

University of Southampton

**“A Functional Analysis of the Responses of Care Staff to Challenging Behaviour in
People with Intellectual Disabilities”**

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Final Year Dissertation

Submitted in partial fulfilment of the
Doctorate in Clinical Psychology

School of Psychology
Faculty of Medicine, Health & Life Sciences

February 2006

Word Count: 20,000

Abstract

The challenging behaviours of people with intellectual disabilities do not exist in isolation from the social environment. Dominant causal models in the literature suggest a role for the actions of paid staff in service environments in particular. Central to these models is the hypothesis that staff may inadvertently behave in ways that serve to maintain challenging behaviour. In two papers, this dissertation seeks to enhance current knowledge of those factors held to influence the behavioural responses of direct care staff to challenging behaviours: (i) staff beliefs about client challenging behaviour, and (ii) staff affective reactions to the behaviour.

The literature review paper provides a comprehensive account of research concerned with staff causal and intervention beliefs, negative emotional reactions and behavioural responses to challenging behaviour, with attention paid to pertinent methodological issues. The theoretical frameworks underpinning empirical enquiry are considered and, in particular, the empirical status of links between staff affect/cognition and actual caregiver behaviour is examined.

The empirical paper utilises an interactive computer simulation of self-injurious behaviour with the aim of providing experimental evidence about the impact of beliefs and emotions on actual behaviour in situ. Participants with greater behavioural beliefs and less negative affect engaged in more habilitative behaviour when caring for a self-injuring 'child'. The results did not indicate any impact of either behaviourally inappropriate/inaccurate beliefs or raised negative affect on counter-habilitative staff behaviour likely to reinforce self-injury or other forms of challenging behaviour. A number of implications for research and clinical practice are discussed.

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Acknowledgements

I would like to thank Professor Bob Remington for his unswerving guidance and support during the preparation of this thesis. I would, in addition, like to indicate my appreciation of the help provided by Mr Martin Hall and Dr Tom Randall. A note of thanks is also offered to the Head Teachers and Educational Psychologists in Hampshire and Dorset who facilitated my access to participants and last, but most certainly not least, to the staff themselves for kindly agreeing to take part.

Literature Review Paper

**Staff Responses to the Challenging Behaviour of People with Intellectual
Disabilities: Review of Staff Behaviour and the Role of Emotions and Beliefs**

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Prepared as if for submission to:

Clinical Psychology Review

Abstract

Challenging behaviour, which adversely affects the lives of both individuals with intellectual disabilities and those who educate and care for them, is increasingly viewed as a function of the social environment. The corresponding growth of interest in the way that caregivers respond to challenging behaviour has led to these responses being identified as a significant factor in the behaviour's development and maintenance. The present review summarises the dominant behavioural account of challenging behaviour and its inadvertent reinforcement by staff in service environments before examining the current status of research on those factors considered most likely to influence the behaviour of carers: their beliefs about challenging behaviours and their emotional reactions to them. The ability of the main theoretical models to account for the research findings is considered. Available evidence suggests that more progress has been made in detailing the nature of staff emotions and beliefs about challenging behaviour and their respective determinants than has been made in demonstrating that these affective or cognitive responses are related in reliable ways to staff behaviour. In particular, there is a lack of data on potential links to actual staff behavioural responses in situ. Other limitations include an over-reliance on staff self-report, a lack of controlled research, particularly in special education settings and issues about reliable and valid measurement. In light of these criticisms, suggestions for future investigations with staff in intellectual disability settings are discussed. Finally, a number of implications for staff training and for assessment and intervention with challenging behaviour are described.

Keywords: Staff; Challenging behaviour; Intellectual disabilities; Counter-habilitative; Intervention behaviour; Attributions; Intervention beliefs; Negative emotional reactions

1. Introduction

Challenging behaviour is a highly significant clinical and research issue within the field of intellectual disability (ID). It is defined as “culturally abnormal behaviour of such an intensity, frequency or duration that the physical safety of the person or others is likely to be placed in serious jeopardy, or behaviour which is likely to seriously limit use of, or result in the person being denied access to, ordinary community facilities” (Emerson, 2001: p.3). Actions described as challenging include self-injurious behaviour, physical/verbal aggression, property destruction, inappropriate social or sexual conduct, oppositional behaviours, stereotyped mannerisms, faecal smearing, persistent screaming and pica (Hastings & Brown, 2000).

A recent, health-district total population study found that challenging behaviours were shown by 12% of people in contact with ID services (Emerson et al., 2001). This figure contrasts with 8% (Emerson & Bromley, 1995) and 14% (Borthwick-Duffy, 1994) of people with ID who were screened in similar prevalence studies. Reports also indicate that the majority engage in multiple topographies of challenging behaviour (Emerson et al., 2001). Risk factors include being young and male and having physical, sensory or communication impairments (Emerson, 1998; McClintock, Hall, & Oliver, 2003).

Challenging behaviours present significant problems to the individuals who engage in them. These include potentially serious physical health consequences (Borthwick-Duffy, 1994), higher rates of institutionalisation (Sherman, 1988) and increased risk of neglect and abuse (Marchetti & McCartney, 1990; Rusch, Hall, & Griffen, 1986). Challenging behaviour, as the term was intended to suggest, presents a major challenge to service providers (Davidson et al., 1995; Murphy et al., 1993). It is also associated with

raised levels of stress and burnout in care staff (e.g. Jenkins, Rose, & Lovell, 1997) as well as increased distress in family carers (e.g. Quine & Pahl, 1985).

2. Behavioural Framework for Understanding Challenging Behaviour

Applied research within the field of ID has been dominated by behavioural and neurobiological/psychiatric traditions (Emerson, 2001). The latter has offered evidence to suggest that the behaviour-modulating mechanisms of certain neurotransmitters might underpin challenging behaviour in some people, but will not be discussed further here (for a review, see Verhoeven & Tuinier, 1999). Rather, discussion will focus on the former since the most influential theories of challenging behaviour stem from the behavioural approach, particularly the view that behaviour is not primarily affected by intrapsychic dynamics but by conditions in the person's environment. More specifically, whilst the importance of antecedent influences on difficult behaviour is increasingly being recognised (see McGill, 1999; Smith & Iwata, 1997), the behaviour-analytic view that behavioural challenges occur because of the positively or negatively reinforcing nature of the events that follow them dominates (cf. Emerson, 2001; Remington, 1991).

The contingent environmental events held to shape and maintain challenging behaviours include the attention of others, the attainment of tangible items (both positive reinforcement), escaping from the demands of imposed tasks or social contact (both negative reinforcement), and certain automatically reinforcing changes in internal states (Carr, 1977; Edelson, Taubman, & Lovaas, 1983). Crucially, as a learned operant, challenging behaviour is 'selected' or shaped through the person's interactions with the physical/social environment and can therefore be seen as functional and adaptive. Indeed,

attempts to identify the functions that these behaviours serve and substitute functionally equivalent positive behaviours have resulted in significant steps forward in assessment (e.g. experimental functional analysis; Carr & Durand, 1985a; Iwata, Dorsey, Slifer, Bauman, & Richman, 1982; Iwata, Vollmer, & Zarcone, 1990) and treatment (e.g. constructional interventions; Carr et al., 1994; Durand & Crimmins, 1991; Koegel, Koegel, & Dunlap, 1996). Finally, by way of raising two key distinctions, interventions are widely reported as being successful when (i) they are based on hypotheses about the functions which challenging behaviours serve (Carr, Robinson, & Palumbo, 1990; Didden, Duker, & Korzilius, 1997; Repp, Felce, & Barton, 1988) and (ii) they are carried out by ‘experts’ (see Carr et al., 1999; Durand & Carr, 1991; Green, Gardner, & Reid, 1997; Iwata, Pace, Kalsher, Cowdery, & Cataldo, 1990; Taylor et al., 2005).

In support of the behavioural principles outlined above, analogue assessments of clinically referred samples (e.g. Derby et al., 1992; Iwata et al., 1994) have found that approximately 70% of challenging behaviours are maintained by attention or escape from demands, whilst quasi-experimental work has shown that rates of challenging behaviour in children can be affected by manipulating the amount of attention that adults provide (Taylor & Carr, 1992a). Challenging behaviour is therefore described as a function of the social environment (McGill, 1993).

To conclude, if the antecedents and consequences of challenging behaviour are important determinants of that behaviour and if these contingencies are mediated by others in the environment, then the behaviour of others becomes an important focus too (Hastings & Remington, 1994b). For people with ID who show challenging behaviour, the most significant others on a day-to-day basis are paid staff in service environments.

3. Staff Behaviour

Thus, in general terms, psychological interest in the actions of special education or residential care staff stems from the notion that staff behaviour can affect client behaviours. More specifically, it is premised on the behaviour-analytic contention that challenging behaviour can be developed and/or maintained by the way in which others in the social environment respond to it (Carr, 1977; Guess & Carr, 1991; Hastings & Remington, 1994a; Oliver, 1995). Supporting this case is a body of work investigating how staff behave in ID service environments.

3.1. Staff-Client Interaction

In terms of day-to-day caregiver behaviour, observational studies indicate that less than 10% of a client's day is typically spent interacting socially with staff (Cullen, Burton, Watts, & Thomas, 1983; Repp, Barton, & Brulle, 1981). When social exchanges do take place, they are often less than 10 seconds long (Moore & Grant, 1976) and seldom last for more than 4 minutes (Markova, Jahoda, Cattermole, & Woodward, 1992). Even when carers are found to be broadly responsive to the social overtures of residents, there is no evident focus on encouraging client engagement in activity (Felce, Lowe, & Blackman, 1995) or on teaching appropriate skills (Hile & Walbran, 1991). The question therefore arises as to whether staff behaviour contributes to a situation where challenging behaviour is the only means by which clients can secure contact with others.

3.2. Staff Responses to Client Behaviour

Observational methodology has also been employed to investigate how staff behave in the 'natural' environment in response to client challenging behaviours. Much of this

research has stressed the inactivity of staff. Just as they spend little time interacting with clients, they are reported as rarely attending to either appropriate or inappropriate behaviours (Beail, 1989; Warren & Mondy, 1971). When staff do respond, it is on an intermittent basis. Warren and Mondy (1971) observed staff providing some form of active response to challenging behaviour once in every 10-20 occurrences, which operant principles predict could be enough to maintain the behaviour with ease (see Skinner, 1969). A replication of this study (Felce et al., 1987) found a similar pattern of results.

Elsewhere, observational research has built on these findings by showing how reactive strategies to the more severe challenging behaviours account for the majority of staff-client contact (Duker et al., 1989; Emerson, Beasley, Offord, & Mansell, 1992). The Emerson et al. (1992) study partialled out the time spent dealing with any attendant disruption and found that clients who engaged in challenging behaviour still received a disproportionate amount of staff attention. The situation may be yet further exacerbated if staff respond more readily only after behavioural challenges have escalated in severity. For example, in a case study by Hall and Oliver (1992), social contact of a reinforcing nature was significantly more likely to follow longer bursts of self-injurious behaviour than shorter bursts, thus differentially reinforcing a more severe form of self-injury.

A somewhat different picture emerges from self-report studies, which indicate a higher likelihood of staff responding. Worryingly, many of these responses could be described as counter-habilitative in that they are of a nature that may reinforce the behaviour in question. Carers reporting on their typical responses to challenging behaviours have cited the following strategies as the most popular: 'giving attention', 'coaxing' and 'distracting' (Sandow, 1975); 'verbally reprimanding', 'restraining', 'isolating' (Maurice & Trudel, 1982); and 'asking to stop', 'restraint' and 'actively

ignoring' (Bruininks, Hill, & Moreau, 1988). Intagliata, Rinck, and Calkins (1986) categorised staff reports into a hierarchy of response to challenging behaviour that reflected increased staff involvement (do nothing → verbal → ignore → physical → call in others). In a finding echoing that of Hall and Oliver (1992) above, staff used the highest levels of the response hierarchy for the most violent, destructive or withdrawn behaviour. More recent research has confirmed these initial findings (see section 6.2. below).

3.3. Overall Picture

Reviews of research in this area (Hastings & Remington, 1994b; Repp, Felce, & de Kock, 1987) have drawn the following conclusions: (i) staff often fail to engage with those in their care, resulting in impoverished social environments in which challenging behaviours may thrive; (ii) those people with the most serious behaviours also have the most contact with staff; (iii) carers respond intermittently to challenging behaviour and in a manner likely to contribute to the development and maintenance of the behaviour in clients. Although many of the studies cited above are not recent and questions arise as to whether the picture has altered at all of late, the weight of evidence as it stands gives significant cause for concern. It is these concerns that underpin current research interest in how staff in ID services respond to challenging behaviour. What is needed first, though, is a theoretical account that addresses the close relation between staff behaviour and client challenging behaviour and accounts for the key clinical and research issue of why staff might inadvertently behave in a counter-habilitative manner (Hastings, 1999; Hastings & Remington, 1994b). Such an account does exist and it is this which is considered next.

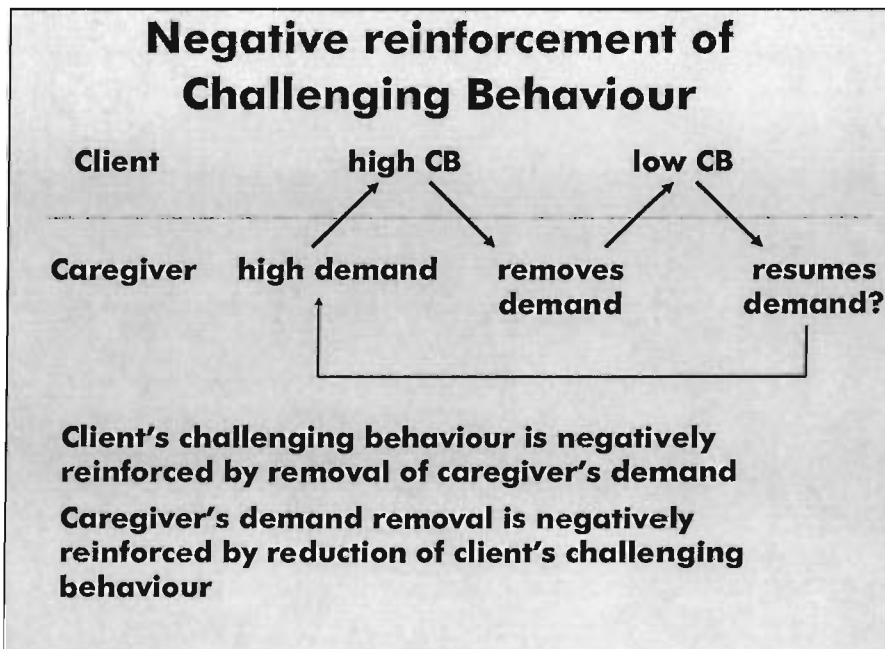
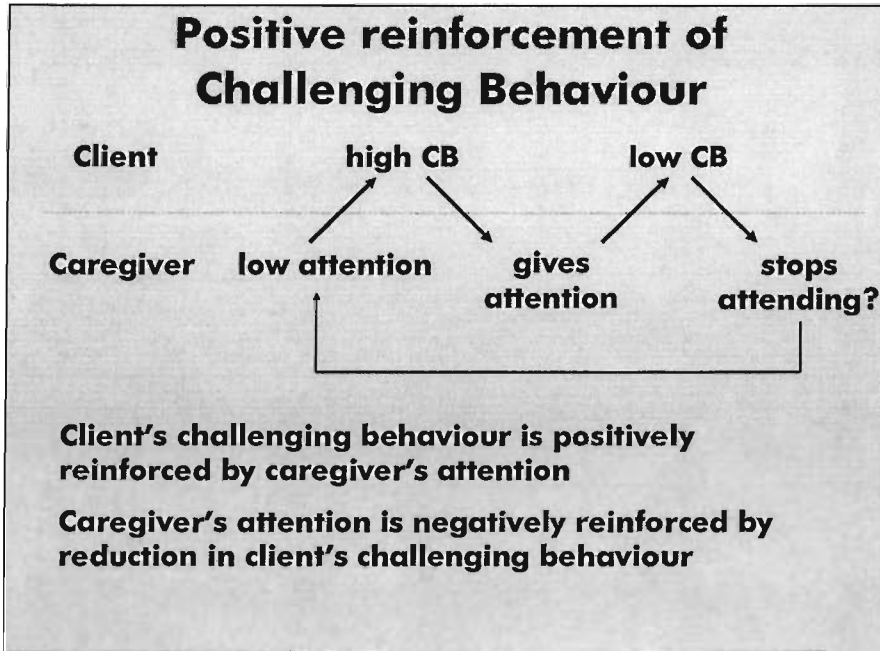
4. Behavioural Systems Model of Challenging Behaviour & Related Research

The behavioural systems model (Oliver, 1993, 1995) extends the basic three-term contingency (antecedent-behaviour-consequence) to examine the wider systems in which challenging behaviour occurs. In doing so, it focuses equally on the individual who exhibits challenging behaviour and others in the environment, such as staff. The model posits that just as challenging behaviour is often affected by staff behaviour, so staff behaviour may be directly affected by certain aspects of challenging behaviour in what is described as a dynamic, cyclical system of mutual influence (Oliver, 1995; Taylor & Carr, 1992b). Specifically, what is being suggested is a mutual reinforcement process in which challenging behaviour is rewarded by the responses of others and those responses themselves are rewarded by the challenging behaviour terminating (Oliver, 1995).

An example of this comes from the Hall and Oliver (1992) study in which a young man self-injured when the probability of carers attending to him was low and stopped self-injuring when social contact was provided (a predictable sequence for challenging behaviour positively reinforced by contingent attention). Crucially, from the point of view of caregiver behaviour, his self-injury operated as a sufficient condition (an antecedent) to elicit staff attention (a behaviour) which was followed by the negative reinforcement of the behaviour abating (a consequence). The cycle was completed when cessation of self-injury was accompanied by staff attention returning to low, pre-self-injury levels. As the figure below shows, what this study suggests is that not only do the actions of staff act as antecedents and consequences for challenging behaviour, but also challenging behaviour acts as antecedent and consequent conditions for the behaviour of staff (Hastings, 1999).

Figure 1

Reciprocal Reinforcement of Challenging Behaviour & Staff Behaviour



The notion of interlocked contingencies or reciprocal reinforcement, grounded in Skinner's (1971) concept of "control and counter-control", has already been proposed as

an essential process in understanding the impact of child behaviours on the actions of adults, known as 'child effects' (Berberich, 1971; Emery, Binkoff, Houts, & Carr, 1983; Patterson, 1982). Its application to the maintenance of challenging behaviours (Carr & Durand, 1985b; Oliver, 1995; Oliver & Head, 1990) is supported by child-effects research in ID settings conducted by Carr and colleagues (e.g. Carr, Taylor, & Robinson, 1991; McConnachie & Carr, 1997; Taylor & Carr, 1992b).

In one of these studies, for example, adults with no experience of challenging behaviour interacted with two children who engaged in such behaviour. The variables maintaining the behaviour for each child pair were pre-determined by prior functional analyses. In the experimental situation of one child's behaviour being maintained by attention and the other's by escape from social contact, participants attended less to, and made fewer demands on, the child classed as a social/demand avoider (Taylor & Carr, 1992b). The authors concluded that the attending and intervention behaviour of adults is related in reliable ways to the function of challenging behaviours so that, in the short term, the lowest rates of the behaviour result. Similar experimental findings from a study using a computer simulation of self-injurious behaviour add further support (Hastings, Remington, & Hall, 1995), as do descriptive analysis data indicating that observing the distribution of staff attention can serve as a useful functional assessment tool (Taylor & Romanczyk, 1994). In light of these findings, it has been proposed that staff experience challenging behaviour as aversive and that they act to reduce this aversive experience through escape behaviour (Hall & Oliver, 1992; Oliver, 1995).

The hypothesis used to explain what it is that caregivers find aversive is that challenging behaviour acts as an establishing operation (Michael, 1982) or setting event (Wahler & Fox, 1981) which elicits negative affect and establishes the potential for

reinforcement of caregiver escape behaviour (i.e. actions that reduce/remove the negative emotion). Returning to Hall and Oliver's (1992) study, this mechanism can be incorporated into the dynamic behavioural system. The establishing operation, 'deprivation of staff contact', evoked self-injury and when that contact was not provided, deprivation continued and self-injury persisted. The proposed aversiveness of challenging behaviour meant that the carers were punished for not providing attention and therefore the client's self-injury became an establishing operation for the caregiver escape behaviour of providing that attention. Thus, demonstrated here is a behavioural pattern that serves to stop challenging behaviour in the short term, yet reinforce it and ensure its long-term maintenance (Hall & Oliver, 1992; Hastings & Brown, 2000; Oliver, 1993, 1995).

5. Staff Behaviour Shaped by Contingencies: The Role of Negative Affect

The thesis that staff behaviour may be shaped by the contingencies associated with challenging behaviours helps to identify a factor that might influence staff to behave in the way that they do when presented with the behavioural challenges of people with ID. The key determinant implicated by the above account is that of negative emotion in the face of aversive stimuli.

5.1. Staff Negative Emotional Reactions to Challenging Behaviour

Bromley and Emerson (1995) asked 70 care staff members what percentage of their full staff team would experience certain emotions in response to behavioural challenges. Staff cited a range of negative emotions, with the dominant reaction being 'annoyance' for aggression (41% of cases) and 'sadness' for self-injury (38%). 'Anger', 'despair', 'disgust' and, 'fear' also featured prominently. Harris, Cook, and Upton (1996) reported

similar findings for the emotional reactions of teachers to challenging behaviour in special education classrooms. Content analysis of interview transcripts from an exploratory study revealed that self-injury was experienced as the most saddening and aggression as the most frightening (Hastings, 1995). Hastings and Remington (1995) investigated level of negative emotion relative to topography. Ratings from 246 care workers showed that stereotypy was rated as less disturbing than aggression, which in turn was less disturbing than self-injury.

