remaining, the full text articles were accessed and the reference lists of these were hand searched for missing papers, this yielded 9 additional papers. Following application of the inclusion criteria, 11 papers remained, 10 of which contained sufficient data to be included in the meta-analysis. The reasons for these 64 full text article exclusions are noted in Figure 2 below.

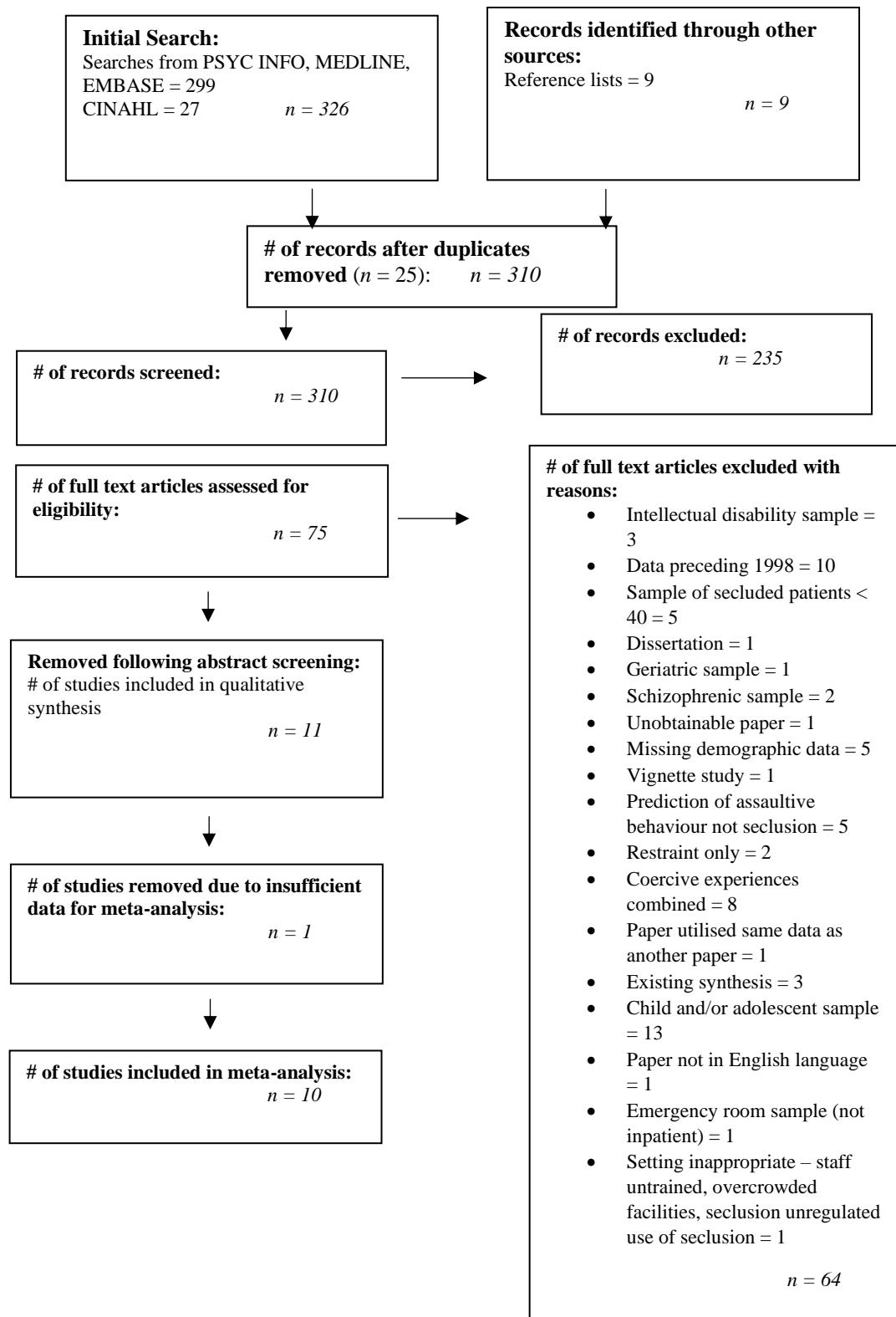
### ***Quality Ratings and Data Extraction***

Full articles were obtained for relevant studies, they were quality assessed and the data relevant to methods and participants were extracted. The extraction of all data was carried out by the author; however, the quality ratings and extraction were validated by a second rater. Disagreement which arose between the author and secondary rater were discussed and decisions were documented. Where different ratings were given, a discussion was held between the author and the second rater regarding the reasons for the rating discrepancies until a resolution was found based upon further clarification of the criteria (see Appendix 8). In circumstances where agreement could not be reached, the allocated point scores for both raters were to be adjusted to the mid-point between the two ratings. However, this was not necessary for the present study as discussions clarified the different ratings.

For the current research, event rates were reported by the authors as the number of participants with and without the condition of interest, in this case, the number of individuals within the male and female groups, younger or older groups

and the number of individuals within the schizophrenia and non-schizophrenia (any other diagnosis) were noted.

*Figure 2.* Results of the systematic search and the application of the inclusion criteria



### **Risk of Bias Assessment**

A quality framework was developed such that the risks of bias in the included studies could be identified and quantified. This framework was adjusted in order to specifically meet the needs of this meta-analysis. The criteria utilised were adjusted from the pre-existing frameworks that had been published by The Cochrane Collaboration Risk of Bias Tool (Higgins et al., 2011), the Risk of Bias Assessment Tool for Non-randomised Studies (Downs & Black, 1998; Kim et al., 2013). This framework included the following risk of bias domains: Selection Bias, Detection Bias, Statistical Bias, Reporting Bias, Methodological Bias, Measurement Bias and Generalisability (see Table 3). Each domain consisted of a number of items, rated as low (0), moderate (-1) and high risk (-2) for each of the studies. In total, 9 items were rated for each of the studies.

Domain	Item	Low, Moderate and High Risks
Selection Bias	1. Typicality of sample	0 = Acute wards, secure unit, normal sample
		-1 = Possibly atypical (e.g. forensic psychiatric sample)
		-2 = Atypical sample (e.g. Intensive Care Unit)
Detection Bias	2. Allocation of risk factors (e.g., psychotic/not psychotic) prior to the seclusion episode	0 = Demographic and diagnostic info was reported by unit prior to study / researchers not involved in categorising
		-1 = Unclear
		-2 = Not reported / researchers involved in allocations
Statistical Bias	3. Allocation of risk factors by researchers	0 = Researchers not involved in allocations
		-1 = Researchers may have been involved
		-2 = Not reported/ researchers were involved
	4. Missing or incomplete data (e.g., the $n$ in one section is	0 = No important data missing
		-1 = Some important data missing (less than 5%)

Domain	Item	Low, Moderate and High Risks		
	different to the $n$ in another section of the report)	-2	= Not reported/ important data missing (greater than 10%)	
	5. Not being able to find important information in the paper	0	= Able to find all information	
		-1	= Able to find most information	
		-2	= Able to find some or no information	
	6. Inconsistencies in reporting of the data	0	= No important data missing	
		-1	= Some important data missing	
		-2	= Not reported/ important data missing	
Reporting Bias	7. All outcomes reported.	0	= All outcomes reported	
		-1	= Some outcomes unclear	
		-2	= Not all outcomes reported	
Generalisability	8. Sufficient power (proportion of population sample (women/total sample))	0	= Sufficient power	
		-1	= event rate less than 10% of total sample	
		-2	= event rate less than 5% of total sample	
	9. Sample size	0	= >501	
		-1	= sample 200-500	
		-2	= sample < 200	

Table 5. Risk of Bias Domains and Items in the Quality Framework

	Selection Bias	Detection Bias	Statistical Bias	Reporting Bias	Generalisability
Tunde-Ayinmode & Little (2004)	Green	Green	Red	Green	Red
Bullock et al. (2014)	Red	Green	Green	Green	Yellow
Van De Sande et al. (2013)	Green	Red	Green	Green	Yellow
Van De Sande et al. (2017)	Green	Green	Yellow	Green	Green
Vruwink et al. (2012)	Green	Green	Green	Green	Yellow
Cullen et al. (2018)	Red	Yellow	Green	Green	Green
Chavulak & Petrakis (2017)	Green	Green	Green	Green	Red
Mason (1998)	Red	Yellow	Green	Green	Green
Thomas et al. (2009)	Yellow	Yellow	Green	Green	Red
El-Badri & Mellsop (2002)	Green	Yellow	Green	Green	Green
Happell & Koehn (2010)	Green	Green	Green	Green	Green

Figure 3: Summary of Applied Quality Criteria (Red = high risk of bias, amber = unclear risk of bias, green = low risk of bias).

### ***Selection Bias***

Overall, only seven studies were rated as low risk of selection bias. The low risk studies were those whose sample was considered ‘typical’ in terms of being an inpatient setting, these included five studies on acute wards (Chavulak & Petrakis, 2017; El-Badri & Mellsop, 2002; Tunde-Ayinmode & Little, 2004; Van De Sande et al., 2013; Van De Sande et al., 2017) and two utilising mixed ward samples (including acute, forensic and long-term inpatient wards: Happell & Koehn, 2010; Vruwink et al., 2012). One study by Thomas et al. (2009) was rated as unclear risk due to the sample being possibly atypical (an exclusively forensic psychiatric sample, as it could not be assumed that this feature would not impact upon the observed differences between the groups). Three studies were rated as high risk of bias, which related to the sample being considered atypical. Two of these were intensive care inpatient settings (Bullock et al., 2014; Cullen et al., 2018) and the final study was conducted in a ‘special hospital’ of high security (Mason, 1998).

### ***Detection Bias***

Within the included studies, the detection bias was mixed as six studies were rated as low risk. The low risk studies were those where demographic and diagnostic information was reported by the unit prior to conduction of the study (i.e., those where researchers were not involved in categorising the participants to their group. The four studies rated as unclear risk indicated some uncertainty about the involvement of the researcher in the allocation of participants to categories. Casefiles had been examined in order to obtain information about patient categories and it was unclear whether the rater had prior knowledge about the patient being within the secluded or non-secluded group which might have impacted upon their decision making (Cullen et al., 2018; El-Badri & Mellsop, 2002; Mason, 1998; Thomas et al., 2009). One study was rated as

high risk as information was not reported about how the participant was allocated to the categories (Van De Sande et al., 2013).

### ***Statistical Bias***

Nine of the included studies were rated as low risk, indicating that there was no important information missing and all necessary information was obtained. One study (Van De Sande et al., 2017) was rated as unclear risk where some important data was missing (2.3% of total sample) and one study was rated as high risk due to information not being reported or important missing data exceeded 10% of the sample (25% missing data; Tunde-Ayinmode & Little, 2004).

### ***Reporting Bias***

The reporting bias was consistent, as all eleven included studies were rated as low risk, due to all outcomes being reported by the authors. None of the studies were found to have unclear or unreported outcomes.

### ***Generalisability***

Five studies were rated as low risk due to there being sufficient power (in terms of the proportion of the category relative to the total sample) and the sample being equal to or exceeding 501 participants. Three studies were rated as unclear risk as the total sample was between 200 and 500 participants (Bullock et al., 2014; Van De Sande et al., 2013; Vruwink et al., 2012). Three studies were rated as high risk as the total sample was less than 200 (Chavulak & Petrakis, 2017; Tunde-Ayinmode & Little, 2004; Thomas et al., 2009).

## **Summary**

Overall, the included studies showed a range of risks of bias, both in terms of the type of bias and the number of biases identified. There was only one study that was not rated as having a high risk of bias in any domain (i.e., Happell & Koehn, 2010). The domains with the highest ratings of bias across studies related to selection bias and generalisability with three studies in each being rated as high risk. In terms of selection bias, this related to atypical samples and small sample sizes. The studies with unclear and high risk of bias were included due to the small number of studies within this area of research. As such, the results of this meta-analysis should be considered with a degree of caution and it would be hoped that further research in this area will be of a higher quality, utilising larger samples. However, the included studies were deemed to be representative of the current literature in this research area.

## **Data Analysis Strategy**

### ***The Synthesis of Findings***

In order to synthesise the primary study findings, researchers may use either a fixed effects or a random effects model. The fixed effect model assumes that the true effect size has no variation across all studies and as such the only variation occurring relates to sampling error (an error arising due to unrepresentativeness of the sample utilised). As such, when weighting the various studies, the information included in the smaller studies can be minimally acknowledged, since more helpful information about the same effect size can be gleaned from the larger-scale studies. Therefore, it is logical to utilise this model so long as the following can be confirmed: that the available information suggests that the studies in the meta-analysis are homogenous in terms of excellent methodology and that the goal of the analysis is to identify a

common effect size for the target population, rather than a more widely generalisable population. As psychological studies tend to have variation resulting from uncontrolled variables, such as methodological differences, often it is more appropriate to utilise the random effects model.

The random effects model does not seek to estimate one true effect but rather to provide a mean estimate of the distribution of possible effects (each of which may vary with the unique characteristics of the studies' participants). This would therefore seek to describe the true variation that exists due to individual characteristics or the effect of unique populations on the estimate. As each study contributes information about a different effect size, the aim is to represent all of these effect sizes in the meta-analytic summary estimate. Therefore, a smaller study is not as severely censored, by being assigned a smaller weight, as would be the case in a fixed effects model.

Although the estimate of such a study may be inaccurate, it provides unique information about an effect that another study cannot, in the same way that a far larger study cannot be given too much weight (as in a fixed effects model). Thus, the goal is to provide a mean effect estimate in a series of studies, with no single study having a heavier influence on this.

As primary studies have been conducted by independent researchers, it is unlikely that they can be considered functionally equivalent, in so far as the reported effects are likely to have been impacted by different methodological approaches, each with their respective strengths and limitations.

Precision, in the random effects model, is considered in relation to sample size. This is the same as in the fixed effects model, however, smaller samples are not subjected to a penalty to the same extent. Instead, the penalty occurs where a study's reported effect size is substantially different from the rest of the included literature. It

can be assumed that differences in participants, sampling, or the treatment of the data in such studies would have influenced the results and as such a common effect size cannot be assumed. Resultantly, the random effects model is more appropriate and justifiable than the fixed effects model. The most straightforward way of calculating this variation ( $\tau$ ) between the primary studies, utilising the random effects model, is the DerSimonian and Laird method which assumes that the distribution of reported effect is normal.

### **Handling of data that violates the assumptions of the random effects model**

#### *Transformation to effects and back transformation for presentation*

In this meta-analysis, the event rates and relative risk estimates in the primary studies were log transformed before the numerical synthesis was conducted. The values presented within tables and figures, however, were subsequently back-transformed to their original format (unless otherwise stated) for coherence and clarity.

