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The Effect of Overshadowing Bias on Individual Decision Making and Referral Pathways

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Abstract

Research has presented diagnostic overshadowing as a robust cognitive bias, which alters clinicians' diagnosis and treatment recommendations for individuals with learning disability and concurrent mental health problem. It refers to the tendency of clinicians to overlook a comorbid condition in the face of a more salient condition such as learning disability, hearing impairment and life-limiting illness. Although the literature has focused on the clinical realm, the overshadowing bias may equally be applied to the non-clinical sphere, where decisions are commonly made about individuals who may present with concurrent conditions. This thesis has two main aims:

Firstly it will review the existing diagnostic overshadowing literature. The strengths and weaknesses of this research will be considered and the validity of the bias assessed. Future research direction will be considered.

Secondly, it will empirically test the validity of the overshadowing bias by: assessing the effect manipulation of methodology has on overshadowing; exploring the generalisability of overshadowing for a non-clinical population making decisions about children with Asperger Syndrome and concurrent challenging behaviour; and finally exploring the relationship between overshadowing and cognitive complexity and causal attributions.

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Literature Review

A critical review of diagnostic overshadowing Bias: Future Directions

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Abstract

Diagnostic overshadowing is a cognitive bias that has been demonstrated in the literature for over 20 years. It originally referred to the tendency of clinicians to overlook comorbid mental health problems in individuals with learning disabilities. More recent studies have also evidenced diagnostic overshadowing for individuals with hearing impairment, AIDS and life-limiting illnesses. Diagnostic overshadowing is presented in the literature as a robust construct; however, there are a number of key weaknesses in the research, which raise questions about the validity of the bias. This paper offers a detailed critique of published literature exploring diagnostic overshadowing. It will review methodological, conceptual and clinical limitations to existing studies and offer directions for future research.

Introduction

The concept of diagnostic overshadowing has been recognised in the literature for over 20 years. This decision-making bias is defined as when one salient disorder overshadows or confounds another in the context of a co-morbid condition (Jopp & Keys, 2001). It refers to the tendency of clinicians to be so blinded by the salience of one disorder that they ignore or underestimate the existence of a second disorder. This then extends to erroneous recommendations of differential treatments for the comorbid disorder. Initially, the focus of overshadowing research was on the effect the label of learning disability had over concurrent mental health conditions (Reiss, Levitan & Szyszko, 1982; Levitan & Reiss, 1983; Reiss & Szyszko, 1983; Alford & Locke, 1984; Spengler, Strohmer & Prout, 1990; Spengler & Strohmer, 1994). However, subsequent literature has explored this bias in relation to other conditions such as physical disability, hearing–impairment and life-limiting illnesses such as AIDS and cancer (Garner, Strohmer, Langford & Boas, 1994; Goldsmith & Schloss, 1984; 1986; Walker & Spengler, 1995). What all the research has in common is that it is always a salient condition that overshadows.

Although, researchers have concentrated on how this bias presents in clinical settings, the concept can theoretically be applied to any situation where decisions are made. An everyday example might be the common parental anxiety about their baby crying. There are countless reasons to explain why a baby might be crying on any particular occasion. However, if the child is within

the developmental period of teething, their cries and often any fever, diarrhea, sleeplessness and general irritability is confidently attributed to teething alone. Every year there are a number of babies whose serious illnesses are missed because of this misguided attribution.

A search of the literature from 1982 to 2004 using PsycINFO (American Psychological Association, 2004) found no articles and reviews exploring overshadowing outside the clinical realm. However, as mentioned above, there is a firm base of research exploring the overshadowing bias in relation to clinical decision-making and this base can be drawn upon to inform us of the validity of the overshadowing phenomena generally. Although diagnostic overshadowing has been presented as a robust bias (Jopp & Keys, 2001) the research has strengths and weaknesses and this review will explore these studies in detail.

The present paper will commence by outlining the concept of diagnostic and treatment overshadowing and its robustness in terms of the moderating variables of client and participant. It will then explore the 11 published studies in detail and highlight the strengths and limitations of the existing research. Finally, it will conclude by exploring areas for further research.

The Concept of Diagnostic Overshadowing

The concept of diagnostic overshadowing was initially offered as explanation for the disproportionate (low) use of mental health services by people with

learning disabilities (Reiss, Levitan & Szyszko, 1982). Although psychopathology in individuals with learning disabilities may exceed that of the general population (Matson & Barrett, 1982; Szymanski & Tanguay, 1980) they do not receive comparable mental health treatments (Reiss, Levitan & McNally, 1982). It was hypothesised that this problem resulted from decision-making bias or mis-attribution by professionals in the assessment stage of service provision (Nisbett & Ross, 1980) which then leads to erroneous treatment recommendations.

Moderators to Diagnostic Overshadowing

Demographic distinctions such as experience, client preference, training and workplace setting have been hypothesised to play a part in decision-making. After overshadowing had been evidenced empirically, researchers set out to explore whether any of these characteristics could affect overshadowing. However, few of these distinctions have been found to impact on overshadowing.

For clinicians, overshadowing has been found across disciplines and training. Clinical, counselling and school psychologists, rehabilitation counsellors, social work and psychology students at various levels of study, have all been found to show diagnostic overshadowing in their clinical judgements (Alford & Locke, 1984; Spengler & Strohmer, 1994; Garner, Strohmer, Langford & Boas, 1994; Spengler, Strohmer & Prout, 1990; Reiss & Szyszko, 1983);

although there also appears to be no effect for the type of employing organisation or workplace setting (Reiss & Szyszko, 1983; Seay, 1991).

It would make sense that individuals with greater experience would make decisions that are more accurate. However, studies exploring the influence of experience show mixed results. The length and quality of work experience has generally not been found to moderate clinicians' decisions about diagnosis (Alford & Locke, 1984; Reiss & Szyszko, 1983; Seay, 1991; Spengler et al, 1990) but is has been found to positively affect the treatment recommendations of clinicians (Spengler et al, 1990).

It has been suggested that individual preferences influence cognitive processes (Nisbett & Ross, 1980; Zajonc, 1980). Spengler, Blustein & Strohmer, (1994) found that counsellors who preferred working with personal problems tended to over empathise a client's personal problems at the expense of any vocational problems. Spengler and Strohmer (1994) hypothesised that clinicians' preference for working with people learning disabilities would moderate the effects of overshadowing. However, preference had no significant effect on overshadowing. Spengler and Strohmer (1994) speculated that this was because of the overall low preference rate of participants for working with clients with learning disabilities, which may have skewed the results.

One individual characteristic that has been found to affect overshadowing is level of cognitive complexity. Cognitive complexity is derived from Kelly's

(1955) personal construct theory and refers to the ability to view others' social behaviours in a multidimensional way, that accounts for their individual strengths and weaknesses (Bieri, Atkins, Briar, Leaman, Miller & Tripodi, 1966). A more cognitively complex person accesses a more differentiated system of dimensions for perceiving others' behaviours than a less cognitively complex person (Bieri et al, 1966). They may ask a greater number of relevant questions, consider a wider range of hypotheses and construct more accurate judgements (Holloway & Wolleat, 1980). Two studies (Spengler & Strohmer, 1994; Walker & Spengler, 1995) have found that cognitive complexity moderates the effects of diagnostic overshadowing amongst clinicians. Individuals with high cognitive complexity are three times less likely to overshadow than those with low cognitive complexity (Spengler & Strohmer, 1994). Although it is still unclear exactly what processes are at work here, these findings suggest that cognitive complexity reduces the tendency to fall back on cognitive biases in clinical judgements and leads to more accurate decisions.

The moderating effects of the disorder presented have also been studied. Variability in the type and severity of the concomitant disorder (psychopathology) does not appear to affect the robustness of overshadowing. The presence of cognitive deficits in clients have been found to overshadow schizophrenia (Reiss & Szyszko, 1983; Alford & Locke, 1984; Wittman, 1989; Spengler et al, 1990; Spengler & Strohmer, 1994), phobias (Reiss, Levitan & Szyszko, 1982; Levitan & Reiss, 1983), depression (Walker & Spengler, 1995) and personality disorder (Reiss, Levitan & Szyszko, 1982).

Overshadowing has also been found within non-learning-disabled populations such as physical disability (Garner, Strohmer, Langford & Boas, 1994), hearing–impairment (Goldsmith & Schloss, 1984; 1986) and life-limiting illnesses such as AIDS and cancer (Walker & Spengler, 1995).

Therefore, in the clinical sphere, overshadowing appears to be a robust bias for salient disorders. It is unaffected by clinician variables such as experience, client preference, workplace environment and training but may be moderated by their levels of cognitive complexity. It has also been established across a number of salient presenting disorders and secondary pathologies.

Critical Review of Published Research examining Diagnostic Overshadowing

As shown above, diagnostic overshadowing is presented as a robust bias negatively affecting the accuracy of clinicians' diagnostic judgements (White, Nichols, Cook, Spengler, Walker & Look, 1995; Jopp & Keys, 2001). However, in order to substantiate this claim, the methodology of the studies needs to be scrutinised to determine whether their findings are a function of the overshadowing effect or simply reflect limitations of the research designs.

Eleven key research studies have been published evaluating the robustness of diagnostic overshadowing (see table 1). All of these studies have looked at whether diagnostic overshadowing occurs with various co-morbid disorders. Seven have used learning disabilities as the salient disorder; three have specified hearing impairment, with one of these also exploring neurological

Table 1: Diagnostic Overshadowing: Published Research (adapted from Jopp & Keys (2001).

(a) Application to Learning disability

Authors	Method	Sample Size (*N*)	Disorder Examined	Was DO found	Variables Examined	Significant Results
Reiss, Levitan & Szyszko, 1982	SV/LS	Study 1: 120 psychologists	Agoraphobia	Yes	1. Disorder type (no disorder, learning disabilities, alcoholism)	1. Single diagnosis coded more frequently than multiple diagnoses 2. Neurotic, irrational, emotionally disturbed and psychotic labels rated less likely for the learning disability condition than the other two conditions
Reiss, Levitan & Szyszko, 1982	SV/LS	Study 2: 80 psychologists	Schizophrenia avoidant personality disorder	Yes	1. Type of concomitant disorder	1. Learning disability condition was rated less likely to be examples of schizophrenia, psychosis, emotional disturbance and more likely to be an example of a thought disorder compared to the average IQ condition.
Levitan & Reiss, 1983	SV/LS	76 graduate students	Agoraphobia	Yes	1. Clinical psychology vs social work graduate training.	1. DO occurred equally across conditions

Note: DO = Diagnostic overshadowing IQ = Intelligence quotient SV/LS = Short vignettes/Likert scale

Table 1: Diagnostic Overshadowing: Published Research (cont.)

Authors	Method	Sample Size (*N*)	Disorder Examined	Was DO found	Variables Examined	Significant Results
Reiss & Szyszko, 1983	SV/LS	87 psychologists graduate students	Schizophrenia	Yes	1. Professional experience 2. Experience with persons with mental retardation	1. DO occurred equally across all experience conditions
Alford & Locke, 1984	SV/LS	119 psychologists	Schizophrenia	Yes	1. Presence of learning disability label 2. Clinician experience with learning disability 3. Clinician behavioural orientation	1. Label elicits DO 2. Behavioural orientation related to greater behavioural treatment recommendations
Spengle, Strohmer & Prout, 1990	SV/LS	57 rehabilitation counsellors	Schizophrenia	Mixed	1. Multiple levels of IQ (58, 70, 80) 2. Professional experience (months in the field, number of clients seen)	1. Only IQ = 58 condition showed overshadowing. 2. Experience (months in the field) related to more ratings for neurotic and fewer recommendations for talk therapy and psychopharmacological treatments
Spengler & Strohmer, 1994	SV/LS	119 counselling psychologists	Schizophrenia	Yes	1. Counsellor preference for working with clients with learning disability Counsellor cognitive complexity	1. Counsellor preference was not found to moderate DO 2. Increased clinical cognitive complexity was related to less DO

Note: DO = Diagnostic overshadowing IQ = Intelligence quotient SV/LS = Short vignettes/Likert scale

Table 1: Diagnostic Overshadowing: Published Research (cont.)
(b) Application to other disorders

Authors	Method	Sample Size (*N*)	Disorder Examined	Was DO found	Variables Examined	Significant Results
Goldsmith & Schloss, 1984	SV/LS	219 school psychologists	Hearing impairment, learning disabled/ non-disabled	Yes	1. DO across conditions 2. Treatment overshadowing	1. DO occurred 2. Treatment overshadowing occurred
Goldsmith & Schloss, 1986	SV/LS	169 school psychologists	Hearing impairment non-disabled	Yes	1. DO across conditions 2. Experience	1. DO occurred 2. Experience did not moderate DO
Garner et al 1994	SV/LS	89 rehabilitation counsellors	Traumatic brain injury, hearing impairment epilepsy	Yes	1. Disability type (no disability, IQ = 65, traumatic brain injury, hearing impaired, epilepsy)	1. Learning disability, traumatic brain injury and epilepsy elicit DO compared to no disability and hearing impairment conditions. 2. No treatment overshadowing
Walker & Spengler, 1995	SV/LS	173 clinical and counselling psychologists	AIDS and major depression	Yes	1. Moderating effects of: knowledge about AIDS and cognitive complexity	1. DO occurred but no difference between groups 2. Cognitive complexity moderated recommendations regarding AIDS 3. Attitudes about AIDS did not moderate DO

Note: DO = Diagnostic overshadowing IQ = Intelligence quotient SV/LS = Short vignettes/Likert scale

problems, and one has used AIDS and cancer. Several of the studies have also explored other factors that are hypothesised to effect the degree of overshadowing. These factors are clinician's experience, therapeutic orientation, knowledge of disorder and cognitive complexity. Literature searches using PsycINFO Journal Articles Database (APA, 2004) with the search term 'diagnostic overshadowing', also found nine unpublished dissertation abstracts (see table 2). Although these studies may be referred to in the general review, they will not be included in this section as they have not been subject to peer review.

The majority of the research has used an analogue design with vignettes and Likert Scale ratings (Likert, 1932). Therefore, this common methodology will briefly be outlined, followed by a review of the 11 studies.

Outline of Methodology

The majority of diagnostic overshadowing research has followed the same analogue research design. Firstly, one of several different conditions is presented to each participant in the form of a written vignette. These conditions depict a person presenting with behaviours that would meet criteria for a concomitant pathology such as schizophrenia. The vignettes are identical except that one shows a person with learning disabilities and one a person with average intelligence. The learning disability is identified either by direct reference to the diagnostic label (Alford & Locke, 1984); by the individual's Full Scale IQ on cognitive assessment measures (Levitan &

Table 2: Diagnostic Overshadowing: Dissertation Abstracts

Authors	Method	Sample Size (*N*)	Disorder Examined	Was DO found	Variables Examined	Significant Results
Levitan, 1983	Interview	48 psychologists	Schizophrenia depression	No	1. Overshadowing across disorders 2. Order and frequency with which clinicians requested diagnostic information	1. Overshadowing was not found to differ across disorders 2. No differences were found in questioning order or frequency.
Reidy, 1987	Novel vignette and novel scoring	125 psychologists	Schizophrenia agoraphobia	No	1. Use of objective DSM-III-R criteria vs personal criteria	1. DO was not found to occur 2. Use of DSM-III-R criteria made no difference in diagnostic accuracy across all conditions.
Wittmann, 1989	Modified SV/LS	109 psychologists	Schizophrenia	Yes	1. Order of diagnostic information in the vignette (IQ first vs pathology first) 2. Schizophrenia symptoms severity (high vs low).	1. Order of information did not effect DO 2. High symptom condition led to more schizophrenia diagnoses but DO still occurred across all conditions.
Seay, 1991	SV/LS	116 psychologists	Major depression	Yes	1. Levels of mental retardation (mild/moderate) 2. Psychologists workplace (private/CMHC/state facility)	1. DO occurred across both mild and moderate conditions 2. Workplace had no moderating effect on DO

Note: DO = Diagnostic overshadowing IQ = Intelligence quotient SV/LS = Short vignettes/Likert scale

Table 2: Diagnostic Overshadowing: Dissertation Abstracts (cont.)

Authors	Method	Sample Size (*N*)	Disorder Examined	Was DO found	Variables Examined	Significant Results
Moreno-Ricado, 1998	SV/LS	71 graduate students	Schizophrenia	Yes	1. Moderating effects of learning disability training.	1. Training did not moderate diagnostic overshadowing
Showich, 1999	DSM response mode vs Likert scale	Unknown	Schizophrenia	Yes	1. Use of DSM-IV criteria for diagnosis compared to Likert	1. Overshadowing occurred regardless of response mode

Note: DO = Diagnostic overshadowing IQ = Intelligence quotient SV/LS = Short vignettes/Likert scale

Reiss, 1983; Reiss, Levitan & Szyszko, 1982; Reiss & Szyszko, 1983; Spengler et al., 1990; Spengler & Strohmer, 1994) or by reference to the person being a 'slow learner' (Levitan & Reiss, 1983; Reiss & Szyszko, 1983; Reiss, Levitan & Szyszko, 1982, Spengler et al, 1990; Spengler & Strohmer, 1994). Various studies have modified these conditions to evaluate overshadowing amongst other disorders, for example, alcoholism (Reiss, Levitan & Szyszko, 1982) and AIDS, (Walker & Spengler, 1994).

Participants are asked to rate on a seven point Likert scale how likely it is that the individual suffers from a list of conditions, for example, schizophrenia, psychotic disorder, thought disorder, depression, personality disorder, neurotic disorder, emotional disturbance, nonassertiveness and mental retardation (Levitan & Szyszko, 1982). They are then asked to rate which of two treatments would be appropriate, for example, psychotherapy and psychopharmacology. Results are analysed using analysis of variance (ANOVA). When each diagnostic and treatment categories are compared, those in the learning disabled condition are rated as significantly *less likely* to suffer from any of the psychopathology conditions than those in the non learning disabled condition. This is seen as evidence that individuals with learning disabilities are considered less likely to be suffering from a comorbid psychopathology and are therefore more likely to be victims of diagnostic overshadowing.