In terms of psychometrics, the array of staff negative emotional reactions has been factor analysed into feelings of 'depression/anger' and 'fear/anxiety' (Mitchell & Hastings, 1998). The resultant scale has been used in several studies, for example to capture the emotional responses of special educators to the challenging behaviour of children with autism (Hastings & Brown, 2002). However, a measure that explores separate domains for anger and depression, two key emotions, is yet to be published. In the absence of a healthy selection of well-researched bespoke measures, standardised adult mental health questionnaires have also been applied in assessing staff negative emotional reactions. Cottle, Kuipers, Murphy, and Oakes (1995) gave the State-Trait Anxiety Inventory (Spielberger, 1983) to staff following violent incidents in a psychiatric hospital where a number of residents had ID. The violent incidents were associated with significant levels of anxiety which returned to baseline by one-month follow up.

Having established that negative emotions exist among staff in ID service environments, it remains to be checked that it is the behaviour and not the environments per se that are associated with staff negative affect. Jenkins et al. (1997) surveyed the emotions of 78 residential staff supporting people with ID in small community residences, only some of which housed individuals with challenging behaviour. Whilst no difference

existed in terms of depression scores, significantly more anxiety was experienced by carers working in those houses where challenging behaviour was shown. These self-report data have been confirmed in experimental research. In a control comparison study involving 60 special educators, participants who watched a video depicting an actor engaged in self-injury reported significantly more negative emotional responses than participants who watched a matched video depicting no self-injury (Mossman, Hastings, & Brown, 2002).

To summarise, the findings outlined above offer support to the behavioural systems model and, bearing in mind the aim of this review, provide an incentive to investigate the role of negative affect in influencing the inadvertent reinforcement of challenging behaviour by staff in ID settings. In other words, if the study of staff emotional responses is to be of applied significance, empirical support is needed for the mediational hypothesis that, in the immediate situation and aftermath of an incident of challenging behaviour, the negative emotions that caregivers experience contribute to the prediction of their behavioural responses (Hastings, 2005). Perhaps the key prediction here is that staff who report negative affective reactions to challenging behaviour will be more likely to respond in a counter-habilitative or reinforcing manner than staff not reporting such reactions, or reporting them to a lesser degree (Hastings, 2005).

Potential links with behavioural responses have been explored indirectly. Carers themselves have stated that their emotional reactions do play a role in determining how they respond to challenging behaviours (Hastings, 1995) and staff reporting more depression/anger in response to the video material described above were more likely to endorse inappropriate interventions on a questionnaire (Jones & Hastings, 2003). However, recollections at interview or statements of how one would intervene with fictional clients are not necessarily related closely to actual staff behaviour. To date, no

direct evidence exists to show that differences in emotional responding are crucial to the maintenance of challenging behaviour (see section 9. for a suggested explanation).

Researchers have instead concerned themselves with discovering more about the factors that might determine staff affective responses to challenging behaviours. If, despite the lack of research data showing direct effects on behaviour, the significance of staff negative emotional reactions is accepted, then identifying variables related to negative emotions might lead to potential staff training and support initiatives (Hastings & Brown, 2002). The published research findings are summarised below.

5.2. Factors Affecting Staff Negative Emotional Reactions to Challenging Behaviour

The first of these factors, topography of the challenging behaviour, has already been discussed, with the research cited above suggesting that the three major forms of challenging behaviour (aggression, self-injury, stereotypy) differ both in terms of type and intensity of emotion evoked (Bromley & Emerson, 1995; Hastings, 1995; Hastings & Remington, 1995). A second factor that has been investigated is that of behavioural function, with conflicting results. In the Mossman et al. (2002) experiment, participants who watched a video in which the actor simulated self-injury maintained by negative reinforcement processes reported more depression/anger responses than participants allocated to the video where self-injury was maintained by positive reinforcement. In contrast, Hastings, Tombs, Monzani, and Boulton (2003), using the same stimulus materials with a sample of 60 staff and 60 students, found that attention-maintained self-injury with reportedly severe consequences was more emotionally disturbing to watch for the students than similar escape-maintained behaviour. The variable of behavioural function is theoretically important and further work appears necessary in order to ascertain

just how it affects staff emotional reactions to challenging behaviour (see section 6. for one set of potential determinants).

Another potentially important factor investigated in the Hastings et al. (2003) study is that of severity. The groups who were informed that the self-injurious behaviour seen in matched, acted videos typically led to severe physical injury reported more negative affect than those given background information indicating mild physical consequences. This finding is supportive of the behavioural systems view that challenging behaviours comprise aversive stimuli which in their more intense or severe forms are more aversive still (Hall & Oliver, 1992). To date, the only research data on the relationship between severity and staff negative emotion come from the study cited above and the one outlined previously by Hastings and Remington (1995) in which relatively minor forms of challenging behaviour (e.g. stereotypy) evoked less negative affect than more serious forms (e.g. aggression). Given that the Hall and Oliver (1992) case study did indicate an association between severity of self-injury and actual staff behavioural responses, the severity-emotion-behaviour link seems ripe for further investigation.

In terms of staff variables potentially related to negative affect, Hastings and Remington (1995) investigated the factor of experience. They found that experienced ID nursing staff rated challenging behaviour described in written vignettes as less disturbing than inexperienced trainee nurses. In particular, experienced people were more likely to 'feel nothing' and less likely to 'feel fearful' and the authors concluded that negative emotional reactions to challenging behaviours may become less intense with experience. The same findings were also found in Hastings et al.'s (2003) experimental study, although it should be noted that the operationalisation of experience used in both these studies was a

crude, binary one of 'some' versus 'none' and as such the variability associated with the range of experience that staff possess has not yet been explored.

In terms of the influence of training, one study (Hastings & Brown, 2002) has investigated the ability of this factor to affect emotional responding to challenging behaviours among special education staff. Training was conceptualised not in terms of in-service courses, but in terms of formal teacher training/qualifications, with data being obtained from a survey of 30 teachers and 40 support staff. The apparently counter-intuitive finding was that qualified staff reported more negative emotional reactions than support staff. The authors addressed this by invoking the notion of responsibility, stating that as the teachers would typically have been 'in charge' in classrooms where challenging behaviour was shown, they may have felt more responsible for it.

Finally, both objective (i.e. relevant behavioural knowledge) and subjective measures (i.e. perceived self-efficacy) of efficacy were taken from the participants in the Hastings and Brown (2002) study. Results obtained were suggestive of the fact that low self-efficacy and low knowledge of behavioural principles may make staff vulnerable to experiencing negative emotional reactions to challenging behaviours. Given this finding, a future focus on caregivers' perceived ability to have an effect on events may have an indirect impact on the remediation of challenging behaviour.

In summary, challenging behaviours may hold aversive properties for caregivers in ID service environments, evoking negative emotional responses in them. Such negative affective responding is said to be subject to a number of influences arising either from the behaviour itself (e.g. severity) or from staff (e.g. experience). The putative relationships between these negative emotional reactions and the actual behaviour of staff in response to

challenging behaviour await supportive data. In terms of where else to look for potential determinants of staff behaviour, the discussion of factors such as perceived responsibility and self-efficacy above implicates staff cognition and the question of what carers think about the client behavioural challenges to which they may be averse.

6. Staff Behaviour Governed by Rules: The Role of Beliefs

Returning to the behavioural perspective on staff behaviour and client challenging behaviour and with a view to incorporating both affective and cognitive domains in any analysis, a broader framework for the analysis of staff behaviour in the field of ID has been proposed by Hastings and Remington (1994a). They premise their behaviour-analytic framework on the operant distinction between contingency-shaped and rule-governed behaviour (cf. Hineline & Wanchisen, 1989), arguing that an adequate functional analysis of caregiver behaviour needs to acknowledge the contributions made by both processes. ‘Rules’ are essentially verbal formulations of contingencies that describe relationships between behaviours and environmental consequences (see Catania, Matthews, & Shimoff, 1990; Hayes, Zettle, & Rosenfarb, 1989; Lowe, 1983).

The rules in use may be a staff member’s own rules (more typically characterised as beliefs, attitudes, etc.), or the rules of others (e.g. advice from colleagues, service policies). In terms of ‘self-rules’ (Zettle, 1990), most research attention (see Hastings, 1997, 1999) has focused on (i) staff causal beliefs, or attributions, about challenging behaviours (i.e. rules concerning why challenging behaviour occurs, or ‘hypotheses about causes’), and (ii) staff beliefs about appropriate interventions for these behaviours (i.e. rules concerning what to do about challenging behaviour when it is displayed, or ‘performance-related

rules'). The body of work investigating these two domains of staff beliefs effectively represents an extension of work within the behavioural tradition that attaches importance to understanding the relationship between what people say and what they do (Hayes, 1989; Israel, 1978).

6.1. Staff Attributions about Challenging Behaviour

Bromley and Emerson (1995) asked care staff working with the challenging behaviour of 70 individuals with ID living within the same metropolitan borough why they thought the behaviour was displayed. The most commonly held causal beliefs concerned very general factors that would be in the main uncontrollable by staff (e.g. general psychological states, past environments). More encouraging are the results of Hastings' (1995) interviews with 19 carers about the reasons for challenging behaviour occurring. 'Social reinforcement' (79% of staff), 'communication/expression' (68%), 'the physical environment' (58%) and 'emotional states' (58%) were cited as the most common causes. The beliefs reported in this study therefore seem to be partially congruent with prevailing psychological hypotheses.

In order to address the possible biases associated with staff retrospective accounts, two studies (Berryman, Evans, & Kalbag, 1994; Hastings, Remington, & Hopper, 1995) have elicited attributions from residential and institutional staff about the challenging behaviour of fictional clients presented in written vignettes. Both these investigations also found evidence of broadly appropriate staff causal beliefs, such as 'socially-mediated reinforcement', 'emotional states' and 'reacting to tasks or the environment' (Berryman et al., 1994). Many of the factors endorsed as likely causes reflected the operant view that challenging behaviour is affected by the actions of others in the environment (see Taylor &

Carr, 1992a) and/or the view that such behaviours are a means of communicating client needs (Carr & Durand, 1985b). This pattern of results was replicated with staff in community settings (Hastings, Reed, & Watts, 1997).

6.1.1. Factors Affecting Staff Attributions about Challenging Behaviour

The causal beliefs of staff thus appear to be broadly congruent with behavioural models, something which may reflect the influence of professional discourses in applied settings (Whittington & Burns, 2005). However, caution is needed in drawing conclusions, particularly in light of research which shows that when asked to suggest causes of challenging behaviour with clearly described functions, staff often fail to make appropriate attributions (Hastings, 1997). Oliver, Hall, Hales, and Head (1996) devised a questionnaire to measure the extent of a person's behavioural perspective on self-injurious behaviour. Information about the behaviour's likely function was included in questions or mini-scenarios, but in choosing between four causal hypotheses the 99 staff participating in the validation study made correct attributions on only 55% of responses.

A starker finding comes from a study by Morgan and Hastings (1998) in which 60 special educators read two functionally distinct challenging behaviour vignettes. Only 35% of participants identified the causal factor in the 'task-avoidance vignette' while less than 10% correctly attributed the cause in the 'attention-seeking vignette'. A further, experimental study (Hastings et al., 2003) has also demonstrated how behavioural function can affect the appropriateness of staff causal beliefs. In contrast to Morgan and Hastings (1998), it was found that endorsement of causal beliefs derived from behaviour-analytic models of challenging behaviour was greater for attention-maintained self-injury than it was for escape-maintained self-injury (cf. section 5.2.).

Another variable associated with variations in staff attributions in vignette studies is that of topography. The particular form of the challenging behaviour has been highlighted as a potential determinant of staff causal beliefs in both institutional (Hastings, Remington, & Hopper, 1995) and community environments (Hastings et al., 1997). For example, stereotypy tended to be viewed as a natural activity that provides stimulation for people with ID, with boredom and enjoyment identified as likely causes. In contrast, self-injury was rated as being more likely due to social/emotional factors (e.g. others' provocation, bad mood). Finally, Tynan and Allen (2002) found that the aggression of clients with mild ID was rated as being under the person's control to a significantly greater extent than similar behaviour shown by clients with severe ID.

Citing data from Wanless and Jahoda (2002) which suggests that attributions made about the behaviour of real clients are likely to differ from those made about fictional clients' behaviour, Noone, Jones, and Hastings (2006) studied the causal beliefs of 23 care staff about two clients who were known to them. The two young men displayed challenging behaviour with contrasting behavioural functions, but were matched for topography, frequency and intensity of behaviour as well as level of ID. Attributions varied in a manner that was broadly consistent with the hypothesised functions of the clients' aggression. Replications of this work are needed in order to establish if staff are sensitive to variations in 'real' client or challenging behaviour variables; if they are not, "their attributions may have little predictive value given that their own behaviour clearly does vary in response to challenging behaviour" (Noone et al., 2006: p.110).

In sum, it seems that although caregivers are aware of the dominant causal hypotheses in the literature, when their attributions for challenging behaviour described in vignettes are measured with greater specificity they are often inappropriate. These causal

beliefs appear to be affected by a number of factors, such as the form and function of the behaviour. However, as a reminder of the significance of research methodology, staff may make different attributions about different instances of 'real' or known client behaviour that do reflect some sensitivity to perceived causes, suggesting a degree of variation that may help to predict behavioural responses (Noone et al., 2006). Given this and the counter-habilitative nature of staff behaviour documented earlier, Noone et al. (2006) have made an urgent request for research which determines whether carers' attributions are reliably related to their tendency to reinforce challenging behaviours.

6.2. Staff Beliefs about Intervention for Challenging Behaviour

The second category of rules governing staff actions in Hastings and Remington's (1994a) framework concerns what to do about challenging behaviours. Research into staff intervention beliefs has again been based mainly on interviews or the use of fictional vignettes. In describing their strategies for managing challenging behaviour in interviews, staff tend to cite responses such as 'distraction', 'seclusion' and 'restraint' (Bromley & Emerson, 1995; Hastings, 1995). Berryman et al. (1994) devised several categories to describe the responses of 83 care staff to challenging behaviour vignettes, of which 'change task/environment' (62% of staff) and 'use reinforcement' (59%) were the most popular strategies proposed.

In a similar study, a content analysis of staff written responses was preferred to predetermined categories (Hastings, 1996). Fictional vignettes were given to 109 nursing staff in a large institution for people with ID and questions asked of the participants aimed to elicit how they would deal with the challenging behaviour in the immediate situation versus over the longer term. The most frequently reported immediate responses were

'distract' (37% of staff), 'find out the cause' (31%), 'make the environment safe' (30%) and 'calm/communicate' (29%). For the longer term, however, staff described approaches to intervention such as 'find out causes', for example, by completing ABC charts (56% of staff), 'adopt a management strategy', for example, by agreeing on a consistent team response (42%), 'involve the client in more activities' (33%) and 'normalise lifestyle' (16%) by making improvements in the person's living conditions.

The above intervention beliefs obtained from staff working in institutions were also obtained from 56 care staff working in community-based residences (Watts, Reed, & Hastings, 1997). Also evident in this community sample was the same distinction between immediate intervention strategies in conflict with behavioural approaches to challenging behaviour and longer-term intervention beliefs largely consistent with the aims of psychological interventions.

An interesting contrast thus arises. Caregivers' beliefs about intervening in the immediate situation, if they predict actual behaviour, are often of a form that would contribute to an environment where challenging behaviour is displayed and reinforced (Hastings, 1997) and would therefore be considered counter-habilitative. For example, whilst many carers believe that simply changing the task or distracting the person represent appropriate strategies, the high proportion of challenging behaviours maintained by escape or attention contingencies (Derby et al., 1992; Iwata et al., 1994) suggests that such interventions could inadvertently reinforce the behaviour in question. In contrast, staff descriptions of long-term interventions appear to be non-aversive and constructional (see Carr et al., 1994; Cullen, 2000; Repp & Singh, 1990) and as such are ones that most professionals would consider to be appropriate and habilitative. This distinction between short-term and long-term strategies resurfaces in section 7. below.

In the vignette-based studies described above, no information about the function of the behaviour was included. These investigations aimed to elicit general models of intervention that staff apply to challenging behaviour and providing information about causes may have restricted the range of responses provided (Hastings, 1996). Nevertheless, the drawback to this research method is that it is impossible to assess whether any habilitative strategies that staff report using are indeed appropriate for the particular behaviour in question.

Oliver et al.'s (1996) Self-Injury Behavioural Understanding Questionnaire directly addresses this issue as it provides information suggestive of behavioural function for items on the intervention beliefs subscale. Of the four answer-options accompanying each item, one represents a response that would reinforce the self-injurious behaviour in question. Encouragingly, across the four staff groups sampled (i.e. 'close daily contact', 'hospital', 'behavioural unit', 'behaviourally trained'), only 10% of the interventions selected were reinforcing. However, a job description breakdown showed that residential care workers, teaching assistants and unqualified nurses from the contact group were all more likely to choose a reinforcing response than not. It thus appears that those in close contact with people who self-injure have a relatively poor appreciation of a behavioural perspective on intervention, a finding singled out as a cause for concern by the authors.

To summarise, available evidence suggests that the short-term intervention strategies that staff deem appropriate are often of a manner likely to contribute to the maintenance of challenging behaviour. The one caveat to this finding concerns staff beliefs about how to intervene over the longer-term, which are reported as being appropriate insofar as they relate to behaviour that would likely contribute to a habilitative environment.

Compared to staff rules about ‘why’, relatively few studies have been undertaken of staff rules about ‘what to do’. The reason for this may be related to a point suggested by Hastings, Remington, and Hopper (1995). When a carer cites a counter-habilitative intervention strategy, it is not readily apparent whether that choice was guided by a functional approach (i.e. intervention behaviour is based on inaccurate beliefs about causes) or by what Hastings and Remington (1994a) term a ‘needs-based’ approach (i.e. intervention behaviour is based on accurate beliefs about causes, but the causal information is used in a ‘non-functional’ manner, one which prioritises the needs identified in the motivation behind the challenging behaviour). When adults interacting with children displaying challenging behaviour attend less to those assessed as ‘social avoiders’ and more to those assessed as ‘attention seekers’ (Carr et al., 1991; Taylor & Carr, 1992b), this may represent examples of staff utilising a needs-based model to respond to challenging behaviour.

7. Contribution of Emotions & Beliefs to the Prediction of Staff Behaviour

In short, to understand caregivers’ inappropriate intervention beliefs properly, their causal beliefs need to be studied in tandem. Causal beliefs, on the other hand, may be studied without accessing staff intervention beliefs, as research into belief-behaviour relationships within Weiner’s (1980, 1993) cognitive-emotional framework has demonstrated. Studies attempting to extend Weiner’s attributional model of helping behaviour to staff working in ID services (Dagnan, Trower, & Smith, 1998; Hill & Dagnan, 2002; Jones & Hastings, 2003; Stanley & Standen, 2000; Wanless & Jahoda, 2002) represent the only body of research to date investigating the relationships between

staff beliefs about challenging behaviour and their behavioural responses to it (Hastings, 2005). In general terms, certain associations are posited between beliefs and behaviour that are mediated by affect. More specifically, Weiner's model predicts that staff attributions (i.e. about the locus, stability or controllability of the causes of challenging behaviours) will be associated with emotional responses that, in turn, will tend to increase or decrease staff willingness to expend effort in helping a client. In particular, staff making attributions of control towards a client (e.g. "they are seeking attention") will likely feel anger and be unlikely to assist, whereas attributions of control outside the client will tend to engender feelings of sympathy or pity and this will predict therapeutic commitment or helping behaviour (cf. Schmidt & Weiner, 1988; Weiner, 1980, 1993).

In terms of the findings obtained to date by researchers working with cognitive models of care staff behaviour, Dagnan et al. (1998) found that staff attributions of controllability predicted willingness to help. However, their conceptual analysis involved combining Weiner's theories of both helping behaviour and achievement motivation (Weiner, 1985) and the mediated effect was for optimism or 'expectancy of success', not for emotion (Jones 2001). Stanley and Standen (2000) found that stability attributions about challenging behaviour and positive emotion were both associated with willingness to help. However, the authors did not report analyses suitable for establishing the mediational role of affective responses as predicted by Weiner's helping model (Jones & Hastings, 2003).

There are additional methodological problems with the studies cited above. These include use of an attributional measure that lacks psychometric robustness and definitions of helping behaviour lacking a functional perspective (i.e. giving no indication of whether the 'helping' would tend to maintain or extinguish the challenging behaviour). In one

study where the function of staff self-reported helping was distinguished, no associations between staff attributions and their selected intervention responses were found (Jones & Hastings, 2003). Overall, only very limited support has been found for a mediational role of affect in the relationship between attributions and helping behaviour and the applicability of Weiner's cognitive model to staff working with challenging behaviour in ID settings has not been proven (Jones & Hastings, 2003). However, few studies have been conducted and calls for further efforts have been made (Noone et al., 2006; Stanley & Standen, 2000), particularly as it is this research more than any other that seeks to identify which particular emotional responses will emerge, under what circumstances and with what specific effects on behaviour.