#### *Missing data and zero frequency data*

Zero count event rates often occur in small studies where the sample size is insufficient to accurately estimate the true event rate. These can cause numerical problems in synthesising relative risk and event rates. As such, studies with a sample of fewer than forty participants were not included within this review due to it not being possible to estimate the true event rate. In circumstances where a sample was greater than forty but an event rate was equal to zero, a small constant of 0.5 was added to the event rate in order to avoid division by zero errors.

### ***Normalisation and variance stabilisation***

The most common method for calculating the between studies variation of the effect (Tau) is DerSimonian and Laird, which is required in order to fit the random effects model. This method, though, relies on the assumption that the random effect has a normal distribution in the population, thus meaning the reported effect sizes should also be normally distributed. As such, by log transforming event rates and relative risk estimates this can normalise the distribution of effects as well as stabilise the variance of the estimates before the meta-analytic synthesis is carried out.

### ***Handling problematic variance***

#### ***Defining problematic variance***

A heterogenous effect is one that varies from the meta-analytic synthesis sufficiently for the variation not to be attributable to the distribution of the effect in the population. Numerous factors such as measurement error, individual differences performance factors, varying methodologies etc, can cause heterogeneity. Higgins  $I^2$  is frequently used to measure heterogeneity, with higher  $I^2$  values indicative of greater variation that is unaccounted for in the distribution of the effect within the population. Due to the varying methodologies in the primary studies of this meta-analysis, problematic heterogeneity was considered to be evident where a Higgins  $I^2$  value exceeded 75%<sup>1</sup>.

#### ***Estimation of attrition & corrective strategies***

Where problematic heterogeneity was identified, a leave-one-out analysis will be conducted. This was in order to allow the identification of primary studies which

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<sup>1</sup> Please note that this relatively high threshold for Higgin's  $I^2$  reflects the substantial variation in research methodology within the primary studies.

had a disproportionate influence on the meta-analytic effect. In order to identify any studies exerting a disproportionately high influence on the meta-analytic synthesis, a “one left out” procedure was utilised wherein the impact (on the estimate) of removing each study in turn is observed. Where the omission of a study lead to an effect falling outside of the 95% confidence intervals for the meta-analytic synthesis then it was removed from the omnibus test, due to the disproportionate influence it had on the same. Furthermore, subgroup analyses were undertaken in order to establish whether other sources of problematic heterogeneity exist, and the adjusted estimate then was reported.

### ***The Quality Effects Model***

The random effects model assumes that the precision of an effect relates to the size of the sample the effect is derived from. On the other hand, the quality effects mode (Doi & Thalib, 2008) extends this by also including the methodological quality rating in the estimation. In this meta-analysis, the quality effects model utilised the total risk of bias score (as reported in section 6). This model provides the meta-analytic effect that would have been found if all of the primary studies had been as high in methodological quality as the best included study, therefore providing a measure of attrition attributable to this kind of variation.

### ***Identifying publication bias and small study effects***

Where a meta-analysis utilises a sufficient number of included studies, publication bias and the effect of small studies can be identified through ‘eyeballing’ a funnel plot of the effects against a measure of precision, as well as statistically inspecting these results. It is utilised in order to identify whether systematic heterogeneity exists. If publication bias is not found to be relevant, it can be assumed

that high precision studies will fall near to the average (the omnibus estimate), while those with low precision will fall evenly on either side of the average, creating a distribution in a funnel shape where the distance from the average is conversely equivalent to the precision of the study.

Where a symmetrically inverted funnel shape appears, this indicates a ‘well behaved’ data set, suggesting that publication bias is not likely to apply. Deviation from this shape suggests that publication bias does exist, particularly if there are gaps in areas associated with small samples and effects which are not significant. In these circumstances, a ‘trim and fill’ procedure (Duval & Tweedle, 2000a; Duval & Tweedle, 2000b) was conducted. This procedure utilises an iterative algorithm, removing the smallest studies from the positive effect side of the plot, reconducting the effect estimate at each iteration until a symmetrical funnel plot around the corrected effect size is produced. In principal, this algorithm will result in an unbiased effect size estimate, however, also reduces the variance of the effects, providing too narrow a confidence interval. As a result, the algorithm reinserts the original studies into the analysis, attributing a mirror image for each side of the funnel plot associated with negative effects.

The failsafe N (Rosenthal, 1979) were calculated when deemed appropriate. This was an estimate of the number of studies that would need to be found within the literature in order for the effect to be non-significant. If this is a large number, in relation to the number of primary studies included, then the meta-analytic synthesis can be deemed robust in terms of the being affected by publication bias.

### **Planned contrasts & analysis of sub-groups**

In circumstances where a priori hypotheses had been made, subgroup analyses were undertaken for categorical moderating variables. These categorical moderators were considered to be summary effects and their respective heterogeneity measures were computed for each subgroup. The significance of the sub-group differences were then considered by comparing their 95% confidence intervals.

## **Results**

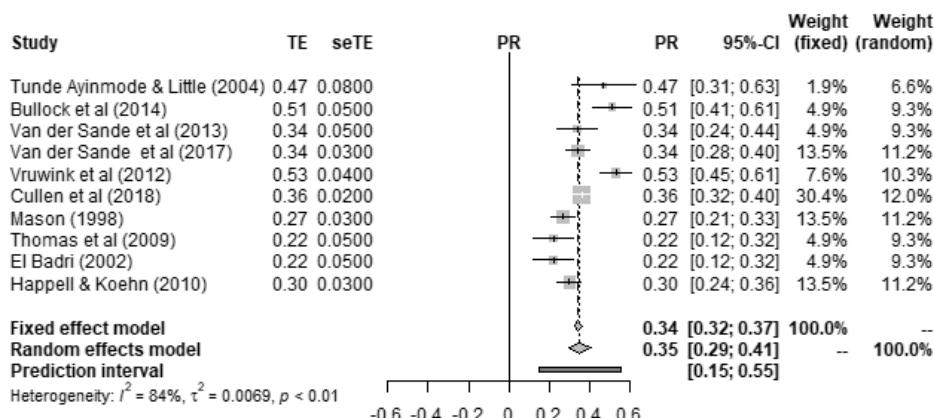
### **Hypothesis 1: Effect of gender**

#### **Omnibus tests – raw proportions**

The studies reported a total of 838 females in seclusion, in comparison with 1,491 secluded males (total secluded population of 2,329). The number of females never secluded was 2,291, in comparison with 4,408 males who were not secluded (total non-secluded population of 6,699).

The proportion of females in seclusion was 35.17% (95% CI 29.37% to 40.97%). There was considerable variation in the estimates of this proportion ( $I^2 = 84\%$ ) that might reflect methodological biases in the primary studies.

The forest plot of the studies reporting the proportion of females in seclusion is shown in Figure 4.



*Figure 4: The proportion of females in seclusion across studies*

The proportion of females in the non-seclusion group was 34.85% (95% CI 24.60% – 45.10%). There was considerable variation in the estimates of this proportion ( $I^2 = 98.9\%$ ) that could not be attributed to true variation in the effect. The forest plot of the studies reporting the proportion of females in non-seclusion is presented in Figure 5.

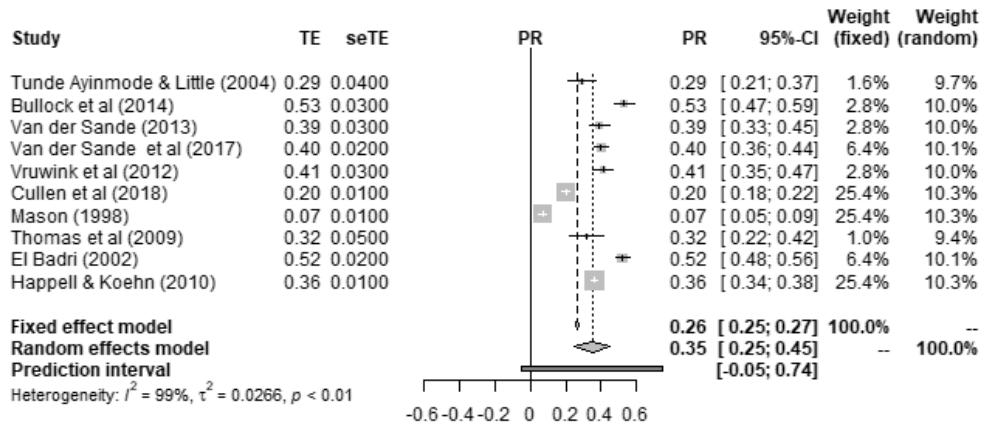


Figure 5: The proportion of females in non-seclusion group

### Omnibus tests (effect of gender) – relative risk

In total, 10 studies, of 9,028 participants, reported the number of secluded females (versus secluded males) and the comparative non-secluded females (versus non-secluded males) in psychiatric settings. A random effects models was calculated using the generic inverse variance method. The random effects model suggested a weighted average relative risk of RR = 1.11 ( $p = 0.5204$ ) and a 95% confidence interval of between 0.81 to 1.50 (see Figure 6). Overall, this suggests that a female patient is no more likely to be secluded than to not be secluded, in comparison with males.

This analysis indicated that there was a substantial level of heterogeneity in the portions reported in the primary studies ( $\tau^2 = 0.2182$ , Higgin's  $I^2 = 93\%$ ;  $Q = 128.13, p = 0.0001$ ). This suggests that the estimates of the primary studies are biased by the presence of uncontrolled or confounding factors in those papers.

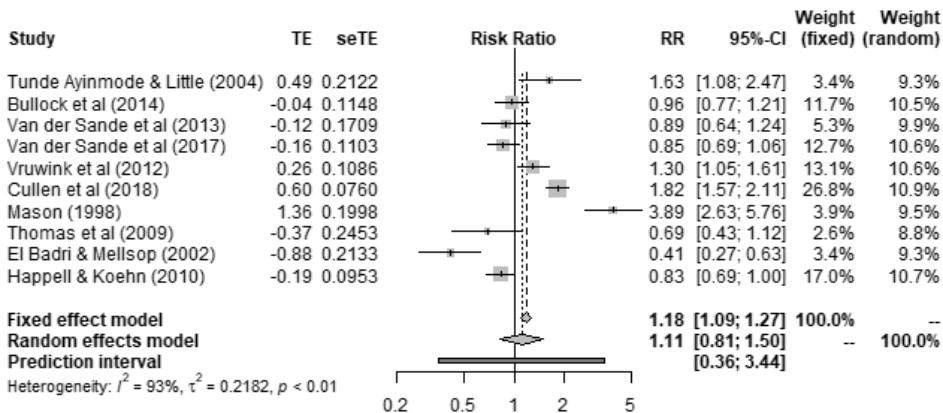


Figure 6: Forest plot of the relative risk of being female in seclusion group.<sup>2</sup>

### Impact of influential studies

The impact of disproportionately influential studies was assessed using a leave-one-out analysis, in which the random effects model was calculated with each of the primary studies removed in turn. This measure of influence is depicted in the below forest plot of leave-one-out effect sizes shown in Figure 7. If the 95% confidence interval for a study that has been removed from the synthesis does not include the value of the synthesis from the complete data set, then it may be inferred that removal of that study results in a quantitatively different conclusion and the removed study is exerting excessive influence on the outcome.

Figure 7: Forest plot of leave-one-out effect sizes

None of the primary studies resulted in a synthesis that was outside of the confidence interval for the overall random effects model and therefore none of the primary studies was considered to be excessively influential. However, the leave-one-out method is somewhat insensitive to the impact of disproportionately influential studies, therefore nine other outlier indices were calculated (see Appendix 8). These

<sup>2</sup> Note: TE refers to the log transformed relative risk.

analyses demonstrated that Mason (1998) had a disproportionate influence on the meta-analysis. As such, the random effects model was recalculated with this study removed. The corrected random effects model reported a synthesis of RR = 0.97 (95% CI 0.74 – 1.29) and evidenced an approximately 13% decrease in effect relative to the uncorrected estimate. However, when Mason (1998) is removed there was no change in the substantive conclusion of the analysis (see figure 8).

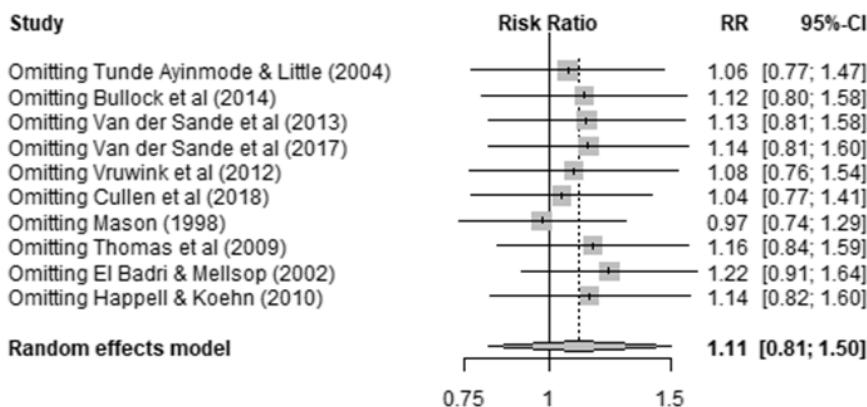


Figure 8: Relative risk recast with Mason (1998) removed

In order to assess the impact of methodological variation upon heterogeneity, a series of subgroup analysis were conducted on the prevalence rates of low, unclear and high risk of bias for each of the five types of methodological bias (see Table 6 below).

	Low	Unclear	High	Q	p
<b>Selection Bias</b>	6 studies 0.9137 [0.6886; 1.2125]	1 study 0.6898 [0.4265; 1.1156]	2 studies 1.3319 [0.7158; 2.4781]	2.72	0.2570
<b>Detection Bias</b>	5 studies 1.0402 [0.8372; 1.2924]	3 studies 0.8156 [0.2971; 2.2386]	1 study 0.8891 [0.6360; 1.2428]	0.74	0.6922
<b>Statistical Bias</b>	7 studies 0.9262 [0.6604; 1.2989]	1 study 0.8550 [0.6887; 1.0613]	1 study 1.6315 [1.0764; 2.4729]	7.38	0.0249

<b>Reporting Bias</b>	9 studies 0.9735 [0.7357; 1.2883]	N/A	N/A	0.00	--
<b>Generalisability</b>	4 studies 0.8739 [0.5079; 1.5036]	3 studies [0.8368; 1.3349]	1.0569 1.0702 [0.4604; 2.4876]	2 studies 0.41	0.8159

*Table 6:* Subgroup analyses on the prevalence rates of low, unclear and high risk of bias for each type of methodological bias

The only risk of bias that evidenced a statistically significant difference in prevalence was the statistical bias, with lower levels of bias being associated with lower estimates of prevalence. The Higgins  $I^2$  value for the 7 studies at low risk of statistical bias was 92.6%, suggesting that inclusion of studies that are at risk of statistical bias may contribute to heterogeneity and inflate the estimate of the prevalence of the condition of interest.