The eleven studies are divided into two sections. Firstly, those applying diagnostic overshadowing to learning disabilities and secondly, those applying

diagnostic overshadowing to other disorders. Unless stated, all of the studies have utilised the methodology outlined above.

Review of Published Research

Application of Diagnostic Overshadowing to Learning Disabilities

Three researchers, Reiss, Levitan and Szyszko, initially explored the phenomena of the diagnostic overshadowing bias. Together, they conducted four experiments looking at the effect of overshadowing on learning disabled populations. Reiss, Levitan & Szyszko's (1982) original study introduced the concept of diagnostic overshadowing. They conducted two experiments. The first evaluated the effects of the label of learning disability and alcoholism on psychologists' judgements about their client's emotional problems (phobia). Their initial study recruited 48 psychologists (from 120 questionnaires sent out, representing a return rate of 40 per cent). Each read one of three vignettes, which presented a client with an acute phobia. The vignettes differed on whether the case presented with learning disability, alcoholism or a control condition. The case descriptions were hypothetical rather than based on actual cases. Reiss et al (1982) argued that actual cases histories might be biased in terms of the information they included and excluded and that these cases would require substantial amendment to ensure the presentation of the phobia was consistent with the different levels of intellectual functioning. Diagnostic options were the likelihood the client was, mentally retarded (sic), alcoholic, psychotic, neurotic, tense, emotionally disturbed and irrational. The

data supported the occurrence of diagnostic overshadowing of phobia in the learning disability condition and in the alcoholism condition. Their results showed that both these conditions tended to be rated as single diagnoses compared to the control condition even though multiple disorders were indicated. In addition, both conditions were less likely to be recommended systematic desensitisation treatment. Main effects specific to learning disability were ratings of *neurotic* and *psychotic*. These diagnoses were rated significantly lower than both the control and alcoholism condition. The authors concluded that these results showed evidence for some forms of diagnostic and treatment overshadowing specific to learning disabilities and some attributable to the presence of multiple 'handicaps'. However, the authors also acknowledged that any generalisations based on these results were limited because of the low questionnaire return rate. The presentation of hypothesised case studies also poses questions about the validity of the vignette categories. If phobia does have a different presentation depending on the client's cognitive level then is it realistic to present clinicians with a standardised depiction of a phobia and ask them to make diagnostic judgements; this may not be reflective of real life diagnoses in clinical practice.

Reiss et al's (1982) second experiment replicated the above study, extending the findings to cases involving schizophrenia and avoidant personality disorder. They attempted to respond to the methodological problems outlined above. The return rate was increased to 88 per cent (N = 53 psychologists) and the case descriptions represented a composite of symptoms based on

real-life cases which were then modified to be consistent with low and average IQ levels. Eleven diagnostic labels were rated (mental retardation, schizophrenia, personality disorder, psychotic, neurotic disorder, emotionally disturbed, depressed, non-assertive and thought disorder). Treatment options were long-term psychotherapy and drug therapy. The results offered further evidence for diagnostic overshadowing. The learning-disabled condition was rated as significantly less likely to be representative of schizophrenia, psychosis, an emotional disorder, a personality disorder or a thought disorder and less likely to be recommended long-term psychotherapy. This finding was consistent across both the avoidant personality and schizophrenia conditions. Therefore, both experiments provide evidence for diagnostic overshadowing across syndromes (phobia, schizophrenia and avoidant personality disorder) with the second experiment providing a more robust methodology.

In a third study, Levitan & Reiss (1983) replicated Reiss et al's (1982) first experiment, using 76 psychology and social work students as participants. Their results demonstrated diagnostic and treatment overshadowing for individuals with learning disabilities. No differences were found between social work and psychology students. This was offered as evidence of the generality of diagnostic overshadowing across training experiences from two disciplines.

In the groups' final study, Reiss & Szyszko (1983) replicated Reiss et al's (1982) second experiment to test the moderating effect of professional experience on diagnostic overshadowing. Participants were 30 psychologists working with individuals with learning disability, 30 psychologists working with

individuals with mental health problems and 27 clinical psychology students. Participants also recorded experience levels in years and number of clients seen and these were categorised into three levels, low, moderate and high. Preliminary analysis confirmed that psychology students had the least experience working with learning disabilities and psychologists in learning disability settings had the greatest. Their results again confirmed the existence of diagnostic and treatment overshadowing in the learning disability condition. However, no significant results were found for the effect of experience levels on overshadowing. This suggests that clinicians are still prone to making diagnostic errors when working with individuals with learning disabilities regardless of their level of professional training or client contact. However, assigning experience level, an otherwise continuous variable, into the three categories may have resulted in loss of information, error, degrees of freedom and power of the statistical sample (Cohen & Cohen, 1983). A more sensitive measurement of experience level may have provided a better test of the effect of this variable on diagnostic overshadowing.

The fifth study (Alford & Locke, 1984) contained the largest sample size. Three hundred and seventy-two psychologists, who worked with clients with learning disabilities, completed postal questionnaires (40% return rate). The disorder presented in the vignettes was schizophrenia. In addition to establishing the effect of diagnostic overshadowing, the study sought to explore whether the therapeutic orientation and level of experience of clinicians affected their judgements. Participants were also asked to rate the effect of the client's cognitive functioning on their assessment decision. Forty-

six per cent of respondents described themselves as behavioural (rather than non-behavioural) in orientation and 59 per cent reported at least three months clinical experience with learning disabled individuals. The results were consistent with previous studies for diagnostic overshadowing and treatment overshadowing; the learning disability condition resulted in fewer diagnoses of psychopathology and recommendations for behavioural over expressive therapy. Diagnostic overshadowing was not found to be moderated by behavioural orientation but treatment choice was moderated by orientation with the more behaviourally minded psychologists perhaps unsurprisingly, recommending more behavioural treatments over non-behavioural. Consistent with Reiss & Szysko's (1983) finding, experience was not found to moderate overshadowing, although different definitions of experience were used in these two studies, making direct comparison difficult. Clinicians attributed more importance to the client's level of intellectual disability in the learning disability condition. This suggests that the participants were in some measure aware of the effect of this label on their decisions and recommendation. This study, again, supported the concept of diagnostic overshadowing although it raises questions about the exact processes involved. If overshadowing is indeed a conscious bias then this may point either to a lack of understanding of or knowledge about learning disabilities and/or to the existence of stereotyped views (Alford & Locke, 1984) about the role of 'abnormal' behaviour in the pathology of learning disabled individuals.

The sixth study, conducted by Spengler, Strohmer & Prout (1990), sought to examine diagnostic overshadowing bias amongst 57 rehabilitation

counsellors. They tested the robustness of diagnostic overshadowing across a range of IQ levels and for different levels of clinical experience. Three IQ levels were presented (58, 70 or 80) to assess the salience of the learning disability label. Two types of experience were measured: the number of months worked with people with learning disabilities and the number of clients seen with learning disability. This provided a more sensitive record of experience than in previous studies. The results showed diagnostic and treatment overshadowing for the lowest IQ group but not for the other two IQ groups. There was no linear relationship between the effect sizes for overshadowing and IQ. Therefore, the salience hypothesis, which states that overshadowing would decrease linearly as a function of the increase in IQ, was rejected. This suggests that diagnostic overshadowing may be a robust concept for IQs in the low range of learning disability but not amongst the majority of individuals with learning disability in the moderate and borderline range of intelligence. The effect of experience on overshadowing was mixed. There was no effect for number of clients worked with but there was a positive interaction between number of months worked and treatment overshadowing. Therefore, clinicians with greater experience were more biased in their treatment recommendations. The authors suggest a number of reasons for this rather suprising result. Firstly, that more experience may lead to the strengthening of stereotypes associated with individuals with severe learning disabilities. Secondly, that experienced clinicians may have spent longer in a service that tends not to offer psychotherapy to clients with learning disabilities and the result may reflect the reality of service provision rather than the ideal.

The seventh study examined the moderating factors of client's IQ level and clinicians' cognitive complexity and counsellor preference on the cognitive processes leading to diagnostic overshadowing (Spengler & Strohmer, 1994). Their sample was 119 (just under 40% return rate) counselling psychologists between the ages of 31 and 70. All participants had doctoral degrees in applied psychology subjects and the majority were involved in diagnostic and treatment decision-making. In line with previous studies, the researchers presented a short vignette describing an individual fulfilling criteria for a DSM-IV (Diagnostic and Statistical Manual of Mental Disorders-IV, American Psychological Association, 1994) diagnosis of schizophrenia. Counsellor preferences for working with people with learning disabilities were measured by a constructed questionnaire, the Mental Retardation Preference Scale (MRPREF). This measure consisted of six problem labels indicative of learning disabilities (e.g. mental retardation and intellectually handicapped) amongst 15 filler items. Counsellors indicated their degree of preference on a six point Likert scale ranging from *dislike* (1) to *like* (9). Content validity of the MRPREF was good (alpha coefficient of 0.99, $M = 32.3$, $SD = 12.70$). Cognitive complexity was assessed by a reduced version (4x6) of Bieri, et al, (1966) 10x10 repertory grid. The grid was based on Kelly's (1955) personal construct theory and measures the ability to view individuals' social behaviours in a multidimensional way, accounting for their individual strengths and weaknesses (Bieri et al.'s (1966). No effect was found for client's intellectual level, or for clinicians' preference for working with people with learning disabilities, on diagnostic and treatment overshadowing. However, as

hypothesised, clinicians with high cognitive complexity were less likely to show diagnostic and treatment overshadowing than those with low cognitive complexity. Again, the return rate makes generalisation difficult but this study showed that cognitive factors such as complexity of thought, may be key to understanding the processes involved in diagnostic overshadowing.

Application of Diagnostic Overshadowing Beyond Learning Disabilities

Goldsmith and Schloss (1984; 1986) conducted two experiments examining the diagnostic overshadowing bias in relation to learners with hearing-impairments. The first study (Goldsmith & Schloss, 1984) drew on a sample size of 219 school psychologists (31% return rate). They utilised Reiss et al.'s (1982) first research design, adding the condition of hearing impairment to the vignette presentations and a third variable, placement options (e.g. inpatient mental health facility, alternative school program, homebound instruction etc). Results showed that the psychologists were less likely to apply a secondary diagnosis of behavioural disorders to the learning disabled and hearing-impaired learners. This again supports the presence of a diagnostic overshadowing bias. In addition, psychologists were less likely to recommend therapeutic services for clients with learning disabilities and hearing-impairments compared to the non-disabled students, which suggests that treatment overshadowing was evidenced for these students. For placement option, psychologists were more likely to recommend students with hearing impairments should remain in their existing placement than students with learning disabled and those without disabilities. Therefore, this study adds

support to the literature showing diagnostic and treatment overshadowing for individuals with learning disabilities and expands this (with the caveat of the low return rate restricting generalisations) to encompass learners with hearing impairments.

Goldsmith & Schloss's (1986) second study extended their previous findings by exploring the effect that experience had on the diagnostic overshadowing bias. Their study was similar to their earlier one apart from the exclusion of the learning disability category and an additional demographic question regarding the amount of experience each participant had of working with students with hearing impairments. Experience was divided into two categories, high experience, working with ten or more deaf learners over the past 3 years, or, low experience, working with two or less students with hearing impairments over the past 3 years. One-hundred and sixty-nine school psychologists returned questionnaires (return rate 31%). Their results mirrored those found in their previous study, again supporting the existence of an overshadowing bias directed towards learners with hearing impairments for the diagnostic, treatment and placement recommendations of school psychologists. No difference was found between psychologists with high or low experience in any of the diagnostic, treatment or placement categories. However, the cut off points for high and low experience, 10 and 2 contacts respectively, was decided by reviewing experience levels of all the participants returning questionnaires. It could be questioned whether this somewhat arbitrary division actually reflects high and low experience levels. In addition, defining experience levels according to the characteristics of the

particular sample used makes comparisons with other studies problematic. What constitutes high experience in this population may be very different to another. One way around this could be to measure experience as a continuous variable.

The tenth study, Garner, Strohmer, Langford & Boas (1994), examined the robustness of the diagnostic overshadowing bias for rehabilitation counsellor judgements towards clients with physical disabilities as well as for learning disability. Eighty-nine rehabilitation workers were recruited, of whom, 66% were counsellors or administrators and the rest were in rehabilitation related positions. Garner et al. (1994) used the same vignette scenario provided by Reiss et al's (1982) second experiment with five diagnostic conditions: no disability, a traumatic brain injury, epilepsy, hearing impairment and an IQ of 65. Their results evidenced diagnostic overshadowing bias for the learning disability condition, the traumatic brain injury condition and the epilepsy condition. No bias was found for the hearing-impaired condition. No treatment overshadowing bias was found for any of the conditions. These findings support the robustness of diagnostic overshadowing applied to clients with learning disabilities and extends it to include other cognitive or neurological deficits. However, two of their main effects contradict previous research. Firstly, unlike Goldsmith and colleagues (1984; 1986), they did not find evidence of diagnostic overshadowing bias with hearing-impaired clients. Secondly, in contrast with Spenger et al (1990), the presence of learning disability did not lead to treatment overshadowing. It is unclear why these anomalies occurred. One possible reason may be the use of rehabilitations

counsellors as participants. Rehabilitation counsellors are not trained to make diagnoses; therefore, they may have drawn on a different knowledge base than school psychologists to inform their decision-making and treatment recommendations (ironically one that caused them to make fewer errors than the trained professionals).

Finally, Walker & Spengler (1995) examined diagnostic and treatment overshadowing in relation to clients with AIDS. They recruited 173 clinical and counselling psychologists (return rate 38%) split over three conditions, AIDS, cancer and a no-medical-problem condition. Their methodology differed from that presented by Reiss et al (1983) in the conditions presented. Three vignettes were read by participants, all depicting an individual with depression, each differing on whether the person suffered from AIDS, cancer or had no medical problem. Additional hypotheses concerned the moderating effects of clinicians' attitudes towards people with AIDS and the moderating effect of clinicians' cognitive complexity. These were measured by an adaptation of Bieri et al (1966) repertory grid measuring clinicians' cognitive complexity about AIDS issues and the Attitudes Towards AIDS Victims (ATAV: Larsen, Serra & Long, 1990) questionnaire. The results were analysed using two separate multiple regression analyses applied to the diagnostic and treatment overshadowing variables. Their results showed treatment but not diagnostic overshadowing for the client with AIDS rather than cancer or no medical problem. Clinicians were less likely to recommend antidepressant medication for this group. Diagnostic overshadowing was evidenced for the combined groups of cancer and AIDS when compared to no

medical problem. As such, diagnostic overshadowing appeared to be a function of the client's life-limiting illness rather than a bias specific to AIDS clients. No moderating effects were found for clinicians' attitudes towards people with AIDS. Cognitive complexity was found to moderate treatment recommendations for AIDS clients but not for cancer clients or those with no medical condition. This suggests that clinicians with low cognitive complexity were less likely to recommend anti-depressant medication when a client had AIDS and major depression and supports the previous study (Spengler & Strohmer, 1994) which identifies cognitive complexity as a moderating factor in diagnostic overshadowing.

Summary of Diagnostic Overshadowing Research

All of the eleven published studies have evidenced some degree of diagnostic and treatment overshadowing. Researchers found diagnostic overshadowing to be a robust bias for people with learning disabilities, however, Spengler, Strohmer & Prout (1990) suggested that the overshadowing bias may not be generalisable to individuals outside of the severe learning disability range. Diagnostic overshadowing was also found for clients with hearing-impairment and AIDS, although the low return rates of many of these studies suggests caution when generalising the findings outside of these populations. However, as similar findings have been found across all 11 studies, sample size alone is unlikely to explain the effect. Of the potential moderators to diagnostic overshadowing examined, only cognitive complexity was repeatedly found to

affect overshadowing. The effect of levels of work experience remains unclear because of the differing definitions of 'experience' within the studies.

Critical Review of Diagnostic Overshadowing Research

Strengths of the Research

The major strength of the research has been the consistency of the findings. The above studies suggest that diagnostic overshadowing is a robust construct demonstrating reasonable effect sizes and power (White, et al, 1995). Jopp & Keys (2001) have listed several advantages to the analogue design used in the research designs. Firstly, survey methodology provides a relatively efficient way to collect data. Secondly, vignettes are easy to read and clearly show the salient characteristics about the individual presented. Thirdly, the primary data analysis used, ANOVA comparisons, yield results that are relatively painless to interpret. Fourthly, the use of this research design across the majority of studies aids direct comparisons of the findings.

Weaknesses of the Research

There are a number of limitations to the overshadowing research. These limitations can be divided into three main areas: the failure to account for any internal and external mechanisms underlying the overshadowing phenomena; the exclusive focus of research in the clinical field; and problems with methodology.

Causal Mechanism Underlying Overshadowing

As we have seen, decision-making can be affected by an overshadowing bias but the existing literature has contributed little to our understanding of why this may occur. The health professionals who are referred to in the overshadowing literature are specifically trained to make differential diagnoses and recommend treatments for their clients, so why are they consistently failing to make the correct decisions? A number of internal and external factors may influence individual decision-making. Internal factors are the way that individuals process information and include cognitive biases such as heuristics and attributions. Factors external to the person such as organisational influences and the rules that govern staff behaviours will also affect individual judgements. Knowledge about these internal and external factors may help us begin to understand how decisions are made, whether they be diagnostic in nature or outside of the clinical arena.

The Effect of Internal Factors

Social and clinical psychologists have suggested that errors in decision-making can be explained by looking at the way that individuals process information. Individuals are prone to a number of cognitive biases and errors when making decisions, using cognitive simplification strategies that deviate from normative principles of statistics and probability (Dawes, 1986; Dunmont & Lecomte, 1987). Although these cognitive shortcuts can result in accurate

judgements, overreliance on these simple rules can reduce the accuracy of judgements, particularly in uncertain situations (Kahneman, Slovic & Tversky, 1982) and result in biases. This review will outline two key cognitive entities, heuristics and attributions and explore the evidence for their effect on decision-making and their possible bearing on overshadowing.