Of course, even if the evidence from the cognitive-emotional research above had proven stronger, it would still have been reliant on participant self-reports and therefore subject to the thorny question of just how close or reliable the relationship is between how staff describe their intervention responses to challenging behaviour and how they *actually* respond in situ (Jones & Hastings, 2003). Crucially, then, despite their theoretical importance to both behavioural and cognitive theories, no direct evidence of any effects of staff emotions and beliefs about challenging behaviour on staff actual intervention behaviour has yet been gathered (Hastings et al., 2003). Experimental tests that permit a behavioural response from participants are needed.

One such experimental test has, in fact, been carried out by Hastings, Remington, and Hall (1995). Starting from the position that both staff beliefs and their emotional responses are likely to influence their intervention behaviour, the authors set out to compare the relative contribution made by each within the behaviour-analytic framework set out earlier (Hastings & Remington, 1994a). Human behavioral software was used to

simulate a care situation and participants were asked to interact with two figures or 'people' on a computer screen. The first person was an 'attention seeker' who engaged in high rates of self-injury when not being attended to and low rates when being attended to; the other person was a 'social avoider' who behaved in the opposite fashion. Participants could 'attend' to either one or the other by moving a mouse pointer between them and by carrying out a vigilance task analogous to engaging the person in educational activities. In order to simulate the contingencies generated by the pattern of self-injurious responding in question, the schedule determining rate of self-injury was switched between high and low rates immediately after a participant shifted his or her attention from one person to the other.

The potential for experimental caregiving or intervention behaviour to be shaped by these contingencies was then pitted against the effect of certain rules on such behaviour. Groups were told the 'results of a functional assessment' (i.e. hypotheses about causes) or were given 'advice from a psychologist' about who to spend more or less time with (i.e. performance-related rules). The results of the study showed that those participants given performance-related information behaved in accordance with the advice given, even when this advice was incorrect and did not lead to lower rates of self-injury. On the other hand, participants given functional analysis information appeared not to know how to translate this into attending behaviour and divided their time roughly equally between the two people, as did the group who were given no additional information.

It was thus concluded that performance-related rules (i.e. intervention beliefs) played an important part in determining behaviour within the simulation, whereas rules that do not carry with them clear performance requirements (i.e. causal beliefs) may not be used in immediate situations where challenging behaviours are being shown. Hastings (1999)

cited this finding as supporting a position that staff responses to challenging behaviours, like the majority of human behaviour (Catania et al., 1990), are rule governed. However, the data do not completely bear this out. Evidence to suggest that the different contingencies in operation within the simulation impacted on participants' behaviour may have been minimal, but was sufficient for the authors to conclude that "the data did not suggest that our question is an 'either-or' about the rule-governed or contingency-shaped nature of participants' behavior. Rather, rules and 'natural' contingencies may work together to influence people's behavior" (Hastings, Remington, & Hall, 1995: pp.445-6).

Discussion of the relative impact of staff affect and cognition on their behaviour brings us back to the distinction between what carers think and feel in the moment that challenging behaviour is being displayed versus how they approach such behaviour across situations or over time (Hastings, 1996; Watts et al., 1997). One view on the contrast between inappropriate immediate responses and appropriate longer-term strategies is that something about the aversive nature of challenging behaviours in the moment of dealing with them leads caregivers not to act in accordance with the appropriate beliefs or knowledge that they actually possess (Hastings, 1999). If this is correct, (i) staff would have difficulty adhering to formal behavioural programmes, and (ii) research would implicate reasons related to caregiver escape behaviour. The question arises as to whether these assertions are supported in the literature.

8. Staff Role in Formal Intervention Programmes for Challenging Behaviour

The process of addressing this question brings the present review full circle back to staff behaviour and in doing so draws it to a conclusion. In terms of the first assertion concerning the role of staff in organised interventions, reviews do indeed conclude that where behavioural programmes exist, they are often not followed by staff or are incorrectly or inconsistently implemented (Emerson & Emerson, 1987; Hastings & Remington, 1993, 1994b; Holburn, 1997; Woods & Cullen, 1983). Moreover, lack of adherence on the part of care staff has been identified as one of the principal reasons why the potential of behavioural programmes to bring about significant and durable changes in the behaviour of individuals with ID is seldom realised (Emerson & Emerson, 1987).

As for the second assertion concerning caregiver escape behaviour, the evidence seems to suggest that if staff actions are a barrier to effective implementation of formal programmes, this may be due more to their attitudes and preferences than escape from aversive contingencies. For instance, Woods and Cullen (1983) report that whilst a period of enthusiasm may accompany the introduction of new behavioural programmes, once initial interest subsides they are often abandoned. This suggests that formal interventions may not feature prominently in the priorities of care staff. Indeed, in responding to challenging behaviours, staff do not prioritise adherence to the rules and methods of behavioural programmes; rather their chief concerns appear to be preventing harm, stopping the behaviour (e.g. via distraction) and trying to calm the situation (Hastings, 1996; Watts et al., 1997). Finally, a lack of behavioural knowledge and skills has been cited as a barrier to programme implementation (Donat & McKeegan, 1990).

Nonetheless, Hastings' (1999) suggestion that staff short-term behaviour is chiefly influenced by negative emotional reactions whereas staff long-term behaviour is primarily influenced by beliefs may still have credence. Treatment acceptability research (e.g. Kazdin, 1981; Witt, Martens, & Elliot, 1984) shows that adults prefer interventions that generate few undesirable side effects and lead to minimal disruption, regardless of efficacy. The implication is that these side effects and disruptions constitute aversive stimuli (e.g. the extinction bursts accompanying escape extinction procedures). The hypothesis that behavioural programmes might not be carried out faithfully if the procedures evoke reactions from clients that serve to punish the caregiver's attempts at faithful intervention was investigated in a study by McConnachie and Carr (1997). They measured responses to two interventions: functional communication training and escape extinction. Treatment fidelity was higher and the intervention was reported as less stressful for the functional communication training, which led to a prompt reduction in challenging behaviour rather than a pronounced extinction burst. Thus, there may be a role for both contingencies/affective determinants and rules/cognitive determinants in accounting for low staff adherence to behavioural programmes.

9. Broader Spectrum of Influences on Staff Behaviour: The Need to Look Beyond Affective & Cognitive Factors

Finally, whilst this review has focused on caregivers' emotions and beliefs as potential influences on their actions, it is clear that the determinants of staff behavioural responses to challenging behaviour in ID service environments are complex and manifold (Allen, 1999; Hatton, Rivers Emerson et al., 1999; Reid & Whitman, 1983; Whittington & Burns, 2005). There is a need to look beyond the two primary factors reviewed here in

order to consider organisational structures and their effects upon the behaviour of individual actors (Tizard, 1976). These include: the influence of the informal workplace culture, particularly on the behaviour of new staff members who quickly learn their colleagues' everyday ways of working and existing values (Hastings, 1995; Whitworth, Harris, & Jones, 1999); management factors associated with staff stress and burnout such as lack of support and non-participation in decision-making (Dyer & Quine, 1998; Hatton, Emerson et al., 1999); the impact of the physical environment (e.g. the competing behaviour of other residents, staffing levels) on the perceived utility of behavioural methods (Emerson & Emerson, 1987); and the effect of mismatches between staff perceptions of real and ideal organisational cultures in terms of how tolerant/staff oriented, rewarding or innovative they are perceived as being (Hatton, Rivers, Mason et al., 1999).

10. Review Summary

In the field of ID and challenging behaviours, analysis of staff behaviour is a priority (Hastings & Brown, 2000). This review has focused on the actions of staff in response to challenging behaviour. The key clinical and research issue at stake has been the elucidation of why caregivers in ID service environments might unwittingly behave in a counter-habilitative manner, both during their day-to-day responding to challenging behaviours and during the implementation of formal behavioural programmes.

The empirical investigations summarised here are driven by the hypothesis that the most prominent influences on how staff respond to challenging behaviours are their beliefs about such behaviours and their emotional reactions to them. Evidence indicates that staff respond to challenging behaviour with strong negative emotion that may predispose them

to engage in escape actions that reinforce the behaviour in question. Evidence also exists to suggest that carers inaccurately attribute causes for problem behaviour when the client is fictional, although they perform somewhat better when the client is known. In addition, research findings have shown that staff beliefs about how to intervene in the immediate situation are inappropriate insofar as they would, if acted on, predict staff actions that contribute to the maintenance of client challenging behaviour. In contrast, staff beliefs about how to intervene with challenging behaviour over the longer term appear to be constructional and unlikely to reinforce the behaviour. Thus a more encouraging picture of habilitative staff action is hinted at in this regard.

Finally, considerable research data now show how staff negative emotions and beliefs may themselves be multiply determined by client, challenging behaviour or caregiver variables. However, evidence showing *direct* links between staff emotional or cognitive responses and staff behavioural responses to challenging behaviour (i.e. which transcends staff self-report) is, unfortunately, relatively scarce (Hastings, 2005). The following section will discuss how the body of work amassed to date might be extended in order to address this and other research questions that are as yet unanswered.

11. Methodological Issues & Future Research

Both behavioural and cognitive models have been used to guide empirical investigations into staff negative emotional reactions to/beliefs about challenging behaviours, with all research subscribing to the general assumption that staff cognitive and affective factors are related in reliable ways to a tendency to inadvertently reinforce challenging behaviour. Whilst such an assumption seems reasonable given its theoretical

underpinnings, it remains merely an assumption. Consequently, all studies to date have been undertaken in the absence of direct evidence showing that beliefs in any domain or negative emotions of any kind do indeed predict actual staff intervention behaviour. An empirical gap exists and research aimed at closing it is required.

In addition, there is the question of the assumed relationship between what people say they do in self-report studies and what they actually do in 'real' situations. This too seems a reasonable assumption given the adequate correspondence between beliefs and behaviour uncovered by social psychologists (see Ajzen & Fishbein, 1977). Ultimately, though, an over-reliance on staff self-reports may lead to biases in research findings and therefore direct evidence of the putative relationships between staff cognition, affect and counter-habilitative behaviour is needed. Such evidence, though, is likely to continue to remain elusive without systematic experimental or quasi-experimental manipulation of the sort reported in the child-effects literature (see Taylor & Carr, 1994).

The main reason that no investigations of actual staff intervention behaviour have yet taken place is that it has been difficult to devise an ethical means of studying staff beliefs or emotions and potentially related behavioural responses in situ, given that these responses may increase the likelihood of client challenging behaviour. In effect, ethical constraints mean that the studies of Carr, Taylor and colleagues of the early 1990s would not be approved by today's ethics committees and alternative research methods are consequently needed. One methodology that could be exploited by future studies is behavioural simulation of the sort utilised in the Hastings, Remington, and Hall (1995) study discussed earlier. Computer simulations should allow crucial research questions to be addressed in this area without the ethical concerns stemming from attempts to analyse the effects of inappropriate staff beliefs or difficult emotions on real challenging

behaviours. Whilst applied environments cannot be replicated completely, recent technological advances now allow the essential aspects of reciprocal reinforcement in a teaching/care situation to be simulated in *interactive*, computer programs (Remington, Hastings, Hall, & Bizo, 2004). An acceptable and potentially productive methodology for capturing staff actual intervention behaviour is therefore available.

In order to address the paucity of evidence bearing directly on the analysis of staff behaviour, whilst bearing in mind the finding that real incidents of aggression evoke stronger emotional reactions and more negative evaluations of clients than fictional incidents (Wanless & Jahoda, 2002), a multi-phase research programme is recommended. Controlled experiments in the laboratory could generate findings to be followed up by naturalistic observation of staff responses to 'live' incidents of challenging behaviour. Extended research efforts combining these contrasting yet complementary methodologies have yet to figure in the literature on staff responses to challenging behaviour, despite recent calls for their implementation (Jones & Hastings, 2003; Mossman et al., 2002).

In terms of specific avenues of investigation, three further recommendations can be made. First, future research should be directed towards developing and refining reliable instruments for the measurement of challenging behaviour-related staff affect and cognition (Hastings, 1997, 2002). A more sensitive approach to the measurement of staff negative emotional reactions to behavioural challenges might address the question of key topography-specific emotions. In terms of attributions, Hastings (1997) has called for a common approach to measurement to be adopted, one that permits comparison between carers working across different settings and contexts.

Second, the majority of the research reviewed here has been conducted in institutional or community residential care settings, many of which cater for *adults* with ID. However, the stubborn persistence of challenging behaviour noted earlier and the finding that some forms are reported to escalate in severity during the transition from childhood to young adulthood (Kebbon & Windahl, 1986; Oliver, Murphy, & Corbett, 1987) require that more research be conducted on the emotions, beliefs and actions of staff in special education settings. It is these caregivers who have the most contact with challenging behaviour during its earlier developmental manifestations when it has yet to become a more serious clinical problem (see Cormack, Brown, & Hastings, 2000; Wacker, Berg, & Northup, 1991).

Finally, Hastings (1997) observes that caregiver behaviour may also be instrumental in the development and maintenance of adaptive client behaviour. Clegg (1994) notes that staff often strive hard to understand the needs and desires of clients, whilst Whittington and Burns's (2005) qualitative study noted an adherence to a human-rights driven philosophy in staff who were troubled by the limitations of a narrow behavioural discourse. Furthermore, Bell and Espie (2002) recently found a range of positive as well as negative feelings in a staff group towards people who engage in challenging behaviours. Research on staff beliefs and emotions potentially related to habilitative or non-reinforcing behavioural responses could contribute to improved staff support for client skills, but this is an area that, to date, remains largely unaddressed.

The present review has brought together theory and research on aspects of staff negative emotional reactions to and beliefs about challenging behaviours. Implications for future research have been identified, some of which have been explicitly addressed here. As a result, an agenda for research in the short-to-medium term has been set.

12. Implications for Clinical Practice

The work reviewed here has perhaps its most significant clinical application in the area of staff training and management (Allen, 1999; Hastings & Remington, 1994b). Over time, considerable efforts and resources have been directed at this area (cf. Cullen, 1992; Kushlick, Trower, & Dagnan, 1997; Reid, Parsons, & Green, 1989). However, the general consensus is that, thus far, training has failed to bring about lasting changes in either staff or client behaviour (Clements, 1993; Cullen, 1988).

The findings discussed in the present review suggest at least two reasons why this may be so. First, training programmes attempt to change or intervene with the behaviour of staff but usually do so without recourse to any sort of functional analysis of that behaviour or the influences on it beforehand. This is analogous to attempting an intervention for client challenging behaviour without conducting a prior functional assessment and, as Hastings (1999) has noted, when the issue of function is not addressed, lasting change usually remains elusive. Second, the emotions and beliefs reported here suggest that staff experience a number of dilemmas in their practice (see Heyman, Swain, & Gillman, 1998; Whittington & Burns, 2005). Examples include: understanding challenging behaviour as a behaviour problem versus seeing it as a means of communication; interpreting causes of behaviour in a functional versus a needs-based manner; and holding beliefs about responding firmly to behaviour that has been learned versus beliefs about responding kindly to behaviour that implicates the social environment. The tensions that stem from these dilemmas would likely undermine training efforts unless they are addressed.

Staff training in ID settings needs to reinvent itself. The aforementioned simulation (Hastings, Remington, & Hall, 1995) plus recent developments in human behavioural software herald the possibility of a major shift in training methods towards more interactive, 'hands-on' approaches (Remington et al., 2004). For instance, the effects of certain inappropriate intervention beliefs/strategies exposed on the computer screen could be witnessed 'first-hand' and then compared to the effects of more appropriate beliefs.

Staff training programmes could also focus on breaking links between challenging behaviour and negative emotional reactions (Hastings, 2002), since doing so may promote staff engagement with clients and improve adherence to formal interventions (Whittington & Burns, 2005). One specific training route into this is suggested by the finding that different forms of challenging behaviour are associated with differential effects. For instance, sharing with staff that self-injury may be the most emotionally disturbing form or that aggressive behaviour may be particularly associated with strong, fearful reactions (Bromley & Emerson, 1995; Hastings & Remington, 1995) is not only empowering, but insofar as it relates to fairly digestible parts of the behavioural systems model would add to caregivers' behavioural expertise. Critical to the success of training initiatives such as this is the fostering of an environment in which the emotional impact of working with challenging behaviour is acknowledged (Whittington & Burns, 2005) so that staff feel comfortable 'owning' strong and often unpleasant feelings.

In terms of assessment and intervention, many formal procedures aim to extinguish challenging behaviour without acknowledging either the impact of extinction bursts on staff asked to implement them or the impact of staff aversion to the target challenging behaviour on treatment fidelity (Hastings & Remington, 1995). The potential for staff to

experience strong negative emotional reactions such as disgust and fear should therefore be an automatic consideration when planning intervention programmes for challenging behaviours in order to improve the prospects for effective implementation. Once interventions are up and running, there might be value in services ensuring regular team discussion of the feelings engendered by specific behavioural challenges. Negative emotional reactions may be at their most intense after critical incidents and a special emphasis on debriefing could help to counter any tendency for the use of punishment to be considered appropriate whilst feelings are running high (Fenwick, 1995) and help to ensure that behavioural programmes are maintained through difficult periods.

The most difficult aspect of implementing such programmes, particularly ecological interventions which implicate the people and systems around the focus client such as positive programming (see LaVigna, Willis, & Donnellan, 1989) or person-centred planning (see Holburn, 1997; Kincaid, 1996), is maintaining staff commitment over time (Mount, 1992). This problem is most pronounced when the intervention package is not embraced by staff during the initial implementation (Risley, 1996). It has therefore been proposed that any assessment of challenging behaviour be extended to include a functional analysis of staff perspective on the behaviour (Hastings & Remington, 1994a; Hastings, 1999; Jones, 2001). Although carers may hold similar beliefs to professionals about why challenging behaviours occur, the present review has shown that their beliefs about how to act when those behaviours are being displayed may well be quite different from the principles underlying organised intervention. Having assessed the causal and intervention beliefs of relevant staff members, careful planning and monitoring on the part of programme designers should aim to establish in what circumstances these beliefs are actually reflected in staff remediation efforts.

Finally, substantial stress levels are reported by staff populations (Robertson et al., 2005; Hatton, Rivers, Emerson et al., 1999) and it may be that many of the negative emotions discussed accumulate over time to affect staff psychological well-being (Hastings, 2002). Indeed, recent studies indicate that staff negative emotional reactions to challenging behaviour are predictive of job-related stress/burnout (Mitchell & Hastings, 2001; Rose, Horne, Rose, & Hastings, 2004) and there exists the possibility that stress/burnout could also affect the way in which staff interact with clients who challenge (Rose, Jones, & Fletcher, 1998). At the very least, the potential for the clinical implications of the work under review to extend to caregivers themselves requires consideration.

The analyses of staff cognitive, emotional and behavioural responding to client challenging behaviour presented in this review possess a number of implications for practice in clinical settings. Substantial issues of applied relevance relating to assessment, intervention and staff training have been laid out and, as such, the clinical case for ongoing vigorous research in the reviewed area seems strong.

13. Concluding Thoughts on Progress Made

In 1992, John Clements wrote a seminal article on challenging behaviour in which he bemoaned the narrow focus on 'client solutions'. He proposed the development of a broader framework, one capable of embracing the many determinants of human behaviour in a more ecologically sound manner, a sentiment that was echoed by others at around the same time (e.g. Clegg, 1994; Hill-Tout, 1992; McGill, 1993). Since this need for a more macro-level awareness was expressed, the behaviour-analytic case for studying the

behaviour of carers in ID settings has been well made; staff responses to challenging behaviour are pivotal in contemporary theoretical models of how such behaviour is developed and maintained and are central to ongoing research (Hastings, 2005). Stemming from this, empirical work targeting the potential affective and cognitive influences on the behaviour of staff working with challenging behaviour has begun to blossom. Advances in understanding have ensued with implications for psychological work with staff; at the same time, more theory and research development should reduce the methodological limitations and gaps in knowledge that still remain. The gains made over the last decade are considerable, although, as Hastings and Brown (2000) have pointed out, they represent but one step on a long road.

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Empirical Paper

Staff Responses to Self-Injurious Behaviour in Children with Intellectual Disabilities: An Investigation Utilising a Computer-Simulation Paradigm

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Prepared as if for submission to:

Research in Developmental Disabilities

Abstract

Self-injurious behaviour in people with intellectual disabilities can be a severely disabling and intransigent problem. The need for a macro level awareness in addressing this clinical problem has seen a burgeoning research literature on the behaviour of paid education/care staff, which has been identified as a significant factor in the development and maintenance of challenging behaviour. The beliefs of caregivers about self-injury and their emotional reactions to it are likely to influence their behaviour. Indeed, much of the research conducted in this area assumes this to be so. However, to date there have been no documented attempts to obtain direct evidence of the effects of staff cognition and/or affect on actual staff intervention behaviour. This deficit was addressed by means of a quasi-experimental study that allowed a behavioural response from participants. Measurements of beliefs and emotional reactions were taken from special education staff who were asked to respond to a computerised simulation of a work situation. This involved the teaching and care of a 'virtual child' who engaged in self-injurious behaviour of either mild or severe intensity. Analyses of the 'interactions' indicated relationships between cognitive and emotional responses and actual intervention behaviour when that behaviour was habilitative or non-reinforcing. Participants with a greater behavioural perspective and less self-reported negative affect engaged in more habilitative behaviour. No significant results were obtained for counter-habilitative staff behaviour that reinforced the self-injury. In light of the study's findings, methodological and conceptual issues are considered and implications for research and practice are discussed.