The quality effects model was calculated using the total score from the risk of bias ratings reported in Table 5. This model can be interpreted as the meta-analytic synthesis that would have been obtained had all of the studies been of the same methodological quality as the best study in the review.

The quality effect model reported a synthesis of RR = 0.9303 (95% CI 0.70 to 1.24). The quality effects model evidences an approximately 4% decrease relative to the random effects estimate. Accordingly, when the synthesis includes information about the methodological quality of the studies there is no significant change in the synthesis of these studies.

### ***Estimate of publication bias***

As can be seen from Figure 1 the outcomes reported for the relative risk of being female in seclusion conform to normal expectations and there is no evidence of

substantial publication bias, as such it was not necessary for a trim and fill procedure (Duval & Tweedle, 2000a; Duval & Tweedle, 2000b) to be undertaken.

The funnel plot of the relative risk of being female in seclusion is presented in Figure 9.

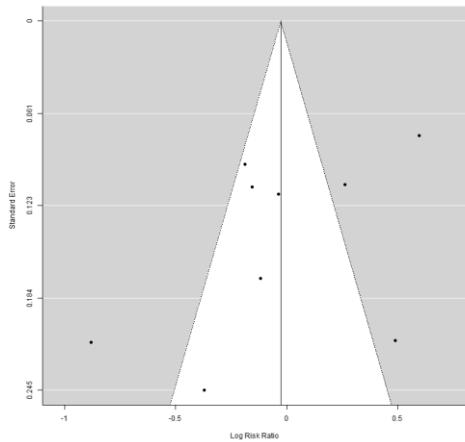


Figure 9: Funnel Plot of the relative risk of being female in seclusion

### Attenuation due to other factors

#### *Tables of hypothesised moderating effects as subgroups or meta-regression statistics*

To further explore the impact of uncontrolled covariates upon the relative risk of being female in seclusion, a series of subgroup analysis were conducted.

#### **Hypothesis 2: Effect of Psychosis**

##### *Omnibus tests – raw proportions*

The studies reported a total of 849 patients with a diagnosis of psychosis in seclusion, in comparison with 1,141 secluded non-psychotic patients (total population 1,990 secluded individuals). The number of psychotic patients never secluded was 3,135, in comparison with 3063 non-psychotic patients who were not secluded (total population of 6,198).

The proportion of psychotic patients in seclusion was 50% (95% CI 41.27% to 58.73%). There was considerable variation in the estimates of this proportion ( $I^2 = 92\%$ ) that might reflect methodological biases in the primary studies.

The forest plot of the studies reporting the proportion of psychotic patients in seclusion is shown in Figure 10:

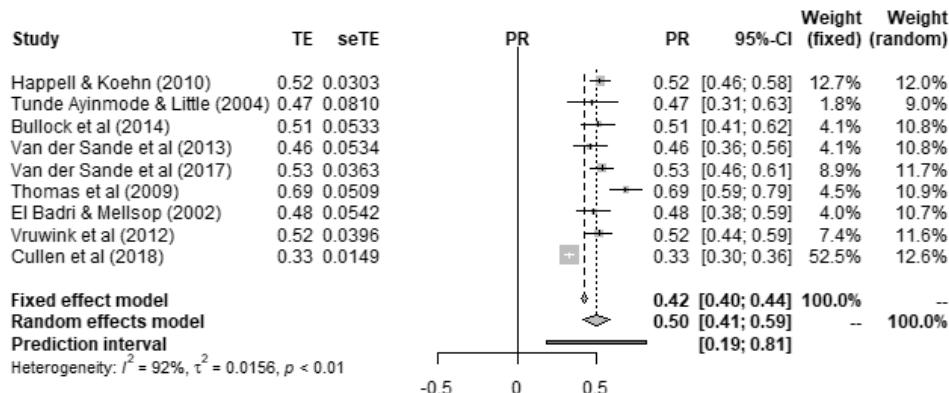


Figure 10: The proportion of psychotic patients in seclusion

The proportion of psychotic patients in the non-seclusion group was 48.16% (95% CI 39.07% – 57.24%). There was considerable variation in the estimates of this proportion ( $I^2 = 97.8\%$ ) that could not be attributed to true variation in the effect. The forest plot of the studies reporting the proportion of psychotic patients in non-seclusion group is shown in Figure 11.

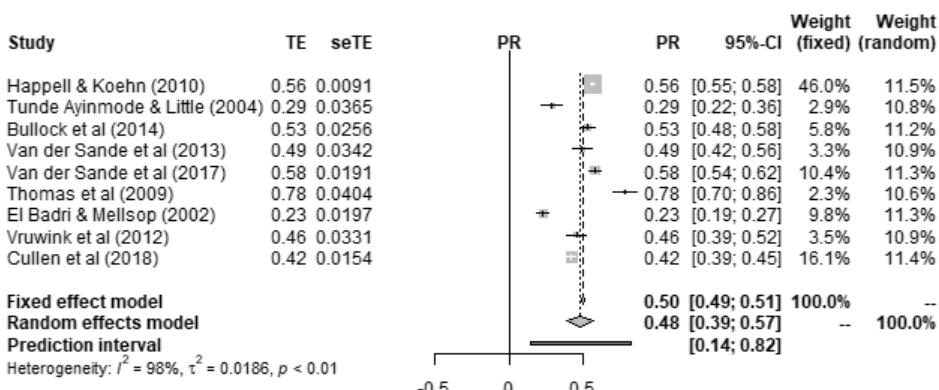


Figure 11: The proportion of psychotic patients in non-seclusion group

### **Omnibus Tests (effect of psychosis) – relative risk**

In total, 9 studies, of 8,188 participants, reported the number of secluded psychotic patients (versus secluded non-psychotic) and the comparative non-secluded psychotic (versus non-secluded non-psychotic) in psychiatric settings. A random effects models was calculated using the generic inverse variance method. The random effects model suggested a weighted average relative risk of RR = 1.0445 ( $p = 0.5947$ ) and a 95% confidence interval of between 0.89 to 1.23 (see Figure 12 below). Overall, this suggests that a psychotic patient is no more likely to be secluded than to not be secluded.

This analysis indicated that there was a substantial level of heterogeneity in the portions reported in the primary studies was observed ( $\tau^2 = 0.0478$ , Higgin's  $I^2 = 85.2\%$ ;  $Q = 54.03$ ,  $p = 0.0001$ ). This suggests that the estimates of the primary studies are biased by the presence of uncontrolled or confounding factors.

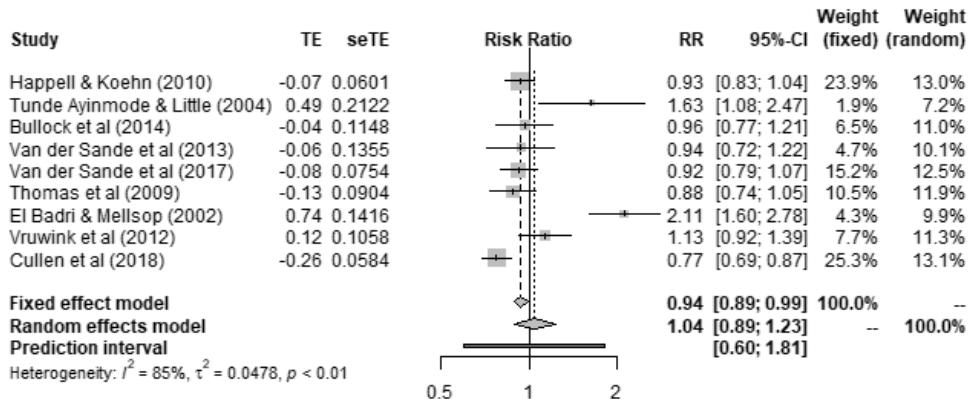


Figure 12: Forest plot of the relative risk of being psychotic in seclusion group

### **Impact of influential studies**

#### *Assessing influence*

The impact of disproportionately influential studies was assessed using a leave-one-out analysis, in which the random effects model was calculated with each of the primary studies removed in turn. This measure of influence is depicted in the below forest plot of leave-one-out effect sizes shown in Figure 13. If the 95% confidence interval for a study that has been removed from the synthesis does not

include the value of the synthesis from the complete data set, then it may be inferred that removal of that study results in a quantitatively different conclusion and the removed study is exerting excessive influence on the outcome.

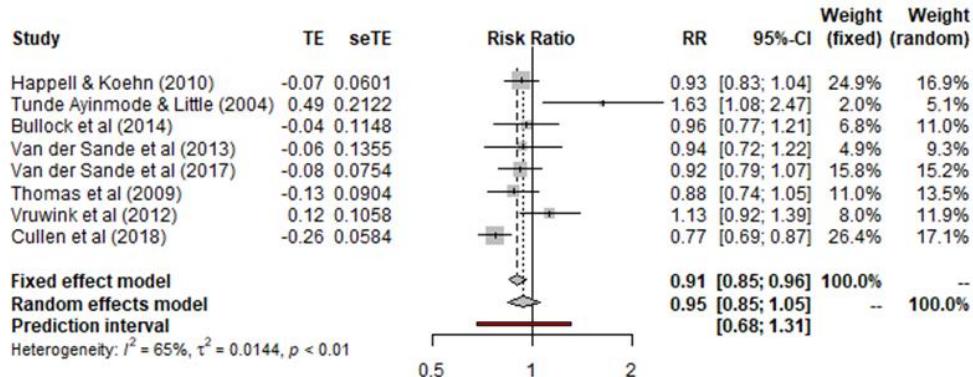


Figure 13. Forest plot of leave-one-out effect sizes

None of the primary studies resulted in a synthesis that was outside of the confidence interval for the overall random effects model and therefore none of the primary studies was considered to be excessively influential. However, the leave-one-out method is somewhat insensitive to the impact of disproportionately influential studies, therefore nine other outlier indices were calculated (see Appendix 9). These analyses demonstrated that El-Badri and Mellsop (2002) had a disproportionate influence on the meta-analysis. As such, the random effects model was recalculated with this study removed. The corrected random effects model reported a synthesis of  $RR = 0.95$  (95% CI 0.85–1.05) and evidenced an approximately 9% decrease in effect relative to the uncorrected estimate. However, when El-Badri and Mellsop

(2002) was removed this did not change the substantive conclusion of the analysis (see figure 14).

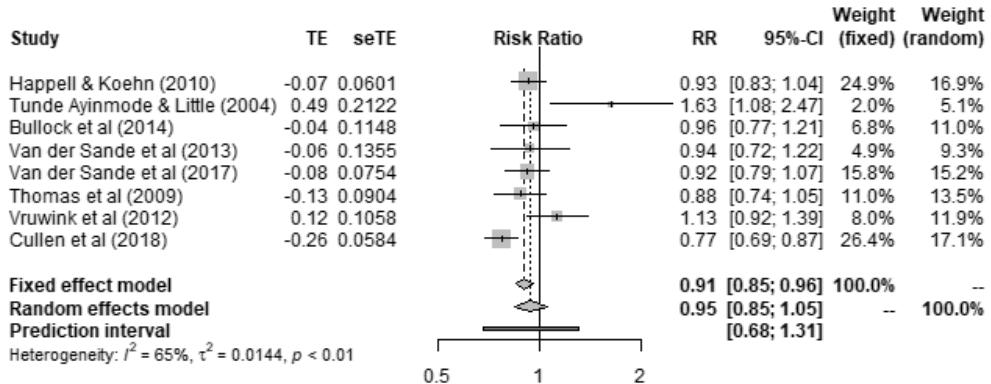


Figure 14: Relative Risk recast with El-Badri & Mellsop (2002) removed

In order to assess the impact of methodological variation upon heterogeneity, a series of subgroup analysis were conducted on the prevalence rates of low, unclear and high risk of bias for each of the five types of methodological bias.

	<b>Low</b>	<b>Unclear</b>	<b>High</b>	<b>Q</b>	<b>p</b>
<b>Selection Bias</b>	5 studies 1.0116 [0.8844; 1.1569]	1 study 0.8794 [0.7366; 1.0499]	2 studies 0.8451 [0.6842; 1.0438]	2.66	0.2647
<b>Detection Bias</b>	5 studies 1.0130 [0.8899; 1.1531]	2 studies 0.8098 [0.7185; 0.9127]	1 study 0.9371 [0.7185; 1.2221]	6.28	0.0432
<b>Statistical Bias</b>	6 studies 0.9139 [0.8201; 1.0184]	1 study 0.9215 [0.7949; 1.0682]	1 study 1.6315 [1.0764; 2.4729]	7.08	0.0290
<b>Reporting Bias</b>	8 studies 0.9453 [0.8484; 1.0533]	N/A	N/A	0.00	--
<b>Generalisability</b>	3 studies 0.8685 [0.7680; 0.9821]	3 studies 1.0219 [0.8953; 1.1664]	2 studies 1.1626 [0.6363; 2.1244]	3.60	0.1651

Table 7: Subgroup analyses on the prevalence rates of low, unclear and high risk of bias for each type of methodological bias

The two risks of bias that evidenced a statistically significant difference in prevalence were as follows. Statistical bias, which showed that lower levels of bias were associated with lower estimates of prevalence. The Higgins  $I^2$  value for the 6 studies at low risk of statistical bias was 58.4% suggesting that inclusion of studies that are at risk of statistical bias may contribute to heterogeneity and inflate the estimate of the prevalence of the relative risk of being psychotic and secluded.

Detection bias also showed a statistically significant difference in prevalence, where lower levels of bias were associated with a higher prevalence estimate. The Higgins  $I^2$  value for the 5 studies at low risk of statistical bias was 56% suggesting that including the studies at risk of statistical bias reduce the estimate of the prevalence of being psychotic and secluded.

The quality effects model was calculated using the total score from the risk of bias ratings reported in Table 5. This model can be interpreted as the meta-analytic synthesis that would have been obtained had all of the studies been of the same methodological quality as the best study in the review.

The quality effects model reported a synthesis of RR = 0.99 (95% CI 0.88 to 1.11). The quality effects model evidences an approximately 4% decrease relative to the random effects estimate. Accordingly, when the synthesis includes information about the methodological quality of the studies there is no significant change in the synthesis of these studies.