Heuristics

Heuristics are 'rules of thumb' that we all use that serve to simplify decision-making but that may also lead to errors. The heuristics of *availability* and *representativeness* (Tversky and Kahneman, 1974) have been suggested as explanations why overshadowing occurs (Jopp & Keys, 2001).

Availability refers to the tendency to judge class frequencies or event probabilities based upon the ease with which they can be brought to mind (Jopp & Keys, 2001). Usually, the most salient factors are the easiest to access and use as an explanation for a particular event (Kahneman, et al., 1982). Availability is closely connected to memory accessibility and this can be affected by exposure to comparison groups, mood level, imageability and category vividness (Tracey & Rounds, 1999). These four influences on memory have been linked to biases in clinical decision-making. *Comparison groups:* when making judgements, individuals most readily reference their past and present experiences for comparisons (Tracey & Rounds, 1999). In relation to clinical decision-making, the reference point is usually client groups. However, this exposure is biased, as most client groups by their

nature represent a skewed unrepresentative population (Cohen & Cohen, 1984). These memories are easy to access but using them as a means to assess the relative health and pathology of individuals can lead to errors in judgement. *Mood levels:* individual mood states may also bias decision-making, causing selective retrieval of memories (Dunmont, 1993). Therefore, if an individual is required to make a decision about someone they feel angry towards, they are more likely to access memories of other individuals they felt the same emotion towards and this may lead to them omitting important comparisons. Thus, the mood state becomes the main reference point rather than any other perhaps more objective considerations. *Imageability:* individuals also tend to retrieve information that is plausible regardless of whether or not it is probable and they will be more likely to plan for an event if they can imagine it. For example, if a clinician can imagine a client committing suicide, they will be more likely to make this assessment, inflating the probability of the event happening, even if it is actually very unlikely (Tracey & Rounds, 1999). *Category vividness:* people also tend to retrieve information that is most vivid and memorable; unremarkable information is less likely to be retrieved. This means that individuals who present with more extreme profiles of behaviours or are physically more noticeable are more likely to be recalled than those who are average (Tracey & Rounds, 1999).

Therefore, research suggests that availability may affect judgements. In terms of overshadowing, several researchers have postulated that bias is a function of the *saliency* of one presenting behaviour over another (e.g. Reiss et al, 1982). Within learning disability research, it is the salience of cognitive

impairment that diminishes the effects of co-existing psychopathology (Spengler, Strohmer & Prout, 1990) rather than any inherent difficulty in differentiating multiple diagnoses (Jopp & Keys, 2001). This is supported by research which shows diagnostic overshadowing is more likely to occur for individuals with diagnoses reflecting cognitive impairments (learning disabilities, traumatic brain injury and epilepsy (Garner, Strohmer, Langford & Boas, 1994). However, researchers have failed to explain why cognitive impairments are more salient than psychopathology. Other research has established overshadowing for clients without cognitive impairments (Goldsmith & Schloss, 1984; 1986; Walker & Spengler, 1995) which suggests that cognitive functioning alone may not underlie the salience effect. More research is needed to explore this phenomenon.

The representativeness heuristic arises when people have to assess the probability that a particular object (or person) belongs to a particular class or process (disorder) (Jopp & Keys, 2001). An example of this is the extent to which a specific person matches a particular diagnostic category. Thus, the person's behaviour is observed and assessed as to whether it fits in with the diagnostic criteria. If the behaviour is seen as similar then that diagnosis is made. However, in making these judgements, other relevant information may be ignored and diagnostic errors made. Tracey & Rounds (1999) explored representativeness in clinical decision-making and suggested that clinicians may make errors in representativeness in a number of ways.

They may disregard the base rate probability of a diagnosis occurring in the general population compared to their own caseload. Thus, their own clinical experiences and observations are given equal or more weight as information gathered in large sample size research and classifications such as DSM-IV (APA, 1994). Any generalisations from these limited experiences may result in errors of judgement (Tracey & Rounds, 1999). Clinicians may also make fundamental errors in assessing the likelihood that behaviour will occur. Tracey & Rounds (1999), argue that clinicians are particularly prone to the assumption that the probability of behaviour (A) given behaviour (B) is the same as the probability of behaviour (B) given behaviour (A). They cite eating disorder to illustrate this point. Clinicians have noted perfectionist tendencies in clients who have eating disorders and have suggested that perfectionism could be used as a diagnostic sign. However, the number of individuals who have perfectionist tendencies who do not manifest eating disorders far exceeds the number that do.

When individuals use the representativeness heuristic, they are attempting to simplify decision-making by classifying objects and people into groups. This rule of thumb is closely linked to stereotyping, as stereotypes of specific groups set the boundaries by which classes of people are defined (Jopp & Keys, 2001). Stereotypes have been cited as possible causes of the overshadowing bias (Alford & Locke, 1984; Reiss & Szyszko, 1983) particularly in relation to presentations of learning disability. However, stereotyping has only been indirectly explored through assessment of the effect of experience as a moderator of stereotyped representations (Alford &

Locke, 1984). These researchers hypothesised that direct experience of the group being discriminated against would reduce stereotyping, and therefore, decrease overshadowing. However, experience has not been found to moderate overshadowing (Alford & Locke, 1984; Reiss & Szyszko, 1983). Biases can be remarkably resistant to change as a result of experience with a stereotyped group (Gurwitz, 1977) and individuals may label any disconfirming evidence as atypical rather than altering their existing beliefs (Hamilton & Sherman, 1984). Reiss & Szyszko (1983) suggested that experience with stereotyped groups such as people with learning disability might actually strengthen biases and there is some evidence for this in the literature with higher experience positively correlating with overshadowing (Spengeler, Strohmer & Prout, 1990).

Attribution Theory

Attribution theory (Heider, 1944; 1958a; Jones & Davis, 1965; Kelley, 1967) attempts to explain how people develop an understanding of the causes of human behaviour. Two main attributional biases are important to consider in terms of overshadowing. The *fundamental attribution error* refers to the tendency to over-estimate the influence of internal (dispositional) factors and underestimate the influence of external (situational) causes when making judgements about the behaviours of others (Nisbett & Ross, 1980). The *actor-observer effect* refers to our tendency to attribute the behaviour of others to internal causes and attribute our own behaviour to external causes (Jones & Nisbett, 1972).

The relationship between attributions and overshadowing has not been studied but related findings suggest they may be relevant. There is evidence that individuals may change their attributions about the cause of behaviours depending on client variables such as race, gender, religion and disabilities (Duncan, 1976; Deaux, 1976; Taylor & Jaggi, 1974; Severance & Gasstrom, 1977). Clinicians may also make a number of attributional errors in their judgements based on their client's gender and age (Bowman, 1982; Perlick & Atkins, 1984). Bowman (1982) found differences in therapists' attributions of male and female clients. The male client's problems was attributed to having difficulty in dealing with their anger whereas the same problem in the female client was more frequently attributed to conflict about sexual identity and dominance within their marriage. In terms of treatment recommendations, the female client was more likely to be ascribed insight therapy and the male client couples therapy. Perlick & Atkins (1984) also found discrepancies in clinical judgement based on age. Clinical psychologists were more likely to attribute depressive symptoms in older clients to organic causes and the same symptoms in middle-aged clients to functional causes. They were less likely to recommend antidepressants for the older client. These results mirror what happens in diagnostic overshadowing, that is, clinicians make differential judgements of diagnosis and treatment based on salient characteristics of the client group and is likely that causal attributions play some part in overshadowing. However, attributions have not been studied directly in the overshadowing literature, therefore this connection can only be theoretically postulated. It is interesting that client distinctions other than cognitive

functioning, i.e. age and gender may also affect decision-making. Although the majority of the overshadowing literature has used male client presentations, two have used female (Goldsmith & Schloss, 1984; 1986) and their ages, when mentioned, have ranged from 17 to 32. These variables have not been directly manipulated in the research designs but the above research indicates that both these variables may affect clinical decisions. It is therefore unclear how these indicators may have affected the overshadowing phenomena.

Effect of External Factors

Overshadowing represents a cognitive bias in individual decision-making. However, factors external to the individual are also likely to impact on judgement validity by either reinforcing or reducing these errors (Jopp & Keys, 2001). The behaviour of others may shape an individual's own judgements and behaviours. In the field of applied behavioural research, the literature suggests that staff responses to the behaviour of others are directly related to the contingencies that shape those behaviours (Hastings, 1999; Carr, Taylor & Robinson, 1991; Taylor & Carr, 1992). Contingency shaping refers to the process by which staff alter their behaviour as a result of their direct experience of observed problem behaviours. For example, within a residential home for people with learning disabilities, a member of staff may alter the amount of time they interact with a client who self-injures based on why they think the self-injury occurs. Their experience may show them that self-injury will increase when the client is left alone and therefore, they increase the

amount of time spent with the client (Taylor and Carr, 1992). Contingencies may also be verbally mediated through voices, signs and text. The verbal formulation of contingencies is known as rule governance (Zettle & Hayes, 1992). These rules can be conveyed through verbal instruction, for example, a rule may be, "*when reinforcement is withdrawn, the to-be-extinguished behaviour increases then decreases*". Thus, an individual told this rule may behave as if they had experienced repeated exposure to extinction procedures rather than it being voiced through a secondary source (Hastings, 1999; Hastings & Remington, 1994a).

Hastings & Reminngton (1994a) suggest that rules that govern staff behaviour may be classified along two dimensions. Firstly, the individuals act in accordance with three sets of rules, their own rules, that is, their beliefs, perceptions and attributions; the informal culture (the rules of other staff) and the formal culture (the rules of the service in which they work). Secondly, they may be influenced by rules regarding why behaviours may occur, and what should be done about these behaviours. Rules may be followed because of certain consequences that motivate the individual to adhere to the rule, for example praise, holidays, promotion, withholding criticism, respect of peers. The rule may also represent the hypotheses or model presented by another professional to the individual, relating to the cause of the behaviour examined (Zettle & Hayes, 1992). In a series of studies looking at staff responses to problem behaviours, Hastings and colleagues showed that the action of staff in response to problem behaviours are generally governed by these rules

even if they result in maintenance of the aberrant behaviour (Hastings, 1995; Hastings, Remington & Hopper, 1995; Hastings, Remington & Hall, 1995).

Therefore, experiential based contingency shaping and verbally mediated rule governance have been shown to affect the way staff make decisions regarding their responses to problem behaviours. For diagnosticians, these formal and informal rules may influence their practice. Within the formal rule governed culture, diagnostic classifications such as DSM-IV and ICD-10 (APA, 1994; International Classification of Disorders, ICD-10, World Health Organisation, 1983) will determine what individual behaviours are included and excluded from diagnostic categories. However, Hastings (1995) suggests that informal staff culture may have more influence over them than formal service culture. The unexpected suicide of a teenager might create an informal culture that over-predicts future risky behaviours and over-diagnoses depression, despite the existence of these formal diagnostic classifications. The death of a child is tragically salient and is learned quickly as a behavioural consequence. Other less salient behaviours, such as those associated with developmental disorders, by definition take much longer to become apparent and, therefore, it may take more time for staff to learn to modify their responses. Thus, an addition to Hastings and Remington's model may be the effect of temporal factors on the contingent shaping of staff behaviours.

For non-diagnosticians the informal culture may be more influential, particularly when they encounter atypical behaviours. In the absence of DSM-

IV and ICD-10 to organise their observations, individuals may rely on guidance from other staff, peers or family members as to why the behaviours may be occurring and what actions should be taken

In summary, internal and external factors may affect the quality of individual judgements. Cognitive strategies employed to simplify the decision-making process may lead to more biases. Informal and formal rules held by individuals and advocated within their system's culture may also affect the quality and nature of these judgements. The overshadowing literature has yet to consider the effect of contingencies and the formal and informal rules that govern behaviours. These internal and external influences may offer some explanation as to why overshadowing occurs and with these in mind, a more complex model of understanding may begin to be developed and empirically tested.

Clinical focus of Research

All of the 11 published studies have recruited clinical staff such as psychologists, psychiatrists and counsellors as participants. However, whilst it is important to explore clinicians' decision-making processes, clinicians may only have the opportunity to assess clients if their service receives appropriate referrals from parents and tier one staff such as teachers, care workers, health visitors and G.P.s. (Health Advisory Service, 1995). These non-diagnosticians are effectively in a position to act as gatekeepers for referrals to clinical health service providers. Whilst adults in the general population may

be able to sidestep these gatekeepers by self-referral, populations such as children, individuals with learning disabilities and older adults may be more dependant on others. Children may be particularly vulnerable to this problem as they are less able, both practically and developmentally, to self-refer to service providers, instead relying on others to advocate for them. For example, within the education services, schools may refer directly to generic Child and Family services. Thus, these referrals are dependent on the judgements of teachers about the behaviour of their students. Whilst it is not the role of teachers to diagnose students, their judgements regarding the nature, severity and manageability of students' behaviours will be primary factors in their decisions to refer to outside agencies. Schoolteachers may be ideally placed to observe and interpret the behavioural presentation of students over time and in different settings (for example, academic lessons, physical education lessons and unstructured play). The research examining diagnostic overshadowing has been motivated by concerns about whether people with learning disabilities are receiving adequate treatment for mental health problems (Reiss, Levitan & Szyszko, 1982). However, a more pressing concern may be whether vulnerable groups such as children, individuals with learning disabilities and older adults, who depend on external advocates to access services, are being treated at all. Therefore, it would be important to explore diagnostic overshadowing amongst these gatekeepers to clinical services.

Methodological Problems

There are five general methodological problems have been identified with the overshadowing research outlined above which weaken the robustness of the concept. These are: the definition of learning disability; the single methodology used; the construct of the questions presented; the validity of cognitive complexity and, the use of vignettes.

Firstly, the research exploring diagnostic overshadowing spans over two decades and the definition of learning disability has changed during this time (Jopp & Keys, 2001). The criteria used to define learning disability in DSM-III (Diagnostic and statistical manual of mental disorders, 3rd edition, APA, 1980) and DSM-III-R (Diagnostic and statistical manual of mental disorders, 3rd edition, revised, APA, 1987) are different to those in DSM-IV (APA, 1994). All three manuals require clinicians to use standardised measures to assess adaptive functioning in addition to cognitive functioning. However, in DSM-IV (APA, 1994), this has evolved to refer to the particular skills a person must display to function within his or her environment (Editorial Board, 1996, p28). In order to meet criteria, individuals must present with adaptive deficits in two of the following areas: communication, self-care, home living, social/interpersonal skills, use of community resources, self-direction, functional academic skills, work, leisure, health and safety (APA, 1994, p46). The vignettes used in overshadowing research define learning disability by direct reference to their diagnostic label, by reference to their IQ or by identification of them as a 'slow learner'; they do not use a skills based

definition. Therefore, one of the key requirements for a diagnosis of learning disability in actual practice is absent from the vignettes and this may confound the responses of clinicians and affect overshadowing.

Secondly, using a single methodology means that diagnostic overshadowing has yet to be demonstrated outside of this methodology. As detailed above, the majority of studies have used the same Vignette/Likert research methodology to assess diagnostic and treatment overshadowing. There is, to date, no published research using alternative methodologies. However, two unpublished studies (see Table 2) have employed different methodologies and have yielded different results. Although their findings have not been subject to peer review and therefore can only be tentatively considered, it is worth looking at them as a means of cautiously reviewing the robustness of the overshadowing methodology. Levitan (1983) presented clinical vignettes but allowed participants to request additional verbal information from the experimenter. Reidy (1987) provided the initial information in the form of a written psychological report, which supplied more information than the traditional vignette. Neither study found evidence of overshadowing, although without a direct comparison of methodologies, it is unclear whether it was the amount of information that affected overshadowing or the processes used in the research.

These two studies also changed the way the dependent variable was assessed. Instead of using Likert scales to measure the likelihood of a particular diagnosis, they asked respondents to give specific multiaxial

diagnoses based on DSM (DSM III, APA, 1980; DSM III-R, APA, 1987). Both studies found equal proportions of correct and incorrect diagnoses. Jopp & Keys (2001) suggest two reasons for these findings. The first reason is that the overall statistical power of these studies may have been reduced by the dichotomization of variables (scoring them as correct/incorrect) (Farrington & Loeber, 1997). Thus, the lack of findings may be due to insufficient power rather than an absence of overshadowing. In addition, the clinicians' cognitive complexity may have increased as a result of the intricacy of the task asked of them. As mentioned, cognitive complexity moderates diagnostic overshadowing to the extent that those clinicians demonstrating high complexity are less likely to make diagnostic errors (Spengler & Strohmer, 1994). To make multiaxial decisions, the clinician must undertake a complex decision-making process. They have to determine the nature of the disorder (Axis 1), the salient personality components (Axis 2), possible medical causes (Axis 3), and environmental factors (Axis 4) and, determine the overall level of the client's functioning (Axis 5). These procedures require clinicians to engage in cognitive processes, such as considering various alternative hypotheses, which indicate a high level of cognitive complexity (Holloway & Wolleat, 1980). These findings allow consideration of the influence of alternative methodologies on the overshadowing bias. However, more published research is required to make any firm conclusions about which of these processes effect diagnostic overshadowing.

Thirdly, the construction of the questions presented within the questionnaires has been criticised. It is unclear whether the specific question asked to

determine diagnostic overshadowing, i.e. how likely is it that this person has depression, actually taps into the diagnostic decisions that clinicians make in real situations. The question asks respondents to estimate the *probability* that a particular diagnosis is made which may be different from asking whether the clinician themselves would actually give a diagnosis of depression (Rabinowitz, 1993; Jopp & Keys, 2001). Asking respondents to make multiaxial diagnoses may be more representative of real-life clinical decision making. Instead of assessing the likelihood of a presenting condition, participants are asked to code particular diagnoses as correct or incorrect. This would also allow assessment of the specificity and sensitivity of these decisions. The questionnaires also refer to diagnostic constructs that are little used in current clinical practice. The term, 'neurotic' is one of the options for diagnostic choices and, is therefore, employed as a primary outcome measure for diagnostic overshadowing. However, few clinicians would still refer to this label when making diagnoses, therefore the validity of the research materials is of concern.