Keywords: Self-injurious behaviour; Computer simulation; Staff; Counter-habilitative; Intervention behaviour; Attributions; Intervention beliefs; Negative emotional reactions; Intellectual disabilities

1. Introduction

Within the field of intellectual disability (ID), challenging behaviours are the subject of much clinical and research attention (Emerson, 2001). One notable example is repeated, self-inflicted, non-accidental injury, or self-injurious behaviour (SIB). The most common forms of SIB are head hitting, head-to-object banging, self-biting/scratching and skin picking (Emerson et al., 2001b; Rojahn, 1986) and multiple topographies are shown by many who self-injure (Oliver, Murphy, & Corbett, 1987; Rojahn, 1986). Prevalence rates vary between 4% and 15% depending on the population studied (Borthwick-Duffy, 1994; Emerson et al., 2001b; Schroeder, Schroeder, Smith, & Dalldorf, 1978). SIB presents significant problems to the individuals concerned, including potentially serious health consequences (Borthwick-Duffy, 1994) and greater risk of abuse (Zirpoli, Snell, & Loyd, 1987). It is also associated with stress and burnout in care staff (e.g. Jenkins, Rose, & Lovell, 1997) and elevated levels of family distress (e.g. Quine & Pahl, 1985).

The early development of SIB in people with ID is not particularly well understood (Symons, Sperry, Dropik, & Bodfish, 2005). Available information suggests that internally regulated rhythmic behaviours emerge in early childhood, becoming stereotyped responses to environmental stimulation before developing into learned behaviours emitted to affect others (Guess & Carr, 1991; Hall, Oliver, & Murphy, 2001; Murphy, Hall, Oliver, & Kissi-Debra, 1999; Oliver, Hall, & Murphy, 2005; Richman & Lindauer, 2005).

Berkson and Tupa (2000) point to the prolonged opportunity in developmentally delayed children for repetitive SIB to come under stimulus control, thereby allowing it to be shaped and maintained by contingent environmental events through the operant processes of positive and negative reinforcement (Carr, 1977; Edelson, Taubman, & Lovaas, 1983).

Psychological interventions are based on hypotheses about the functions which these operant behaviours serve (Repp, Felce, & Barton, 1988) and functional assessments of clinically referred samples (e.g. Derby et al., 1992; Iwata et al., 1994) suggest that a good deal of reinforcement is social in nature; indeed, approximately 70% of challenging behaviour such as SIB is reported to serve functions that relate to social effects such as securing attention or escaping from social/academic demands. Thus, in many cases, the antecedents and consequences of SIB are behaviours of other people, particularly paid staff in service environments and an analysis of these behaviours is therefore of prime importance (Hastings & Remington, 1994a; Hastings & Brown, 2000).

Staff reportedly spend little time responding to appropriate behaviour or engaging in desirable interactions (Felce et al., 1987; Hile & Walbran, 1991; Repp, Felce, & de Kock, 1987), with reactive strategies to severe challenging behaviours accounting for the majority of contact (Duker et al., 1989; Emerson, Beasley, Offord, & Mansell, 1992). Reviewing the research, Hastings and Remington (1994b) concluded that staff responses, though successful in stopping challenging behaviour in the short term, tend to be reinforcing in nature, thereby increasing the likelihood of problems in the long term. In particular, staff attention is a frequent consequence of challenging behaviour (Thompson & Iwata, 2001), thus potentially leading to its maintenance. The problem may be exacerbated if staff act more readily after SIB has escalated in severity. For example, in a Hall and Oliver (1992) case study, social contact of a reinforcing nature was more likely to follow longer bursts of SIB than shorter bursts, thus differentially reinforcing a more severe form of self-injury.

If care staff behaviour is seen as the mechanism by which SIB is developed and maintained within the behavioural repertoire of people with ID (Hastings, 1999; Hastings & Remington, 1994b), the key clinical and research issue is to explain why staff might

inadvertently behave in a counter-habilitative manner. It is hypothesised that among the most prominent influences on caregivers' behavioural responses are their beliefs about challenging behaviours and the emotional reactions that the behaviours engender (Bromley & Emerson, 1995; Hastings & Remington, 1994a; Hastings, Remington, & Hall, 1995).

In terms of beliefs, the general assumption is that understanding staff thinking about challenging behaviour will reveal something about why they behave as they do. Hastings and Remington (1994a) note that within a behaviour analytic framework, caregivers' beliefs can be conceptualised as self-generated 'rules' (cf. Zettle, 1990) that may govern their behaviour. Most research attention (see Hastings, 1997, 1999) has been devoted to either staff causal attributions about challenging behaviours (i.e. rules concerning why SIB occurs) or staff beliefs about appropriate intervention for such behaviours (i.e. rules concerning what to do about SIB).

Several investigations into staff attributions have yielded quite similar results. Hastings (1995) interviewed carers about why they thought challenging behaviour occurred. They cited 'attention', 'communication/expression' and 'environmental conditions' as the most common causes and their beliefs therefore seem partially congruent with prevailing psychological hypotheses. Studies using written vignettes describing fictional accounts of challenging behaviour (e.g. Berryman, Evans, & Kalbag, 1994; Hastings, Remington, & Hopper, 1995) have also elicited broadly appropriate causal attributions from staff, such as 'communicating needs', 'securing socially-mediated reinforcement' and 'rejecting tasks'. Thus, it appears that care staff may identify with behavioural models in this belief domain.

However, by way of highlighting the importance of research methods, when asked to suggest causes of challenging behaviour with clearly described functions, staff often fail to make appropriate attributions (Hastings, 1997). For example, Oliver, Hall, Hales, and Head (1996) measured staff beliefs about SIB depicted in scenarios on a questionnaire. Information about the behaviour's likely function was included, but in choosing between four causal hypotheses staff made correct attributions for only 55% of the scenarios. More emphatic is a study by Morgan and Hastings (1998) in which special educators read two functionally distinct vignettes. Only 35% of participants identified the cause in the 'task-avoidance vignette' while less than 10% correctly attributed the cause in the 'attention-seeking vignette'. It seems that although caregivers are aware of the dominant causal hypotheses in the literature, their attributions, when measured with greater specificity, are often inaccurate and therefore may have an impact on counter-habilitative staff behaviour.

The second class of staff beliefs examined in the literature are those about how to intervene when SIB is displayed. When interviewed about their responses to SIB, carers have tended to cite strategies such as 'distraction', 'seclusion' and 'restraint' (Bromley & Emerson, 1995; Hastings, 1995). When vignette methodology is used, however, the most frequently reported intervention responses tend to be slightly more habilitative, such as 'change task/environment', 'use reinforcement' (Berryman et al., 1994), 'find out cause', 'make environment safe' and 'calm/communicate' (Hastings, 1996).

Oliver et al.'s (1996) SIB questionnaire also elicits intervention beliefs, with one of the four options accompanying each scenario being a response that would reinforce the SIB. Across all staff groups (i.e. 'close daily contact', 'hospital', 'behavioural unit', 'behaviourally trained'), only 10% of the interventions selected were reinforcing. However, a job description breakdown showed that residential care workers, teaching

assistants and unqualified nurses from the contact group were all more likely to choose a reinforcing response than not, a finding singled out as a cause for concern by the authors.

The intervention beliefs cited here are evident in community as well as institutional settings (Watts, Reed, & Hastings, 1997). If they predict actual behaviour, they would likely contribute to an environment in which SIB is displayed and reinforced (Hastings 1997). For instance, whilst many carers believe that changing the task or distracting the person are appropriate, the high proportion of SIB maintained by escape or attention contingencies (cf. Derby et al., 1992; Iwata et al., 1994) suggests that such interventions may often inadvertently reinforce the behaviour. Moreover, beliefs favouring restraint and seclusion are in conflict with the broad consensus that approaches to SIB should be non-aversive and constructional (cf. Carr et al., 1994; Cullen, 2000; Repp & Singh, 1990).

In sum, staff causal attributions and intervention beliefs may both be implicated in the long-term maintenance of SIB in ID service environments. Whilst relationships between the two belief domains are poorly understood (Hastings, 1997), they have been investigated in one study where a negative correlation between correct behavioural attributions and selection of a reinforcing intervention response was found (Oliver et al., 1996). Hastings (1997) suggests that knowledge of basic behavioural processes or practices (e.g. effect of schedules of reinforcement) may be implicated in the ability of staff to translate accurate attributions into appropriate beliefs about action. In support of this, staff behavioural knowledge was associated both with more appropriate attributions about SIB and fewer inappropriate intervention beliefs in the Oliver et al. (1996) study.

However, interest in staff beliefs or in behavioural knowledge has little practical merit unless it can be established that they are reliably related to staff habilitative or

counter-habilitative behaviour. This issue has, in fact, been addressed by researchers working with the cognition-emotion models of Weiner (1980, 1985, 1993), with some of these studies finding that attributions about the stability or controllability of challenging behaviour presented in vignettes were correlated with carers' stated intention to expend effort helping the client (Dagnan, Trower, & Smith, 1998; Stanley & Standen, 2000). However, overall, this body of research has yielded mixed results and, given additional methodological limitations, the empirical evidence for any effect of staff beliefs about challenging behaviours on their actions is weak (see Jones & Hastings, 2003).

Even if the evidence from this cognitive-emotional research had proven stronger, it would still have been reliant on staff self-reported responses to vignettes and therefore subject to the thorny question of just how close or reliable the relationship is between carers' *reports* of intervention behaviour and their *actual* behavioural responses to challenging behaviour such as SIB (Jones & Hastings, 2003). Crucially, despite their theoretical importance to both behavioural and cognitive models, no direct evidence of any effects of staff beliefs on their observed intervention actions has yet been gathered (Hastings, Tombs, Monzani, & Boulton, 2003).

Investigations of intervention behaviour that permit an actual response from participants have, until now, remained some way off. The main reason for this is that it has been difficult to devise an ethical means of studying beliefs and potentially related behaviours in situ, given that these responses may increase the likelihood of SIB. Fortunately, the methodology of behavioural simulation is available (Epstein, 1986) and whilst applied environments cannot be replicated completely, recent advances in human behavioural computer software now allow the essential aspects of a teaching/care situation to be simulated (Remington, Hastings, Hall, & Bizo, 2004). Indeed, one study (Hastings,

Remington, & Hall, 1995) has already piloted a SIB simulation in order to examine the impact of contingencies and rules on the behaviour of undergraduates (concluding that rules were paramount but both had a part to play in influencing actions). An acceptable methodology for capturing actual behavioural responses to SIB and thus investigating whether caregivers' beliefs do predict their behaviour *is* therefore now available.

In turning to the second factor of negative emotional reactions to SIB, from a behavioural perspective, staff actions are not solely viewed as governed by rules, but are also understood as shaped by contingencies (Hastings & Remington, 1994a). Behavioural systems models suggest that just as challenging behaviours are often affected by staff behaviour, so staff behaviour may be directly affected by challenging behaviours in a cyclical system of mutual influence (Oliver, 1995; Taylor & Carr, 1992). An example comes from a case study of a client who self-injured when the probability of staff attending to him was low. His SIB operated as a sufficient condition (an antecedent) to elicit staff attention (a behaviour) which was followed by the negative reinforcement of SIB abating (a consequence). The vicious circle closed when cessation of SIB was accompanied by staff attention returning to low, pre-self-injury levels (Hall & Oliver, 1992).

This notion of interlocked contingencies or reciprocal reinforcement has previously been proposed as a crucial process in understanding the impact of child positive and negative behaviours on the actions of adults, known as 'child effects' (Berberich, 1971; Emery, Binkoff, Houts, & Carr, 1983; Patterson, 1982). The application of reciprocal reinforcement to the maintenance of SIB (Carr & Durand, 1985; Oliver & Head, 1990) is supported by child effects research showing that the attending and intervention behaviour of adults is related to the function of challenging behaviour, such that in the short term the lowest rates of the behaviour result (Carr, Taylor, & Robinson, 1991; McConnell &

Carr, 1997; Taylor & Carr, 1992). Similar findings from experimental research using a computerised simulation of SIB add further support (Hastings, Remington, & Hall, 1995) as do descriptive analysis data which suggest that observing the distribution of staff attention can serve as a useful functional assessment tool (Taylor & Romanczyk, 1994).

In light of the above, it has been proposed that staff find SIB aversive and that they quickly learn to reduce this aversive experience through escape behaviour (Hall & Oliver, 1992; Oliver, 1995). Such behaviour is likely to consist of approach responses for attention-maintained SIB and physical avoidance responses for SIB maintained by escape contingencies (Taylor & Carr, 1992). The behavioural mechanism put forward to explain this pattern of aversion and escape is that SIB acts as an establishing operation (Michael, 1982) or setting event (Wahler & Fox, 1981) which elicits negative affect and establishes the potential for reinforcement via caregiver escape behaviour (i.e. actions that reduce or remove the negative emotion). Crucially, staff actions previously reinforced by the termination of SIB contingent on them are more likely to occur in the future and a behavioural pattern that ensures the inadvertent reinforcement and long-term maintenance of SIB takes hold (Hall & Oliver, 1992; Hastings & Remington, 1994a).

Existing research lends support to this hypothesis. Interview and questionnaire studies show that staff in residential care (Bell & Espie, 2002; Bromley & Emerson, 1995; Hastings, 1995; Whittington & Burns, 2005) and special education settings (Harris, Cook, & Upton, 1996) do report strong negative affect in response to challenging behaviours, with sadness, anger and despair cited as the salient emotions for SIB. The array of staff negative emotional reactions has been factor analysed into feelings of 'depression/anger' and 'fear/anxiety' (Mitchell & Hastings, 1998) and these subscales effectively measured the emotional responses of special educators to the challenging behaviour of children with

autism (Hastings & Brown, 2002b). Moreover, Hastings and Remington (1995) found that in responding to vignettes, nursing staff perceived SIB and aggression as more disturbing than relatively minor forms of challenging behaviour such as stereotypy.

These self-report data have been confirmed in experimental research. In a control comparison study, staff watching a video depicting an actor engaged in SIB reported significantly more negative emotional responses than those watching a matched video depicting no SIB (Mossman, Hastings, & Brown, 2002). In a further study, participants also viewed SIB depicted in matched, acted videos. Groups informed that the SIB typically led to severe physical consequences reported more negative affect than those given background information indicating only mild consequences (Hastings et al., 2003).

These findings offer support to the behavioural systems view that SIB is aversive to staff and the related view that it increases in aversiveness as it increases in severity (Hall & Oliver, 1992). The key issue, though, in an analysis of staff emotional reactions to SIB is the empirical investigation of predicted links with behavioural responses; chiefly, that staff who report more negative affect will be more likely than staff reporting less negative affect to respond in a manner that reinforces the challenging behaviour. Carers themselves state that their emotional reactions play a role in determining how they respond to challenging behaviours (Hastings, 1995) and staff reporting more depression/anger in response to the video vignettes described above were more likely to endorse inappropriate interventions on a questionnaire (Jones & Hastings, 2003). However, as noted earlier, recollections at interview or stated interventions with fictional clients are not necessarily related closely to actual behaviour. Therefore, as with beliefs, no direct evidence currently exists to show that differences in emotional responses are crucial to the maintenance of SIB.

Based on the findings that more severe forms of challenging behaviour or more serious physical consequences are likely to elicit more negative emotion, it should be possible, by manipulating the level of SIB severity in a computerised simulation (e.g. by varying the perceived intensity), to evoke and then investigate the effect of group differences in negative affective responding. By additionally grouping staff according to their beliefs and setting up an interactive situation in which participants must respond to the simulated SIB, links between staff cognitive, emotional and behavioural responses to SIB can be explored.

The present study therefore utilises a computer-simulation paradigm to provide experimental evidence about the impact of beliefs and emotions on the behaviour of staff who are attempting to care for/teach a self-injuring 'child'. Adopting a behavioural-simulation approach allows this to be done without the ethical concerns accompanying attempts to analyse effects on real self-injury (see Hastings, Remington, & Hall, 1995).

The clinical case for conducting such a study seems strong. Long-term follow ups indicate that even successful behavioural intervention programmes (see Carr et al., 1999; Luiselli, Matson, & Singh, 1992) rarely eliminate SIB and are hard to sustain (Emerson et al., 2001a), an intransigence compounded by the finding that staff across settings have difficulty in appropriately implementing such programmes (Ayres, Meyer, Erevelles, & Park-Lee, 1994; Corrigan et al., 1998; Emerson & Emerson, 1987; Hastings & Remington, 1993). Furthermore, given that SIB often escalates in severity during the teenage years (Kebbon & Windahl, 1986; Oliver et al., 1987), a greater focus is needed on special education staff who work with SIB prior to it becoming a more serious clinical problem. As one of the variables strongly associated with SIB is severe ID (see McClintock, Hall, & Oliver, 2003), staff working with these children should be targeted.

Specifically, the present investigation aims to address the following questions:

1. Are staff beliefs in conflict with behavioural models related to more counter-habilitative (i.e. reinforcing) intervention behaviour?
2. Are staff beliefs in keeping with behavioural models related to more habilitative (i.e. non-reinforcing) intervention behaviour?
3. Do more staff negative emotional reactions predict counter-habilitative intervention behaviour?
4. Do fewer staff negative emotional reactions predict habilitative intervention behaviour?
5. Do intervention responses alter over the duration of the experiment and if so, does the self-injury software application simulate increased escape behaviour over time in the presence of a 'demand avoider'?
6. Is there an association between reported questionnaire responses to hypothetical SIB and actual responses to experimental SIB?

Insofar as it is the first of its kind, this study is exploratory and research questions are therefore preferred to hypotheses. However, in light of the literature reviewed, positive answers to questions 1-4 might be expected; in light of work piloting the simulation with undergraduate students (Remington et al., 2004), a similarly positive answer might be expected to question 5; and in light of the adequate correspondence between beliefs and behaviour reported by social psychologists (see Ajzen & Fishbein, 1977), a positive answer to research question 6 might also be expected.

2. Method

2.1. Research Design

A quasi-experimental, mixed design was employed for this study. Participants were allocated to one of four conditions varying on two factors. The first between-groups factor of 'beliefs' (greater vs. lesser behavioural perspective) was determined by questionnaire scores. The second between-groups factor of self-injury 'severity' (mild vs. severe) was obtained by random allocation to different versions of the computer program. The within-subjects factor was 'block of time' (three 10-minute phases) during the running of the experiment. Thus, a 2 x 2 x (3) design was employed, resulting in four subgroup cells in the experimental design. In general terms, the dependent variables provided behavioural measures of participants' willingness or reluctance to engage with their 'client' (see 2.3.3.2. *Measures derived from stimulus materials*).

2.2. Participants

Staff who came into contact with SIB at work and could operate a simple computer program were eligible to participate. Although an extended recruitment process yielded a total of 98 volunteers, the final study sample comprised 68 participants (see Appendix A). Once ethical approval for the study had been obtained (see Appendix B), Educational Psychologists and Head Teachers of schools for children with special educational needs were contacted about recruitment. Permission was obtained to approach the staff at ten schools catering specifically for children with severe ID and presentations were made to 170 potential recruits at staff meetings (see Appendix C). Volunteers read through an information sheet (Appendix D) and gave informed consent (Appendix E). The sample was predominantly female, which is representative of the population from which it was

drawn. Participants were more experienced than in other studies with special education staff, though this varies widely. Other key sample demographics were broadly comparable.

Table 1

Demographic Characteristics of the Sample

Characteristic	M	SD	Range
Age (years)	44.25	9.33	23-63
Experience in ID settings (months)	172.79	109.53	9-444
	N	(%)	
Gender			
Male	14	(20.6%)	
Female	54	(79.4%)	
Highest educational achievement			
No formal qualifications	3	(4.4%)	
O level/GCSE	4	(5.9%)	
A level/HNC	7	(10.3%)	
HND/Diploma equivalent	12	(17.6%)	
Polytechnic/University	34	(50.0%)	
Masters/Doctoral degree	8	(11.8%)	
Professional qualification			
Yes	44	(64.7%)	
No	24	(17.6%)	
Training related to SIB/challenging behaviour			
Yes	56	(82.4%)	
No	12	(17.6%)	
Job			
Teaching	46	(67.6%)	
Support Staff	22	(32.4%)	
Contact			
Daily	55	(80.9%)	
Not daily	13	(19.1%)	
Exposure to serious SIB in last month			
Yes	42	(61.8%)	
No	26	(38.2%)	
Exposure to any form of SIB in last month			
Yes	60	(88.2%)	
No	8	(11.8%)	

2.3. Materials

2.3.1. Questionnaire Measures

2.3.1.1. Knowledge and beliefs. In order to measure the extent of an individual's behavioural perspective on self-injury and thus obtain the between-groups factor of beliefs, the Self-Injury Behavioural Understanding Questionnaire (SIBUQ; Oliver et al., 1996) was administered to participants (Appendix F). This is a multiple-choice measure used to assess the explanations and behavioural intentions of staff towards people who show SIB. It has three subscales that are defined by the content of the items. The Causal Explanation subscale ($n = 11$) measures explanations in two ways: (i) at the general level by assessing a person's overall orientation to SIB (e.g. whether people view the behaviour as being internally driven or learned) and (ii) at the specific level by presenting brief scenarios of particular functional determinants of an individual's SIB. The Behavioural and Correct response either recognises the importance of antecedents and consequences or identifies the relevant contingencies given the scenario. The Action subscale ($n = 5$) provides a measure of intervention beliefs by asking respondents to choose the best course of action in response to a described instance of SIB and its functional determinant. The Behavioural and Correct response (i.e. the one which would extinguish the SIB in the long term) is set against responses which are reinforcing, avoidant or appropriate to an internal organic cause. The Knowledge subscale ($n = 11$) assesses knowledge of basic behavioural processes or practices such as the effect of schedules of reinforcement and defining/recording target behaviour. The Behavioural and Correct response is the one held to be in line with best behavioural practice. In all cases, the Behavioural and Correct response is awarded one point. Oliver et al. (1996) report the total Behavioural and Correct score across the three subscales of the SIBUQ as having a good level of test-retest reliability ($r = .87$).