### ***Estimate of publication bias***

As can be seen from Figure 1 the outcomes reported for the relative risk of being psychotic in seclusion conform to normal expectations and there is no evidence of substantial publication bias, as such it was not necessary for a trim and fill procedure (Duval & Tweedle, 2000a; Duval & Tweedle, 2000b) to be undertaken.

The funnel plot of the relative risk of being psychotic in seclusion is presented in

Figure 15.

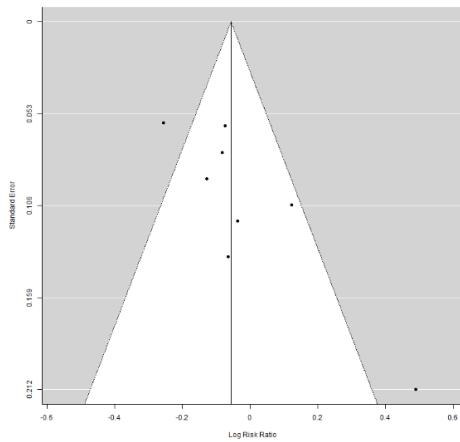


Figure 15: Funnel Plot of the relative risk of being psychotic in seclusion

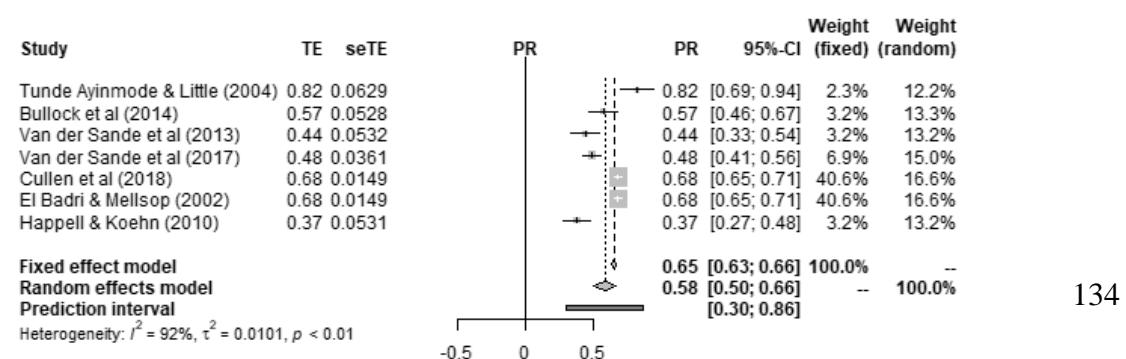
### Hypothesis 3: Effect of Age on Seclusion

#### *Omnibus tests – raw proportions*

The studies reported a total of 1,057 patients in the younger group (younger than 35) in seclusion, in comparison with 692 patients in the older group (older than 35) in seclusion (total population 1,749 secluded individuals). The number of patients in the younger group never secluded was 2,612, in comparison with 3,284 older patients who were not secluded (total population of 5,896).

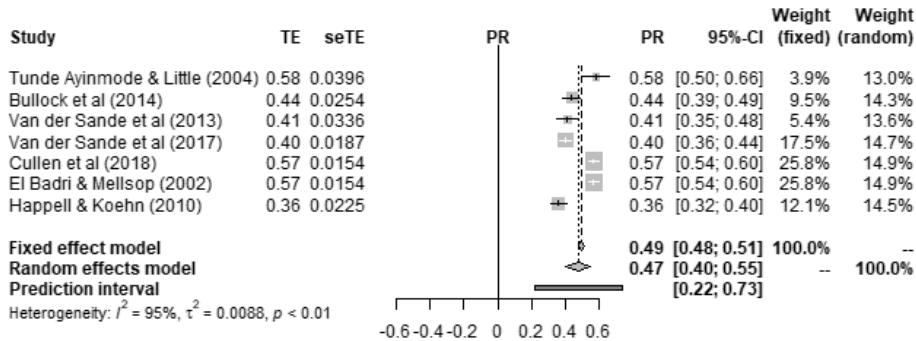
The proportion of younger patients in seclusion was 58% (95% CI 49.77% to 65.95%. There was considerable variation in the estimates of this proportion ( $I^2 = 93\%$ ) that might reflect methodological biases in the primary studies.

The forest plot of the studies reporting the proportion of younger patients in seclusion is shown in Figure 16:



*Figure 16:* The proportion of younger patients in seclusion

The proportion of younger patients in the non-seclusion group was 47% (95% CI 40.22% to 54.60%). There was considerable variation in the estimates of this proportion ( $I^2 = 95.1\%$ ) that could not be attributed to true variation in the effect. The forest plot of the studies reporting the proportion of younger patients in non-seclusion group is shown in Figure 17.



*Figure 17:* The proportion of younger patients in non-seclusion group

### Omnibus tests (effect of being younger in seclusion) – relative risk

In total, 7 studies, of 7645 participants, reported the number of younger secluded patients (versus secluded older patients) and the comparative non-secluded younger (versus non-secluded older) in psychiatric settings. A random effects model was calculated using the generic inverse variance method. The random effects model suggested a weighted average relative risk of  $RR = 1.2017$  ( $p = < 0.0001$ ) and a 95% confidence interval of between 1.15 and 1.26 (see Figure 18 below). Overall, this suggests that a younger patient is significantly more likely to be secluded, than to not be secluded, in comparison with older patients.

This analysis indicated that there was a low level of heterogeneity in the portions reported in the primary studies ( $\tau^2 = 0$ , Higgin's  $I^2 = 0.00\%$ ;  $Q = 4.53$ ,  $p =$

0.6059). This suggests that the estimates of the primary studies are not biased by the presence of uncontrolled or confounding factors in the primary studies.

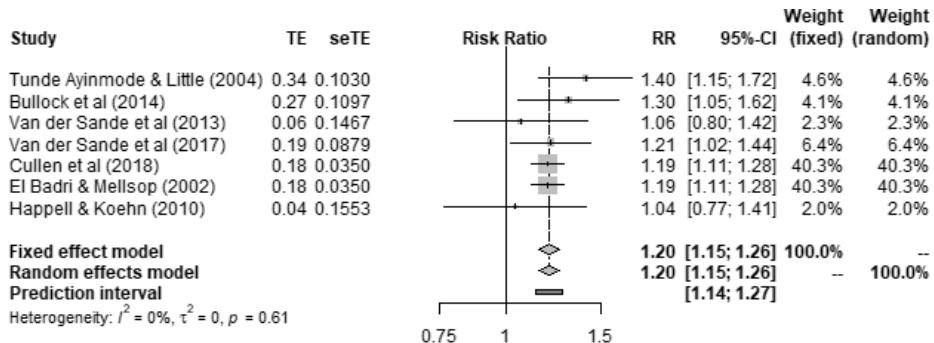


Figure 18: Forest plot of relative risk of being younger in seclusion group

### Impact of influential studies

The impact of disproportionately influential studies was assessed using a leave-one-out analysis, in which the random effects model was calculated with each of the primary studies removed in turn. This measure of influence is depicted in the below forest plot of leave-one-out effect sizes shown in Figure 19. If the 95% confidence interval for a study that has been removed from the synthesis does not include the value of the synthesis from the complete data set, then it may be inferred that removal of that study results in a quantitatively different conclusion and the removed study is exerting excessive influence on the outcome.

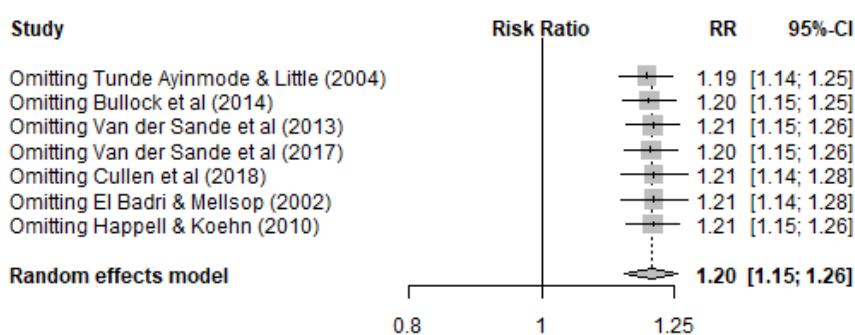


Figure 19. Forest plot of leave-one-out effect sizes

None of the primary studies resulted in a synthesis that was outside of the confidence interval for the overall random effects model and therefore none of the

primary studies was considered to be excessively influential. However, the leave-one-out method is somewhat insensitive to the impact of disproportionately influential studies, therefore nine other outlier indices were calculated (see appendix 10). These analyses demonstrated that no study had a disproportionate influence on the meta-analysis.

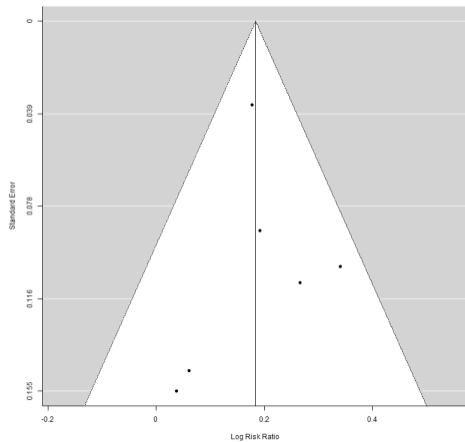
The quality effects model was calculated using the total score from the risk of bias ratings reported in Table 5. This model can be interpreted as the meta-analytic synthesis that would have been obtained had all of the studies been of the same methodological quality as the best study in the review.

The quality effect model reported a synthesis of RR = 1.1833 (95% CI 1.09 to 1.28). The quality effects model evidences an approximately 2% increase relative to the random effects estimate. Accordingly, when the synthesis includes information about the methodological quality of the studies there is no significant change in the synthesis of these studies.

#### ***Estimate of publication bias***

As can be seen from Figure 1 the outcomes reported for the relative risk of being younger in seclusion conform to normal expectations and there is no evidence of substantial publication bias, as such it was not necessary for a trim and fill procedure (Duval & Tweedle, 2000a; Duval & Tweedle, 2000b) to be undertaken.

The funnel plot of the relative risk of being younger in seclusion is presented in Figure 20.



*Figure 20:* Funnel Plot of the relative risk of being younger in seclusion

The fail-safe N suggested that 122 additional, unpublished studies would be required for the meta-analytic effect to become non-significant. Accordingly, the observed effect was shown to be robust to potential publication biases.

### **Discussion:**

#### ***Summary of Results***

##### ***Gender***

The present meta-analysis aimed to establish whether female inpatients were more likely to be secluded than their counterparts. The results of the meta-analysis found that the proportion of females in the seclusion group and non-seclusion group were not significantly different, with females making up 35% of each. Further, in terms of relative risk, it showed that female patients (in comparison with males) were no more likely to be secluded.

Upon re-calculation, following the systematic exclusion of each study, it was evidenced that one study (Mason, 1998) had a disproportionate impact upon the estimate. The inconsistency of this study in comparison with the remaining papers might relate to the age of this research, having been published in 1998. It might also have been a feature of the population, as the research was undertaken at a high

security ‘special’ hospital and was the only study with an exclusively forensic sample. As such, the meta-analysis was re-cast with this study omitted. The corrected estimate, however, did not change the overall conclusion of the analysis, nor did conduction of a quality effects model, wherein the calculated estimate was based upon the study with the best methodological quality. Additionally, no evidence of publication bias was found.

The findings of this meta-analysis, in relation to the wider literature, do not support the findings by some researchers that females are at a higher risk of being secluded (Ahmed & Lepnurm, 2001; Beck et al., 2008; Cullen et al., 2018; Mason, 1998). Further they do not support the reports of other authors that males are more likely to be secluded (Barnett et al., 2018; El-Badri & Mellsop, 2002; Happell & Koehn, 2010; LeGris et al., 1999; Morrison & Lehane 1996; Sorgaard, 2004; Thompson, 1986; Van De Sande et al., 2013). Rather they suggest that, statistically, neither male nor female inpatients are inherently more likely to be secluded in comparison with their non-secluded counterparts, which supports research by other authors (Angold, 1989; Happell & Gaskin, 2011; Kaltiala-Heino et al., 2003; Knutzen et al., 2007; Smith et al., 2005; Tunde-Ayinmode & Little, 2004).

### ***Diagnosis***

This meta-analysis set out to examine whether inpatients with psychosis were at a higher risk of being secluded in comparison with individuals with other diagnoses. It was found from this analysis that the proportion of inpatients with psychosis in the seclusion group was 50%, while the non-seclusion group made up 48%. The meta-analytic synthesis found that psychosis was not a significant risk factor for seclusion, as individuals with psychosis were no more likely to be secluded than all other diagnostic categories.

The systematic exclusion of each study in turn was again conducted and it was found that one study (El Badri & Mellsoop, 2002) had a disproportionate influence upon the estimate. As a result, the estimate was recalculated with this study removed, however, there was no overall change in the conclusion of the analysis. The quality effects model did not yield a significant change in the results and no publication bias was found.

The findings in this meta-analysis supported the findings of various researchers who did not find psychosis to be a significant predictor for the use of seclusion (Barnett et al., 2018; Thomas et al., 2009; Van De Sande et al., 2017). However, the current findings are contrary to other research that finding that psychosis increases the likelihood of an inpatient being secluded (Oldham et al., 1983; Mattson & Sacks, 1978; Tunde-Ayinmode & Little, 2004; van Heeringen et al., 1995).

### ***Age***

Finally, the present meta-analysis sought to examine whether younger inpatients were significantly more likely to be secluded compared with older inpatients. The proportion of younger inpatients in the seclusion group was found to be 58%, while younger patients made up 48% of the non-seclusion group. In terms of their relative risk of seclusion, this meta-analysis found that younger inpatients were significantly more likely to be secluded, in relation to their older counterparts. As there was a low level of heterogeneity between the studies, it was not considered necessary for any studies to be removed or the meta-analytic effect to be recalculated. The quality effects model did not produce a significant change in the estimate, nor was publication bias evidenced.

The current study provides support for the substantial amount of research that has found younger age to be significantly predictive of the use of seclusion, in comparison with older inpatients (Bullock et al., 2014; Happell & Koehn, 2010; Kirkpatrick 1989; Morrison & Lehane, 1996; Plutchik et al., 1978; Schwab & Lahmeyer, 1979; Smith et al., 2005; Sorgaard, 2004; Stolker et al., 2005; Tardiff, 1981; Thomas et al., 2009; Thompson, 1986; Tunde-Ayinmode & Little, 2004).