Fourthly, although cognitive complexity has been cited as the only evidenced moderator of overshadowing (e.g. Jopp & Keys, 2001), it is unclear whether it represents a stable construct. Various different measures have been used in the research (Caracena & King, 1962; Crockett, 1965; Streufert & Streufert, 1978) and they often show low correlations with one another (Vannoy, 1965). The variability of measurement makes direct comparison between studies difficult and raises the question of whether the measures are rating the same construct. Questions have also been raised whether cognitive complexity is

task specific. This suggests that it may represent an individual's state rather than an enduring universal trait (Caracena & King, 1962; Walker & Spengler, 1995) and would therefore question the usefulness of a general cognitive complexity measure being used within research studies that are studying different conditions.

Finally, the use of written vignettes also raises questions of validity. It has been argued that vignettes are too simplistic and artificial, that they do not represent the complexity of real life situations (Barter & Reynold, 2000). Social situations are characterised by continuous interactions between individuals and their environments and written vignettes are unable to replicate this. In clinical settings, clinicians have the opportunity to use assessment measures specifically designed to evaluate dual diagnosis (e.g. Psychiatric Assessment Schedule of Adults with Developmental Disabilities, PAS-ADD, Moss, 2002) and can interact directly with clients obtaining a richer source of information than a written vignette (Jopp & Keys, 2001). However, a counter argument is that vignettes offer researchers a way of managing and isolating the complexities of real life (Corkery, 1992). The challenges involved in assessing clients with cognitive or social deficits may mean that clinicians actually gather information that is more reliable from a written vignette (Caelho & Saunders, 1996).

Researchers have also questioned whether responses in vignette-based research truly map social reality (Faia, 1979). That is, whether what people *believe* they would do in a given situation is necessarily how they would

actually behave (Barter & Reynold, 2000). This relationship between belief and action has been explored in multi-method approaches and the findings are ambiguous. Some studies conclude that responses to vignettes mirror how individuals react in real life situations (see e.g. Carlson, 1996; Rahman, 1996) whilst others remain unconvinced about the nature of the association (e.g. Hughes, 1998).

Despite these criticisms, White et al (1995) offer some hope for the validity of the methodology. Their meta-analysis on the studies of diagnostic overshadowing, concluded that the resulting effect size was large enough and stable enough to assume that diagnostic overshadowing would be anticipated in actual clinical settings. However, they added that although the consistency of the analogue research was impressive, there still needs to be evidence of its robustness outside the vignette research paradigm.

Recommendations for Future Research

This review has considered the validity of diagnostic overshadowing as a cognitive bias affecting decision-making. It provides a useful basis for specific recommendations for future research. Future research is needed in four distinct areas.

Firstly, taking account of the methodological problems noted above, diagnostic overshadowing needs to be demonstrated outside of the vignette/Likert research paradigm. In order to answer whether overshadowing

actually occurs in situ, participants could be presented with stimuli that are more reflective of their real-life environments. White et al. (1995) proposed utilising in-vivo or archival methods with other contexts such as treatment teams in future research. Jopp & Keys (2001) also called for the use of more differentiated methodologies beyond the short vignette/Likert designs. They suggested using portions of actual diagnostic interviews, materials resembling full case files and video stimulus materials to allow for a more vigorous testing of the subtle facets of diagnostic overshadowing.

Secondly, the decision-making literature looking at cognitive biases and information processing provides many possible avenues for research. Cognitive complexity is the only processing variable that has been explored in relation to overshadowing (Spengler & Strohmer, 1994). An exploration of some of the other cognitive biases mentioned above, would add to our understanding of the processes involved in diagnostic overshadowing. For example, future studies could explore the relationship between an individual's causal attributions and their diagnostic and treatment recommendations.

Thirdly, the existing literature has exclusively focused on overshadowing of diagnosticians in clinical services. Researchers need to take a step back from the clinical field and explore how overshadowing may influence the decisions that tier-one staff such as teachers, social workers, G.P.s and health visitors (Health Advisory Service, 1995) make about their clients. If overshadowing is prevalent amongst these staff then their decisions about whether a particular individual should be referred may be subject to bias and error. Therefore,

future research could explore the presence of overshadowing for non-clinicians who are referrers to clinical services.

Finally, the majority of the research has looked at diagnostic overshadowing with clients with learning disabilities. Jopp & Keys (2001) suggested that diagnostic overshadowing research be extended to include other conditions presenting with cognitive/social deficits such as Asperger Syndrome. This would increase its generalisability and add validity to the concept.

Conclusion

In conclusion, research using analogue methodology has demonstrated diagnostic overshadowing to be a stable response bias for clinicians making decisions about people with cognitive deficits, hearing impairments and life-limiting illness. However, this review has shown that there are a number of shortcomings in the literature, which serve to question the robustness of the bias outside of the classic analogue design. Future research needs to address these limitations if overshadowing is to be seen as more than methodological artefact. In addition, the research has failed to take account of current literature exploring internal and external influences on decision-making, which may engender a greater understanding of why this bias occurs. Finally, the literature has concentrated on studying the overshadowing bias for clinicians, principally working with individuals with learning disabilities. An exploration of the overshadowing bias for staff who act as gatekeepers to

clinical services with populations such as those with developmental disabilities (Jopp & Keys, 2001) will add to the generalisability of the concept.

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Empirical Paper

The Validity of the Overshadowing Bias for Non-clinical professionals working with Children with Asperger Syndrome

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Autism

The Validity of the Overshadowing Bias for Non-clinical professionals working with Children with Asperger Syndrome.

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Abstract

The diagnostic overshadowing literature has clearly raised a number of issues that remain within the clinical, diagnostic world. However, these issues also bridge into decision making generally. A dynamic relationship exists between more clinical and more general decision making, that being the gatekeeping of referrals from concerned non-clinicians to the clinical services. The implications of not addressing this dynamic are significant, as failure on the part of these non-clinicians, to recognise and refer may result in loss of clinical decision-making. In addition, subsequent referrals may only be made when aberrant behaviours become more extreme and this may make the potential of diagnostic overshadowing greater.

This study aims to apply the principle of diagnostic overshadowing to these gatekeepers to clinical services. One-hundred and thirty-one secondary school teachers' ratings and referral recommendations were compared for video or written vignette presentations of an 11 year old boy presenting with Asperger Syndrome and concurrent challenging behaviour. Cognitive complexity and causal attributions were assessed as potential moderators. The results found overshadowing of Asperger Syndrome by escape-motivated challenging behaviour but only in the video presentation. Comparison of methodology showed that overshadowing was more prevalent when escape-motivated challenging behaviour was presented visually rather than in written form. There was partial evidence that cognitive complexity and causal attributions may act as moderators. Research and clinical implications are discussed and future directions suggested.

Introduction

Children with Asperger Syndrome have no distinct physical characteristics to signify their disorder and their intellectual and physical abilities are considered within the typical range, therefore, others may struggle to understand the difficulties the child has with the social, emotional and communicative aspects of their lives (Attwood, 2000).

Even in the presence of formal diagnostic classification, as provided by ICD-10 (International Classification of Diseases, ICD-10, World Health Organisation, 1993) and DSM-IV, (Diagnostic and Statistical Manual of Mental Disorders-IV, American Psychological Association, 1994), there is still substantial variance within those diagnostic features that makes diagnosis problematic.

The classification of Asperger syndrome (AS) is of a pervasive neurodevelopmental disorder defined by social deficits and circumscribed interests (DSM-IV, APA, 1994; ICD-10, WHO, 1993). Current diagnostic criteria specify the clinical signposts are social deficits; characterised by a lack of desire or inability to interact with peers and the failure to develop developmentally appropriate peer relationships. The individual may show a lack of reciprocity, an unawareness of social cues, lack of eye-gaze, facial expressions, body posture and gesture, all of which are needed to regulate social interaction. (Attwood, 1998; 2000; APA, 1994; WHO, 1993; Gillberg & Gillberg, 1989; Szatmari, Bremner & Nagy, 1989; Wing, 1981). Children with

Aspergers also develop all-absorbing special interests that interfere with skills learning and social adaptation (South, Klin & Volkmar, 1997).

However, despite these classifications, the complexity of diagnostic symptomatology characteristic of AS presents a major challenge to diagnosticians. The dynamic relationship between developmental deficits and additional aberrant behaviours (i.e. obsessional, stereotypical behaviours) makes identification of AS difficult. Therefore, non-clinicians such as parents and teachers, who do not have access to these diagnostic frameworks, may struggle to understand these subtle atypical behaviours. In the presence of additional comorbid conditions or behaviours, the subtle nature of AS may be lost under the power of more salient, aberrant behaviours. Given such circumstances, clinicians may be so blinded by the salience of one behaviour that they underestimate the significance of the second. Therefore, in the presence of comorbidity there may be a risk of a more dominant condition eclipsing one that is more subtle.

The overshadowing of one condition in the presence of another more salient one has been named diagnostic overshadowing (Reiss, Levitan, and Szyszko, 1982). The bulk of the literature exploring this bias has focussed on the effect of the learning disability label on clinicians' diagnostic decisions. In the field of intellectual disability and mental health, it has been acknowledged that mental health issues may be overlooked because they may be deemed as part of the intellectual disability itself (Reiss et al, 1982). The assumption is that intellectual deficit in someone with a learning disability is such a primary,

salient feature that associated emotional and behavioural disturbances are hidden and their importance 'overshadowed' by its presence.

Reiss et al (1982) investigated diagnostic overshadowing in two studies. Clinicians were asked to read identical short case vignettes (about 250 words in length) which suggested symptomatology consistent with a DSM-III (APA, 1980) diagnosis of schizophrenia. The participants were divided into two groups and were told that the individual who was the subject of the case vignette was either of average intelligence, or had a learning disability at the lower end of the mild range (IQ of about 60). Clinicians rated the likelihood that the individual was suffering from a range of mental disorders, including schizophrenia. Their results showed that clinicians who were told that the individual had a learning disability were less likely to suggest that the person was suffering from a mental disorder, even though the symptoms presented were identical in both cases.

Multiple studies have used this methodological approach and the majority have supported the view that diagnostic overshadowing is a robust bias negatively effecting professionals' judgements about concomitant diagnoses.

These studies found that professionals tend to assess people with learning disabilities less accurately than those without learning disabilities, overlooking concomitant psychopathologies such as phobia, schizophrenia, personality disorder and depression, in the presence of learning disabilities (eg. Levitan & Reiss, 1983; Reiss, Levitan & Szyszko, 1982; Alford & Locke, 1984; Reiss &

Szyszko, 1983; Reiss, Levitan & Szyszko, 1982; Spengler, Strohmer & Prout, 1990; Spengler & Strohmer, 1994). Diagnostic overshadowing has also been found within non-learning disabled populations such as physically disability (Garner, Strohmer, Langford & Boas, 1994), hearing-impaired learners (Goldsmith & Schloss, 1984; Goldsmith & Schloss, 1986) and life-limiting illnesses such as AIDS and cancer (Walker & Spengler, 1995). The above studies have evidenced diagnostic overshadowing amongst clinical, counselling and school psychologists, rehabilitation counsellors, and social work and psychology students at various levels of study. Demographic distinctions amongst clinicians such as length of experience, client preference and work setting have not moderated this bias, nor has variability in the type and severity of the concomitant disorder (psychopathology).

Although, researchers have concentrated on how this bias presents in clinical settings, the concept can theoretically be applied to any situation where decisions are being made. A recent review of diagnostic overshadowing called for the research base to be broadened to include 'more relevant' disorders such as Asperger Syndrome (Jopp & Keys, 2001). In addition, overshadowing should be explored beyond the clinic, in settings such as schools. Teachers are well placed to observe and interpret the behavioural presentation of students over time and in different surroundings. They are a main source of referral to the child and family services and as such may effectively act as gate-keepers to these services. Children are less able, both practically and developmentally, than the general adult population, to self-refer to service providers. Instead, they rely on others to advocate for them.

Thus, referrals from schools are dependent on teacher's judgements about the behaviour of their students. Whilst it is not the role of teachers to diagnose students, their judgements regarding the nature, severity and manageability of students' behaviours will be primary factors in their decisions to refer to outside agencies. Therefore, it would be important to explore the overshadowing phenomenon amongst these gate-keepers to clinical services and this would add to the generalisability of the overshadowing bias outside the clinical realm.

In addition to calls to broaden the applicability of overshadowing, commentators have questioned the validity of diagnostic overshadowing, raising a number of methodological concerns that might undermine the robustness of the concept (Jopp & keys, 2001; White, Nichols, Cook, Spengler, Walker & Look, 1995). These concerns will now be discussed in more detail.

Methodological Issues

The overshadowing bias has yet to be demonstrated outside of a single methodology. The majority of studies have used the same classic vignette and Likert scale (Likert, 1932) research methodology as presented in Reiss et al.'s (1982) research. Characteristically, one of several different case descriptions is presented to a group of clinicians in the form of a written vignette. These conditions depict a person presenting with behaviours that would meet criteria for a concomitant pathology such as schizophrenia. The

vignettes are identical except that one shows a person with learning disabilities and one a person with average intelligence. Participants are asked to rate on a seven point Likert scale how likely it is that the individual suffers from a list of diagnoses. They are then asked to rate which of two treatments would be appropriate. The ten studies that have used this methodology have found evidence of diagnostic overshadowing (Alford & Locke, 1984; Reiss, Levitan & Szyszko, 1982; Levitan & Reiss, 1983; Reiss & Szyszko, 1983; Goldsmith & Schloss, 1984; 1986; Spengler, Strohmer & Prout, 1990; Garner, Strohmer, Langford & Boas, 1994; Spengler & Strohmer, 1994; Walker & Spengler, 1995).

There is, to date, no published research using alternative methodologies. However, two unpublished studies (Levitan, 1983, and Reidy, 1987, as cited in Jopp & Keys, 2001) have employed different methodologies and have yielded different results. Their research differed from previous research in two key ways, firstly in the type of stimulus material presented and secondly in the way the diagnoses were assessed.

Firstly, both studies used novel stimulus materials that changed the presentation of the case descriptions. Levitan (1983) presented clinical vignettes but allowed participants to request additional verbal information from the experimenter. Reidy (1987) provided the initial information in the form of a written psychological report, which supplied more information than the traditional vignette. Neither study found evidence of overshadowing. Secondly, the studies changed the way the dependent variable (diagnostic

overshadowing) was assessed. Instead of using Likert scales to measure the likelihood of a particular diagnosis, they asked respondents to give specific multiaxial diagnoses based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-III, Diagnostic and statistical manual of mental disorders, 3rd edition, APA, 1980; DSM-III-R, Diagnostic and statistical manual of mental disorders, 3rd edition, revised, APA, 1987). Both studies found equal proportions of correct and incorrect diagnoses.

It is uncertain why these two studies failed to find significant results but it seems likely that either the amount of information presented or the processes used in the research were responsible for the outcome.

It is also unclear whether the exclusive use of the written vignette in the published overshadowing research actually accounts for what happens in applied settings. Researchers have questioned whether responses in vignette-based research truly map social reality (Faia, 1979), that is, whether what people *believe* they would do in a given situation is necessarily how they would behave in actuality (Barter & Reynold, 2000). This relationship between belief and action has been explored in multi-method approaches and the findings are ambiguous. Some of the studies conclude that responses to vignettes mirror how individuals react in real life situations (Carlson, 1996; Rahman, 1996) whilst others remain unconvinced about the nature of the association (Hughes, 1998).

Vignettes may be too simplistic and artificial to represent accurately the complexity of real life situations (Barter & Reynold, 2000). Social situations are characterised by continuous interactions between individuals and their environments and written vignettes are unable to replicate this. In clinical settings, clinicians have the opportunity to use assessment measures specifically designed to evaluate dual diagnosis and can interact directly with clients obtaining a richer source of information than a written vignette (Jopp & Keys, 2001)

In order to answer whether overshadowing actually occurs in situ, participants could be presented with stimuli that are more reflective of their real-life environments. White et al (1995) proposed utilising in-vivo or archival methods with other contexts such as treatment teams in future research. Jopp & Keys (2001) also called for the use of more differentiated methodologies beyond the short vignette/Likert designs. They suggested using portions of actual diagnostic interviews, materials resembling full case files and video stimulus materials to allow for a more vigorous testing of the subtle facets of diagnostic overshadowing.

Therefore, findings in unpublished studies bring into question the validity of the published literature's claims for robustness for the concept of diagnostic overshadowing. Published studies using alternative methodologies, as suggested above, are necessary to address these concerns.

In addition to methodological concerns, the published overshadowing research has been criticised for failing to take account of the processes involved in this cognitive bias (Jopp & Keys, 2001). A number of decision-making biases have been suggested that might help explain why this bias occurs in well-trained, experienced professionals. One of these is the attributional bias.

Causal Attributions

Attribution theory (see Heider, 1944; 1958a; Jones & Davis, 1965; Kelley, 1967 for a full explanation of the different theories) attempts to explain how people develop an understanding of the causes of human behaviour. Individuals may change their attributions about the cause of behaviours depending on known client variables such as race, gender, religion and disabilities (Duncan, 1976; Deaux, 1976; Taylor & Jaggi, 1974; Severance & Gasstrom, 1977). The presence of these variables may be said to be overshadowing individual judgements. For example, Perlick & Atkins (1984) found that clinical psychologists were more likely to attribute depressive symptoms in older clients to organic causes and the same symptoms in middle-aged clients to functional causes. They were less likely to recommend antidepressants for the older client. The relationship between causal attributions and the overshadowing bias would be an important area for further investigation.

Recent studies have started to investigate cognitive factors that may effect diagnostic overshadowing, looking at how complexity of thought may influence this bias.