2.3.1.2. Emotions. In order to obtain an ordinal measure of negative affective responding to the simulation, the Emotional Reactions to Challenging Behaviour Scale (ERCBS; Mitchell & Hastings, 1998) was employed (Appendix G). Respondents use a four-point scale to rate the extent to which they experience different negative emotions when working with people who display challenging behaviour. Mitchell and Hastings report two factor-analytically derived subscales: feelings of depression/anger ($n = 10$) and feelings of fear/anxiety ($n = 5$), for which scores are obtained by summing the ratings for the constituent items. Both subscales are internally consistent, show good test-retest reliability and are relatively free from social desirability response biases (Mitchell & Hastings, 1998). The scale's instructions were amended to allow participants to report their reactions to the on-screen SIB rather than their typical reactions to real instances of such behaviour. Therefore, the internal consistency of the measure was re-examined using Cronbach's alpha ($n = 34$). The reliability coefficient was .78 for the depression/anger subscale, .76 for the fear/anxiety subscale and .85 for the whole scale. It was concluded that adaptation of the ERCBS had not adversely affected its psychometric properties.

2.3.1.3. Posttest. The question of whether a behavioural understanding of hypothetical SIB scenarios equates to a behavioural understanding of actual experiences of SIB was important for the present study. If a relationship between the two did not exist, the between groups factor of beliefs would be an artefact of the questionnaire used rather than a meaningful distinction between groups that held up in the experiment. A means of gauging participants' behavioural perspective on the SIB presented in the simulation was required and a posttest was therefore devised. In a manner comparable to the three content areas of the SIBUQ, the posttest items covered (i) the most likely cause of the simulated SIB, (ii) behavioural knowledge (e.g. that the SIB was contingent upon the actions of others), (iii) beliefs about how to effectively intervene (see Appendix H). The scoring key

was, to some extent, arbitrary, but followed widespread practice of weighting open-ended items requiring a written response more heavily than forced-choice items (see also Appendix H). In order to estimate the reliability of the scoring for the two open-ended questions, the author and a person unconnected with the research independently scored a randomly selected subset of the responses ($n = 17$). The kappa coefficients for inter-rater reliability were .82 for the cause question and .77 for the action question, indicating a good level of agreement for both.

2.3.1.4. Demographic Information. The sample demographics were collected via a short questionnaire (Appendix I).

2.3.2. Application Software/Apparatus

The self-injury program was written in Visual Studio C++ and utilised the Cal 3D figure animation library. The application was run on a Pentium 4 1.7 GHz processor and could be used on any computer with an open GL compatible video card. It was installed, accompanied by a PowerPoint tutorial, onto a laptop meeting these requirements for data collection purposes. Participants needed to use (i) a USB mouse to run the simulation by clicking on-screen command prompts and (ii) the number keys on the laptop keyboard.

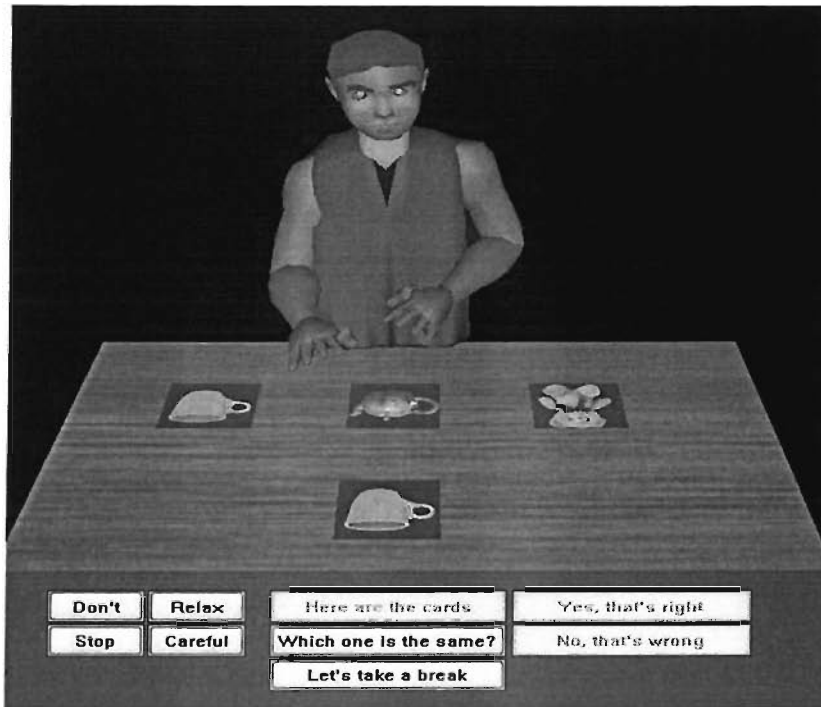
2.3.3. Stimulus Materials

The SIB simulation programme was developed and piloted by a university-based research team (Remington et al., 2004; Remington et al., in preparation). A sophisticated software package was used to build an application that presents a lifelike 14-year-old boy (*Simon*) who engages in simulated self-injury. Users interact face-to-face with *Simon* and he ‘learns’ as a result of these interactions (see 2.3.3.1. below). The user interface allows real-time movement between two closely linked ‘virtual’ environments: a teaching room

where *Simon* can be taught using match-to-sample tasks typical of behavioural interventions and an office where the admin task of completing time sheets is carried out.

Figure 1

The Teaching Room



The Admin Office

	mon	tue	wed	thu	fri
week 1	0	5	2	3	6
week 2	5	1	2	2	5
week 3	1	0	2	1	4
week 4	6	3	7	7	2
week 5	4	0	2	6	0
submit timesheet					

A complete teaching trial is defined as <present task + ask to match + provide feedback>, whilst <present task + any other sequence of actions> results in an incomplete trial. The admin task involves the addition of simple time-sheet numbers. Although *Simon* remains in the teaching environment, users working in the office can still see and hear him and therefore remain aware of his SIB. The SIB is always of the same form. It involves *Simon* hitting the eye/cheek region on the right side of his face with a loose fist. The action is accompanied by an audible 'ouch/slap' sound. Communication with *Simon* is possible from both 'rooms' and this takes place via a series of buttons that deliver verbal instructions, prompts and feedback when clicked. *Simon's* communication consists of pointing at cards for the matching task and self-injuring. The learning engine consists of learning and motivational algorithms that are underpinned by established mathematical models of learning (Killeen & Bizo, 1998). They govern the frequency of *Simon's* SIB and allow its rate to change in response to user activity and setting conditions. Under conditions of negative reinforcement, *Simon* is motivated to avoid the demands of the matching task and SIB-contingent moves away from teaching will be reinforcing. Indicator bars allow users to monitor developments during their interaction with *Simon*: in the classroom, the extent of *Simon's* SIB is indicated on a damage bar, whilst the number of successfully completed time sheets is indicated on a progress bar in the office. All actions are logged and analysed in real time and the resulting output file records the entire range of participant responses to the simulation as well as each occurrence of SIB.

2.3.3.1. Manipulation of stimulus materials. (i) For the purposes of this study, behavioural function was held constant by setting *Simon* to simulate only the negative reinforcement contingencies of a 'demand avoider'. His SIB was therefore contingent on task demands and could be reinforced by only two actions on the part of participants: either removal of the task materials by clicking the 'Let's take a break' button or switching into

the ‘no-demand’ environment of the admin office. (ii) In order to reinforce *Simon*’s self-injury and therefore increase its rate of occurrence, the above actions had to occur within a pre-determined period of time following an instance of SIB. The ‘reinforcement window’ was set at a length of 10 seconds. (iii) As the communicative function of *Simon*’s challenging behaviour is to escape the demands of the matching task, it is more likely to occur in the teaching room. The setting-event ratio was set at one-to-ten and therefore participants experienced only one-tenth of the true SIB rate during any breaks that they took from teaching by means of the two abovementioned actions (i.e. short-term reward). Upon commencing a new teaching trial, staff experienced a ten-fold increase in the frequency of *Simon*’s self-hitting as the actual SIB rate resumed (i.e. long-term effect).¹ (iv) The dichotomous independent variable of severity (mild vs. severe) was produced not by altering the SIB rate but by varying the visual/auditory intensity of the SIB depicted on-screen and by inserting different background information (Appendix J) into a tutorial given to participants prior to running the simulation (see 2.4. Procedure). As noted previously, these superficial manipulations were designed to elicit the two distinct levels of negative emotional responding required for the investigation of group differences in behaviour.

2.3.3.2. Measures derived from stimulus materials. Three dependent measures of behaviour were taken: (i) mean number of teaching trials completed per minute spent in the teaching room; (ii) proportion of time spent doing admin (i.e. carrying out the ‘no-demand’ task); (iii) mean elapsed time in seconds between instances of SIB and contingent moves away from the teaching task within the reinforcement window. These were chosen to reflect the escape function of *Simon*’s self-injury in that the first variable is a measure of

¹ The parameters stated in points (ii) and (iii) were considered to be plausible for the current research; in pilot studies, these were the values that enabled reinforcement processes to be demonstrated within the experimental scaling down of real-life scenarios that the simulation represents.

caregiver behaviour that should prevent his SIB from acquiring function, whilst the second and third variables measure behaviour that should provide contingent reinforcement for it.

2.3.3.3. Ecological validity of stimulus materials. There are no prior demonstrations of the ecological validity of a computer simulation in this field. Although several ways exist to establish the ecological validity of such a technique, the key dimension here is whether participants found the simulation sufficiently convincing to be engaged by *Simon* in a manner comparable to real instances of SIB. One means of judging this is to examine the degree of negative affect provoked in staff by their interactions with *Simon*. ERCBS scores for the participant sample (see 3.2. *Preliminary Data Analysis*) were easily comparable to those reported in the scale's main development study which reported on typical affective reactions to recent experiences of aggressive behaviour (see Mitchell & Hastings, 1998). The simulation could therefore be said to possess a key measure of ecological validity. Feedback from participants was also obtained as a means of gauging those aspects of ecological validity requiring further consideration (Appendix K).

2.4. Procedure

2.4.1. Pilot Study

A pilot study was conducted in order to establish the reliability of the SIBUQ, for which there were no available internal consistency data. Prior to the main analysis, the measure was given to staff ($N = 14$) at a community learning disability team. The pilot sample all had experience of working with challenging behaviours, comprised four (28.6%) males and ten (71.4%) females, had a mean age of 39.14 years ($SD = 10.38$) and a mean length of experience in ID services of 162.93 months ($SD = 122.46$). As such, it was comparable to the main sample in terms of key demographics. The internal consistency of the measure as a whole, tested using Cronbach's alpha coefficients, was found to be high

($\alpha = .85$). Internal consistency was good for both the Causal Explanation ($\alpha = .75$) and Action subscales ($\alpha = .72$) and adequate for the Knowledge subscale ($\alpha = .67$) and all three were used in the present study. The extra items that this latter subscale afforded enhanced the distribution of scores (see 2.4.2. below), although retaining them meant that the beliefs factor was more accurately a beliefs/knowledge factor. The relationship between beliefs and behavioural knowledge will resurface in 4. *Discussion*.

2.4.2. Main Study

The SIBUQ was administered at initial recruitment meetings in order to divide the 68 participants into two groups on the basis of their beliefs and knowledge about self-injury. The scoring distribution permitted a median split, such that 34 participants with scores of 12 or above formed the Greater Behavioural Perspective ('GBP') group, whilst the remaining 34, who scored 11 or below, formed the Lesser Behavioural Perspective ('LBP') group. Members of each group were then allocated randomly to one of two experimental conditions varying on the factor of SIB severity: a mild SIB ('MSIB') group and a severe SIB ('SSIB') group, thereby creating four experimental subgroups of 17 participants each.

Subsequently, staff participated in the experimental session individually, in a quiet room at the school. After providing demographic details, they were given background information about *Simon* and guided through their task of caring for him by means of an on-screen tutorial (see Appendix L). Apart from the crucial differences specified in Appendix J, the content of the tutorial was the same for both severity conditions. The interaction with *Simon* lasted for 30 minutes. When the simulation ended, the ERCBS and posttest were administered and a debriefing sheet was read and discussed (Appendix M). Factors that might interfere with participants' accurate capturing of their emotional reactions (e.g. time lapse, reflection on performance) were minimised by administering the ERCBS without delay. It was therefore always the first measure to be completed.

3. Results

All preliminary and main analyses used two-tailed significance testing and an alpha level of .05. Main analysis test statistics and their associated probabilities are cited for all findings that have values of $p < .10$ and therefore show a trend towards significance.

3.1. Participant Characteristics

Mean scores for the two key measures completed by the sample were as follows: SIBUQ = 12.38 (*SD* 3.38), ERCBS = 11.49 (*SD* 6.32). Although the SIBUQ score exceeded that reported by Oliver et al. (1996) for a similar group of teachers and support staff in close contact with SIB ($M = 9.48$, $SD = 4.72$), it fell within one standard deviation of the mean. The ERCBS mean score was very similar to that of 10.20 reported by Mitchell and Hastings (1998). Recent studies with similar participants have also reported broadly comparable SIBUQ and ERCBS scores (e.g. Hill & Dagnan, 2002; Jones & Hastings, 2003). The current sample therefore appears to be representative of the population that works with challenging behaviour in terms of these key indices.

3.2. Preliminary Data Analysis

Four preliminary data-analysis issues required scrutinising. Firstly, all the variables to undergo statistical testing were investigated regarding suitability for parametric analysis. One-sample Kolmogorov-Smirnov tests checked for normal distributions, whilst Levene's tests checked for equal variances. Testing of the dependent scores showed that all three measures of behaviour (teaching trials per classroom minute; proportion of time in admin; time from SIB to reinforcement) had normally distributed data and equality of variances across groups, as did both the SIBUQ and posttest scores. However, the test for the

fear/anxiety scores on the ERCBS was significant ($D = 1.42, p = .035$), showing that these data were not normally distributed. To access the greater power of parametric testing, the main analysis eschewed the measure's two subscales ('fear/anxiety' & 'depression/anger') in favour of the total negative emotions score only (obtained by summing the ratings across all 15 items). A non-significant D value indicated that a normal distribution was a good fit for the ERCBS total-score data ($M = 11.63, SD = 5.52$).

Secondly and crucially, the success of the SIB severity manipulation needed to be established. As already noted in the stimulus materials section, the aim of the mild/severe SIB conditions was to produce two distinct levels of negative emotional responding to the simulation. The validity of the severity variable (i.e. its psychological reality within the simulation) hinged on whether this was achieved. The negative emotional responses of participants in the SSIB condition ($M = 13.85, SD = 6.25$) were found to be significantly higher ($t(66) = -2.89, p = .005$) than those of participants in the MSIB condition ($M = 9.41, SD = 6.42$). This indicated that the experimental manipulations had produced two meaningful, differentially aversive conditions and that the factor of SIB severity therefore provided a valid means of investigating whether differences in negative emotional responding would predict staff behavioural responses to self-injury.

Thirdly, it was also important to gauge the validity of the between-groups factor of beliefs. This was done by measuring the extent to which the hypothetical behavioural knowledge of the GBP and LBP groups differed. An independent t -test was carried out to compare the respective groups' questionnaire scores. The SIBUQ scores of the GBP group ($M = 15.09, SD = 1.91$) were significantly higher ($t(66) = 11.07, p < .001$) than those of the LBP group ($M = 9.68, SD = 2.11$).

Finally, the GBP/LBP grouping was not the result of random assignment, but rather was created by responses on the SIBUQ. Comparisons were therefore made between these two groups to test the assumption that both came from the same population of data in which there was no relationship between a strong behavioural understanding of SIB and the demographic variables of age, gender, level of education, training received, professional qualifications, job type, length of experience in ID services, work-related contact with SIB and recent exposure to self-injury (see Table 1). Depending on the level of measurement of the variable in question, *t*-tests, Mann-Whitney *U* tests or chi-square tests were conducted. There were no significant differences between the GBP and LBP groups on any of the demographic factors over and above those due to chance.

3.3. Main Analysis

Analysis proceeded using a 2 x 2 x 3 (Beliefs x Severity x Block of Experiment) mixed analysis of variance (ANOVA), where beliefs and severity were between-groups factors and experimental phase was a within-subjects factor (see 2.1. *Research Design* for factor levels).

3.3.1. Analysis of Covariance (ANCOVA) Checks

Length of time spent working in ID services was considered to be a potential confound for any observed effects of behaviourally appropriate beliefs. In order to determine whether to control statistically for length of experience by covarying it out of the analysis, its relationship with the three outcome measures was examined. There was no relationship between length of experience and the number of teaching trials and so a three-way mixed ANOVA was performed on this dependent variable. Length of experience was, however, correlated with elapsed time from SIB to reinforcement ($r(66) = .24, p = .046$) and with proportion of time spent in admin ($r(66) = -.32, p = .009$). The conditions for

ANCOVA of a linear relationship and homogeneity of regression across the four subgroups were also satisfied and therefore length of experience was entered as a covariate in a three-way mixed ANCOVA for both these variables.

3.3.2. Effect of Beliefs, Severity & Block of Time on Dependent Measures of Behaviour

{cf. Research Questions 1, 2 (Beliefs); 3, 4 (Severity); 5 (Block)}

The mean scores for participants in each cell of the design for the three dependent variables are displayed in Table 2. The experimental interaction was divided by the software into 3 ten-minute blocks for the purpose of analysing changes in participant behaviour over time. The same set of means is also presented for each block of the experiment in Table 3.

Table 2

Mean (SD) Scores for Intervention Behaviour Overall

Condition	No. Teaching Trials per Minute	Proportion of Time Spent in Admin	No. Seconds from SIB to Reinforcement
All Staff	2.99 (0.63)	.46 (.15)	3.36 (1.39)
Greater Behavioural Perspective	3.15 (0.51)	.48 (.14)	3.18 (1.26)
Mild SIB	3.02 (0.51)	.50 (.12)	3.01 (1.38)
Severe SIB	3.28 (0.50)	.45 (.16)	3.35 (1.14)
Lesser Behavioural Perspective	2.84 (0.71)	.45 (.16)	3.55 (1.51)
Mild SIB	2.88 (0.74)	.44 (.16)	3.40 (1.35)
Severe SIB	2.81 (0.70)	.46 (.17)	3.69 (1.68)
Mild SIB	2.95 (0.63)	.47 (.14)	3.21 (1.36)
Severe SIB	3.04 (0.65)	.45 (.16)	3.52 (1.43)

Table 3

Mean (SD) Scores for Intervention Behaviour over Blocks

Condition	Block 1	Block 2	Block 3
<u>No. of Completed Teaching Trials per Minute</u>			
All Staff	2.46 (0.75)	3.34 (0.74)	3.35 (0.88)
Greater Behavioural Perspective	2.62 (0.66)	3.52 (0.65)	3.46 (0.80)
Mild SIB	2.46 (0.55)	3.34 (0.61)	3.46 (0.72)
Severe SIB	2.79 (0.73)	3.70 (0.65)	3.46 (0.90)
Lesser Behavioural Perspective	2.30 (0.80)	3.19 (0.79)	3.22 (0.94)
Mild SIB	2.21 (0.79)	3.32 (0.85)	3.25 (0.93)
Severe SIB	2.39 (0.83)	3.05 (0.73)	3.19 (0.98)
Mild SIB	2.33 (0.68)	3.33 (0.73)	3.35 (0.83)
Severe SIB	2.59 (0.80)	3.37 (0.76)	3.32 (0.93)
<u>Proportion of Time Spent in Admin</u>			
All Staff	.36 (.14)	.48 (.17)	.54 (.20)
Greater Behavioural Perspective	.37 (.12)	.51 (.16)	.55 (.19)
Mild SIB	.39 (.11)	.54 (.14)	.57 (.14)
Severe SIB	.35 (.13)	.48 (.18)	.54 (.23)
Lesser Behavioural Perspective	.35 (.16)	.46 (.17)	.53 (.21)
Mild SIB	.36 (.18)	.44 (.16)	.51 (.18)
Severe SIB	.35 (.16)	.47 (.18)	.55 (.24)
Mild SIB	.38 (.15)	.49 (.16)	.54 (.16)
Severe SIB	.35 (.14)	.47 (.18)	.54 (.23)
<u>No. of Seconds from SIB to Reinforcement</u>			
All Staff	3.47 (1.80)	3.12 (1.70)	2.67 (1.77)
Greater Behavioural Perspective	3.73 (1.86)	2.81 (1.40)	2.33 (1.13)
Mild SIB	3.28 (1.56)	2.32 (1.24)	2.35 (0.89)
Severe SIB	4.19 (2.07)	3.31 (1.42)	2.31 (1.37)
Lesser Behavioural Perspective	3.21 (1.74)	3.42 (1.91)	2.99 (2.20)
Mild SIB	2.99 (1.53)	3.37 (1.76)	2.97 (2.06)
Severe SIB	3.50 (2.00)	3.48 (2.16)	3.00 (2.44)
Mild SIB	3.12 (1.53)	2.88 (1.61)	2.69 (1.63)
Severe SIB	3.86 (2.03)	3.39 (1.78)	2.64 (1.95)

3.3.2.1. Number of completed teaching trials per minute spent in teaching. For this dependent variable, the ANOVA revealed a significant main effect of block (participants completed more trials per minute with each successive block; $F(1, 64) = 56.65, p < .001$). The main effect of beliefs was significant (those in the GBP group carried out more teaching trials than those in the LBP group; $F(1, 64) = 4.08, p = .048$). There was no main effect of severity. The two-way interaction effects and the three-way interaction were all non-significant.