This meta-analytic estimate, however, contested the findings of Barnett et al. (2018), El-Badri and Mellsop (2002) and Happell and Gaskin (2011), which found no such association between seclusion and age.

Unfortunately, it was not possible to conduct a meta-analysis on any of the other variables that some authors have assessed within the literature such as ethnicity, indigenous status, employment status, educational background, marital status or living situation due to insufficient comparable data.

### ***Convergence with other reviews***

In terms of the convergence of the results of the current meta-analysis with previous reviews, this author did not identify any existing meta-analyses or systematic reviews assessing the characteristics of secluded individuals. However, a systematic review of 49 studies exploring the prevalence and risk factors for coercive measures, including seclusion, was carried out by Beghi et al. (2013). These authors found that male gender, younger age and schizophrenia were most frequently associated with the use of these practices. As such, the current study converged on the characteristic of younger age as a predictor of seclusion, however, did not support the finding that gender or a diagnosis of schizophrenia were risk factors.

Additionally, as noted previously, there is likely to be considerable overlap between the characteristics of aggressive inpatients and those who are subjected to seclusion. However, these are not entirely synonymous as, although aggressive behaviour is a prominent factor in the use of seclusion, other reasons for its use also relate to agitation and disorientation. As such, it is relevant to consider the current results in light of reviews assessing features predictive of aggression and violence in psychiatric settings. Dack et al. (2013), in their review and meta-analysis of patient factors and aggression, also found significant relationships for younger age, male gender and a diagnosis of schizophrenia. These findings, once more, suggest that younger age may be a common feature between aggressive and secluded inpatients. However, notably, a more recent meta-analysis of aggressive patient features did not find any predictive relationships for any of the factors assessed in the current study (Bulgari, Ferrari, Pagnini, de Girolamo, & Iozzino, 2018). The reason for these substantially different findings is unclear though may relate to methodological differences such as the settings of the assessed papers, or the number of included studies (Dack et al., 2013 = 34 papers; Bulgari et al., 2018 = 10 papers).

### ***Strengths and Limitations***

To the author's knowledge, the present research was the first attempt to conduct a quantitative synthesis of available data on the characteristics of secluded inpatients in psychiatric hospitals worldwide. The data that could be extrapolated from the literature provided substantial group sizes for analysis in relation to each of the outcomes. In terms of the assessed qualities of the included studies, the most methodically sound research was conducted by Happell and Koehn (2010), whose sample comprised inpatients from various wards, including acute, long-term and forensic. The authors in this study found no involvement in the categorisation of

inpatients as a function of diagnosis. Their missing data was less than 1% and with over 3,200 patients in their study, their study was the largest in the sample of studies used in the meta-analysis. Unfortunately, as outlined previously, many of the other studies included in the meta-analysis employed less rigorous methodology, and many had far smaller sample sizes, with some as small as 193 total inpatients (Tunde-Ayinmode & Little, 2004).

It is also important to consider the more general limitations of analysing data that is subject to the possibility of human error and researcher bias. For instance, this might relate to a researcher assigning inpatients to a diagnostic category via a retrospective chart review, rather than being provided with a pre-existing clinical diagnosis. This is problematic as it is subjective and the diagnosis might therefore differ between various researchers.

As such, it would be beneficial to the knowledge base if future research were carried out with the above noted features in mind and potentially utilising better studies, such as Happell and Koehn's (2010) research as a benchmark. Further, this area of research would benefit from enhanced understanding about how the different types of inpatient settings impact upon the predictive characteristics associated with seclusion, as the current research was limited by the fact that the settings were not homogenous (i.e., comprising acute, long-term and forensic wards).

### ***Future research***

It was necessary for the author to compile data that could be meaningfully compared and in some cases the data was not entirely consistent. For example, while each paper provided data about younger and older age groups, in some cases these categories were below and above age 39 (Tunde-Ayinmode & Little, 2004), while

others compared 30 and below versus 30 and above (Van De Sande et al., 2013). Sensitivity analyses were undertaken in relation to the differing age groupings and these did not indicate that there was a significant impact upon the relative risk estimates. However, it might be helpful for this to be considered in future research.

Future research into the predictive characteristics of secluded individuals in inpatient settings might also benefit from assessment of the demographic features in combination, rather than strictly in isolation. For instance, Dumais et al. (2011) found that the highest risk of restraint and seclusion existed in inpatients in the younger age groups who also had a diagnosis of a personality disorder or bipolar. It may also be beneficial for research to be expanded utilising a qualitative methodology wherein the intricacies of the younger age group are explored with both staff and service users to enhance understanding about how this factor might relate to this increased risk of seclusion.

In terms of being able to utilise the existing literature to its full potential in terms of meta-analysing the data, it would also be helpful for researchers to have a better understanding about how the populations who are secluded differ from those who are subject to other restrictive practices (e.g., restraint). This is important as it cannot be assumed that these two populations are mutually exclusive, particularly because seclusion is the most restrictive form of coercion. As such, it may not be necessarily accurate or meaningful to make comparisons between secluded inpatients and those who are manually restrained, for example.

### ***Implications***

Although significant findings were noted in this study in terms of younger age being predictive of an increased risk of seclusion, this meta-analytic effect was based

upon data from papers whose methodologies were, on the whole, moderate in terms of quality. As such, while these findings are interesting, they should be considered with caution. However, should further research, with improved methodologies and larger sample sizes, be undertaken that can support the predictive relationship between younger age and seclusion, there are potentially far reaching implications for this finding in terms of service provision in these settings.

Although there appears to be limited research looking into how younger age increases an individual's risk of seclusion, it may relate to staff being more risk-aversive in their management of this population, perhaps due to an increased likelihood of feeling threatened by younger and more physically fit inpatients on the ward (Ahmed & Lepnurm, 2001). It may also be that older patients have been in services for longer periods of time and may have pre-existing relationships with staff members. Additionally, a lengthier psychiatric history provides professionals with more information about an individual's background within services and therefore enhanced understanding about a patient's presentation as well as previous and potential future risk. This information would likely impact upon individual staff members' perception of the risk inpatients pose, as well as their subsequent management of challenging behaviour. Until more is known about these features and how they might impact upon professionals' management of challenging behaviour in these settings, it appears that continuing to utilise and advance structured risk assessments will provide professionals with helpful information to aid in the management of challenging behaviour. Research has shown that behavioural and cognitive behavioural therapies can effectively reduce the incidence of agitated and aggressive behaviour in psychiatric inpatients. As such, increasing and promoting

access to these targeted and tailored interventions services would be extremely beneficial in reducing seclusion use (Keski-Valkama et al., 2010).

As outlined in Chapter 1, it is also widely documented that services worldwide are taking steps to reduce the use of seclusion (as well as other coercive measures) for a number of reasons previously outlined. For instance, it is well-known that seclusion has a harmful impact on patients, as well as on the staff who initiate seclusion (Hall, 2004; Holmes, Kennedy, & Perron, 2004; Lazarus, 2001). This is a responsibility that professionals often report feeling conflicted about, as it is considered necessary to protect the patient and others on the ward, though is felt to be contra-therapeutic (Bonner, Lowe, Rawcliffe, & Wellman, 2002; Hall, 2004; Muir-Cochrane et al., 2018; Terpstra, Pettee, & Hunter, 2001).

As such, improved understanding about whether there are, indeed, demographic features associated with increased seclusion use, would enable more accurate risk assessments and better management of different groups of patients. Further, if it is possible to target interventions to those groups most affected by seclusion, it might in turn lead to a reduction in the overall use of this practice. This might contribute to improved job satisfaction for those involved in its use as well as better outcomes for patients who experience seclusion during their care. Positive steps have already been made in this regard and in services where staff have been engaged in structured, systematic training programmes to aid in the management of challenging behaviour, the use of these measures has already reduced, without increasing risks to staff (Huckshorn, 2005).

## **Chapter 5:**

### **Discussion**

Research to date has tended to combine restrictive practices such as restraint, sedation and seclusion, when conducting studies in mental health services or has instead focused upon the characteristics of specifically violent or aggressive patients. Research presented in this thesis (chapters 3 & 4), however, aimed to separate seclusion from other coercive measures with the aim of furthering understanding about the reasons for its use, as well as enhancing knowledge about the characteristics of the inpatients who are affected.

As seclusion is the most restrictive practice used in inpatient settings, it might be assumed that the precipitators for its use would differ from those of other, less restrictive de-escalation techniques (such as manual restraint). However, due to a dearth of research assessing whether there are varying characteristics associated with different restrictive interventions, it was deemed necessary to focus exclusively upon seclusion rather than presenting findings related to coercive measures on the whole.

It is known from the literature in this area that global efforts continue to be made to reduce the number of inpatients in mental health settings, and the present figures are hopeful. Statistics indicate that between the years 2018 and 2019, the number of inpatients in UK hospitals reduced by over twenty percent (Mental Health Today, May 2019). As outlined in chapter one, the prevalence rates are difficult to conclude, though some research has suggested that seclusion affects around one per cent of total inpatients in the UK. This percentage is lower than in the many of the other European countries, as well as in parts of Asia (Steinert et al., 2010). However, the knowledge that Iceland abolished seclusion and restraint decades ago indicates that there are still vast improvements to be made to minimise this practice even further within the UK (Steinert et al., 2010).

Research surrounding the development of theories of aggression deepens understanding about the basis of this behaviour and recent, integrative theories indicate that there are a number of factors, which contribute to this presentation. For instance, the General Aggression Model (Anderson & Bushman, 2002) makes possibly the most helpful contribution in this area, incorporating aspects of biology, personal attributions, values, belief systems and previous experiences with an environmental interaction.

Likely even more important information involving understanding challenging behaviour can be gleaned from service users themselves. Guidelines already impress upon professionals the importance of collaboration with service users, noting that inpatients should be encouraged to become more aware of their own potential triggers for aggressive or disturbed behaviour (NICE, 2005). There should be an opportunity for service users to express to the staff caring for them how they would prefer for their behaviour to be managed and increase understanding about how professionals' attempts to de-escalate may be more effective. This does, though, depend to some extent upon adequate consistency of the staff on ward teams, as building the necessary openness within professional relationships would not be possible if staff are regularly changing or are completely unfamiliar to inpatients.

It is unsurprising that being contained within a locked room, separate from other inpatients on the ward, can be perceived as, at the very least, a negative experience, and at worst, traumatising for an inpatient (Daffern, Mayer, & Martin, 2006; Muir-Cochrane et al., 2018). Some service users may find their removal from an overly stimulating environment to be therapeutic, however, this reinforces the importance of an open and safe dialogue between staff and service users as without discussion these are all unknowns.

Utilising this information, as well as incorporating what is currently known about the theories of aggression, is vital to the development of targeted interventions. It is understood that as better interventions for aggressive/violent behaviour are implemented and made widely available in hospitals, seclusion use will likely be minimised. Positively, if these efforts are fruitful, the benefits will also extend to the professionals caring for them, as seclusion has additional negative effects upon staff.

At an organisational level, seclusion is tasking due to the frequent observations and multi-disciplinary reviews that are essential in its use, which can lead to fewer staff being available on the wards, the use of bank staff or the ‘borrowing’ of staff from other wards. Furthermore, understaffing and inconsistency of the care team can, in itself, contribute towards aggressive or disturbed behaviour as it can be unsettling for service users (Bowers et al., 2005). It can also be tentatively suggested that an inconsistent, frequently changing ward team also contributes to a sense of unease in staff and associated increased perception of risk. These factors could then lead to seclusion being used to manage the inpatients’ behaviour due to a lack of a trusting team of professionals who have established relationships with inpatients on their ward.

In terms of the psychological impact of seclusion for professionals, there is a noted conflict reported by some staff members who recognise the utility of the seclusion suite, though find it a morally conflicting practice due to the distress it can cause and the sense of this not always feeling therapeutic.

As such, the overriding aim of this thesis, which has been pushed to the forefront of seclusion research in recent years, surrounds whether seclusion is absolutely necessary and can challenging behaviour be safely managed without this practice. More recently, a cross-cultural evaluation of literature surrounding seclusion-reduction programmes has been extremely promising, indicating that where

best practice guidelines are in place using evidence-based practices and including inpatient input, organisational change and focused de-escalation training for staff, seclusion can be minimised without leading to staff being at increased risk (Te Pou o Te Whakaaro Nui, 2014).

### **Summary of findings and implications**

#### ***Chapter One***

The research literature in chapter one outlined the current practices in use today in mental health hospitals for the management of challenging behaviour, particularly referencing the role and utility of seclusion. The prevalence of this practice and the impact on both staff and inpatients were described as well as theories focusing on aggressive behaviour due to the proportion of seclusion episodes caused by this.

#### ***Chapter Two***

Risk assessments, particularly those with a focus on violent risk, such as the VRS, help professionals to gather and organise as much relevant information as possible about patients, and support more objective, structured judgements to be made about an individual's risk both within and outside of hospital. As such, these tools play an important role in the clinical management of challenging behaviour and it was deemed necessary for a critical appraisal to be conducted of such a measure. The Violence Risk Scale (Wong & Gordon, 2000) was therefore critically assessed, in chapter two, with the aim of exploring the research base, examining the psychometric properties and establishing how its predictive power compared with other measures (like the widely used HCR-20 v3: Douglas et al., 2013).

The factors included within this measure were reported to be underpinned by supportive research, however, the validity and reliability do not appear to be

satisfactory. However, although validation studies suggested reasonable internal consistency and interrater reliability, the extremely high correlations were suspicious and suggested the presence of overlapping items. Furthermore, the norms used for this assessment were insufficient for this measure to be deemed valid for use with female inpatients, as they were not included within the normative samples, despite the VRS being described as gender neutral. Additionally, although described as a violence risk tool, evidence suggested significant overlap with other measures such as the PCL-R, which is a measure of psychopathy, suggesting it may not be measuring a separate construct.

A benefit and also a limitation of this study was the inclusion of a section for professionals to provide their own clinical judgements and ‘override’ the scale scoring if they considered that the score was misrepresentative, or the assessment had not included within it information relevant to the inpatient. This is helpful in terms of enhancing understanding and moving away from ‘tick box’ type assessments, though caution should be exercised in interpreting these assessments as professionals completing it may have differing views on the impact of the additional information on the perception of risk.

This critique suggests that although risk assessments are likely to continue to feature prominently, particularly in secure inpatient facilities, no single measure is ever likely to be able to perfectly predict future behaviour. However, these measures are improving over time and they do provide a helpful framework for information gathering and formulating about a service user’s presentation. It is hoped that future risk tools will be more comprehensive, require adequate training and refresher training for those using it, and they will include an element of formulating a deeper

understanding about an individual's experiences, though they should never be used in isolation as a sole predictor of future risk.