Cognitive Complexity

Cognitive Complexity is the only factor that has been found to moderate overshadowing. It is defined as *the ability to view people and their behaviours in a multi-dimensional fashion, which accounts for their unique strengths and weakness* (Bieri, Atkins, Briar, Leaman, Miller & Tripodi, 1966). A more cognitively complex person accesses a more differentiated system of dimensions for perceiving others' behaviours than a less cognitively complex person (Bieri et al, 1966). They may ask a greater number of relevant questions, consider a wider range of hypotheses, construct more accurate judgements (Holloway & Wolleat, 1980) and be more resistant to using cognitive biases and attribution errors.

Two studies (Spengler & Strohmer, 1994; Walker & Spengler, 1995) have found cognitive complexity to moderate the effects of diagnostic overshadowing amongst clinicians. Individuals with high cognitive complexity were three times less likely to overshadow than those with low cognitive complexity (Spengler & Strohmer, 1994). Although it is still unclear exactly what processes are at work here, these findings lend support to the hypothesis that cognitive complexity reduces the tendency to fall back on cognitive biases in clinical judgements.

Treatment bias

Finally, studies exploring diagnostic overshadowing have also looked at the effects on treatment recommendations (Spengler et al, 1990) and it appears that different processes may be operating for diagnosis and treatment.

Results from diagnostic overshadowing studies have suggested the presence of a treatment bias. Participants have generally rated individuals with learning disabilities as less likely to benefit from psychotherapy than those without a learning disability. It is unclear whether diagnostic and treatment overshadowing represent the same phenomenon as some studies have found different results for diagnosis and treatment recommendations. Spengler et al (1990) found that clinicians' experience was not related to diagnostic overshadowing but it was related to fewer recommendations for psychotherapy and drug treatments. Garner et al (1994) found evidence for a diagnostic overshadowing bias but not for treatment overshadowing.

Spengler et al (1990) proposed that treatment overshadowing may be the result of the clinician's lack of experience of medical/psychotherapeutic treatments for people with learning disabilities rather than any cognitive bias. Keys & Jopp (2001) suggest that some professionals do not see the value of treating people with learning disabilities or that they mistakenly believe that proven treatments are not effective or viable for this client group (Tanguay & Szymanski, 1980). However, this discrepancy is not only found for individuals with cognitive deficits. Walker & Spengler (1995) found no evidence for

diagnostic overshadowing of people suffering from AIDS and comorbid depression but did find significant effects for treatment recommendations. It is unclear whether treatment overshadowing is in itself sufficient to represent an instance of diagnostic overshadowing (Keys & Jopp, 2001).

Aims

The current study, therefore, has five main aims. Firstly, it aims to develop the methodology used to assess overshadowing by comparing the typical classical vignette case presentations with the use of filmed stimuli.

Secondly, this study aims to extend the overshadowing research beyond the clinic to the educational setting, assessing teachers' decisions about children in mainstream secondary schools. The present study will expand the current research base by applying overshadowing to children with developmental disorders (Asperger Syndrome) and co-morbid challenging behaviour. Aspergers Syndrome was chosen rather than another developmental disability, as it would be more likely that children with higher functioning disorders would be included in mainstream schools. Externalised challenging behaviour was chosen as this has been reported as the most common referral issue for children with Aspergers (Frazier, Doyle, Chiu & Coyle, 2002).

Thirdly, the study aims to asses the role of treatment overshadowing through teachers' belief in their ability to manage the presented behaviour and the referral routes that are then chosen.

Fourthly, the study aims to explore the cognitive processes involved in overshadowing by assessing how causal attributions relate to participants' judgements.

Finally, this study aims to measure the effect of teacher's cognitive complexity using an easily administered measure that has psychometric robustness.

Hypotheses

1. The presence of challenging behaviour will overshadow identification of Asperger Syndrome

2. Higher levels of cognitive complexity will correlate with more accurate 'diagnostic' ratings.

3. Causal attributions will correlate with 'diagnostic' and treatment choices.

4. Presentation of case material, (video or written vignette) will affect the overshadowing bias.

Method

Participants

One-hundred and thirty-one (n=131) mainstream teaching staff from secondary schools within one local education authority were used for this study. Schools were recruited through the Educational Psychology department of Southampton University.

Initially participants were recruited for the first half of the study, which used written vignettes. One-hundred and eighty questionnaires were sent to the mainstream schools and 67 teachers agreed to participate, a return rate of 37%. The second half of the study used video stimuli. Sixty-four teachers were recruited from two teacher-training days. Only 2 teachers did not agree to participate, a return rate of 96%. Participants met the inclusion criteria if they held a formal qualification and if they gave informed consent (appendix A) to participate.

Stimulus Materials

Video

Three videos were created in collaboration with the University of Southampton based Teaching and Media department. Actors recruited from three schools played the parts of the children and teachers presented in the videos and the

director was experienced in working with children and individuals with Asperger Syndrome. Informed consent was obtained from the children's parents for video recording (appendix B). All three videos depicted scenes of a child actor presenting behaviour that fulfilled the criteria for a diagnosis of Aspergers Disorder (ICD-10, WHO, 1993). The three videos differed according to whether the child (known as Paul) presented with no challenging behaviour, challenging behaviour motivated by escape and challenging behaviour motivated by avoidance.

Asperger Syndrome was portrayed firstly through a discussion of Paul's education experiences between Paul's head teacher and his classroom teacher. This discussion included references to Paul's average intelligence, his dislike of group-based subjects (e.g. drama, physical education) and his lack of imagination. Secondly, Asperger Syndrome was portrayed through visual presentations of Paul's individual, symptomatic behaviours in relation to his peers. These behaviours included, playing on his own in the playground with a ball and lining up his pencils, whilst his peers played with each other; sitting in silence in the classroom, lining up his pencils whilst his peers discussed motorbikes with each other. Challenging behaviour (escape) consisted of two scenes. The first showed Paul engaged in an ICT (Information, Communication and Technology) lesson and showed him running from the classroom after his teacher asked him to share a computer with another pupil and moved his pencil case. The second scene showed Paul in a science lesson and showed him pushing over chemistry equipment and running from the room when his teacher tried to remove his pencil case

from the table. Challenging behaviour (avoidance) showed Paul engage in a Maths lesson and consisted of Paul throwing his schoolbag at the teacher when he was told that the following ICT lesson had been cancelled and replaced by a drama lesson.

Vignettes

Three vignettes (Appendix C) were designed which described the behaviour of a child who fulfils the criteria for a diagnosis of Aspergers (ICD-10; WHO, 1993). Each vignette mirrored the scenes presented in the video stimulus (above). Thus, each vignette differed according to whether the child presented with either no challenging behaviour; an escape based challenging behaviour or a task-avoidance challenging behaviour.

Materials

Each participant was given a questionnaire pack. This pack consisted of the following materials:

1. The Revised Causal Dimensions Scale (CDSII) (McAuley, Duncan & Russell, 1992) – adapted for third person usage (Jones & Hasting, 2003)
2. Diagnostic Categories Questionnaire
3. Management and Referral Questionnaire
4. Short Form for the Need for Cognition Scale (Cacioppo, Petty & Kao, 1984)

5. Demographic Questionnaire

Revised Causal Dimensions Scale (CDSII)

Participants' causal attributions about the behaviour presented in the vignettes were measured using an adapted version of the Revised Causal Dimensions Scale (CDSII, McAuley, Duncan & Russell, 1992; Appendix D). After reading the vignette, participants were asked to provide an unforced response regarding what they thought was the most likely single cause of the child's behaviour. They were then asked to rate this cause on a nine-point scale for each of 12 items. These items score on four attributional dimensions (locus of control, stability, personal controllability and external controllability) (see McAuley et al, 1992 for definitions of dimensions). The coefficient alphas for the four subscales ranged from .60 to .92 across 4 different studies (McAuley et al, 1992). The scale was adapted for the third person in order to measure participants' attributions about the vignette they had read. In a previous study (Jones & Hastings, 2003) the psychometric properties of the adapted subscales were analysed and found to be unaltered (.75 External Control; .80 Stability; .79 Personal Control and .79 Locus of Causality).

Diagnostic Categories Questionnaire

Participants were asked to think about the vignette they had read and rate how strongly they believed Paul's behaviour was associated with any of seven given diagnostic categories (appendix E). These categories were: depression,

attention deficit hyperactive disorder (ADHD), social anxiety, autistic spectrum disorder (ASD), obsessive compulsive disorder (OCD), conduct disorder and specific learning difficulties (SLD). The wider label of ASD was used rather than Asperger Syndrome as the distinguishing between Asperger Syndrome and Autism is subject to debate in the literature (e.g. Schopler, Mesibov & Kunce, 1998; Klin, Volkmar & Sparrow, 2002)

The choice of diagnoses was generated from information given by two experienced professionals working in the field of child and family psychology and were based on their clinical experience.

Management Capacity and Referral Questionnaire

From their reading of the vignette, participants were asked to rate: 1. Their ability to manage the behaviour within the class and 2. Their ability to manage the behaviour within their school. The above areas were measured using a five-point scale (see Appendix F).

If participants thought the behaviour could not be managed within their school (a rating of 1, 2 or 3 on the scale were considered to represent this), then they were asked to rate on a five-point scale which of nine professionals they would consider referring to (one indicating *would not refer*, five indicating *would definitely refer*). These professions were: G.P.; Paediatician; Clinical Psychologist; Educational Psychologist; special educational needs coordinator (SENCO); Educational Welfare Officer (EWO) and Psychiatrist.

The category of 'other' was included to enable participants to state an additional referral contact if not included within the list provided.

Short Form for the Need for Cognition Scale

Participants' cognitive complexity was assessed using the Short form Need for Cognition Scale (Cacioppo, Petty & Kao, 1984; appendix G). This questionnaire consists of 18 questions designed to assess an individual's tendency to engage in elaborate thought. Participants were asked to indicate to what extent eighteen statements about their thinking styles were characteristic of them. This was measured on a five-point Likert scale where extremely uncharacteristic ("not at all like you") scored "1" and extremely characteristic ("very much like you") scored "5". A total score was then obtained. The short-form scale was adapted from the Need for Cognition Scale (Cacioppo & Petty, 1982) which has demonstrated good validity (Cacioppo, Petty & Morris, 1983). The short-form has shown good convergent validity with the full version (r - .95) and excellent reliability estimated by theta of .90 (Cacioppo, Petty & Kao, 1984; Tolentino, Curry & Leak, 1990). Previous published studies, which have explored the relationship between cognitive complexity and overshadowing, have used an adaption of Bieri, Atkins, Briar, Leaman, Miller & Tripodi's, (1966) repertory grid (Spengler & Strohmer, 1994; Walker & Spengler, 1995). However, repertory grid measures can take a long time to administer (Spengler & Strohmer, 1994) and, therefore, the Need for Cognition Scale was selected as a quick and valid measure of cognitive complexity (Jopp, 2001).

Demographics Questionnaire

To prevent participants pre-empting the special needs focus of the study, demographic data were collected on completion of the above stated measures. Participants were asked questions regarding their qualification and experience in special education, their age, gender, relevant qualifications and length of service, in years, in a mainstream educational setting (Appendix H).

Ecological Validity of the Stimulus Materials

To determine the validity of the respective vignettes and videos, each was shown to 3 Child Psychiatrists and 3 Clinical Psychologists who were naïve to the study. After each reading/viewing, they were asked to complete the diagnostic categories questionnaire (see above) and rate how likely it was that the stimulus viewed was representative of the seven diagnostic categories. One hundred percent diagnostic validity was achieved (as determined by a rating of '5' on the ASD category). In addition, further informal discussion clarified clinical formulation as to each individual's rationale for rating. In consideration of presentation as to written and visual scripted behaviour, 3 adults with a formal diagnosis of Asperger Syndrome (DSM-IV), who were naïve to the study, were asked to state the representativeness of the presenting behaviours. The following comments were recorded for diagnosticians and adults with AS:

- Paul was isolated from his peers and became upset when asked to pair up with another boy.
- He did not join in with conversations with his peers.
- He showed ritualistic behaviours with his pencils and became upset when they were touched or removed by others.
- He was described as of normal intelligence
- He was described as lacking imagination
- He preferred technical subjects (maths, ITC) rather than creative or group based (English, drama).
- That Paul's behaviour could be improved if the behaviour of others were different, e.g. asking Paul to put away his pencils rather than grabbing them; giving him more time to act on others' instructions.

A comment was made by one of the individuals with Asperger Syndrome that Paul would not have thrown his pencils on the floor during the challenging behaviour condition, as they would have been too precious to him. However, none of the other individuals made this comment and it was considered as part of the individual variation of presentations within the syndrome; therefore, the stimuli were not altered.

Procedure

Ethics Committee approval was obtained from the School of Psychology, Ethics Committee, University of Southampton (Appendix I). In the first half of the study (analogue condition), the questionnaires were divided into three groups representing each of the three vignettes and divided equally between

the schools. Each participant was provided with a short instruction sheet and a consent form and asked to read one of the three vignettes and complete a standard set of five questionnaires (as described above). Stamped self-addressed envelopes were provided.

In the second half of the study (video condition), participants were tested at their place of work. Three cohorts were identified and pseudo-randomly assigned to three groups. Each individual was required to complete a consent form and watch one of the three videos. Immediately after viewing, they were asked to complete a standard set of five questionnaires (see above). As participants were tested in groups, they were asked not to consult with each other.

All participants were given the option of a briefing statement (appendix J) if requested.

Results

The study used a 2 x 3 between groups design (see figure 1). Two independent variables were measured, behaviour (no challenging behaviour; challenging behaviour-avoidance and challenging behaviour-escape) and stimuli (vignette and video). There were six dependent variables, diagnostic rating; manageability in class; manageability in school; referral category; cognitive complexity and causal attributions.

Figure 1: Design of Study

	Stimuli					
	Written Vignette			Video		
Behaviour	No challenging behaviour	Challenging behaviour avoidance	Challenging behaviour escape	No challenging behaviour	Challenging behaviour avoidance	Challenging behaviour escape

Participants

One-hundred and thirty-one qualified teachers were recruited for the study. Of these, 79 (60.3%) were female and 52 (39.7%) were male. The mean age of the overall sample was 41.1 years (*SD* = 10.55) with a mean experience level of 12.6 years (*SD* = 10.21). Twenty-one percent of the sample had previous special-needs qualifications or experience. The participants were randomly divided between the independent variables. The characteristics of these groups are presented in Table 1.

Table 1: Demographics of Sample

	Vignette			Video		
	No Challenging Behaviour	Escape Challenging Behaviour	Avoidance Challenging Behaviour	No Challenging Behaviour	Avoidance Challenging Behaviour	Escape Challenging Behaviour
N	23	23	21	21	20	23
Gender						
Female	12 (55.2%)	13 (56.5%)	13 (61.9%)	21 (100%)	10 (50%)	10 (43.5%)
Male	11 (44.8%)	10 (43.5%)	8 (38.1%)	0	10 (50%)	13 (66.5%)
Age						
X	39.48	41	37.95	45.5,	40.3	42.7
(SD)	(9.0)	(11.7)	(11.31)	(5.26)	13.1	(10.9)
Range	24-52	(21-63	23-62	34-53	24-64	24-58
Experience in Years (Teaching)						
X	10.1	16.0	11	10.1	13.1	15.4
(SD)	(8.3)	(11.6)	(9.7)	(6.7)	(12.5)	(10.8)
Range	1-31	0.5-40	1-38	2-25	2-38	1-31
Experience (Special Needs)						
Yes	6 (26.1%)	4 (17.4%)	3 (14.3%)	6 (21.6%)	2 (10%)	2 (8.7%)
No	17 (73.9%)	19 (82.6%)	18 (85.7%)	15 (71.4%)	18 (90%)	21 (91.3%)

Two preliminary analyses were conducted. Firstly, one-sample Kolmogorov-Smirnov tests were preformed to establish whether the data conformed to normal distribution. Two of the conditions (Cognitive Complexity and Causal Attribution) were normally distributed but all other conditions differed significantly. Transformation, using square root and logarithm transformation did not normalise the data; therefore, non-parametric tests were used for all the analyses.

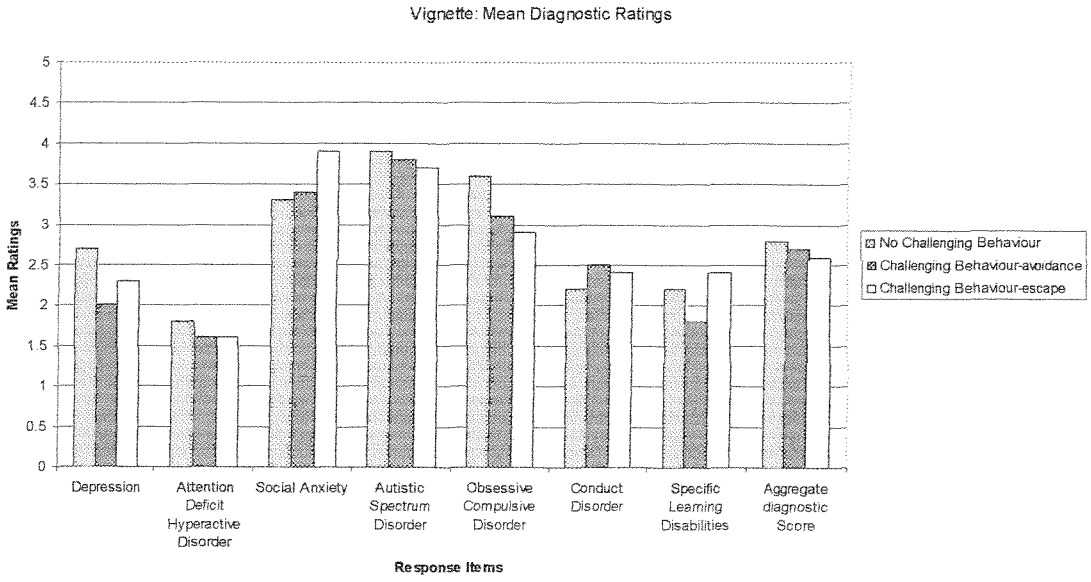
Secondly, the demographic data were explored to establish whether there were any significant differences across stimulus and behaviour. Continuous data (age and experience) were analysed using Kruskal-Wallis H Tests. Categorical data (sex and special needs experience) was analysed using Chi-

Square. No significant differences were found for age or experience. There was a significant difference between women and men x^2 (5, N = 131) 18.23, p < .001, with video: no challenging behaviour containing no males compared to all other conditions which were mixed samples. No significant differences were found for special needs experience. Sex could not be controlled for in the analysis as there were no males within the video: no challenging behaviour condition. This will be commented on in the discussion.