3.3.2.2. Proportion of experimental time spent in the admin office. For this variable, the ANCOVA showed a significant main effect of block (as the experiment proceeded, participants spent an increasing proportion of their time in admin; $F(1, 64) = 27.37, p < .001$). The main effect of beliefs was not significant and there was no main effect of severity. The two-way interaction effects did not reach significance nor did the three-way interaction effect.

3.3.2.3. Mean elapsed time in seconds between instances of SIB and contingent moves away from the teaching task. For this variable, the ANCOVA revealed a main effect of block that showed a *trend* towards significance only (participants reinforced SIB more quickly with each successive block; $F(1, 64) = 2.92, p = .058$). There were no main effects of beliefs or severity. The block x beliefs interaction also *approached* significance only (as the experiment proceeded, reinforcement was more likely to be provided with increasing speed by the GBP group compared to the LBP group; $F(1, 64) = 2.97, p = .056$). The remaining two-way interactions and the three-way interaction effect were all non-significant.

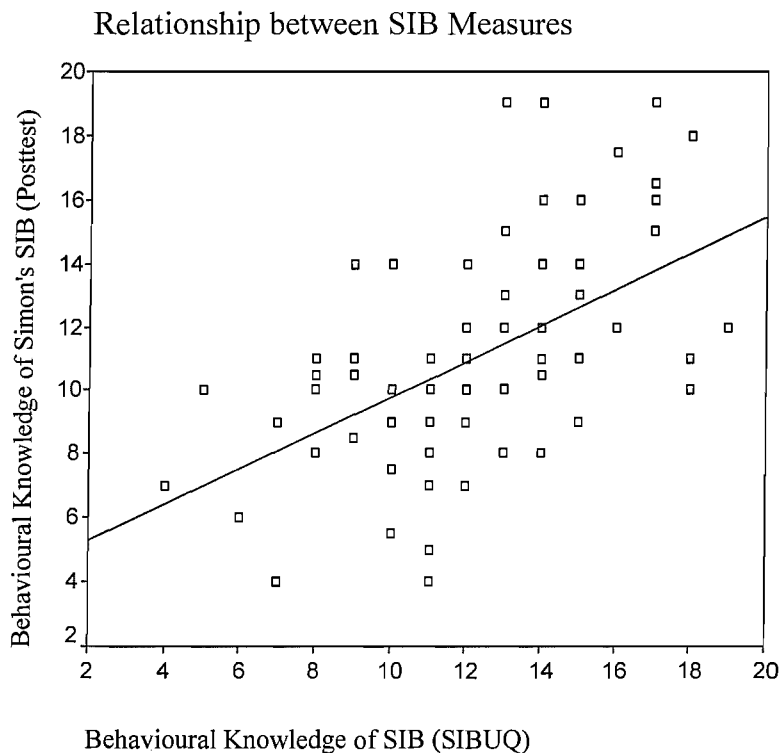
3.4 Supplementary Analysis: Non-Significant Results

3.4.1. Beliefs Factor

{cf. Research Questions 1, 6}

Potentially implicated in the lack of significant findings was the means by which the between-groups factor of beliefs had been derived. This issue was addressed by examining whether the SIBUQ-derived perspective on hypothetical SIB underpinning this factor bore any relation to participants' actual perspective on Simon's SIB as gauged by the posttest questionnaire. The two measures were significantly correlated ($r(66) = .55, p < .001$) and a simple linear regression showed that a person's declarative knowledge of simulated SIB could be accurately predicted on the basis of their SIBUQ scores ($a = 4.16, B = .57$). The positive linear relationship between the two variables is illustrated below.

Figure 2

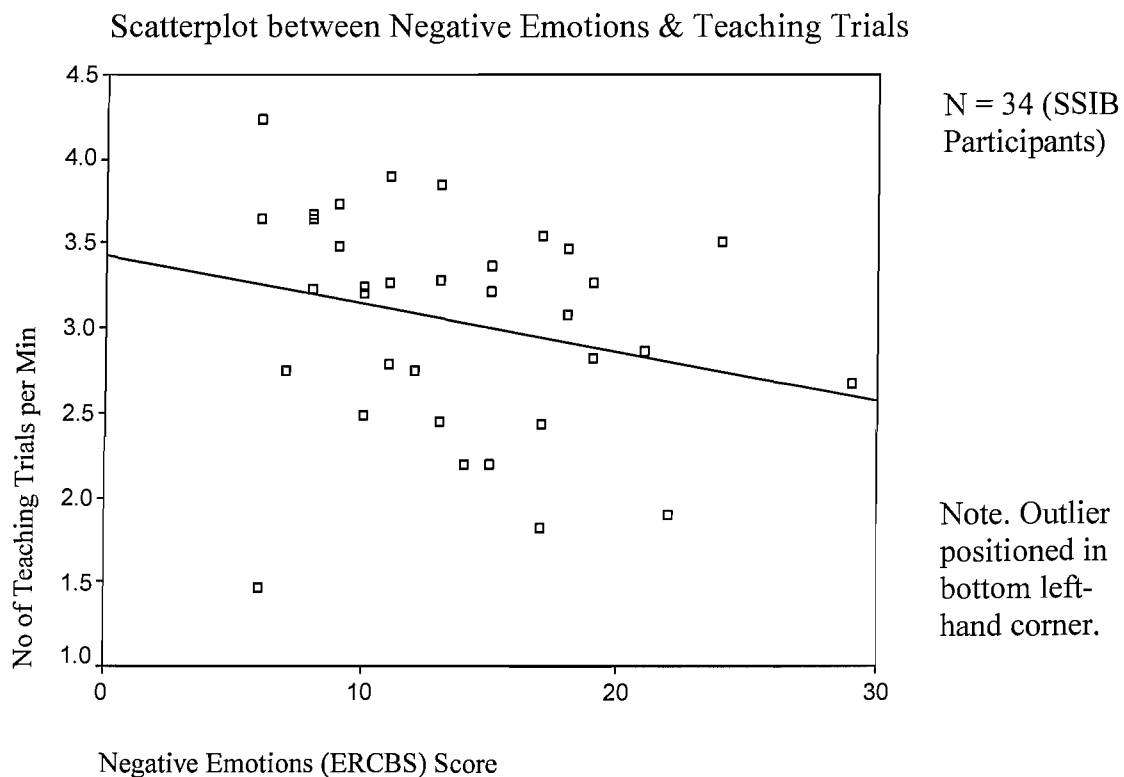


3.4.2. Severity Factor & Negative Emotion Ratings

{cf. Research Question 3, 4}

The severity manipulation produced two differentially aversive SIB conditions (i.e. significant differences in ERCBS scores between MSIB and SSIB groups). However, this did not appear to translate into greater or less reinforcement of self-injury. In light of this, the question of why there were no apparent relationships between SIB severity/degree of negative affect and habilitative or counter-habilitative behaviour required further investigation. To analyse whether there existed some relationship between variables that had been obscured by the experimental design, a series of Pearson correlations were carried out. Inspection of the relationships between ERCBS scores and the dependent measures of intervention behaviour showed an extreme outlier to be affecting the teaching trials data for participants in the SSIB condition. This is illustrated below.

Figure 3



The data point in question appeared sufficiently exceptional in terms of its association between low affect and low performance to merit its exclusion from the correlational analysis. This turned an insignificant negative correlation ($r(32) = -.25, p = .161$) between the two variables into a significant one ($r(31) = -.40, p = .021$). No other significant confounds, in the form of either extreme data points or 'nuisance' variables, were uncovered by the scatterplots or correlations.

Finally, in order to analyse whether the SIBUQ scores were related to the ERCBS scores in a manner that could potentially have influenced relationships between the emotion and intervention measures, a Pearson correlation was conducted. This showed a negative relationship between extent of behavioural perspective on SIB and strength of negative affect that *approached* significance ($r(66) = -.21, p = .080$). However, an independent *t*-test showed no significant difference between the negative emotions experienced by the GBP group and those experienced by the LBP group.

4. Discussion

Staff working in special education interacted with a computerised, self-injuring boy in order that a study could be made of any relationships between their actual behaviour during the simulation and (i) their self-reported beliefs about SIB, (ii) their emotional reactions to the behaviour witnessed on-screen. As noted previously, there existed the expectation that all research questions (RQs) posed would be answered in the affirmative. However, findings were mixed.

Of the three dependent variables of intervention behaviour, one (i.e. completed teaching trials) was a measure of habilitative behaviour, whereas the other two (i.e. speed with which participants 'abandoned' the teaching task; time spent on the admin task) were indices of counter-habilitative behaviour that reinforced the escape-motivated SIB. Findings of note were obtained for the habilitative measure only. Significantly more teaching trials were completed by those who adopted a greater behavioural perspective on SIB, suggesting a relationship between behavioural beliefs and habilitative intervention behaviour in situ and therefore a positive answer to RQ 2. After removing an outlier, there was a significant negative correlation between number of completed teaching trials and degree of negative affect, thus suggesting a positive answer to RQ 4 also. No evidence was found to support links between less behaviourally appropriate beliefs about SIB and the counter-habilitative behaviour measures, nor between greater negative emotional reactions to SIB and such behaviour. As such, RQs 1 and 3 were answered in the negative.

In terms of behaviour change over time, the rate of teaching trials completed by all groups increased from the first ten-minute block of the experiment to the last. This meant that as the task progressed, participants were using their classroom time in an increasingly efficient and habilitative manner. Staff counter-habilitative actions increased too, providing more reinforcement of SIB over time. Regardless of behavioural perspective or severity of SIB/degree of negative affect, escape behaviour was enacted more quickly and led to progressively less time being spent with *Simon* over the course of the simulation. This suggests that with increased exposure to negatively reinforced SIB, participants' actions were modified by the contingencies in place for their escape behaviour. This finding is consistent with the operant literature and the behavioural systems model of challenging behaviour (Oliver, 1995). It also provide supportive data for the effect of the software application on people interacting with it and supplies a positive answer to RQ 5.

The most salient findings from the present investigation were the significant relationships between staff cognitive and affective responses to SIB and their behavioural responses of a non-reinforcing nature. This experimental study thus provides the first direct evidence that staff beliefs and emotions are likely to be predictive of actual staff habilitative intervention behaviour. Although no relationships with counter-habilitative behaviour were found, the evidence is still consistent with models that assign a role to beliefs and emotions in understanding staff behaviour (e.g. Hastings, 2002; Hastings & Remington, 1994a) and also supports the findings of numerous self-report studies.

The reason why participants with less of a behavioural perspective on SIB did not provide more reinforcement than those with more behaviourally appropriate beliefs is important to consider. While this finding may not be replicated in subsequent studies, there remains at least one logical explanation for its presence here. It may be that with less of a behavioural model to guide their approach to the task, the LBP group experienced some uncertainty or were cautious about how to proceed and therefore engaged in lower levels of activity overall. In terms of the key outcome measures of staff behaviour, such a hesitant/inactive presentation would help to explain why these participants were slower to abandon teaching trials or switch rooms and therefore more likely to remain with their 'client'. The finding that the LBP group was less likely to use the teaching time efficiently (i.e. significantly fewer trials per minute) is consistent with an explanation based on these participants being less likely to do per se. In the absence of debriefing data from staff, this hypothesis cannot be further explored. Future simulation paradigms could collect data about how the task was approached or, alternatively, consider using participants as their own controls in within-subjects designs.

The question of why staff negative affect did not predict counter-habilitative behaviour is best addressed via a discussion of the study's methodological and conceptual issues. First, the present study should be expanded and replicated. The relationships found for the teaching trials variable were significant at the .05 level, so the potential for Type I errors due to multiple testing in a univariate analysis cannot be ruled out. In addition, a larger sample giving more than 17 participants per experimental subgroup may (i) enhance the difference between conditions and (ii) improve the chances of obtaining a normal distribution for the data on the five-item fear/anxiety subscale of the ERCBS. This point is significant since use of the 'total negative emotions' score only meant that differences relating to the ERCBS' two separate dimensions of staff negative affect went untapped. Furthermore, given that reactions of anger and depression may have particular salience for SIB (cf. Bromley & Emerson, 1995; Hastings, 1995), a measure that more clearly differentiates these two key emotions would enhance any future replication. Questions about reliable and valid measurement extend also to the beliefs questionnaire, the SIBUQ. It has poor reliability for some subscales and no internal consistency data, although, notably, the correlation between participants' SIBUQ and posttest scores supported the predictive validity of the measure and provided a positive answer to RQ 5. Nevertheless, as a full picture of reliability and validity within the present study is not ascertainable, the possibility of measurement error contributing to some of the findings cannot be discounted.

A broader methodological point concerns the validity of the experimental paradigm. There are clear advantages to the approach adopted in the current investigation, chief amongst which being strong experimental control and the ability to study actual behavioural responses in an ethically sensitive manner. Furthermore, a measure of validity was obtained here by permitting staff responses to be studied in situ and by manipulating the severity of the SIB in a manner that reflected itself in distinct levels of affective

responding. However, experimental research, by definition, places participants in an artificial testing situation. The ensuing loss of ecological validity was compounded here by the fact that the SIB that caregivers were exposed to did not represent real events nor involve a real individual with whom they could empathise (Clements, 1992). Simulations strive to represent reality but applied environments can never be replicated completely.

Finally, by addressing a specific topography of challenging behaviour, the present study limited itself to one putative set of relationships. Other topographies may produce different cognitive, affective or behavioural responses to those obtained here. For example, staff rate aggressive behaviour as more serious than SIB (Elgie & Hastings, 2002; Heyman, Swain, & Gillman, 1998; Lowe & Felce, 1995) and respond with higher levels of intervention (Stancliffe, Hayden, & Lakin, 1999). Similarly, the present results may well be specific to SIB maintained by negative reinforcement. Recent experimental research indicates firstly, that behavioural function affects emotional reactions to SIB (Mossman et al., 2002) and secondly, that staff may be sensitive to the perceived causes of challenging behaviour in the attributions that they make (Noone et al., 2005).

This study carries a number of future research and clinical implications. First, is the question of how to bridge the gap between the controlled, reductive environment of simulation experiments and ‘messy’ applied environments where staff strive to understand the needs and desires of clients in order to forestall challenging behaviours that often serve multiple functions (Clegg, 1994; Clements, 1992). In responding to this issue, Mossman et al. (2002) suggest exploring more complex experimental stimuli. One means of achieving this could be to explore motivational variables since in practice it makes a considerable difference whether ‘escape from demands’ is based upon preferring to do something else, being in pain or being upset (Clements, 1992). At the theoretical level, such variables

would need to be adequately represented in a conceptual framework. At the empirical level, efforts to provide a 'back story' for the 'client', perhaps developed over a series of simulated interactions should enhance ecological validity and would address both Clements' point and the finding that staff may make different attributions about different behaviour depending on its perceived causes (Hastings et al., 2003; Noone et al., 2005).

The limitations of the current research paradigm should not overshadow the fact that without experimental tests of the sort undertaken here, direct evidence of the putative relationships between staff cognition, affect and counter-habilitative behaviour is likely to continue to remain elusive. Nonetheless, in light of said limitations and in light also of the finding that real incidents of aggression evoke stronger emotional reactions and more negative evaluations of clients than fictional incidents (Wanless & Jahoda, 2002), a combination of empirical approaches would seem desirable in future studies. Indeed, multi-phase research programmes have been called for (Jones & Hastings, 2003; Mossman et al., 2002) in which the findings of controlled experiments are confirmed by recording staff responses to live incidents of challenging behaviour such as SIB. Notwithstanding the existence of certain ethical concerns that would need addressing, the observational methods utilised in the broader behavioural literature (e.g. Carr et al., 1991; Hall & Oliver, 1992) represent candidates for the applied stage of any such research endeavour.

Clinically, the finding that cognitive factors may be implicated in actual instances of staff habilitative behaviour has several implications. It has already been proposed that the functional analysis of SIB be extended to include a functional analysis of staff responses (Hastings, 1999; Jones, 2001) and this process could profitably include the assessment of knowledge, attributions and intervention beliefs that constitute a behavioural perspective on SIB as well as those related to inadvertent reinforcement of the behaviour. The array of

beliefs measured in the current investigation suggests that carers possess a broad spectrum of 'rules', not all of which differ from the views espoused in behavioural programmes. The clinical picture is further complicated by the finding here that staff beliefs, of whatever form, may not always be reflected in their remediation efforts. Given that behavioural knowledge was correlated with both causal and intervention beliefs in the SIBUQ study (Oliver et al., 1996), this may be a factor for clinicians to consider. If it can potentially improve links between the two belief domains, it may be a first step towards strengthening the all-important belief-behaviour link (Hastings, 1997).

One factor that might *weaken* the link between intervention beliefs and intervention behaviour is staff emotion (Hastings & Remington, 1995; Hastings, 2002). The finding that a computer simulation elicited a considerable degree of negative affect in participants suggests that staff training should augment its more typical focus on rule-governed aspects of behaviour (e.g. Berryman et al., 1994; Grey, McClean, & Barnes-Holmes, 2002; Reid, Parsons, & Green, 1989) with sessions aimed at helping staff to understand and manage the emotions elicited by the aversive nature of challenging behaviours. Indeed, cognitive-behavioural approaches to anxiety and anger have already been successfully piloted in ID settings (e.g. Kushlick, Trower, & Dagnan, 1997).

Speculatively, training programmes could also consider other potential means of buffering the effects of challenging behaviour on staff emotional reactions, such as reducing carer reliance on maladaptive coping strategies (Hastings & Brown, 2002c; Mitchell & Hastings, 2001), promoting staff self-efficacy (Hastings & Brown, 2002a, 2002b) and increasing support from peers and supervisors (Dyer & Quine, 1998). On a related note, the association found between beneficial staff interactions and less aversive

SIB provides support for functional communication training, as it avoids producing extinction bursts and is less stressful than other approaches (McConnachie & Carr, 1997).

Finally, any realignment of staff training in challenging behaviour needs to bear in mind that, although considerable resources have been directed at this area (cf. Cullen, 1992; 2000), the general consensus is that, thus far, the efforts expended have failed to effect lasting change (Allen, 1999; Clements, 1993; Cullen, 1988). At the level of methodology, this study represents an early step in a process that could ultimately lead to a major shift in the way staff training in ID settings is conducted. In much the same way that flight simulators allow training in flying without any of the risks involved in being airborne, interactive simulations should permit hands-on training in staff approaches to challenging behaviour in an ethically sound, risk-free manner (Remington et al., 2004). For example, a 'see it, show it, do it' learning paradigm could be utilised in exposing care staff to the direct effects of certain beliefs on the frequency or intensity of on-screen SIB.

To conclude, the beliefs and emotional reactions of staff to challenging behaviour are fast becoming established as a research area of applied significance. Despite the lack of findings for inadvertent reinforcement of SIB, the present study has added to a growing literature exploring the impact of these psychological factors on the lives of clients with ID who challenge. The stage is set for further probing of the assumption that the cognitive and affective factors of interest *are* related in some manner to counter-habilitative staff actions and the long-term maintenance of self-injury and other challenging behaviours in ID service environments.

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Appendix A

Recruitment Process

Recruitment of participants was carried out in two phases. The first phase was the original planned recruitment drive. The second phase was an additional recruitment drive that represented a response to an unanticipated adverse development.

Phase One:

- i. Contacts were made with Educational Psychologists at Local Educational Authorities and Head Teachers/Behavioural Coordinators at Special Schools for children with severe learning disabilities (SLD) in Hampshire. This consisted of phone calls, emails and meetings.
- ii. Presentations were made at staff meetings at six special schools in the county.

Outcome of Phase One:

- The recruitment drive yielded the minimum acceptable N of 60 participants (four cells in the experimental design @ n = 15 per cell).

Discovery of Programming Error:

- Several weeks into the process of collecting data at the schools, an error in the programming of the simulation software was discovered by the research team. A line of Visual C++ code contained a programmed value that altered the impact on Simon's SIB of the verbal control buttons (e.g. "Be Careful", "Relax"). Given that Simon was operating in 'demand avoidance' mode, these buttons were intended to have no effect on his SIB. However, the programming error meant that they had been functioning as a reinforcer (i.e. as if Simon were an 'attention seeker'), thereby invalidating all the data obtained up to that point. As a result, the number of participants in the study had been effectively halved. It therefore became necessary to recruit at least 30 additional participants in order to restore the overall N to a minimum of 60.

Phase Two:

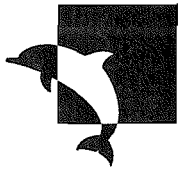
- i. Contacts were made with Head Teachers/Behavioural Coordinators at the few remaining SLD Special Schools in Hampshire. Once it became clear that the number of potential recruits would not be sufficient, contacts were made with Educational Psychologists at Local Educational Authorities and Head Teachers/Behavioural Coordinators in the neighbouring county of Dorset. As with Phase One, this consisted of phone calls, emails and meetings.
- ii. Presentations were made at staff meetings at a further five SLD special schools across the two counties.

Outcome of Phase Two:

- The additional recruitment drive yielded a further 38 participants, giving an overall N of 68 (four cells in the experimental design @ n = 17 per cell).