### ***Chapter Three***

In attempting to achieve a better understanding about the use of restrictive practices in managing challenging behaviour, it is important to have a good understanding about the precipitating behaviours that lead to its implementation. Guidelines note that seclusion should be a last resort measure for managing disturbed or violent behaviour in the short-term (NICE, 2015), and as such a systematic literature review of available research outlining the reasons for seclusion was undertaken in chapter three. The aim of this chapter was to further knowledge about the most common causes for seclusion in mental health hospitals, as well as to assess whether the guidelines appeared to be adhered to in practice.

Eight studies were synthesised in this review, utilising a variety of methods. Most commonly, retrospective chart reviews were undertaken, though other papers utilised mixed methodologies including focus groups to enable discussions and elicit different kinds of information from professionals responsible for secluding inpatients. The research did not conclusively establish any single most common reason for seclusion episodes, though the most frequently cited causes were reported to have been actual violence, agitation, threat of violence and 'multiple reasons'.

This research indicated that seclusion is quite often related to agitation and disorientation, however, the authors of the included papers did not always consistently describe the behaviour these terms captured. As such, it was unclear whether these reasons would be appropriate for such a restrictive practice to be

used. However, the other main reasons relating to violence and aggression appeared to be appropriate reasons for seclusion.

It would seem, from the literature, that a great deal of the difficulty in synthesising the data relates to differences in the quality of information gathering, and the availability of retrospective data. For instance, the ability to meaningfully compare the results of each paper was hindered by settings utilising different categories though seemingly relating to similar behaviour (such as, disturbed / disorientated / agitated behaviour) and a lack of explanation about the exact behaviours these categories captured. This difficulty also related to discrepancies in the quality of the record keeping. Research citing more detailed explanations about the seclusion-precipitating behaviour would significantly improve future efforts to synthesise literature in this area. This would, in turn, enable professionals to develop more targeted interventions with the aim of preventing the occurrence of these behaviours and subsequently reducing the incidence of seclusion.

#### ***Chapter Four***

A number of papers included in the systematic review chapter also reported some demographic information about the secluded patients, though no consensus was found suggestive of a clinical population most at risk. Furthermore, as noted in chapter one, should aspects of biology be thought to increase risk of aggression and subsequently seclusion (as noted in the GAM) then these features would likely be important to quantify as this information could contribute to the development of better risk assessments tools. As a result of the importance of understanding these characteristics for risk management, chapter four presented a meta-analysis assessing the features of secluded inpatients in comparison with their non-secluded counterparts.

Review of the research base produced conflicting findings and a lack of consensus about which characteristics best predicted the use of seclusion and no previous meta-analyses on this subject were found. Meta-analyses have been carried out for coercive practices on the whole, though seclusion had not been separated assessed.

This research aimed to establish which demographics could be meaningfully synthesised based on the information available. Subsequently, the characteristics that were considered to increase the risk of selcusion were then meta-analysed.

Unfortunately, there was insufficient data from the studies meeting the necessary criteria for comparisons of ethnicity, marital status or time spent in hospital. As such, the demographics with sufficient comparable data to analyse were gender, a diagnosis of psychosis (versus all other diagnoses) and categories of younger and older patients (which tended to be 35 and below; versus 35 and above). As with any study reliant on pre-existing data, this was an unavoidable limitation of the study, and it would be hoped that future research could ameliorate these difficulties by improving data collection methods. For example, some difficulties arose as different researchers grouped categories in various ways, which was the reason that the psychosis versus non-psychosis group was required and other diagnostic groups could not be compared. Improvements to data access, however, is likely something that is naturally occurring due to technological advances in computer systems.

A notable limitation of the research was related to the decision to separate seclusion from other restrictive practices. This created some challenges with the analysis as there was a more limited amount of literature available assessing seclusion in isolation. The final number of papers was surprisingly low, in considering the number of papers describing characteristics, however, it was considered that it would

not provide meaningful information if the papers were very discrepant from one another. As an example, a recent paper was published containing large sample sizes for secluded patients, however, the data was obtained from a hospital in Malawi where it was noted that there were no legal guidelines for the use of seclusion. It was therefore considered that if seclusion was not restricted to similar guidelines as in the UK and other Western countries, the study's demographic may not be meaningful as the reasons behind its use would be unclear.

As such, a strength of this meta-analysis was that although not as many papers were included as could have been if the inclusion criteria was less restrictive, the author elected to use papers that had less heterogeneity. However, a limitation of any meta-analytic study including papers from different cultures is that it assumes that these populations are like for like. In light of this limitation, it would be helpful in terms of enhancing risk assessments in the United Kingdom if a meta-analysis of data from all UK hospitals was conducted when sufficient data is available. This would be interesting to then compare with the present meta-analysis and provide information about how the demographic differences within countries compare to those between countries. Further research would also be helpfully conducted should information become available that can compare the predictive effects of different diagnostic criteria.

### ***Clinical Implications***

The implications of the current research suggests that even within a single group of, for example, males or females, individual differences play a significant role, as this characteristic alone did not predict an increased risk of seclusion for either males or females. Additionally, reflecting on the systematic review, the reasons for seclusion

are not always the same, and there was a substantial degree of difference between the papers' findings.

All of this research appears to suggest that, although certain characteristics may impact upon challenging behaviour, there are notable differences between individuals within the same groups and it might be helpful for research to focus more attention upon understanding these features at an individual level. This might be achieved through the use of more advanced and personalised risk assessments arising from collaborative efforts between staff and service users. Research might then be undertaken utilising these detailed risk assessments.

In more recent times, inpatient hospitals are beginning to use risk assessment tools, like the HCR-20 v3, (Douglas et al., 2013) in a collaborative way within UK inpatient hospitals. The implications of this are that the available information can be gathered and then a discussion can be undertaken with the patient to ascertain whether there are additional factors that professionals do not have knowledge about, as well as providing in some cases, more detailed and extremely helpful information to include. As noted previously, this process would naturally be dependent upon positive relationships and shared therapeutic goals within these settings.

However, it is understood from the literature that early detection of aggressive or agitated behaviour is crucially important, as staff have fewer options to de-escalate the behaviour once this has begun to escalate, and that is where coercive strategies come into play (Abderhalden et al., 2004) As such, early detection is important for better patient outcomes as well as a safer experience for staff, and a reduction in the use of restrictive practices like seclusion would likely only benefit the staff/patient relationships, feeding back into better knowledge about the patient and therefore better assessments of their risk, strengths and goals for the future.

### ***Recommendations for practice***

In summary, this meta-analysis, through the use of a random effects model, investigated whether: younger patients are more likely to be secluded than their older counterparts; whether women are more likely to be secluded than men; and whether inpatients with a diagnosis of psychosis are more likely to be secluded, compared with other diagnostic categories.

The results of the current meta-analysis suggested that younger age is likely to be a risk factor for seclusion, which confirmed the findings of most individual studies. However, the synthesis contested the findings of many individual studies that found males and those with psychosis to be at higher risk of seclusion. The current research found no such effect.

Due to the nature of a meta-analysis, the findings are more likely to be reliable than the results of individual studies, utilising smaller populations and with data from a single setting. This is because, on the whole, meta-analyses tend to include data from numerous small studies that, alone, would lack power to detect an effect. As such, the results are more generalisable, particularly as the current research included studies from multiple Western countries. The accuracy and precision of the results are also likely to be greatly improved, due to a larger amount of data being analysed, which improves the power to identify an effect (Turner, Bird, & Higgins, 2013).

That said, the limitations of a meta-analysis are acknowledged and the results, though promising, remain tentative due to the lack of heterogeneity across the studies in terms of population and setting, variations in sample sizes, researcher error and different methodologies in the included papers. Taking stock of these limitations, it is however considered important to outline some specific concrete suggestions for applying this research to clinical settings.

As noted within the introduction chapter, the implementation of ‘least restrictive practice’, as cited within the Mental Health Act (2015), has had a significant impact upon the practice of seclusion in mental health settings. This states that the practices used to manage difficult behaviour should proceed from the least restrictive (e.g., verbal de-escalation) towards more restrictive practices (e.g., restraint) with seclusion being used as a very last resort. This has contributed to the development of training around managing difficult behaviour and methods of de-escalation.

Although this has certainly positively impacted upon staff training and perceptions around seclusion, the findings of this research suggest that staff would likely benefit from further training in some discrete areas. Notably, organisations play an important role in benchmarking for all training within mental health settings, such as the Quality Network for Forensic Mental Health Services (QNFMHS). The QNFMHS is a network for quality improvement in both low and medium secure inpatient forensic mental health settings within the UK. It utilises a multi-disciplinary approach sharing best practice guidelines and training, informed by the experiences of staff and patients in these settings. The network aims to identify areas that could be improved “*through a culture of openness and enquiry*” (Royal College of Psychiatrists, 2020, p. 1). The two-year process by which new training is developed begins with a self-review by services followed by a peer review of their successes and any continuing challenges. It is hoped that as research continues to develop in this area, the recommendations that will be outlined below might be included within future mandatory staff training (in line with the network benchmarks).

Specifically, in relation to the current research, it is noted that there are a number of areas of training that would likely benefit both staff and patients in terms of

improving seclusion practices. For example, training focused upon the various theories of aggression might serve to better inform the way staff work with individuals predisposed to this kind of behavior (which will likely lead to the use of seclusion). The following would provide a good baseline of understanding about the generations of theories that have led to the development of more integrative theories that will be covered later:

Bandura's (1973) social learning theory, plainly speaking, suggests that we learn from observing others, remembering the behaviour, reproducing the behaviour and having the motivation to do so.

The impact of brain damage or intoxication on challenging and violent behaviour (Zeichner & Pihl, 1979).

Situational awareness in the consideration of the factors that can impact upon how an individual appraises a situation. This includes but is not limited to, previous experience, mood, stress levels, personality features, anger thresholds, hormonal imbalances, substances etc (Frude, 1988).

Social cognitive theories (Huessmann & Taylor, 2006) emphasising the importance of social scripts and the impact of desensitisation on future behaviour (such as frequent early observation of aggression inhibiting an aversion to the same)

Berkowitz's (1989; 2012) frustration-aggression hypothesis which considers that provocations cause negative feelings and behaviours, which link in with their fight or flight responses. For example, perhaps explaining how two inpatients can be (seemingly) exposed to a similar situation and reacting in different ways (wherein one becomes aggressive, while the other leaves the situation).

In terms of integrating these separate domains into a helpful multidisciplinary approach, Anderson and Bushman (2002) stated that the General Aggression Model

encourages a more fully encompassing treatment approach. Within this model, consideration is given to incorporating elements of multiple theories that may benefit patient outcomes more successfully than one single approach.

It would appear that the General Aggression Model (Anderson & Bushman, 2002) provides the most straightforward framework for communicating to professionals a range of theories to enable better understanding about the basis of aggressive behaviour.

Specifically, in terms of how this might be presented in training for staff, it would be beneficial for the early theories of aggression to be briefly outlined (as noted in Chapter 1), as these models have been built upon to develop the current models and theories of aggression. This kind of training will be important for staff in terms of considering various motivations for challenging behaviour, as well as different types of treatment, in relation to managing their difficulties. For example, if substance misuse is considered to be a contributing factor in challenging behaviour, this might be the main focus of the intervention or clinical approach to the inpatient. However, learning about the underpinnings of the cognitive schema, or early life experiences of an inpatient (particularly for those staff who are not trained in psychology) might give the staff member the opportunity to alter their one-to-one engagements with service users, shaping their interactions and enabling better outcomes.

Further training around other less restrictive de-escalation techniques would also benefit staff. It is acknowledged that across Western nations, the ongoing thrust towards reducing seclusion is already committing to and has been rolling out enhanced training aimed at reducing seclusion. These seclusion reduction programmes are being undertaken with positive effect, without leading to increased assaults on staff (Muir-Cochrane et al., 2018) further emphasising the importance of

being open minded to these practices (Te Pou o Te Whakaaro Nui, 2014). In addition, providing staff with more information regarding the importance of effectively using de-escalation techniques and the detrimental impact of seclusion on inpatients in order to avoid the use of seclusion, will likely lead to better outcomes in this regard relationships. These include the re-traumatisation of inpatients who have existing traumatic experiences, the negative impact on staff/patient relationships (Muir-Cochrane et al., 2018).

Notably, research suggests that the most effective training should be structured sequentially over an extended period of time (where possible), encouraging attendees to practice skills whilst allowing facilitators the opportunity to adapt and respond to the learners' changing needs. As such, training should not be 'crammed' in or made difficult for staff to attend (due to understaffing or excessive workload). It is acknowledged that, particularly in publically funded hospitals, this will not always be achievable as funding may not allow, however, this would be considered the 'gold-standard' of training.

Within the Readiness to Change Framework, (Burrowes & Needs, 2006) the authors outline the Barriers to Change Model, as outlined in the first chapter. These ten barriers would be an important area of training for staff, particularly for those working closely with inpatients. It is also important for training in this area to state explicitly that motivation to change is, in and of itself, a variable process with frequent, and often unavoidable, lapses and relapses. Training should highlight this in order to help to prevent staff from feeling discouraged and hopeless and rather, facilitating a sense of empowerment and collaboration in continuing to monitor the barriers and maintain the individual's position within model.

A further recommendation for practice, based on the current research findings, highlights the implementation of more robust risk assessment tools. In order to reduce the perceived necessity of stringent, coercive measures of restraint, prediction and early detection of aggressive behaviour is vital. Utilising a structured risk assessment instrument to predict such behaviour allows staff an improved opportunity or ‘window’ within which they are able to carry out a lower level intervention. This is important in order to de-escalate the challenging behaviour and, ultimately, to avoid staff having to implement harsher levels of control and restraint. Perhaps unsurprisingly, research has found that low level interventions are more successful when implemented early as a result of accurate behaviour prediction. An example of a low level intervention includes the use of sensory tools to reduce arousal and de-escalate potentially aggressive individuals.

Further, emphasis should be given to the importance of patient involvement in completing structured risk assessments and predicting aggression, therefore, ultimately, reducing the need for seclusion. Skeem, Manchak, Lidz, and Mulvey (2013) found that patient collaboration in the completion of a structured risk assessment tool added significant utility to the prediction of conflict.