Overshadowing Effect

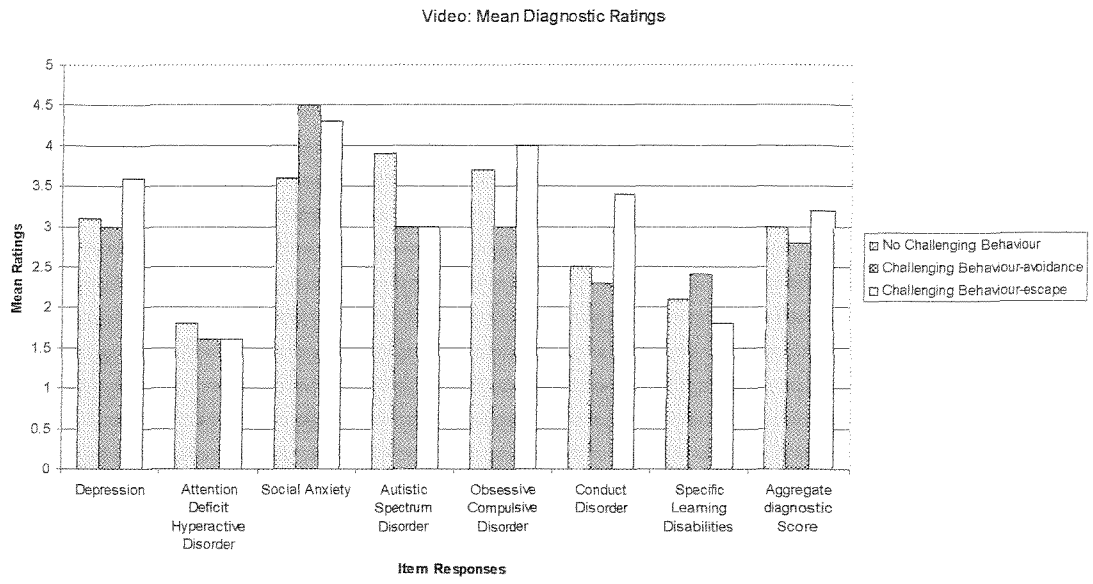
The mean diagnostic ratings for vignette stimuli across the three behaviour conditions are displayed in the following bar chart:

Figure 2: Vignette: Mean 'diagnostic' ratings



The mean diagnostic ratings for the video stimuli across the three behaviour conditions are displayed in the following bar chart:

Figure 3: Video: Mean 'diagnostic' Ratings



In line with Spengler & Strohmer (1994), an aggregate 'diagnosis score' was computed from the mean of the seven diagnostic ratings. Kruskal-Wallis H tests were conducted to determine whether there were any significant effects for each of the diagnostic ratings and the aggregate 'diagnosis score ' across stimuli and behaviour. If significant effects were found, Mann-Whitney U tests were conducted to determine whether this difference lay within or between stimuli.

Significant results were found for the following response items:

Autistic Spectrum Disorder

The results showed that there was a significant difference between ratings of ASD across stimuli and behaviour ($H = 11.27$; $p = .05$).

There were no significant differences found for ASD between behaviour within vignette stimuli. For video stimuli, challenging behaviour-escape was significantly less likely to be rated as ASD than no challenging behaviour (U = 152.00, p = .03). Although challenging behaviour-avoidance was not rated as significantly less likely to be ASD than no challenging behaviour, a trend towards significance was found (U = 140, p = .057).

One significant difference was found between stimuli. Challenging behaviour-escape was significantly less likely to be identified as ASD when the information was presented in video rather than in written form (U = 152.00, p = .04).

Depression

The results showed that there was a significant difference between ratings of depression across stimuli and behaviour (H = 22.81; p < .001).

No significant differences were found between behaviour within vignette or video. One significant difference was found between stimuli. Challenging behaviour-escape was significantly more likely to be identified as depression when the information was presented in video rather than in written form (U = 79.50, p < .001).

Social Anxiety

There was a significant difference between ratings of social anxiety across stimuli and behaviour ($H = 19.16$; $p < .001$).

No significant differences were found between behaviour within vignette. For video stimuli, two significant differences were found between no challenging behaviour and challenging behaviour-avoidance ($U = 90.00$, $p < .001$) and no challenging behaviour and challenging behaviour-escape ($U = 131.50$, $p < .001$). Social anxiety was more likely to be rated when challenging behaviour was present.

One significant difference was found between stimuli. Challenging behaviour-escape was significantly more likely to be identified as social anxiety when the information was presented in video rather than in written form ($U = 154.5$, $p = .03$).

OCD

There was a significant difference between ratings of OCD across stimuli and behaviour ($H = 15.56$; $p = .01$)

No significant differences were found between behaviour within vignette stimuli. For video stimuli, OCD was more likely to be rated for challenging

behaviour-escape than challenging behaviour-avoidance (U = 128.50, p = .01).

One significant difference was found between stimuli. Challenging behaviour-escape was significantly more likely to be identified as OCD when the information was presented in video rather than in written form (U = 142.00, p = .02).

Conduct Disorder

There was a significant difference between ratings of conduct disorder across stimuli and behaviour (H = 19.11; p < .001).

No significant differences were found between types of behaviour within vignette stimuli. For video stimuli, two significant differences were found between no challenging behaviour and challenging behaviour-escape (U = 117.00, p < .001) and challenging behaviour avoidance and challenging behaviour-escape (U = 114.50, p < .001). Conduct disorder was more likely to be identified in the challenging behaviour-escape condition.

One significant difference was found between stimuli. Challenging behaviour-escape was significantly more likely to be identified as conduct disorder when the information was presented in video rather than in written form (U = 124.00, p < .001).

Aggregate Diagnostic Score

The results showed that there was a significant difference between aggregated diagnostic ratings across stimuli and behaviour (H = 13.12; p = .02).

No significant differences were found between behaviour within vignette or video. For stimuli, challenging behaviour-escape was significantly more likely to be rated with a diagnosis when the information was presented in video rather than in written form (U = 109.00, p < .001).

Treatment Overshadowing – Manageability and Referral Choices

Manageability of Behaviour

For the dependent variables of manageability in class and manageability in school, Kruskal-Wallis H tests were conducted to determine if there were any significant effects across stimuli and behaviour.

Classroom

Using Kruskal-Wallis H tests, there were no significant differences found across stimuli and behaviour for manageability of Paul's behaviour within the classroom (H = 1.21; p = .94). This suggests that the presence of challenging behaviour did not affect whether the participants thought Paul's behaviour could be managed within the classroom.

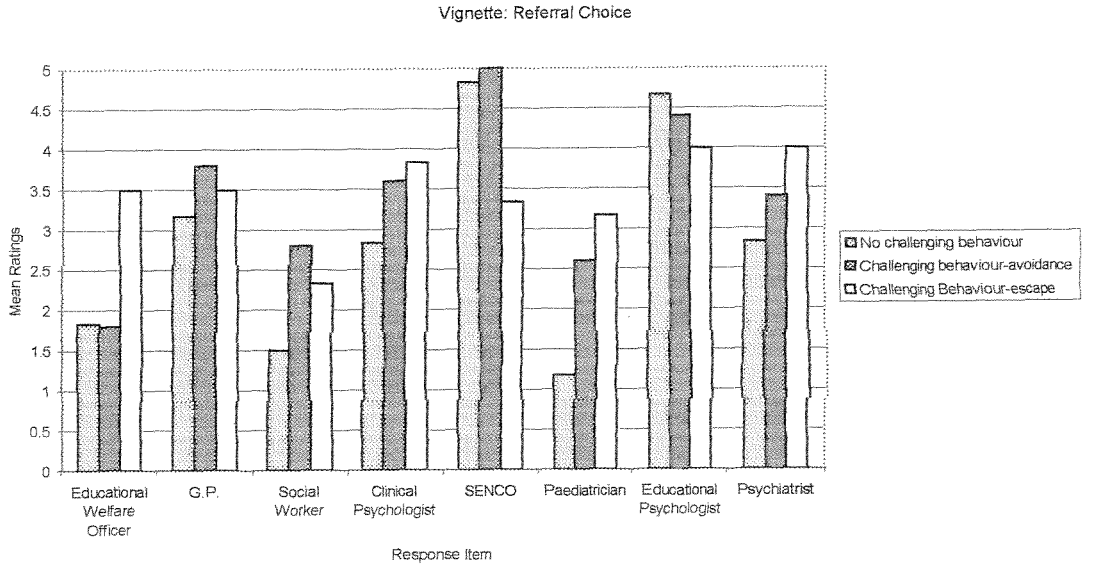
School

Kruskal-Wallis H tests determined that there were no significant differences across stimuli and behaviour for manageability of Paul's behaviour within the school (H = 9.5, p = .91). This implies that the presence of challenging behaviour did not alter teachers' beliefs about whether the behaviour could be managed within the school.

Referral Choice

The following bar chart displays mean referral ratings within vignette stimuli for the three behaviour conditions:

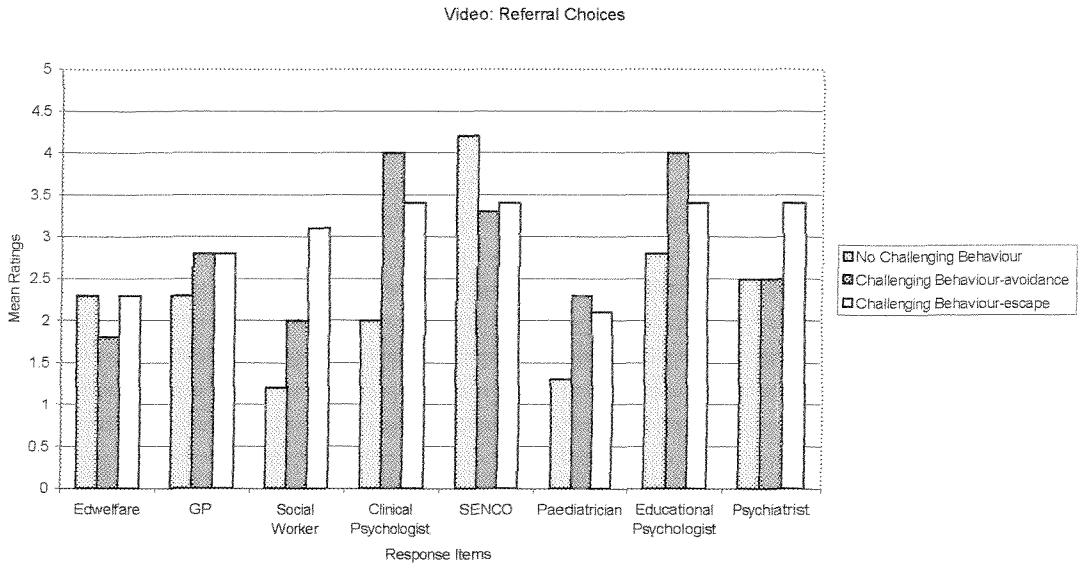
Figure 4: Vignette: Mean referral ratings



Note: GP = general practitioner, SENCO = special educational needs coordinator.

The following bar chart displays mean referral ratings for the video across the behaviour conditions:

Figure 5: Video: Mean referral ratings



Note: GP = general practitioner, SENCO = special educational needs coordinator.

Those participants who believed Paul's behaviour could not be managed within their school were asked to whom they would consider referring. Only, 28% of participants rated the behaviour as unmanageable (n = 37). These numbers were too few to allow statistical comparison; therefore, the data was explored using descriptive methods.

Table 2: Mean Values of Referral Category

	Vignette			Video		
	No challenging behaviour	Challenging behaviour - avoidance	Challenging behaviour - escape	No challenging behaviour	Challenging behaviour - avoidance	Challenging behaviour - escape
n	6	5	6	6	6	8
Educational Welfare Officer	1.83	1.80	3.50	2.33	1.83	2.25
G.P.	3.17	3.80	3.50	2.33	2.83	2.88
Social Worker	1.50	2.80	2.33	1.33	2.00	3.13
Clinical Psychologist	2.83	3.60	3.83	2.00	4.00	3.38
SENCO	4.83	5.00	3.33	4.17	3.33	3.38
Paediatrician	1.17	2.60	3.17	1.33	2.33	2.13
Educational Psychologist	4.67	4.40	4.00	2.83	4.00	3.38
Psychiatrist	2.83	3.40	4.00	2.50	2.50	3.38

Within the vignette stimuli, table 2 shows that, the condition of no challenging behaviour and challenging behaviour–avoidance, resulted in participants being more likely to refer to the SENCO, followed by the Educational Psychologist. They were less likely to refer to the Social Worker, Educational Welfare Officer and Paediatrician. Challenging behaviour–escape differed from the other two as referrals to the Psychiatrist and Educational Psychologist were most highly rated. The Social Worker received least referral ratings.

Within the video presentation, no challenging behaviour, showed similar results to vignette: no challenging behaviour and vignette: challenging behaviour-avoidance, with referrals most likely to be made to the SENCO. However, other referral choices received markedly lower ratings than these conditions. For video: challenging behaviour–avoidance, referrals to the two

Psychologists were most likely. Finally, the mean scores in challenging behaviour-escape, showed less polarisation within the referral ratings. The range of mean referral ratings fell between 2.1 and 3.4 with the highest 4 choices, Educational Psychologist, SENCO, Psychiatrist and Clinical Psychologist all scoring identical mean values.

Moderating Factors

To examine whether the relationship between cognitive complexity and the primary diagnostic condition of interest, namely ASD, assumed the direction predicted in hypothesis 2, one-tailed Spearman correlations were conducted. The relationship between the 4 dimensions of causal attribution and ASD was explored using two-tailed Spearman correlations.

Cognitive Complexity

One significant relationship was found in the video stimuli for no challenging behaviour ($r = .51$, $p = .01$). Therefore, within this condition, participants' with higher cognitive complexity were more likely to rate Paul's behaviours as ASD.

Causal Attributions

Eight significant relationships were found between ASD and causal attributions within the vignette stimuli; no significant relationships were found within the video stimuli.

Table 3: Two-tailed Spearman correlations between ASD and causal attributions

r	Vignette			Video		
	No challenging behaviour	Challenging behaviour avoidance	Challenging behaviour escape	No challenging behaviour	Challenging behaviour avoidance	Challenging behaviour escape
n	23	23	21	21	20	23
Locus of Control	.56**	.43*	.32	.37	.19	.19
Stability	.49*	.55**	0.66**	.36	.14	.29
External Control	-.41*	-.22	.44*	-.38	.08	-.12
Personal Control	-.11	-.44*	-.39	.06	.28	-.1

* = significant at 0.05 level ** = significant at 0.01 level

Table 3 shows that within vignette: no challenging behaviour, significant positive relationships were found between locus of control and stability; a negative relationship was found between ASD and external control.

Within vignette: challenging behaviour-avoidance, significant positive relationships were found between ASD and locus of control and stability; a negative relationship was found with personal control.

Finally, within vignette: challenging behaviour-escape, two positive relationships were found between ASD and stability and external control.

Discussion

Overshadowing

Written Vignette Stimuli

The first hypothesis stated that overshadowing would be more prevalent when challenging behaviour and ASD were comorbidly presented. When Paul's behaviour was presented in written form, there was no evidence that the introduction of challenging behaviour changed the teachers' ratings of Paul's behaviour. In addition, there was no evidence that teachers' decisions were moderated by their levels of cognitive complexity. Therefore, for written vignettes, hypotheses one, and two were not supported.

Several significant results were found for the relationship between causal attributions and ratings of ASD for the written vignette. In the no challenging behaviour condition, those teachers who were more likely to correctly associate Paul's behaviours with ASD were also significantly more likely to attribute these behaviours to factors within Paul, that were stable over time and were less likely to see the behaviours as under external control. In the challenging behaviour-avoidance condition, those teachers who were more likely to correctly associate Paul's behaviour with ASD were also more likely to attribute these behaviours to factors within Paul, that were stable over time and less likely to see them as under personal control. Finally, in the challenging behaviour-escape condition, teachers who were more likely

correctly to associate Paul's behaviours with ASD, also attributed them to factors under external control that were stable over time. Therefore, the third hypothesis that there would be a relationship between causal attributions and association with ASD was partially supported.

Video Stimuli

The results for the video stimuli showed that the teachers did make different decisions based on whether challenging behaviour was included in Paul's behavioural profile. Although diagnostic categories were used to measure overshadowing, it should be noted that the ratings represent participants' directions of concern rather than diagnosis. For the primary condition of interest, ASD, the overshadowing hypothesis was supported, as teachers were significantly less likely to rate ASD when escape motivated challenging behaviour was present. They were also less likely to rate ASD when challenging behaviour-avoidance was present, although this failed to reach significance. Future research could use larger sample size to test whether this condition would then show a significant effect. Significant differences were found for three of the other ratings of, social anxiety, OCD and conduct disorder. However, all three were more likely to be rated when Paul displayed challenging behaviour in addition to the behaviours associated with ASD. Therefore, when Paul's behaviours were presented visually, participants appear to have modified their decisions about the nature of Paul's behaviour in response to the addition of escape-motivated challenging behaviour. This addition appears to have caused teachers not only to miss the behavioural

signposts of ASD, but also to identify these behaviours as being likely to signify a mental health condition. Thus, ASD plus challenging behaviours are a mental health problem.