Appendix B

Ethical Approval



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27 October 2004

Jonathan Wain
Department of Clinical Psychology
School of Psychology
University of Southampton
Highfield, Southampton SO17 1BJ

Dear Jonathan

Re: Staff Responses to Self-Injurious Behaviour in Children with Intellectual Disabilities: An investigation Utilising a Computer Simulation Paradigm

I am writing to confirm that the above titled ethics application was approved by the School of Psychology Ethical Committee on 16 September 2004.

Should you require any further information, please do not hesitate in contacting me on 023 8059 3995.

Please quote approval reference number CLIN/03/56.

Yours sincerely,

Kathryn Smith
Secretary to the Ethics Committee

Appendix C

Recruitment Handout

A Computer Game with a Difference

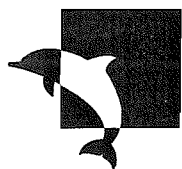
Simon, a virtual child, was devised by a team working to improve our understanding of children who self-injure. Until now, it has been difficult to devise ethical studies of the ways in which people interact with children with learning disabilities who display challenging behaviour. Attempts to investigate responses to self-injury in real situations have always run the risk of bringing about an increase in the self-injury and therefore harm to the child. However, now that patterns of self-injurious behaviour can be reliably simulated in a computer program, we can study people's responses to it in a risk-free manner for the first time. Although *Simon* is not a real child, his behaviour provokes real responses and the analysis of these could contribute greatly to our understanding in this area.

The study will also permit 'real world' testing and development of the computer program, in particular enabling us to receive feedback from people who work every day with children with learning disabilities. This process will hopefully provide real benefits to special education staff. Once the interactive software is validated, it could form the basis of a downloadable training package available to LEAs.

The participation of teachers and support staff is therefore sought for this interesting and totally new way of researching challenging behaviour. Participants will be offered gift tokens after interacting with *Simon* as a gesture of thanks for devoting their time and enabling us to complete this project.

Appendix D

Participant Information Sheet



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Doctoral Programme in Clinical Psychology

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Information Sheet for Participants in the Study

Study Title: *“Staff Interactions with Children with Intellectual Disability”*

I am Jon Wain, Clinical Psychologist in training at the University of Southampton. You are being invited to take part in a research study which I am conducting with Bob Remington, Professor at the School of Psychology. Before you make a decision, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and feel free to ask if you have any queries about it.

What is the purpose of this research?

Once established, self-injurious behaviour can be difficult to treat and provides a major challenge for the people who have to respond to it. The development of a computerised, self-injuring child (*Simon*) provides a means of studying how people relate to this behaviour without placing anyone at risk of harm.

Why have I been chosen?

The study is focusing on the challenging behaviour of children with intellectual disabilities. Therefore, teachers and classroom assistants, who deal with this behaviour as part of their daily working lives, represent a highly appropriate group to carry out the research with.

Do I have to take part?

Your participation in the study is entirely voluntary. If you decide to take part, you will be given this information sheet to keep and asked to sign a consent form. You will be free to change your mind at any time without giving a reason. If you decline to take part or decide later to withdraw your consent, it will not affect you professionally in any way whatsoever.

What is involved in taking part?

You will be asked to provide some basic information about yourself and fill out a multiple-choice questionnaire today. This should take no more than 20-25 minutes. Then in approximately six weeks' time you will be asked to spend 50-60 minutes learning about *Simon*, interacting with him and completing a short questionnaire about your experience. This will take place at your convenience here in the school.

What are the possible benefits or disadvantages of taking part?

The information gathered here could aid our understanding of the factors that determine how people deal with children who self-injure which could benefit their lives and the lives of those who work or live with them. In the unlikely event that you become distressed at seeing *Simon's* simulated challenging behaviour, the program could be paused or stopped altogether.

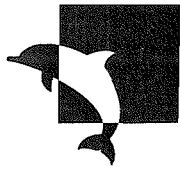
PTO

What will happen to the results of the research study?

They will remain CONFIDENTIAL. Identification numbers are used so that we can compile information in a way that ensures participants' complete anonymity. No data will be viewed by anyone other than the staff involved in this project and the results will be kept in a secure place and then destroyed according to data protection regulations. The project will be written up as a dissertation. One copy will remain at the University and another copy will be sent to the British Library. It is possible that shorter research papers will be sent to academic journals for publication. Neither the project nor any papers will contain any identifying characteristics.

Appendix E

Participant Consent Form



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Consent Form for Participants in the Study

Project Title: *“Staff Interactions with Children with Intellectual Disability”*

1. I have read the handout entitled “Information Sheet for Participants in Challenging Behaviour Study” (11.08.04/2). YES / NO
2. I understand that all information will be confidential and that no individual will be identified from the results. YES / NO
3. I agree to allow the researchers named on the information sheet to store my anonymised results on a University computer or disc for up to ten years after the study has finished. YES / NO
4. I understand that at any time I can change my mind and withdraw from the study without having to give a reason. YES / NO
5. I agree to participate in the study. YES / NO

By signing this sheet you are giving informed consent to be included as a participant in the project described to you and for your data to be used for the purposes of research.

Name of Participant	Date	Signature
Name of Person Conducting Study	Date	Signature

If you have questions or doubts about any aspect of the project, please contact me on 023 8059 5321 (between 9.00 and 5.00) or at jmw302@soton.ac.uk. If you have any questions about your rights as a participant or if you feel that you have been placed at risk, you may contact the Chair of the Ethics Committee, Department of Psychology, University of Southampton, SO17 1BJ.

Appendix F

Self-Injury Behavioural Understanding Questionnaire

THE SELF-INJURY QUESTIONNAIRE

Do not put your name on these questionnaires. The information is for research purposes only and we do not need to know anything about you except the information below.

Your work location: _____

Please tick the box next to the title which most accurately describes your position:

- | | |
|--|--------------------------|
| Teacher | <input type="checkbox"/> |
| Classroom Assistant | <input type="checkbox"/> |
| Nurse | <input type="checkbox"/> |
| Psychologist | <input type="checkbox"/> |
| Residential Care Worker | <input type="checkbox"/> |
| Skills Instructor | <input type="checkbox"/> |
| Parent of Someone with Learning Difficulties | <input type="checkbox"/> |
| Other (please specify) _____ | <input type="checkbox"/> |

For how long have you had close contact with people who have learning difficulties?

_____ years _____ months

There are two questionnaires for you to complete. Please do them in the order that they are presented. Try to answer the questions as accurately as you can. By all means discuss your responses with your colleagues afterwards but please try not to do so beforehand.

Thank you very much for taking the time to fill these questionnaires in.

Chris Oliver
 School of Psychology
 University of Birmingham in collaboration with SENSE in the Midlands

THE SELF-INJURY QUESTIONNAIRE

The following questions are about self-injurious behaviour, which is sometimes shown by people with learning difficulties. Please read each question carefully and then tick the box next to the statement which you most agree with. Please try not to leave any question unanswered and only tick one box for each question.

Thank you.

1. Self-injury is most similar to:-
 - a psychiatric illness
 - a form of communication
 - a type of epilepsy
 - an expression of emotion

2. A client self-injures only when someone who has been attending to him moves away to do something else, the most likely explanation is that:-
 - usually the other person returns to him and reprimands him for self-injuring.
 - he self-injures because he likes the sensation it produces.
 - he is expressing his annoyance at being left alone.
 - he becomes anxious about being alone which causes involuntary movements.

3. Which of the following is most important in helping a client to stop self-injuring:
 - providing consistent consequences for her behaviour.
 - trying to understand her moods and feelings.
 - ensuring that medication is frequently assessed and revised as necessary.
 - ensuring that attention does not follow her self-injury.

4. If a client self-injures only when she is left alone and usually stops when she is told not to, the best thing to do is:-
 - keep telling her to stop when she self-injures so that the self-injury does not continue.
 - try not to leave her alone.
 - ignore her when she self-injures.
 - assess her medication levels and revise them as necessary.

5. A client self-injures only when denied something which he particularly wants, the most likely explanation is that:-
 - he is expressing his anger towards the person who has denied him something.
 - the stress involved in the situation causes an involuntary reaction by the client.
 - in the past he is usually attended to and comforted after the self-injury.
 - usually after the self-injury has occurred the thing he wants is given to him.

6. When very severe self-injury occurs in all settings at all times, it is most likely to be caused by:-
 - some form of neurological damage.
 - some form of emotional or psychiatric disturbance.
 - unintentional teaching by others.
 - others attending to the self-injury.

7. If a client self-injures only when people are interacting with him and stops as soon as they move away, the best thing to do is:-
- assess medication levels and revise them as necessary.
 - try and leave him on his own as much as possible.
 - move away when the self-injury occurs to prevent it from continuing.
 - continue the interaction regardless of the self-injury.
8. A client self-injures only when she is bored, alone and has nothing to do, it is most likely that:-
- early brain damage causes self-injury to occur at low stimulation levels.
 - the self-injury acts as a comfort when no one is near.
 - usually someone comes and comforts her.
 - she finds the self-injury stimulating.
9. When self-injury is moderately severe, occurs frequently and is related to some events it is most likely to be caused by:-
- some neurological damage.
 - some form of emotional or psychiatric disturbance.
 - others attending to the self-injury.
 - unintentional teaching by others.
10. If a client who only self-injures when something she wants is denied but stops as soon as the thing is given to her, the best thing to do is:-
- not to deny her the things she wants.
 - not to give her the thing when she self-injures.
 - to assess her medication levels and revise them as necessary.
 - to give her the things she wants to prevent the self-injury from continuing.
11. A client self-injures only when he is asked to do a task he finds difficult. It is most likely that:-
- he feels inadequate and/or frustrated by his inability to complete the task correctly.
 - underlying brain damage is causing higher levels of self-injuring when he is stressed.
 - in the past the task has stopped when he self-injures.
 - in the past self-injury has been rewarded by attention from others.
12. Which of the following is the best definition of a client's self-injurious behaviour if it was being used in a treatment programme:-
- any contact between head and object.
 - any painful headbanging.
 - any quite hard contact between head and object.
 - any attempt to cause injury to the head.
13. When trying to teach a client to keep her hands in her lap instead of self-injuring, which is it most important to do in the early stages:-
- reward her every time her hands are in her lap.
 - keep reminding her to put her hands in her lap if she has self-injured.
 - reprimand her for not putting her hands in her lap.
 - give her extra helpings of her favourite food at lunchtime if her hands have been in her lap for most of the morning.

14. If a client self-injures only when he is asked to do a task within his ability range that he finds difficult and stops when the task is removed temporarily, the best thing to do is:-
- keep removing the task temporarily whenever he self-injures to prevent the self-injury from continuing
 - continue to present the task regardless of the self-injury
 - not present tasks that he finds difficult
 - check medication levels and revise them as necessary
15. When trying to decrease the head hitting of a client what is the best way of finding out if you are succeeding:-
- record at the end of the day how much time has been spent head-hitting.
 - ask someone to rate on a 5-point scale the client's well being at the end of each day.
 - keep a written record of the number of head hits for each day.
 - look at the site of the self-injury to see if there are bruising or abrasions at the end of each week.
16. A client self-injures only when someone is interacting with him. It is most likely that:-
- autistic features are contributing to the higher rate of self-injury.
 - his self-injury usually leads to the interaction and attention continuing.
 - he feels frustrated by the presence of the other person.
 - the interaction usually stops when the person self-injures.
17. For a client who likes attention and who self-injures by banging his head hard and by rubbing his shin, what is most likely to happen if he is only reprimanded after hard head bangs:-
- hard head banging will decrease because of the pain.
 - he will sustain more injury to his head.
 - hard banging will decrease as he learns it is inappropriate.
 - hard banging will become softer.
18. Which is most true when using punishment to decrease self-injury:-
- the self-injury rapidly decreases initially but may come back.
 - the self-injury rapidly decreases and never comes back.
 - the self-injurer learns new appropriate behaviours.
 - the self-injurer learns to distrust the person administering the punishment.
19. If presented immediately after self-injury, which of the following can make the self-injury more likely to occur in the future:-
- being held and told to "calm down".
 - being severely reprimanded.
 - being secluded for a short period.
 - all of the above.
20. When self injury is mild and only occurs infrequently, and in relation to one particular event, it is most likely to be caused by:-
- some form of emotional or psychiatric disturbance.
 - some form of neurological damage.
 - others attending to the self-injury.
 - unintentional teaching by others.

21. Before beginning a programme to decrease a client's self-injury, which of the following is most important to know:-
- whether the current medication has been recently reviewed.
 - what usually happens before and after the self-injury.
 - whether the client understands the programme.
 - whether all staff respond to the self-injury in the same way.
22. A client only self-injures when something she wants is denied. If she is taught a sign as a way of requesting what she wants and the self-injury decreases, the most likely explanation is that:-
- she no longer feels frustrated at being unable to communicate.
 - she does not become stressed which caused her to self-injure.
 - the self-injury was a way of communicating which is no longer necessary.
 - the self-injury no longer gains her the attention it used to.
23. A client who likes attention is usually told to stop when he self-injures. It is decided to ignore the SIB when it occurs. What is most likely to happen:-
- the self-injury will increase because he is angry about being ignored.
 - the self-injury will decrease because the attention is withheld.
 - the self-injury will decrease and then increase as the person tries harder to gain attention.
 - the self-injury will increase and then decrease because attention is withheld.
24. For a client who self-injures and who likes attention. Which of the following is most likely to make the self-injury a long lasting habit:-
- attending to him every time he self-injures.
 - attending to him every time he self-injures and then only occasionally when he self-injures.
 - attending to him if his self-injury is very hard.
 - attending to him just before and after he self-injures.
25. A client usually self-injures when asked to do something difficult. Which of the following is most likely to succeed in decreasing the self-injury in the long term:-
- self-
task
- continuing to present the task regardless of the self-injury.
 - continue to present the task regardless of the self-injury and reinforce the client when no injury occurs.
 - continue to present the task regardless of the self-injury and reinforce the client when the task is finished.
 - only presenting the task when the client is in a good mood.
26. If a client usually self-injures when asked to do something difficult, which of the following is it most important to do to decrease the self-injury in the long term:-
- completed.
- only present the task when the client is in a good mood.
 - complete the task even if self-injury occurs right up to the end.
 - stop the task when self-injury has not occurred for a period of time even if it is not completed.
 - present the task for a preset period of time and stop after that time regardless of what is happening.

27. A client self-injures by scratching his face and gloves are used to prevent the injuries becoming infected. The gloves stop the scratching and he often puts them on himself or requests them. The best thing to do is:-

- leave the gloves on all the time.
 - only put the gloves on when he has not scratched.
 - only put the gloves on when he has scratched very badly.
 - put the gloves on as soon as he scratches to prevent further injury.
-

**Thank you for taking the time to complete this questionnaire.
Could you please just look back through the questionnaire
and check that you have answered all the questions and that
you have only ticked one box for each question.**

Thanks again.

SIQ Scoresheet

Item no.	Beh corr	Beh inc	Int emot	Int org	Avd rsp	Reinf rsp
1	b		d	a c		
3	a	d	b	c		
6	c	d	b	a		
9	d	c	b	a		
20	d	c	a	b		

Orientation Score

--	--	--	--

2	a	b	c	d
5	d	e	a	b
8	d	c	b	a
11	c	d	a	b
16	d	b	c	a
22	c	d	a	b

Explanation Score

--	--	--	--

4	c		d	b	a
7	d		a	b	c
10	b		c	a	d
14	b		d	c	a
27	b			a	c d

Action Score

--	--	--	--

Subtotal Scores

Beh corr	Beh inc	Int emot	Int org

12	a	b c d
13	a	b c d
15	c	a b d
17	b	a c d
18	a	b c d
19	d	a b c
21	b	a c d
23	d	a b c
24	b	a c d
25	b	a c d
26	c	a b d

Knowledge Score

--	--

Total Scores

Beh corr	Beh inc	Int emot	Int org	Avd rsp	Reinf rsp

Appendix G

Emotional Reactions to Challenging Behaviour Scale

Emotional Reactions to Challenging Behaviour Scale

Below is a list of emotions that caregivers have said that they experience when they have to work with children who display self-injurious behaviours. We want to know how *you* felt in response to SIMon's self-injury, which you saw on the computer screen. Consider each of the emotional reactions, and select the response next to each item that best describes how you were feeling whilst interacting with the program.

	No, never	Yes, but infrequently	Yes, frequently	Yes, very frequently
SHOCKED	0	1	2	3
HOPELESS	0	1	2	3
GUILTY	0	1	2	3
AFRAID	0	1	2	3
RESIGNED	0	1	2	3
DISGUSTED	0	1	2	3
ANGRY	0	1	2	3
FRUSTRATED	0	1	2	3
INCOMPETENT	0	1	2	3
HUMILIATED	0	1	2	3
FRIGHTENED	0	1	2	3
HELPLESS	0	1	2	3
BETRAYED	0	1	2	3
SAD	0	1	2	3
NERVOUS	0	1	2	3

N.B. This is the amended response scale which allows staff to report their emotional reactions to specific stimuli (e.g. computerised simulation of self-injurious behaviour) rather than assessing the emotions that they typically experience.

Appendix H

Posttest: 'Simon Questionnaire' & Scoring Key

Simon Questionnaire

1. What do you think is the most likely single cause of *Simon's* self-injurious behaviour? Choose only one cause – the one you think is most important. Write your answer in the space below.

2. Do you think that *Simon's* rate of self-injury varied during the simulation?

Yes No

3. Do you think your actions changed *Simon's* rate of self-injury during the simulation?

Yes No

4. Reflecting on your experience, indicate whether you think the actions below were helpful in reducing *Simon's* rate of self-injury over the course of your thirty-minute interaction with him.

H = Helpful U = Unhelpful N = Neither helpful nor unhelpful (write the letter in the space)

- presenting positive feedback to *Simon* on successful completion of a teaching trial _____
- offering to “take a break” from the matching task if *Simon* was self-injuring _____
- telling *Simon* to “stop” self-injuring or “relax” or “be careful”, etc. _____
- continuing with the teaching task while *Simon* self-injured _____
- moving from the teaching task to the admin task when *Simon* self-injured _____
- moving from teaching to the admin task when *Simon* had not self-injured _____
- continuing with the admin task while *Simon* self-injured _____
- moving from the admin task to the teaching task when *Simon* self-injured _____
- moving from admin to the teaching task when *Simon* had not self-injured _____

5. What would you recommend to a colleague as being the single best thing to do in order to reduce *Simon's* rate of self-injury across the interaction as a whole? Please choose only one action – the one you think is most important. Write your answer below.

END

Scoring Key

Question 1. Identifying the most likely cause of Simon's SIB:

Correct hypothesis **Score 3**

Clear statement that *Simon* is engaging in SIB in order to escape or avoid the task.

Partially correct hypothesis **Score 1**

Description of the behaviour as learned or as leading to a desired outcome. Statement that *Simon* found the task difficult or that the task was inappropriate for his level.

Incorrect hypothesis **Score 0**

Any hypothesis that does not describe the antecedents or consequences of the behaviour. A second-order explanatory concept is invoked (e.g. boredom, lack of motivation).

Questions 2, 3, 4.

Correct answer **Score 1**

Question 5. Selecting the best intervention response for Simon's SIB:

Behaviourally correct course of action **Score 3**

Clear statement advocating escape extinction or the need to reward instances of non-SIB.

Partially correct course of action **Score 1**

Statement of the importance of giving *Simon* breaks as a reward without specifying any relationship with the contingencies.

Reinforcing or non-behavioural course of action **Score 0**

Any action that would reinforce *Simon's* escape-related SIB. Any action that does not address the need to change the contingencies that have allowed his SIB to acquire function.

N.B. In the event of multiple answers, the first one provided is scored.

Appendix I

Demographic Information Sheet

Confidential Information

The following questions ask for background information about you, your qualifications, training and experience. Please tick the boxes or write in the spaces provided, but please do not write your name on this sheet.

1. Gender: *Male* *Female*

2. What was your age on your last birthday? _____ *years*

3. Please indicate your highest educational achievement.
 - No formal qualifications*
 - GCSE/'O' Level or equivalent*
 - 'A' Level/HNC or equivalent*
 - HND or other diploma equivalent*
 - Polytechnic/University Degree*
 - Masters/Doctoral Degree*

4. Do you have any formal qualifications relating to people with learning disabilities (e.g. teaching, nursing, social work, occupational therapy)?
 Yes No If yes, specify: _____

5. Have you had any training for managing children's self-injury or other challenging behaviours (e.g. aggression, sexually inappropriate behaviour, repetitive behaviours)?
 If yes, briefly describe: (i) type of training, (ii) when it took place, (iii) length of course.

6. What is your current job title? _____

7. Overall, approximately how long have you worked in services for people (children or adults) with learning disabilities? _____ *years* _____ *months*

8. Does your job generally bring you into daily contact with children who engage in self-injurious behaviour (e.g. face-slapping, head-banging, scratching or biting self)?
 Yes No

9. In the past school month have you witnessed:
 - (a) self-directed aggressive behaviour causing injury to the child? Yes No
 - (b) self-directed aggressive behaviour not causing injury to the child? Yes No

Appendix J

Components of Severity Conditions

PowerPoint Tutorial

Mild SIB Condition

Simon is described as hitting himself quite hard and quite frequently.

Simon's SIB is described as sometimes seeming to be a little out of control.

The possibility of tissue damage is suggested.

The possibility of *Simon*'s sight/hearing being affected is raised.

Severe SIB Condition

Simon is described as hitting himself very hard and very frequently.