## **Conclusions**

As outlined, the overarching aim of this thesis was to explore the causes and characteristics associated with the use of seclusion. In doing so, and although the findings of this research must be considered tentatively due to the noted limitations, it was hoped that the information gleaned might contribute towards enhancing current knowledge about seclusion and informing risk assessment tools / targeted interventions, such that seclusion is no longer required to be used with such frequency.

As noted, there is a wealth of research into the reduction of seclusion at present and this extends far beyond the UK to the wider Western world. Analysis of prevalence statistics indicate that although the UK has lower seclusion rates than some other countries, Iceland has eradicated all use of seclusion and restraint. It is acknowledged that the population of this country is substantially smaller than the UK, however, this begs the question, is it that fewer patients display challenging behaviour potentially requiring restraint and seclusion or is it related to cultural perspectives and organisational differences that might necessitate the use of seclusion in the UK? The practices in place in Iceland were not dissimilar from those being put in place at the current time here, including policy overhaul, enhanced training in de-escalation / crisis management, attitudinal changes and increases in staff/patient ratios. These findings encourage us to reflect on how difficult behaviour might be managed safely and effectively for both service users and staff if seclusion and restraint were not available options.

It is clear that there are substantial efforts being made within the UK to improve outcomes for inpatients, and cross-cultural research appears to suggest that if we continue to follow the trajectory currently being evidenced, (i.e. reducing restrictive practices across the board), then future outcomes are optimistic for both the inpatients and the professionals caring for them.

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## Appendices

### **Appendix 1: Syntax used for searches:**

Database: PsycINFO <1967 to April Week 4 2018>

Search Strategy:

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- 1 (((((seclu\* or restrain\*) and mental) or patient or psychiat\*) and factors) or reasons or purpose).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures] (324347)
- 2 (factors or reasons or purpose).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures] (712037)
- 3 (((seclu\* or restrain\*) and mental) or patient or psychiat\*).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures] (411250)
- 4 2 and 3 (85149)
- 5 (mental or patient or psychiatrist\*).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures] (679012)
- 6 (seclu\* or restrain\*).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures] (14143)
- 7 2 and 5 and 6 (736)

Database: Ovid MEDLINE(R) <1946 to April Week 4 2018>

Search Strategy:

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- 1 (((((seclu\* or restrain\*) and mental) or patient or psychiat\*) and factors) or reasons or purpose).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (1439779)
- 2 (factors or reasons or purpose).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (4562216)
- 3 (((seclu\* or restrain\*) and mental) or patient or psychiat\*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (2387756)
- 4 2 and 3 (622511)
- 5 (mental or patient or psychiatrist\*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (2661581)

- 6 (seclu\* or restrain\*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]  
(41999)
- 7 2 and 5 and 6 (1476)

Database: Embase <1974 to 2018 April 25>

Search Strategy:

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- 1 (((seclu\* or restrain\*) and mental) or patient or psychiat\*) and factors) or reasons or purpose).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading] (2024106)
- 2 (factors or reasons or purpose).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading] (3332496)
- 3 (((seclu\* or restrain\*) and mental) or patient or psychiat\*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading] (5786752)
- 4 2 and 3 (1214928)
- 5 (mental or patient or psychiatrist\*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading] (6160732)
- 6 (seclu\* or restrain\*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading] (43440)
- 7 2 and 5 and 6 (1839)

## Appendix 2 - Screening and Selection Tool

<b>Reviewer name:</b>	<b>Date:</b>	
<b>Reference:</b>		
	<b>INCLUDE if....</b>	<b>EXCLUDE if....</b>
<b>Population</b>	<input type="checkbox"/> Male or Female	
	<input type="checkbox"/> Age 18-65	<input type="checkbox"/> Majority of participants are under 18 or over 65
	<input type="checkbox"/> Inpatient psychiatric hospital setting	<input type="checkbox"/> Majority of participants are intellectually disabled
<b>Phenomenon of Interest</b>	<input type="checkbox"/> Seclusion – reasons or purpose of seclusion, factors associated with seclusion episodes, behaviours or symptoms noted, factors associated with decision making (i.e. staff or patient factors)	<input type="checkbox"/> Reduction of seclusion or alternatives for seclusion; attitudes, views or opinions of both staff and patients regarding seclusion; physical / mechanical restraint; impact of seclusion on treatment outcomes; sole focus on the process of decision making to seclude
<b>Design</b>	<input type="checkbox"/> Cohort study <input type="checkbox"/> Retrospective chart review <input type="checkbox"/> Qualitative analysis	
<b>Evaluation</b>	<input type="checkbox"/> Questionnaire <input type="checkbox"/> Review of existing records	<input type="checkbox"/> Vignettes of imaginary patients / hypothetical decision making
<b>Research type</b>	<input type="checkbox"/> Quantitative or quantitative – any research type	<input type="checkbox"/> Systematic review/narrative paper
<b>Publication type</b>	<input type="checkbox"/> Published source <input type="checkbox"/> Published since 1990	<input type="checkbox"/> Unpublished theses and dissertations <input type="checkbox"/> Published before 1990
<b>Language</b>	<input type="checkbox"/> English	<input type="checkbox"/> Any other language
<b>Decision</b>		

### **Appendix 3 – Reasons and numbers of citations excluded:**

<u>Reason</u>	<u>No of papers excluded</u>
Focus on reducing/avoiding seclusion use	<i>n</i> = 13
Sample was primarily children/ adolescents under 18	<i>n</i> = 30
Sample primarily individuals with intellectual disabilities	<i>n</i> = 9
Sample primarily older adults/geriatric	<i>n</i> = 5
Focus on patients' views / attitudes towards seclusion use	<i>n</i> = 23
Study about physical / mechanical restraint or reported seclusion/restraint as one	<i>n</i> = 81
Discusses impact of seclusion on treatment outcomes	<i>n</i> = 34
Discusses staff attitudes / views about seclusion	<i>n</i> = 34
Focus on violent behaviour not seclusion	<i>n</i> = 16
Based upon vignettes of imaginary patients	<i>n</i> = 4
Narrative review or meta-analysis	<i>n</i> = 5
Sample were not in a psychiatric inpatient setting	<i>n</i> = 2
Did not discuss the reasons for seclusion	<i>n</i> = 5

#### **Appendix 4 - Unobtainable papers (n=4) :**

Bak, J., & Aggernaes, H. (2012). Coercion within Danish psychiatry compared with 10 other European countries. <i>Nordic Journal of Psychiatry</i> , 66(5), 297–302.
Betemps., E. J., Somoza., E., & Buncher, C. R. (1993). Hospital characteristics, diagnoses, and staff reasons associated with use of seclusion and restraint. <i>Hospital and Community Psychiatry</i> , 44(4), 367–371.
Farrell, G. A., & Dares, G. (1996). Seclusion or solitary confinement: therapeutic or punitive treatment? <i>Australian New Zealand Journal of Mental Health Nursing</i> , 5(4), 171–179.
Lendemeijer, B. (1997). [Utilization of seclusion. Motives and reasons of nurses]. <i>Verpleegkunde</i> , 12(4), 217–226.

#### **Appendix 4b- Experts contacted:**

<b>Expert contacted</b>	<b>Response</b>
Richard Bennett	None
Selim El-Badri	None
Hugh Middleton	None
Jesper Bek	None

#### **Appendix 5 – Quality Assessment**

Screening Questions:	
1) Did the study address a clearly focused issue? 1 YES 0 NO	
2) Was the cohort recruited in an acceptable way? 1 YES 0 NO/ CANT' TELL	
3) Is it worth continuing? (Is score 0 or 1)	
Quality Assessment:	

<b>Sample size (episodes of seclusion)</b>  2 – SAMPLE 250+  1 – 100+ SAMPLE  0 – 0-100 / NOT STATED	
<b>Confounders</b> Accounted for confounders e.g. race, gender, age  2 – YES 1 – PARTIAL 0- NO / CAN'T TELL	
<b>Data collection methods</b> Were data collection methods shown to be valid and reliable?  2- YES 1- PARTIALLY (i.e. only some of them) 0 – NO/ CAN'T TELL	
<b>Analyses</b> Was the analysis (i.e. statistical methods) appropriate to the study?  2- YES 1- PARTIAL 0- NO	
a) Were the outcomes clearly described in relation to the research question?  2- YES 1- PARTIALLY 0- NO	
Can the results be applied to the general population? Is it a cohort study? What is the setting?  2- YES 1- PARTIALLY 0- NO	
Do the results fit with other available evidence?  2- YES 1- PARTIALLY 0- NO	
Are there implications of this study for practice? If yes, how?  2- YES 1- PARTIAL 0- NO	
Strengths and Limitations:	

(UNSCORED)	
Score	
<u>Percentage</u>	

### Appendix 6 - Data Extraction Form

Date of extraction		
Author/s		
<i>Data to be extracted</i>		
Title of study		
Source		
Year of publication		
Country of study		
Participants/Population		
Sample Size		
Study Objective		
Study Design		
Location/setting		
Study		
Methodology		
Reliability/Validity (as appropriate)		
Results		
Authors' conclusions		
Strengths & weaknesses		
Notes		
Continue?	Yes	No

**Appendix 7 - Completed quality assessments:**

Question	Larue et al. (2010)	Mason (1993)	Morrison & Lehane (1996)	Roberts et al. (2009)	Savage & Salib (1999)	Tyrrer et al. (2012)	El-Badri & Mellsop (2002)	Salib, Ahmed & Cope (1998)
1) Did the study address a clearly focused issue?  1 YES 0 NO	Yes 1	Yes 1	Yes 1	Yes 1	Yes 1	Yes 1	Yes 1	Yes 1
2) Was the cohort recruited in an acceptable way?  1 YES 0 NO/ CANT' TELL	Yes – Retrospective Chart Review 1	Yes – two groups of six nurses randomly selected from volunteered sample for focus group discussion which were analysed 1	Yes – Retrospective Chart Review 1	Yes – the authors used mixed methodology including Retrospective Chart Review 1	Yes - Retrospective Chart Review 1	Yes - Retrospective chart review 1	Yes – prospective record review 1	Yes – retrospective chart review 1

3) Is it worth continuing?  (Is score 0 or 1)	Yes = 2	Yes = 2	Yes = 2	Yes = 2	Yes = 2	Yes = 2	Yes = 2	Yes = 2
<b>Sample size (episodes of seclusion/number secluded)</b>	<b>4863 episodes of seclusion</b>  622 patients secluded  <i>2 year time period</i>  0	Not provided - The information provided about the sample is very limited as it was a pilot study  <i>12 month time period</i>  2	<b>225 episodes of seclusion in a sample of 440 patients</b>  <i>2 year time period</i>  1	Phase one: Does not state numbers of episodes of seclusion or patients secluded only states “Our facility’s seclusion data were recorded during the retrospective chart audit.”  Phase 2: Qualitative reflections involved <b>71</b>	<b>230 episodes of seclusion</b>  115 secluded patients  <i>6 year time period</i>  1	<b>32 episodes of seclusion</b>  24 secluded patients  <i>1 year time period</i>  0	<b>539 episodes of seclusion</b>  129 secluded patients  <i>9 month time period</i>  1	<b>186 episodes of seclusion</b>  94 patients secluded  <i>5 year time period</i>  0
2 – SAMPLE 250+								
1 – 100+ SAMPLE								
0 – 0-100 / NOT STATED								

				<u>members of staff</u>  Did not specify the time period  N/A				
<b>Confounders</b>  Accounted for confounders e.g. race, gender, age  2 – YES 1 – PARTIAL 0- NO / CAN'T TELL	No – author did not account for race, gender or age.  0	No information provided about the demographics of the secluded patients except that they were forensic inpatients on two high dependency wards at Ashworth Hospital  0	Partially – the authors accounted for gender and forensic/non-forensic status  1	No information was provided about the characteristics of patients in phase 1 <u>or</u> of the staff involved in phase 2  N/A	Partially – the study accounted for gender  1	Partially – gender, ethnicity and diagnosis were accounted for  1	Yes - Accounted for gender, race, diagnosis, sex, marital status and age  2	Partially – accounted for gender, medication and diagnosis  1
<b>Data collection methods</b>	The data were collected	Discourse from focus groups formed data and	Yes - Authors collected data	Yes – retrospective chart review.	Data was collected from seclusion	Data was collected over	Data was collected prospectively – as patients	Data was collected retrospectively.

Were data collection methods shown to be valid and reliable?								
2- YES	via an electronic form which is signed by the nurse at the beginning of the seclusion episode.	nursing staff were asked to review the information for errors/misconstructions.	from official seclusion records	However didn't state explicitly how the information was coded.	forms that were mandatory in the facility. Any missing information was gathered from the computerised patient's information form	a 12 month period.  A seclusion episode was recorded whenever a patient was transferred to the specialised locked facility	were newly admitted – info obtained from Overt Aggression Scale (OAS). Other info re diagnosis and other characteristics of patients and details of each seclusion episode were also obtained.	Information was extracted from data collected routinely for all seclusions. The details that were unavailable on the forms were obtained from computerised patient records.
1- PARTIALLY (i.e. only some of them)	This form includes reason for seclusion, special health conditions, alternative measures attempted etc			Phase two – doesn't state method of analysis used  No mention of testing for inter-rater reliability		Information on all patients requiring seclusion during the 1year study period, from 1 August 2007 to 31 July 2008, was collected.	Study carried out as part of a service evaluation.	2
0 – NO/ CAN'T TELL				1		2	2	
<b>Analyses</b>  Was the analysis (i.e. 'by report')	Descriptive analyses were performed 'by report'	Researchers used a dialectic approach to analysing the data which was	Stage 1: the analysis was presented as simple	Unclear - doesn't specify the type of qualitative	Although data collection was described in detail, the method of	Yes – the authors carried out chi <sup>2</sup> and Mann Whitney U tests to	Yes – as well as descriptive statistics, the statistical tests used	Yes – as well as descriptive statistics, the autrors used Yates'

statistical methods) appropriate to the study?	rather than 'by patient' as each episode differs	considered appropriate. The data is described as preliminary findings from a longitudinal study.	frequency counts	analysis (thematic or IPA)	analysis used was not explained, the study only presented the results	establish significance	were the chi-squared and t-tests associated with group comparisons and linear or logistic regression.	correction to test for significant differences between proportions.
2- YES	2	Stage 2: Each of the records was examined and coded on variables identified by the researchers from the literature (not justified, however, appropriate categories were used which fit the literature)	1		As the study involved simple frequency counts, however, it was considered appropriate for this study	2	2	2
1- PARTIAL	2	No mention of testing for inter-rater reliability	1		1			
0- NO								

a) Were the outcomes clearly described in relation to the research question?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2- YES	The results were clearly presented and information was provided in tables.	The outcomes were described, however, as this is a pilot study the complete findings were not presented. Described emerging themes in this “early report”	The results were clearly presented for phase one and phase two.	The results for the reasons of seclusion were outlined clearly.	The results were clearly presented in prose and bar charts.	The results were presently clearly in prose and tables. The findings were well explained.	The result swere clearly presented and the findings explained well in relation to research question	The results were clearly presented and outcomes described.
1- PARTIALLY	Cognitively impaired, adult psychiatry and ‘frequently secluded’ subgroups were also compared	2	2	2	2	2	2	2
0- NO								
Can the results be applied to the general population?	The patients in the study all resided in Quebec, Canada. The results are	The results can't be applied to the general population as it is a forensic population from “Special	No – at most they can be generalised to the UK hospital population	No – at most they can be generalised to Australia hospital population	No – at most they can be generalised to the UK hospital population	No – at most they can be generalised to New Zealand hospital population	No - although these results cannot be generalisable cross-culturally the consideration	No – at most they can be generalised to UK hospital population