In addition, cognitive complexity was found to correlate positively with the rating of ASD when there was no challenging behaviour. This partially supports the second hypothesis, which predicted higher levels of complexity would be related to more accurate ratings of Paul's behaviour. Future research might want to consider the effect of gender on cognitive complexity, as there was a significant difference found for gender across stimuli and behaviour, with no men in the visually presented no challenging behaviour condition. The absence of any males within this condition meant that gender could not be controlled for, therefore, it is difficult know whether gender had a confounding influence on the result. Studies investigating gender differences in cognitive complexity have shown mixed results, with some studies indicating no differences (Adams-Webber, 2001; Cheng, 1997) and others showing significant differences between males and females (Ram-Akshaya, 1984; Tanaka, Panter & Winborne, 1988; Magolda, 1989). The consideration of potential biases such as gender in future research would offer greater validity to the overshadowing research.

There were no significant relationships found between rating of ASD and the causes participants attributed to Paul's behaviour, therefore hypothesis three was not supported for the video stimuli.

Treatment Overshadowing

There were no significant differences in either the written vignette or the video stimuli for teachers' ratings of their ability to manage Paul's behaviours in the school or classroom. Overall, teachers were reluctant to refer Paul to outside agencies; only 28% of participants thought they would not be able to manage his behaviour in their school. Unfortunately, it was not possible to test whether the overshadowing bias extended to these teachers' referral choices because of lack of statistical power. The overall means indicated that teachers were more likely to refer to professionals within education (SENCO, educational Psychologists) and mental health (clinical psychologist, psychiatrist) and least likely to refer to professionals within social settings (social worker, educational welfare officer) and physical health (G.P., paediatrician). Looking at the video stimuli, it is interesting to note that teachers were overall more likely to refer Paul to the psychiatrist, the educational and clinical psychologist, the GP, social worker and paediatrician when he showed challenging behaviour. In contrast, they were less likely to refer to the SENCO. This distinction may fit with their identification of Paul's challenging behaviour as likely to result from a mental health condition and which would therefore require more input. However, this relationship can only be tentatively suggested and further research using a larger sample size is needed to explore whether referral pathways are influenced by presence of externalising challenging behaviour.

Effect of Methodology

The final hypothesis concerned how the overshadowing bias would be affected when the presentation of the case information was manipulated. The results of this study show that for ASD, in the escape-motivated challenging behaviour condition, teachers were significantly more likely to overshadow when the behaviours were presented in video format. This result suggests that overshadowing was more likely to occur when the information was presented visually rather than in written form.

Four other diagnoses, depression, social anxiety, OCD and conduct disorder and the aggregate diagnostic score, all showed significant differences in the video: challenging behaviour–escape condition. However, this was in the opposite direction to ASD. Teachers were significantly more likely to identify each of these conditions when the behaviour was presented in video form rather than vignette. Therefore, Paul's behaviours were significantly more likely to be identified as mental health problems when presented visually. We must remember that a positive identification of a mental health problem is actually erroneous and the challenging behaviour is a function of Paul's ASD. Therefore, when the behaviours were presented visually rather than in written form, teachers were both less likely to correctly identify Paul as having ASD and more likely incorrectly to identify him as suffering from a mental health problem.

This is a surprising result. Written vignettes have been criticised for being simplistic and ambiguous (Carlson, 1996) and it is known that ambiguous information can result in erroneous decisions (Arkes, 1991). They are not

thought to represent accurately real life situations compared to videos, which offer more complex, contextual based presentations (Sleed, Durrheim, Kriel, Solomon & Baxter, 2003). However, visual stimuli may, indeed, offer a more real-life representation of the behaviours and these results may be reflecting the actual judgements of teachers rather than any effect of methodology. It is curious that overshadowing was elicited from viewing videos and not from reading vignettes. If the salience of the overshadowing condition is paramount (e.g. Spengler, Strohmer & Prout, 1990), then, perhaps, Paul's challenging behaviours and their impact is more salient when viewed visually than when read. However, if this is true, the question remains as to *why* the video presentation should be more salient than the written one. One suggestion could be that the contextually based, more realistic depiction of Paul's behaviours in the video elicited stronger emotional reactions from participants than the written vignettes. Videos have been shown to produce different cognitive and emotional responses than written vignettes (Sleed, et al, 2003) and this may have then affected the teachers' judgements. Mood states such as fear and anger can cause selective retrieval of memories (Dunmont, 1993). If Paul's challenging behaviour caused, for example, anger, participants may have been more likely to access memories of other individuals they felt angry towards and this may have resulted in omissions of comparison and led to erroneous judgements. Future research may benefit from measuring the emotional impact of the behaviour participants are viewing and how this may relate to their judgements.

Research Implications

The results of this study have implications for the validity of the overshadowing bias. Diagnostic overshadowing is generally regarded as a robust bias (Jopp & Keys, 2001), however these results showed a difference in the degree of overshadowing when the behaviour was presented in traditional vignette form as opposed to video format. This suggests that the bias is sensitive to manipulations in methodology. This study showed no effects for overshadowing in response to the written vignettes, which contradicts all of the published diagnostic overshadowing research. It evidenced overshadowing in response to video and showed a stronger tendency to overshadow in response to video rather than vignette; results which challenge previous arguments that overshadowing may merely be a function of the limited amount of information available in written vignette (White et al, 1995; Jopp & Keys, 2001).

In terms of research implications, this study has perhaps generated more questions than it has answered. The fact that no significant results were elicited from the vignettes may be a function of the participant group being studied. Previous research has concentrated on clinical groups and, therefore, it could be argued that written vignettes are an unsatisfactory measure of overshadowing in non-clinical groups. Clinicians may be more used to making decisions about clients based on written information whereas, for teachers, the video format may have better reflected their working practices. On the other hand, it could be postulated that if previous diagnostic overshadowing studies had utilised video presentations, even larger effect sizes would have

been found. The result could also reflect the population that is the subject of the study, that is, children with ASD and concurrent externalising challenging behaviour. These children have not been focused on before in overshadowing research and it may be that there is something about their behavioural characteristics presented in written form that affects different responses. Future research replicating the established diagnostic overshadowing literature using video presentations may help answer some of these questions.

The fact that Paul's challenging behaviour was rated differently depending on whether it was motivated by avoidance or escape suggests that this is an important factor in how observers may choose to manage the behaviour. A literature search using PsycINFO Journal Articles Database (APA, 2004) found no studies discriminating between escape and avoidance based challenging behaviour, either from the perspective of the person doing the behaviour or for the observer. It is possible that escape motivated behaviour may look more obvious than avoidance because it is more apparent to what the individual is reacting, whereas for avoidance behaviour, the individual is reacting to something that has yet to happen. Drawing on previous diagnostic overshadowing research (Reiss, Levitan & Szyszko, 1982), it could be hypothesised that escape-motivated behaviour is therefore more salient than avoidance. Future research could explore whether and how individuals discriminate between differently motivated behaviour.

The failure to find any significant relationship between cognitive complexity and identification of ASD when responding to written vignettes also contradicts previous research, which found diagnosis was associated with higher cognitive complexity (Spengler & Strohmer, 1994; Wallker & Spengler, 1995). Because of time considerations, the present study used a different measure of cognitive complexity than the two previous studies. This reflects a general problem in the measurement of cognitive complexity. Previous research has used various different measures (Caracena & King, 1962; Crockett, 1965; Streufert & Streufert, 1978; Jopp, 2001) and they often show low correlations with one another (Vannoy, 1965), which makes comparisons difficult. Future research may benefit from a closer exploration of the concept of cognitive complexity.

The relationships between teachers' causal attributions and overshadowing are difficult to interpret. The results suggest that the teachers did make different attributions of causality depending on whether Paul did or did not present with challenging behaviour. Differences were also found depending on what the challenging behaviour was motivated by (avoidance or escape). This suggests that cognitive factors such as causal attributions are related to the way teachers interpret and make judgements about children's classroom behaviours. However, it is curious why these relationships were only found in the vignette group. Future studies could draw further on decision-making literature to explore the relationships between cognitive biases.

Clinical Implications

Given the results of the current study, significant clinical implication would be how to address the decisions teachers make about the management of aberrant behaviours associated with ASD, in the classroom. The teachers in this study generally decided they could manage Paul's behaviour in the school and did not seek outside help. However, there is a consensus in the literature that the education of children with ASD requires expertise above anything else (Newsom. 1995). Their failure to seek outside help in managing the behaviours has both short and long-term implications. The teaching profession, essentially, involves manipulating the environment in which children learn (Hodapp & Ricci, 2002). Therefore, teachers are in a primary position to influence the trajectory of the condition. Although individuals with ASD have to evidence specific behaviours to meet criteria for diagnosis, the choices teachers make about the way they manage these behaviours and the cognitive deficits associated with the condition may have a marked effect on the child's ability to integrate successfully into mainstream environments. Modification of the classroom environment, combined with structured teaching, adaptive communication and social skills teaching can be an effective means of managing the behaviours of children with ASD in schools (Rutter & Bartak, 1973; Marriage, Gordon & Brand, 1995). The positive effects of these interventions may not be immediately apparent but their potential impact on educational attainment and social integration may contribute to the smooth transition into a less structured adult world.

The negative effects of failing to intervene appropriately may include isolation of the child with ASD from peers and, ultimately, breakdown of the current educational placement (Barnard, Prior & Potter, 2000). Children with a *diagnosis* of ASD can present challenges to teachers. The common approach by which disruptive incidents are examined in terms of antecedents, behaviours and consequences, may be of limited use for children with ASD as the child's perception and interpretation of these antecedents and consequences may be very different to that of the teacher (Howlin, 1998). In addition, previous research has highlighted the tendency for interventions for children with ASD to be directed towards a change in the person rather than towards modifying environmental circumstances or demands (Myles & Simpson, 1998). Therefore, if conditions like ASD are misinterpreted in the face of environmentally induced aggressive behaviour and subsequent interventions are not appropriate, this may result in negative outcomes.

The differences in teachers' causal attributions may offer some hope for how teachers perceive Paul's challenging behaviours. The results of this study suggest that when Paul's behaviour became disruptive, teachers were viewing his behaviour as under external control. Paul's challenging behaviours resulted from external manipulation, e.g. moving his pencil case; therefore, this implies that when the behaviours were problematic, teachers were correctly identifying changes in Paul's environments as a causal factor in his behaviour. Future research could explore whether these attributions would lead to actual behavioural change for the teachers.

The erroneous attribution of Paul's challenging behaviours to a mental health problem also presents potential conflicts in the way this behaviour is managed within the classroom. For example, if his behaviour is identified as resulting from social anxiety, a likely intervention may be to encourage him to socialise more with his peers and to be exposed gradually to group situations. For a child with ASD, whose lack of social integration may be the result of an inability rather than an unwillingness to interact; this may be counterproductive and actually result in an increase of challenging behaviours.

The teaching profession have been identified as gatekeepers for referrals to external agencies and, in this study, the low referral rate implies that gatekeeping was a problem regardless of overshadowing. If this is representative of how teachers make referral decisions about children like Paul, then this presents a problem for services such as the Child and Adolescent Mental Health Service (CAMHS). Unless they receive referrals from teachers and likeminded Tier One professionals, they will be unable to assess and provide appropriate treatments for vulnerable children. How to address this problem is a challenge. One answer could be to provide specialist training for teachers in the identification and management of conditions such as ASD. However, teachers are not diagnosticians and further training in this area may confound what is essentially their primary responsibility, that is, to teach. Another answer could be to form better links between health authorities and schools and encourage services such as CAMHS to be involved in the day-to-day activities of schools. A recent report

looking into joint working between CAMHS and schools concluded that effective joint working led to earlier interventions, more effective referrals and the accessing of children who may not normally be referred (Pettitt, 2003). One model of working might see clinicians directly attached to schools, available to provide advice and recommendations. This would then open the referral gate and provide a through way both for children to access their local clinical health services and for clinicians to provide input into the educational services.

Areas for Improvement

The study's use of video format represents a first attempt at moving towards exploring what actually happens in working practice. However, these conditions remain artificial and may fall short of replicating what happens in the working environment. Finding a satisfactory balance in research design between experimental control and what social psychologists refer to as *mundane realism* (Aronson & Carlsmith, 1969) can be difficult. Whilst the latter hopes to increase participants' engagement within experimental situations and their sensitivity to independent variable manipulations, thereby increasing experimental impact, this may be at the expense of a loss of experimental control and an increase in financial and time costings (Blascovich, Loomis, Beall, Swinth, Hoyt, & Bailenson, 2002). Future research may utilise technology such as virtual reality or virtual environments (Biocca & Levy, 1995), which use computer programmes to reproduce particular scenarios, typically, allowing for action, movement and sometimes speech on

the part of users (Blascovich et al, 2002). This format may allow a satisfactory trade-off between control and realism and thereby allow a better measurement of the true effect of overshadowing.

In line with previous overshadowing research (e.g. Reiss et al, 1982) this study employed between group design to ensure that participants remained naïve when they viewed or read the presented stimuli. However, a within group design would have provided greater validity to findings of difference when comparing the two methodologies of vignette and video. One way of achieving this in future research could be to depict a different individual in each case presentation, ensuring that their profiles matched in their behavioural presentation, social history and cognitive functioning but differed enough in other unessential characteristics to be viewed as a novel person.

Although this study moved away from exploring overshadowing in trained diagnosticians, the questionnaire designed to measure teachers' ratings used diagnostic categories such as autistic spectrum disorder and social anxiety to describe the behaviour. Whilst it can be argued that teachers are likely to be familiar with such terms, their lack of formal training in using these categories may have confounded their responses. Therefore, we cannot be sure that one teacher's understanding of what constitutes a particular disorder was the same as another's.

Finally, the lack of data regarding referral choices prevented statistical analysis of how overshadowing may have influenced the referral pathways;

although the low numbers that chose to refer on was interesting in itself. An assumption of this study was that if participants rated highly their ability to manage the behaviour in school, this automatically excluded them from making subsequent referrals to other professionals. However, this may not be the case, a fact that is highlighted by the 10 participants who completed the referral section, despite recording that they could manage the behaviour in the school. This data was not included, as it may have confounded the results. Removing this exclusion criterion in future studies may allow further analysis of this area.

Strengths of Research

This study has extended the research on diagnostic overshadowing in a number of ways. It has responded to recommendations within the overshadowing literature (e.g. White et al, 1995) to move on from using the classic written vignette and explore alternative, 'in-vivo' presentations of behaviours. The study benefits from the direct comparison of these two methodologies.

It has also responded to calls for overshadowing to be demonstrated for client populations other than those with learning disability (Jopp & Keys, 2001). The exploration of teachers' referral judgements regarding children with ASD and challenging behaviour is a pertinent one because of the ongoing debate surrounding the inclusion and management of these children in mainstream schools (e.g. Barnard et al, 2000).

In addition, this study has moved away from an exploration of overshadowing amongst clinicians. It has begun to look at overshadowing effects for a non-clinical participant population who may be in a powerful position to make decisions concerning which children will access clinical services.

Finally, the study has begun to consider the decision-making literature in relation to the effects on overshadowing.

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Appendices

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Appendix A

Information to Participants and Consent Form

Consent Form for Research Participants

Information sheet

I am Jane Lewendon a Trainee Clinical Psychologist at Southampton University. I am requesting your participation in a study regarding teachers' opinions of children's behaviour in school settings. This will involve watching a video/reading a vignette and completing some questionnaires which should take a maximum of 30 minutes. You will also be asked to fill in a questionnaire about yourself and your qualifications. Personal information will not be released to or viewed by anyone other than researchers involved in this project. Results of this study will not include your name or any other identifying characteristics. A debriefing statement summarising the aims of the research is available on request.

Your participation is voluntary and you may withdraw your participation at any time. If you have any questions please ask them now, or contact me, Jane Lewendon, at jpl300@soton.ac.uk or my Supervisor, Dr Tony Brown on 023 80595321.

Signature Date

Name: JANE LEWENDON

Statement of Consent

I _____ have read the above informed consent form.

I understand that I may withdraw my consent and discontinue participation at any time without penalty or loss of benefit to myself. I understand that data collected as part of this research project will be treated confidentially, and that published results of this research project will maintain my confidentially. In signing this consent letter, I am not waiving my legal claims, rights, or remedies. A copy of this consent letter will be offered to me.

(Circle Yes or No)

I give consent to participate in the above study. Yes No

Signature Date

Name

I understand that if I have questions about my rights as a participant in this research, or if I feel that I have been placed at risk, I can contact the Chair of the Ethics Committee, Department of Psychology, University of Southampton, Southampton, SO17 1BJ. Phone: (023) 8059 3995.

Appendix B
Video Release Form

Release form for Videoing

I the undersigned ....

agree for my child

.....

to be recorded on video, and hereby release the University of Southampton and their agents, employees and successors from all claims, demands and causes of action of every nature and kind arising out of or connected with the recordings which you make of him/her.

I give my consent for you to use the images and sounds, to store, reproduce, publish and broadcast them in the manner and context and in conjunction with such sounds, images and captions as you deem fit. This specifically includes publishing them electronically on CD and on the Internet.

I acknowledge receipt of an appearance fee of £10.

Signed

.....

Address

.....

.....

.....

Date

.....

Signed for e.media

.....

Appendix C

Vignette 1; Vignette 2; Vignette 3

Vignette One – No challenging behaviour

Paul is an eleven-year-old boy attending full time education in mainstream school. He has been at this school for roughly two months, as his father is in the army and the family has recently moved to be near his posting. Unfortunately, very limited information came with him from his previous school. He is of average intelligence and, academically, he copes well with the level of work presented to him. He is particularly good at subjects such as maths and computer studies, although he is rather clumsy at times, which cause him to make mistakes on the keyboard. He is quite able to follow written or verbal instruction, but is extremely limited in his imagination if left to his own resources. If given coloured pencils to draw a picture of his own choice, he would probably use the time to sharpen the pencils all to exactly the same length.