Simon's SIB is described as seeming out of control to those around him.

Actual tissue damage, possibly severe, is explicitly indicated.

The possibility of permanent impairment of *Simon*'s sight/hearing is raised.

Computer Program

Mild SIB Condition

The 'damage status' bar increases every 2 SIBs.

Scale ranges from "no damage" to "risk of long-term damage".

The damage status bar is blue.

Bruising does not appear on *Simon*'s face.

Simon's self-injury is accompanied by an 'ouch' sound.

Simon's body remains still during hand-to-head hitting.

Severe SIB Condition

The damage status bar increases every SIB.

Scale ranges from "no damage" to "risk of severe long-term damage".

The damage status bar is red.

Bruising appears on *Simon*'s face at point of contact (discolouration has 5 different shades that become progressively redder; 50 SIBs per shade).

Simon's self-injury is accompanied by a louder 'ouch-plus-slap' sound.

Simon's hand-to-head hitting causes his body to rock back violently.

Appendix K

Participant Feedback on Computer Simulation

During the debriefing session, a number of participants offered informal comments or reflections on their experience of interacting with Simon. A representative selection of those views is presented below:

Simon/SIB

“People might be spending more time doing admin because they feel that they don’t know enough about Simon and the kinds of teaching tasks he prefers. They might be playing it safe because of their uncertainty.”

“I’d try not to say ‘Stop!’ or ‘Don’t!’ to a learning-disabled child.”

“I kept waiting for Simon’s behaviour to intensify when I switched into the teaching task, but it never happened – it never got any worse.”

Matching Task

“It would have been better to animate the objects themselves rather than using representations of the objects on cards – more realistic for a child with SLD.”

“SLD kids seldom point as clearly as Simon and teachers often need to use hand-on-hand to guide them. I kept on wanting to do that.”

“I’d never tell a child like Simon that he had got it wrong and I’d be careful about using the word ‘no’ too.”

“Simon got it wrong too many times for my liking. I would have taken one of the cards away and just presented him with two until he started to get it right more often.”

“I’d want to persevere, but not with the same task. You need a choice of tasks because you would never present the same task to a child for 30 minutes.”

“I’d have given him something else to do instead of the matching task, which he obviously dislikes.”

Admin Task

“In real life we wouldn’t be trying to do our admin during class time.”

“I can’t see the point of doing the timesheets – it isn’t the kind of admin task that teachers can relate to.”

“For those of us who hate maths, the admin task was more of a problem than Simon’s self-injury.”

Appendix L

On-screen Tutorial for Mild SIB Condition

Welcome to Simon!

Please make sure that you only
press keys or use the mouse
when you are instructed to do so!

Press the Spacebar to Begin.

Simon: A boy with self-injurious behaviour

During this study you will be working with Simon, a 14-year-old boy with a severe learning disability.

Simon repeatedly injures himself by hitting his head.

Although Simon is a virtual person, he acts just like a real person in many ways and is very sensitive to what's happening around him.

Press the spacebar when you are ready to continue.



Simon's background

Simon's learning disability was discovered during infancy but no cause has ever been identified. When Simon was five years old he began to self-injure. Again, nobody knows why he does it.

His self-injurious behaviour involves hitting the side of his head with his right hand, often quite hard and quite frequently. To those around Simon, this self-hitting behaviour can sometimes seem a little out of control. It can, at times, result in swelling and bruising and it may damage his eyes, ears, nose and mouth. In the end, this might affect his ability to see and hear.

Simon attends a special school for children with severe intellectual disabilities. When he was seven years old he was placed with foster carers, after which he moved through several foster placements. He has now been placed in a residential home for children with challenging behaviour.

Press the spacebar when you are ready to continue.

Your task: Be Simon's carer

As Simon's carer, you take on a large number of tasks and obligations. For this study, however, we've simplified things by giving you just two tasks.

1. You will teach Simon to match identical cards, a simple **educational task** that will help him develop important skills and mature.
2. You will carry out an **administrative task** that will help the team work more efficiently, thereby providing the environment necessary for Simon to learn.

Because both tasks are essential to Simon's well-being, you will need to divide your time flexibly between them during the course of the experiment.

To switch between tasks, use the mouse. To move from the teaching task to the admin task, move the mouse pointer to the left of the screen and click. To move from the admin task to the teaching task, move the mouse pointer to the right of the screen and click.



Administrative Task Screen ← → Teaching Task Screen

Press the spacebar when you are ready to continue.

How to do the teaching task

To begin a trial on the teaching task, present cards to Simon by clicking the "Here are the cards" button. Three cards will be placed on the table in front of Simon and another in front of you.

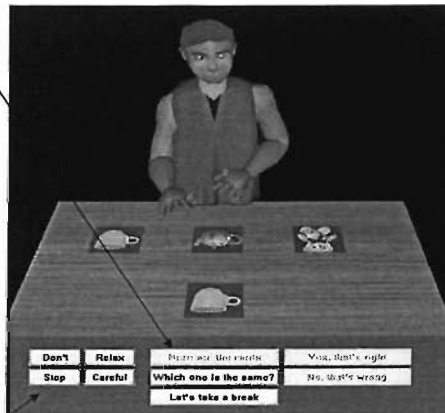
To get Simon to respond, click on the "Which one is the same?" button. Eventually, he will point to one of the cards.

Praise Simon if he's correct by clicking "Yes that's right". To tell him he's made a mistake, click "No, that's wrong".

You can give Simon a break at any time during the teaching task by clicking "Let's take a break".

You can also tell Simon to "Relax" or "Be careful", or say "Stop" or "Don't" to him at any point during the session by clicking on the buttons for those instructions on the control panel.

To start another teaching trial or to continue with the teaching task after a break, simply present a new set of cards to Simon by clicking on the "Here are the cards" button.



Press the spacebar when you are ready to continue.

How to do the administrative task

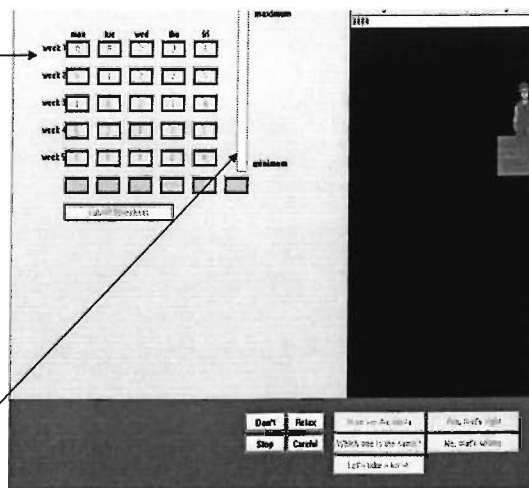
The admin task is straightforward and involves completing staff time sheets.

You will need to add up the number of hours worked per month on the time sheets, which are presented one at a time.

Simply tot up the hours worked each day to get a figure for the week (click in the boxes at the bottom to enter the weekly totals). Then add up these weekly amounts in order to enter the grand total for the month in the final box.

If any of the totals are incorrect, the box with the wrong answer becomes blank and you will need to recalculate that total. A bar will indicate your progress in successfully completing the time sheets.

While you're doing your admin, Simon will be watching TV and you can keep an eye on him by clicking on the "Everything OK?" button. If you see/hear Simon self-injuring in the distance, you can still instruct him to "Relax" or "Stop it" etc., by clicking those buttons on the control panel.

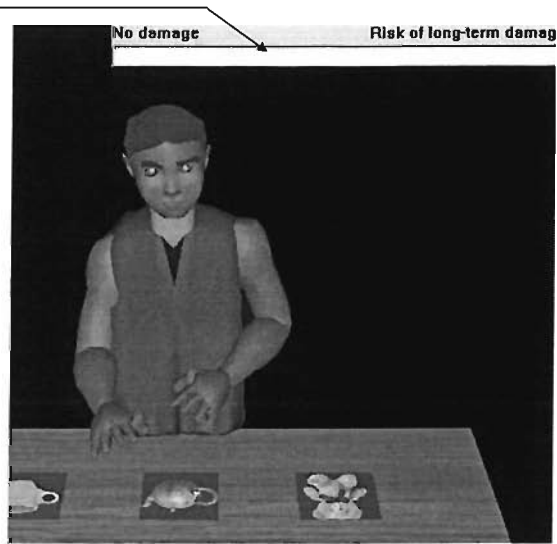


Press the spacebar when you are ready to continue.

Self-injury during the teaching task

Simon will probably hit himself during the teaching task.

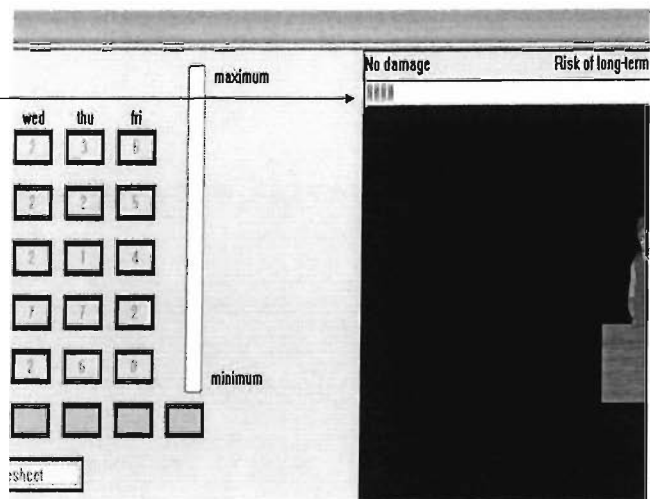
The level of damage caused by Simon's self-injury will be shown on a bar at the top of the screen. The scale ranges from "no damage" to "long-term damage".



Press the spacebar when you are ready to continue.

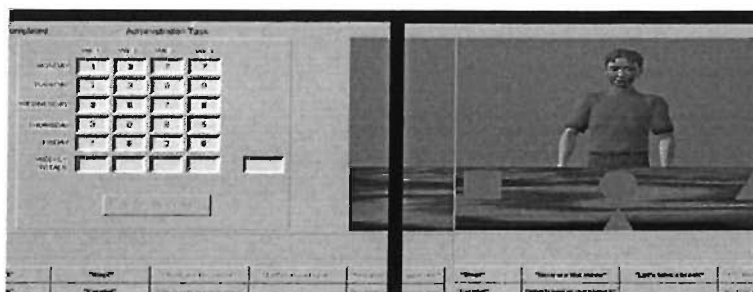
Self-injury during the administrative task

Simon will also probably hit himself during the admin task. Again, the level of damage caused by Simon's self-injury will be shown on the self-injury bar.



Press the spacebar when you are ready to continue.

Which task do I do?



Both the administrative task and the teaching task are equally important to Simon's welfare and development. Like any professional, however, you must decide how to manage your time.

You can switch between teaching and doing admin whenever you want to do so, taking into account whatever factors you think are most important.

Although Simon is a virtual person, like any child his behaviour can improve or deteriorate depending on the circumstances or how you relate to him. So don't be surprised if his behavioural patterns change!

Press the spacebar when you are ready to continue.

Ready to begin?

Final Note: The writing on the control buttons is black. However, if you see that the writing on a button is 'greyed out', this means that the button is inactive at that moment and there is no point in clicking on it. For example, if the "Yes, that's right" & "No, that's wrong" buttons are greyed out, this means that Simon hasn't chosen a card yet. Likewise, if you happen to miss Simon pointing at a card, you'll know that he has chosen one because the "Yes/No" buttons will no longer be greyed out.

Your task now is to care for Simon, managing your time effectively so as to carry out both the admin and teaching tasks. You will do this for 30 minutes. Make sure you continue to care for him until the program gives you further instructions onscreen.

If you have any queries, please ask the experimenter now.

When you are ready to start caring for Simon, put the headphones on.

Press "Esc" and then move the mouse. Simon will appear.

Appendix M

Participant Debriefing Sheet

Debriefing Statement

*“Staff responses to self-injurious behaviour in children with intellectual disabilities:
An investigation utilising a computer simulation paradigm.”*

The aim of this research was to investigate how complex patterns of behaviour become established between children with learning disabilities who challenge and those who educate and care for them. It is expected that we may see a relationship between how people think/feel about mild or serious self-injury in children with intellectual disabilities on the one hand and how they respond to it on the other hand. Your data will help our understanding of the factors that determine how people deal with children who self-injure which could benefit their lives and the lives of those who work or live with them. Once again results of this study will not include your name or any other identifying characteristics. The experiment did not use deception. You may have a copy of this summary if you wish as well as a copy of the research findings once the project is completed.

If you have any further questions please contact me, Jon Wain, at 023 8059 5321 or via jmw302@soton.ac.uk

Thank you for your participation in this research.

Signature _____ Date _____

Name

If you have questions about your rights as a participant in this research, or if you feel that you have been placed at risk, you may contact the Chair of the Ethics Committee, Department of Psychology, University of Southampton, Southampton, SO17 1BJ; Tel: (023) 8059 3995.

Appendix N (i)

Instructions to Authors: "Clinical Psychology Review"

CLINICAL PSYCHOLOGY REVIEW

INSTRUCTIONS TO AUTHORS

AIMS AND SCOPE: *Clinical Psychology Review* publishes substantive reviews of topics germane to clinical psychology. Its purpose is to help clinical psychologists keep up-to-date on relevant issues outside of their immediate areas of expertise by publishing scholarly but readable reviews. Papers cover diverse issues, including: psychopathology, psychotherapy, behavior therapy, behavioral medicine, community mental health, assessment, and child development.

Reviews on other topics, such as psychophysiology, learning therapy, and social psychology, often appear if they have a clear relationship to research or practice in clinical psychology. Integrative literature reviews and summary reports of innovative ongoing clinical research programs are also sometimes published. Reports on individual research studies are not appropriate.

SUBMISSION REQUIREMENTS: All manuscripts should be submitted to Alan S. Bellack, The University of Maryland at Baltimore, Department of Psychiatry, 737 W. Lombard St., Suite 551, Baltimore, MD 21201, USA. Submit three (3) high-quality copies of the entire manuscript; the original is not required. Allow ample margins and type double-space throughout. Papers should not exceed 50 pages (including references). One of the paper's authors should enclose a letter to the Editor, requesting review and possible publication; the letter must also state that the manuscript has not been previously published and has not been submitted elsewhere. One author's address (as well as any upcoming address change), telephone and FAX numbers, and E-mail address (if available) should be included; this individual will receive all correspondence from the Editor and Publisher.

Papers accepted for *Clinical Psychology Review* may not be published elsewhere in any language without written permission from the author(s) and publishers. Upon acceptance for publication, the author(s) must complete a Transfer of Copyright Agreement form.

COMPUTER DISKS: Authors are encouraged to submit a 3.5" HD/DD computer disk to the editorial office. Please observe the following criteria: (1) Send only hard copy when first submitting your paper. (2) When your paper has been refereed, revised if necessary, and accepted, send a disk containing the final version with the final hard copy. If the disk cannot be converted, the hard copy will be used. (3) Specify what software was used, including which release, e.g., WordPerfect 6.0a. (4) Specify what computer was used (IBM compatible PC, Apple Macintosh, etc.). (5) The article file should include all textual material (text, references, tables, figure captions, etc.) and separate illustration files, if available. (6) The file should follow the general instructions on style/arrangement and, in particular, the reference style of this journal as given in the Instructions to Contributors. (7) The file should be single-spaced and should use the wrap-around end-of-line feature, i.e., returns at the end of paragraphs only. Place two returns after every element such as title, headings, paragraphs, figure and table call-outs. (8) Keep a back-up disk for reference and safety.

TITLE PAGE: The title page should list (1) the article; (2) the authors' names and affiliations at the time the work was conducted; (3) a concise running title; and (4) an unnumbered footnote giving an address for reprint requests and acknowledgments.

ABSTRACT: An abstract should be submitted that does not exceed 200 words in length. This should be typed on a separate page following the title page.

KEYWORDS: Authors should include up to six keywords with their article. Keywords should be selected from the APA list of index descriptors, unless otherwise agreed with the Editor.

STYLE AND REFERENCES: Manuscripts should be carefully prepared using the *Publication Manual of the American Psychological Association*, 5th edition, 2001, for style. The reference section must be double spaced, and all works cited must be listed. Avoid abbreviations of journal titles and incomplete information.

Reference Style for Journals:

Cook, J. M., Orvaschel, H., Simco, E., Hersen, M., & Joiner, Jr., T. E. (2004). A test of the tripartite model of depression and anxiety in older adult psychiatric outpatients. *Psychology and Aging, 19*, 444-45.

For Books:

Hersen, M. (Ed.). (2005). *Comprehensive handbook of behavioral assessment (2 Volumes)*. New York: Academic Press (Elsevier Scientific).

TABLES AND FIGURES: Do not send glossy prints, photographs or original artwork until acceptance. Copies of all tables and figures should be included with each copy of the manuscript. Upon acceptance of a manuscript for publication, original, camera-ready photographs and artwork must be submitted, unmounted and on glossy paper. Photocopies, blue ink or pencil are not acceptable. Use black india ink and type figure legends on a separate sheet. Write the article title and figure number lightly in pencil on the back of each.

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Appendix N (ii)

Instructions to Authors: "Research in Developmental Disabilities"

RESEARCH IN DEVELOPMENTAL DISABILITIES

Instructions to Authors

AIMS AND SCOPE: *Research in Developmental Disabilities* is aimed at publishing original research of an interdisciplinary nature that has a direct bearing on the remediation of problems associated with developmental disabilities. Manuscripts will be solicited throughout the world. Articles will be primarily empirical studies, although an occasional position paper or review will be accepted. The aim of the journal will be to publish articles on all aspects of research with the developmentally disabled, with any methodologically sound approach being acceptable. A list of topic areas that is illustrative but not inclusive is applied behavior analysis, pharmacotherapy, traditional assessment, behavioral assessment, speech training, and occupational therapy. Our aim is to publish the best available and most current research possible.

SUBMISSION REQUIREMENTS: All manuscripts should be submitted to the Editor-in-Chief, Johnny L. Matson, Ph.D., Department of Psychology, Louisiana State University, Baton Rouge, LA 70803-5501, USA. Submit five (5) high-quality copies of the entire manuscript; the original is not required. Allow ample margins and type **DOUBLE SPACED** throughout. One of the paper's authors should enclose a letter to the Editor, requesting review and possible publication; this letter must also state that the manuscript has not been previously published and has not been submitted elsewhere. Papers accepted for *Research in Developmental Disabilities* may not be published elsewhere in any language without written permission. Should a paper be accepted for publication, the author will be asked to complete a Transfer of Copyright form.

COMPUTER DISKS: Authors are encouraged to submit a 3.5" HD/DD computer disk to the editorial office; 5.25" HD/DD disks are acceptable if 3.5" disks are unavailable. Please observe the following criteria: (1) Send only hard copy when first submitting your paper. (2) When your paper has been refereed, revised if necessary, and accepted, send a disk containing the final version with the final hard copy. Make sure that the disk and the hardcopy match exactly. (3) Specify what software was used, including which release, e.g., WordPerfect 6.0a. (4) Specify what computer was used (IBM compatible PC, Apple Macintosh, etc.). (5) The article file should include all textual material (text, references, tables, figure captions, etc.) and separate illustration files, if available. (6) The file should follow the general instructions on style/arrangement and, in particular, the reference style of this journal as given in the Instructions to Contributors. (7) The file should be single-spaced and should use the wrap-around end-of-line feature, i.e., returns at the end of paragraphs only. Place two returns after every element such as title, headings, paragraphs, figure and table call-outs. (8) Keep a backup disk for reference and safety.

TITLE PAGE: The title page should list (1) the article title; (2) the authors' names and affiliations at the time the work was conducted; (3) address of corresponding author; and (4) the corresponding author's telephone and fax numbers and E-mail address if available.

ABSTRACT: An abstract should be submitted that does not exceed 200 words in length. The abstract should be brief, concise, and complete in itself without reference to the body of the paper. Include purpose, methodology, results, and conclusions where applicable. Also supply keywords.

STYLE AND REFERENCES: Manuscripts should be prepared using the **American Psychological Association Publication Manual, 4th ed., 1994**.

The word *retarded* should be used as an adjective rather than a noun; *retardate* should be avoided. Terms that are scientifically precise should be adhered to. Therefore, *mentally retarded* will be preferred to *retarded* because it specifies the type of retardation, and *intellectually average* or *normal intelligence* will be preferred over *normal*. A similar format should be followed if other disabilities are involved. Abbreviations should be held to a minimum and should appear only after the full length term has been spelled out once in the text. It is understood that all investigations have been approved by the human subjects review committee of the author's institution.

The reference section must be **DOUBLE SPACED** and all works cited must be listed. Use APA style for the references. Also use APA style for the reference citations in text.

TABLES AND FIGURES: Do not send glossy prints, photographs, or original artwork until acceptance. Copies of all tables and figures should be included with each copy of the manuscript. Upon acceptance of a manuscript for publication; original camera-ready photographs and artwork should be submitted, unmounted and on glossy paper. Illustrations and diagrams should be kept to a minimum to save journal space; they should be numbered and marked on the back with the author's name, in pencil.

PROOFS AND REPRINTS: One (1) set of page proofs of the article will be sent to the corresponding author. These should be carefully proofread. Except for typographical errors, corrections should be minimal, and **rewriting of text is not permitted**.

The corresponding author will receive (along with page proofs for reading), a form for ordering reprints and full copies of the issue in which their article appears. Twenty-five (25) free reprints are provided. Orders for additional reprints must be received before printing in order to qualify for lower prepublication rates.