Is it a cohort study? What is the setting?	therefore not generalisable cross culturally.	hospital” for “dangerous, violent or having criminal propensities” in UK	0	0	0	0	of patient factors is greater than in most other studies and is likely to be somewhat representative of inpatient populations	0
2- YES 1- PARTIALLY 0- NO	Did not include forensic patients. 0		0					
Do the results fit with other available evidence?	Yes - this research found that agitation and aggressive behaviour were found to be the most common causes for seclusion	Yes – the result fit into other evidence in terms of identifying aggressive behaviour as a common reason for use.	Yes – they support the literature in terms of aggression (in this study, physical assault and threats to staff) being the most common reason for seclusion	Yes –the results indicate that seclusion is often used to manage aggression and disruptive behaviour.	Yes – the results are similar to other studies’ findings with the main reasons being: violence to staff and disruptive behaviour, followed by threats of violence, violence towards other	Yes – in line with other research, the authors found the most common reason given for seclusion was “considerable marked agitation manifested by the patient, usually associated with	Yes – as with the literature finding that for the majority of cases, use of seclusion was related to actual or threatened violence. Other reasons for seclusion included threats to other people	Yes – the results are similar to other studies’ findings with the main reasons being: violence to staff, ‘multiple reasons’, non-specific aggression, threats of violence/ actual violence to staff,
2- YES 1- PARTIALLY 0- NO	2	Adds to the literature including why and why NOT seclusion may	2					

		<p>be used e.g. necessity to control, preventing danger, machoism and the role of ‘administration’ i.e. the paperwork involved; internal pressures to reduce seclusion use</p> <p>2</p>		<p>rejected that seclusion was used as a punitive measure. Also implicates poor building design as an environmental factor in the use of seclusion.</p> <p>2</p>	<p>patients or damage to property</p> <p>2</p>	<p>threats of assault”.</p> <p>2</p>	<p>or disorganised or agitated behaviour which was cited for 26% of cases</p> <p>2</p>	<p>and property damage.</p> <p>2</p>
<p>Are there implications of this study for practice?</p> <p>If yes, how?</p> <p>2- YES 1- PARTIAL</p>	<p>Yes – the following with impact on practice;</p> <p>(1) to help develop training for staff</p>	<p>Yes - Understanding external pressures to alter seclusion practice perceived by the nursing staff as emanating from negative perceptions, of seclusion/ wider hospital system.</p>	<p>Yes - It is clear from this study that the use of this type of record data can be very informative and valuable to researchers, managers and clinicians.</p>	<p>Yes - The authors hope the study may assist in universally reducing/eliminating the use of seclusion in these settings and they provide a range of</p>	<p>Yes - The study implicated important environmental factors that can impact on seclusion (purpose-built unit- more spacious/more privacy= significantly</p>	<p>Yes - This study found that treatment received when in seclusion was important. Their assessment of the treatment given showed that when treatment was perceived as</p>	<p>Yes - The possible contributions to seclusion rate of alternative management strategies such as the use of more intense specialising (one staff to</p>	<p>Yes – the review highlights the need for controlled prospective trials comparing the effectiveness of seclusion and other interventions in reducing</p>

0- NO	(2) to target the groups of patients at greatest risk of being secluded  (3) to improve the decision making in the use of seclusion  2	Exploring the value system underpinning the 'macho culture'.  That changes in practice should emanate from the "experts" (i.e. nursing staff) themselves, as they are the ones who must put their ideas into clinical use.  2	Analysis of these could inform practitioners about the care environment. They could help to review policy and practice. Results could be of benefit to consumer groups- establishing standards of care and evaluating care practices.  2	other interventions to do so, hoping to preserve stronger therapeutic alliances with patients, and ensure a safer work environment for staff.  2	fewer seclusion episodes) Increased staffing and provision of a safe quiet room may reduce the use of seclusion. Suggested a need for controlled prospective studies to compare the effectiveness of seclusion  2	inadequate the period in seclusion was correspondingly prolonged. Therefore by improving treatment received it could reduce the use of time in seclusion.  2	one patient), alterations in ward milieu or staff attitudes.  2	behavioural problems.
Strengths and Limitations	+ Large sample from three well-defined	+ Forensic sample – Ashworth Hospital	+ Detailed analysis provided more information	+ provided good information about staff views on the	+ the data was collected over a five year period	+ the study covered a large catchment area  - although mentioning	+ the authors accounted for various factors such as gender, race, diagnosis,	+ the 5 year time period provides a more helpful insight into the patterns of seclusion

	catchment areas  + very detailed descriptive analysis  - did not distinguish between males and females nor diagnosis	+ not simply looking at the reasons for seclusion but complexities within the decision making process also  - method provided limited information about the sample  - pilot study so limited in value and final conclusions and analysis not presented	+ good sample – males/females /forensic/non-forensic  - variation within the records in terms of detail provided	use of seclusion  - flaws in the method: information was very limited about the sample of secluded patients in phase 1 and the staff in phase 2	+ the data comprised both male and female secluded patients  - the data did not involve any qualitative analysis and so the information gleaned is limited to reasons given on a pre-existing form and figure counts  - quite an old study (1999)	reasons for seclusion the main focus of the research appeared to be regarding length of time and factors affecting this	sex, marital status and age  + large sample  -no qualitative element  - some missing information in terms of reasons for seclusion, described as ‘other reasons’	- no qualitative element of study  - the reporting of ‘multiple reasons’ without information detailing the various reasons in detail makes comparisons more difficult
Score	11/16	10/16	11/16	8/12	11/16	11/16	13/16	11/16

<u>Percentage</u>	69%	63%	69%	66%	69%	69%	81%	69%
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#### Appendix 8 – Record of inter-rater assessments and log of discrepancies

Rater 1:

<b>id</b>	<b>Study.name</b>	<b>dy</b>	<b>Selection.Bias</b>	<b>Detection.Bias</b>	<b>Statistical.Bias</b>	<b>Reporting.Bias</b>	<b>Generalisability</b>
1	Tunde Ayinmode & Little (2004)	Yes	Low risk	Low risk	high risk	Low risk	High risk
2	Bullock et al (2014)	Yes	high risk	Low risk	Low risk	Low risk	Unclear risk
3	Van der Sande et al (2013)	Yes	Low risk	high risk	Low risk	Low risk	Unclear risk
4	Van der Sande et al (2017)	Yes	Low risk	Low risk	Unclear risk	Low risk	Low risk
5	Vruwink et al (2012)	Yes	Low risk	Low risk	Low risk	Low risk	unclear risk
6	Cullen et al (2018)	Yes	high risk	Unclear risk	Low risk	Low risk	Low risk
7	Chavulak and Petrakis (2017)	No	Low risk	Low risk	Low risk	Low risk	high risk
8	Mason (1998)	Yes	high risk	Unclear risk	Low risk	Low risk	Low risk
9	Thomas et al (2009)	Yes	Unclear risk	Unclear risk	Low risk	Low risk	high risk
10	El Badri & Mellsop (2002)	Yes	Low risk	Unclear risk	Low risk	Low risk	Low risk
11	Happell & Koehn (2010)	Yes	Low risk	Low risk	Low risk	Low risk	Low risk

## Rater 2:

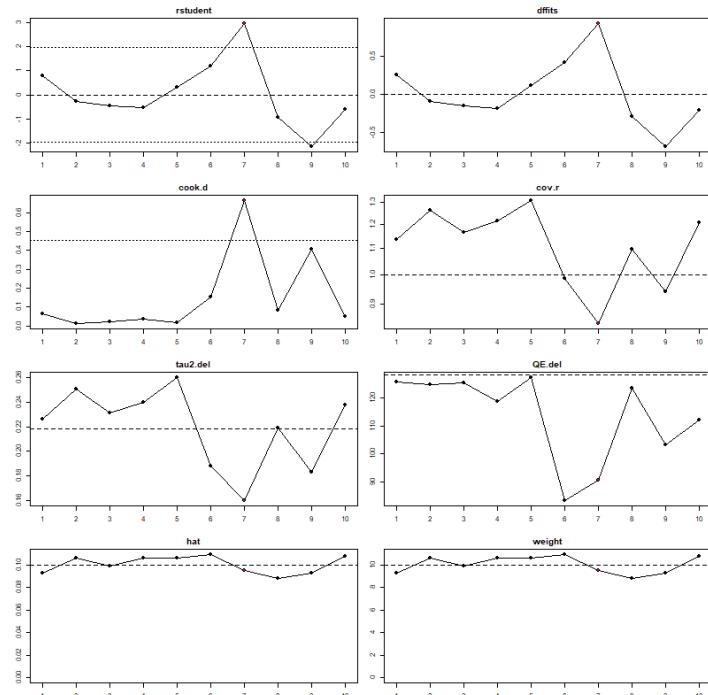
<b>id</b>	<b>Study.name</b>	<b>dy</b>	<b>Selection.Bias</b>	<b>Detection.Bias</b>	<b>Statistical.Bias</b>	<b>Reporting.Bias</b>	<b>Generalisability</b>
1	Tunde Ayinmode & Little (2004)	Yes	Low risk	Low risk	high risk	Low risk	high risk
2	Bullock et al (2014)	Yes	high risk	Low risk	Low risk	Low risk	Unclear risk
3	Van der Sande et al (2013)	Yes	Low risk	high risk	Low risk	Low risk	Unclear risk
4	Van der Sande et al (2017)	Yes	Low risk	Low risk	Unclear risk	Low risk	Low risk
5	Vruwink et al (2012)	Yes	Low risk	Low risk	Low risk	Low risk	Unclear risk
6	Cullen et al (2018)	Yes	high risk	Unclear risk	Low risk	Low risk	Low risk
7	Chavulak and Petrakis (2017)	No	Low risk	Low risk	Low risk	Low risk	high risk
8	Mason (1998)	Yes	Unclear risk	Unclear risk	Low risk	Low risk	Low risk
9	Thomas et al (2009)	Yes	Unclear risk	Unclear risk	Low risk	Low risk	high risk
10	El Badri & Mellsop (2002)	Yes	Low risk	Unclear risk	Low risk	Low risk	Low risk
11	Happell & Koehn (2010)	Yes	Low risk	Low risk	Unclear risk	Low risk	Low risk

Table detailing discrepancies in ratings and resolutions

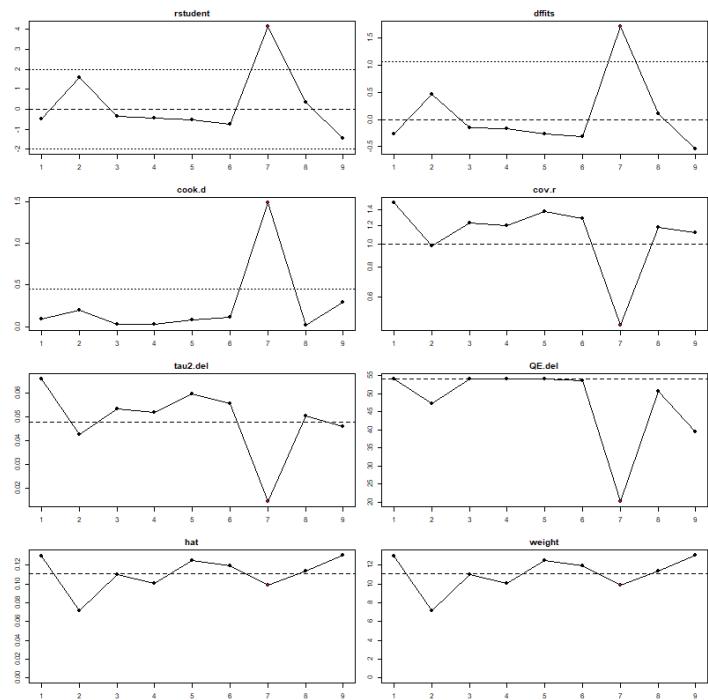
<b>No.</b>	<b>Discrepancy identified</b>	<b>Rater 1</b>	<b>Rater 2</b>	<b>Decision</b>
1.	<b>Criteria:</b> Statistical bias  <b>Study 11:</b> Happell & Koehn (2010)	<i>Low risk</i>  <b>Note:</b> 11 patient data missing <1% missing - from non secluded group (despite there being an 'other' group) - missing data not discussed – due to missing data being less than 1% categorising as low risk	<i>Unclear risk</i>  <b>Note:</b> Missing data was not acknowledged or discussed by authors so classified at unclear	Discussion around the proportion of missing data constituting less than 1% of the total sample so agreement that despite this oversight by authors it is a very small % Agreed to proceed with low risk

2.	<p><b>Criteria:</b> <u>Selection bias</u></p> <p><b>Study 8:</b> Mason (1998)</p>	<p><i>High risk</i></p> <p><b>Note:</b> Setting categorised as a ‘Special hospital’ – highly unlikely to be generalisable to inpatient units on the whole as this is a high secure facility – likely to be a very different population to other included papers – too much heterogeneity to meaningfully compare this population</p>	<p><i>Unclear risk</i></p> <p><b>Note:</b> Hospital setting not very clear about population – referred to a special hospital but population not clear so considered it unclear risk</p>	<p>Discussion around population – rater 2 had missed that it noted ‘high secure’ in the paper and rated unclear due to this. Clarification of the high security population led to rater 2 changing rating to high risk</p>

## Appendix 9 – leave-one-out analysis (hypothesis 1 – female vs male)



## Appendix 10 – leave-one-out analysis (hypothesis 2 – psychosis vs non-psychosis)



## Appendix 11 – leave-one-out analysis (younger vs older)