Paul finds it difficult to engage in social interactions with his peer group, and will always prefer to work alone. At break times, he is often observed playing alone, usually in the same spot with the same activity. During these times, or during any unstructured times, Paul amuses himself by continually lining up a collection of pencils he keeps in a separate pencil case. This case follows him everywhere, and there is a special place for it in each of the different settings around the school.

Vignette Two: Challenging behaviour – avoidance

Paul is an eleven year old boy attending full time education in mainstream school. He has been at this school for roughly two months as his father is in the army and the family has recently moved to be near his posting. Unfortunately, very limited information came with him from his previous school. He is of average intelligence and, academically, he copes well with the level of work presented to him. He is particularly good at subjects such as maths and computer studies, although he is rather clumsy at times, which cause him to make mistakes on the keyboard. He is quite able to follow written or verbal instruction, but is extremely limited in his imagination if left to his own resources. If given coloured pencils to draw a picture of his own choice, he would probably use the time to sharpen the pencils all to exactly the same length.

Paul finds it difficult to engage in social interactions with his peer group, and will always prefer to work alone. At break times, he is often observed playing alone, usually in the same spot with the same activity. During these times, or during any unstructured times, Paul amuses himself by continually lining up a collection of pencils he keeps in a separate pencil case. This case follows him everywhere, and there is a special place for it in each of the different settings around the school.

Since his arrival at this school, Paul has exhibited aggressive behaviour towards his peers and staff. This behaviour is escalating over time, usually just prior to a lesson change. Identified lessons, which are a precursor to the behaviour, are, English, PE. , Drama class and other group activities.

Recently, as a math's lesson was nearing its end, the teacher informed the class that there had been a lesson change. Instead of ICT, it would now be drama. Paul refused to leave. The teacher approached and asked him to move on to the next lesson; Paul again refused to move. The teacher then began to pick up Paul's books, papers and pencils to put in his school bag with the intention of escorting him to the drama class.

Paul immediately responded by grabbing his bag from the teacher, he then swung it at the teacher's head making contact. Picking up his papers and pencil case, Paul ran from the room and out into the playground.

Vignette Three: Challenging behaviour - escape

Paul is an eleven-year-old boy attending full time education in mainstream school. He has been at this school for roughly two months as his father is in the army and the family has recently moved to be near his posting. Unfortunately, very limited information came with him from his previous school. He is of average intelligence and, academically, he copes well with the level of work presented to him. He is particularly good at subjects such as maths and computer studies, although he is rather clumsy at times, which cause him to make mistakes on the keyboard. He is quite able to follow written or verbal instruction, but is extremely limited in his imagination if left to his own resources. If given coloured pencils to draw a picture of his own choice, he would probably use the time to sharpen the pencils all to exactly the same length.

Paul finds it difficult to engage in social interactions with his peer group, and will always prefer to work alone. At break times, he is often observed playing alone, usually in the same spot with the same activity. During these times, or during any unstructured times, Paul amuses himself by continually lining up a collection of pencils he keeps in a separate pencil case. This case follows him everywhere, and there is a special place for it in each of the different settings around the school.

Recently, Paul was engaged in a session on the computer, copying from a piece of written work he had completed in the previous lesson. The sheet of paper was on one side of the keyboard; his pencil case was on the other. Through being heavy handed on the keyboard, he made a mistake, which caused the computer to crash. As the piece of work needed to be completed, his teacher asked him to share a computer with another child. After much persuasion from the teacher, Paul reluctantly sat beside the other child. His piece of paper was placed on the desk beside the keyboard but there was no room for his pencil case so the teacher removed it.

Immediately, Paul's behaviour changed, he swept his arm across the desk knocking the keyboard, mouse, and other objects to the floor. He then turned to the child beside him and pushed him from his chair. He grabbed his pencil case from the teacher and ran from the room.

On subsequent occasions, we have noted that his aggressive behaviour has increased. The most recent occasion was during a science lesson, where he was required to heat up a flask of liquid using a Bunsen burner. For safety reasons, the teacher informed his class to remove any personal objects that may be inflammable, books, papers, pencils etc. The teacher then attempted to assist Paul in moving his belongings out of harms way. Paul immediately responded by grabbing his pencil case from his hand and throwing the contents of the flask in the teachers face, he then ran from the room.

Appendix D

Revised Causal Dimensions Scale (CDSII)

1. Causes Of Paul's Behaviour

A. What do you think is the most likely **single** cause of Paul's behaviour, which you saw in the video? Write your answer in the space below (write only **one** cause – the one you think is most important).

_____

_____

_____

B. Think about the **cause** you have written above in A. The questions below concern **your** impressions or opinions of this cause you have given. Please rate this cause by circling **one** number for each of the question items. First, read the example below, which illustrates how to do this.

EXAMPLE

The question in the first item asks whether the **cause** you have written above is something that reflects an aspect of Paul (the child in the video) *or* something that reflects an aspect of the situation. If you think the cause reflects an aspect of Paul you would circle 9 or 8 or 7 depending on how strong your views are. If you think the cause reflects an aspect of the situation you would circle 3 or 2 or 1, again depending on how strong your views are. Alternatively, you may think that the cause you identified is somewhere between being an aspect of Paul and an aspect of the situation. In this case, you would circle a point somewhere in the middle of the scale as shown below (i.e. Point 6 or 5 or 4).

Is the CAUSE something...

that reflects an aspect of the situation	9	8	7	6	5	4	3	2	1	**that reflects an aspect of Paul**

Now please begin and circle one number for each of the following questions:

Is the CAUSE that you wrote down at A. above something...

that reflects an aspect of Paul	9	8	7	6	5	4	3	2	1	**that reflects an aspect of the situation**
manageable by Paul	9	8	7	6	5	4	3	2	1	**not manageable by Paul**
permanent	9	8	7	6	5	4	3	2	1	**temporary**
Paul can regulate	9	8	7	6	5	4	3	2	1	**Paul cannot regulate**
over which others have control	9	8	7	6	5	4	3	2	1	**over which others have no control**
inside of Paul	9	8	7	6	5	4	3	2	1	**outside of Paul**
stable over time	9	8	7	6	5	4	3	2	1	**variable over time**

1. (Cont.)

Is the **CAUSE** that you wrote down at A. above something...

under the power of other people	9	8	7	6	5	4	3	2	1	**Not under the power of other people**
something about Paul	9	8	7	6	5	4	3	2	1	**something about others**
over which Paul has power	9	8	7	6	5	4	3	2	1	**over which Paul has no power**
unchangeable	9	8	7	6	5	4	3	2	1	**changeable**
other people can regulate	9	8	7	6	5	4	3	2	1	**other people cannot regulate**

Appendix E

'Diagnostic' Categories Questionnaire

2. How strongly do you feel that Paul's behaviours are specifically associated with each of the following? *(Please circle)*

	Not at all Associated					Definitely Associated
Depression	1	2	3	4	5	
Attention Deficit Hyperactive Disorder (ADHD)	1	2	3	4	5	
Social Anxiety	1	2	3	4	5	
Autistic Spectrum Disorder	1	2	3	4	5	
Obsessive Compulsive Disorder	1	2	3	4	5	
Conduct disorder	1	2	3	4	5	
Specific Learning Difficulties (e.g. dyslexia)	1	2	3	4	5	

Appendix F

Management Capacity and Referral Questionnaire

3. Based on what your have observed, do you think these behaviours could be managed within your class? (please circle)

Can NOT be managed within my class					*Can definitely be managed within my class*
1	2	3	4	5	

4 (a). Based on what your have observed, do you think these behaviours could be managed within your school? (please circle)

Can NOT be managed within my school					*Can definitely be managed within my school*
1	2	3	4	5	

4 (b). If you DO NOT think these behaviours can be managed within your school, which, if any, of the following professionals would it be appropriate to refer to: *(please circle)*

	Definitely NOT appropriate to refer				Definitely appropriate to refer
Educational Welfare Officer	1	2	3	4	5
G.P.	1	2	3	4	5
Social Worker	1	2	3	4	5
Clinical Psychologist	1	2	3	4	5
Special Needs Coordinator (SENCO)	1	2	3	4	5
Paediatrician	1	2	3	4	5
Educational Psychologist	1	2	3	4	5
Psychiatrist	1	2	3	4	5
Other (please specify)	1	2	3	4	5

Thank you for answering the questions about the video/vignette. Please complete the following questions about yourself.

Appendix G

Short Form for the Need for Cognition Questionnaire

5. Short Form for the Need for Cognition Scale

For each of the statements below, please indicate to what extent the statement is characteristic of you. If the statement is extremely uncharacteristic of you (not at all like you) please write a "1" to the right of the question; if the statement is extremely characteristic of you (very much like you) please write a "5" next to the question. Of course, a statement may be neither extremely uncharacteristic nor extremely characteristic of you; if so, please use the number in the middle of the scale that describes the best fit. Please keep the following scale in mind as you rate each of the statements below:

1	2	3	4	5
extremely uncharacteristic	somewhat uncharacteristic	uncertain	somewhat characteristic	extremely characteristic

		Item scoring
1.	I would prefer complex to simple problems.	
2.	I like to have the responsibility of handling a situation that requires a lot of thinking.	
3.	Thinking is not my idea of fun.	
4.	I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.	
5.	I try to anticipate and avoid situations where there is likely a chance I will have to think in depth about something.	
6.	I find satisfaction in deliberating hard and for long hours.	
7.	I only think as hard as I have to.	
8.	I prefer to think about small, daily projects to long-term ones.	
9.	I like tasks that require little thought once I have learned them.	
10.	The idea of relying on thought to make my way to the top appeals to me.	
11.	I really enjoy a task that involves coming up with new solutions to problems.	
12.	Learning new ways to think does not excite me very much.	
13.	I prefer my life to be filled with puzzles that I must solve.	
14.	The notion of thinking abstractly is appealing to me.	
15.	I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.	
16.	I feel relief rather than satisfaction after completing a task that required a lot of mental effort.	
17.	It is enough for me that something gets the job done; I do not care how or why it works.	
18.	I usually end up deliberating about issues even when they do not affect me personally.	

Appendix H

Demographic Questionnaire

Background Information

What was your age in years on your last birthday? _____ years Sex: M F

How many years have you worked in an education setting? _____ years _____ months

Please list relevant qualifications:

_____

_____

_____

_____

Please specify any qualifications or experience in special education:

_____

_____

_____

_____

THANK YOU FOR YOUR TIME AND COOPERATION IN COMPLETING THIS QUESTIONNAIRE

Appendix I

Ethics Committee Approval

University of Southampton

Department of Psychology

University of Southampton
Highfield
Southampton
SO17 1BJ
United Kingdom

Telephone +44 (0)23 8059 5000
Fax +44 (0)23 8059 4597
Email

6 September 2002

Jane Lewendon
Department of Clinical Psychology
University of Southampton
Highfield, Southampton
SO17 1BJ

Dear Jane,

Re: Diagnostic overshadowing amongst teachers working with children with Aspergers Syndrome

The above titled application - which was recently submitted to the departmental ethics committee, has now been given approval.

Should you require any further information, please do not hesitate in contacting me on 023 8059 3995. Please quote reference CLIN/2002/27.

Yours sincerely,

KNhucas

Kathryn Lucas
Ethical Secretary

cc. Janet Turner

Appendix J

Debriefing Statement

Debriefing Statement

The aim of this research was to explore whether challenging behaviour in children would overshadow symptoms of Asperger syndrome. It is expected that the behaviours of the child without challenging behaviour would be significantly more likely to be attributed to Asperger than the behaviours of the child showing challenging behaviours. Your data will help our understanding of the recognition and referral routes for children with Asperger in mainstream schools. Once again results of this study will not include your name or any other identifying characteristics. The experiment/research did/did not use deception. You may have a summary of research finding once project is completed. If you have any further questions please contact me, Jane Lewendon on jpl300@soton.ac.uk or my supervisor, Dr Tony Brown, on 023 80595321.

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. Phone: (023) 8059 3995.

Appendix K

Notes for Contributors (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 articles (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*, 4th ed., 1994, 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:
Raymond, M. J. (1964). The treatment of addiction by aversion conditioning with apomorphine. *Behavior Research and Therapy, 3*, 287–290.

For Books:
Barlow, D. H., Hayes, S. C., & Nelson, R. O. (1984). *The scientist practitioner: Research and accountability in clinical and educational settings*. Elmsford, NY: Pergamon.

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 L

Notes for Contributors (Autism)

autism

NOTES FOR CONTRIBUTORS

1. The aim of the journal is to publish original research or original contributions to the existing literature on autism. *Papers* should not previously have been published or be under consideration elsewhere.

2. Each paper submitted will be refereed by at least two anonymous referees.

3. *Length of papers.* Brief reports (up to 3000 words) and more substantial reports (between 5000 and 8000 words) will be considered for the journal. There is scope for longer papers to be published on an occasional basis but please consult with the Editors before submission.

4. When submitting papers for consideration, please supply four paper copies. If the paper is accepted for publication, then a copy of the final version will be required on disk. *The author is responsible for guaranteeing that the final hard copy and diskette versions of the manuscript are identical.* Please attach to every submission a letter confirming that all authors have agreed to the submission and that the article is not currently being considered for publication by any other journal.

5. In order to protect the identity of clients or participants, authors should use pseudonyms and remove any information leading to identification of any of the individuals described in the study.

6. The Editors welcome contributions to the Letters to the editors section of the journal. In the interests of saving space, or to protect confidentiality, for example, the Editors may edit letters for publication.

7. *Unsolicited manuscripts will not be returned to authors if rejected.*

8. *Blind peer review.* Authors should provide two title pages, one containing names, affiliations, full mailing address plus telephone, fax, email address, and one containing the title only.

9. Please number all pages except the title pages, in the following order: abstract (100–150 words), keywords (up to five), address for correspondence; main text; appendices; acknowledgements; notes; references; tables; figure captions; figures. Each of the above sections should start on a fresh page.

10. Articles submitted for publication must be typed (or word processed) in double spacing throughout (especially all notes and references), on one side only of white A4 or US standard paper, with generous left- and right-hand margins but without justification. Pages should not be stapled. Titles and section headings should be clear and brief with a maximum of three orders of heading.

11. *Quotations.* Lengthy quotations (exceeding 40 words) should be displayed and indented in the text.

12. American or UK spelling may be used, to the author's preference. Indicate italics by underlining and use single quotation marks. Dates should be in the form '9 May 1995'. Delete points from 'USA' and other such abbreviations.

13. *Tables and figures* should have short, descriptive titles, and be clearly numbered. All footnotes to tables and their source(s) should be typed below the tables. Column headings should clearly define the data presented. Camera-ready artwork must be supplied for all figures. The location of tables and figures in the text should be given by a note 'Table/Figure X about here' on a separate line in the text. Line diagrams should be presented as camera-ready copy and, if possible, on disk as EPS file (all fonts embedded). Photographs should be submitted as clear, glossy, unmounted b/w prints with a good range of contrast.

14. *References in the text* should be presented in the Harvard system, i.e. the author's name and year of publication in brackets, together with the page number, e.g. 'As Hobson (1989, pp. 22–3) has observed...', or, in a more general reference: 'Scott (1985) appears to be saying that...'.

15. *Reference list.* The references should be listed alphabetically in full at the end of the paper, typed double-spaced for ease of editing, in the following style:

Happé, F. (1995) *Autism: An Introduction to Psychological Theory*. Cambridge, MA: Harvard University Press.

Hobson, R.P. (1989) 'Beyond Cognition: A Theory of Autism', *in* G. Dawson (*ed.*) *Autism: Nature, Diagnosis and Treatment*, pp. 22–8. New York: Guilford.

Sigman, M.D., Kasari, C., Kwon, J. & Yirmiya, N. (1992) 'Responses to the Negative Emotions of Others by Autistic, Mentally Retarded and Normal Children', *Child Development* 63(3): 796-807.

In multi-authored articles, the names of all authors should be given in the reference list. In the text, if there are more than two names, please give the first name and et al.

NB: (eds) as a contraction but (ed.) as an abbreviation.

16. *Language and terminology.* Jargon or unnecessary technical language should be avoided as should the use of abbreviations (such as coded names for conditions). Please avoid the use of nouns as verbs (e.g. to access), and the use of adjectives as nouns (e.g. autistics, normals or retardates). Wherever possible use phrases such as 'children with autism' rather than 'autistic children'. Language that might be deemed sexist or racist should be avoided.

17. *Abbreviations.* As far as possible, please avoid the use of initials, except for terms in common use. Abbreviations that are common enough to be in the dictionary, e.g. IQ and USA, are acceptable, but AS (for Asperger syndrome) and SPS (for semantic pragmatic syndrome) are not. Please provide a list, in alphabetical order, of abbreviations used, and spell them out (with the abbreviation in brackets) the first time they are mentioned in the text.

18. Authors will receive proofs of their papers and 25 offprints of the published version, plus one copy of the printed journal.

19. *Copyright.* On acceptance of their paper, authors will be asked to assign copyright to Sage Publications Ltd and The National Autistic Society, subject to retaining their right to reuse the material in other publications written or edited by themselves, and due to be published preferably at least one year after initial publication in the journal. Authors are responsible for obtaining permission from copyright holders for reproducing any illustrations, tables, figures or lengthy quotations previously published elsewhere.

20. *Typescripts:* Authors should retain one copy of their typescript and send four copies, each fully numbered and legible, together with all figures and tables and a covering letter. Authors from outside the Americas should send their typescripts to: Submissions Editor, *Autism: The International Journal of Research and Practice*, The National Autistic Society, 393 City Road, London, EC1V 1NG, UK. Fax:+44 [0]171 833 9666; email: autism@nas.org.uk. Authors from the Americas should send their typescripts in the first instance to: Mohammad Ghaziuddin, Division of Child Psychiatry, Taubman Center, Box 0390, University of Michigan Medical Center, 1500 East Medical Center Drive, Ann Arbor, MI 48109–0390, USA. Fax +1[313]936 8907; email: mghaziud@umich.edu

21. *Reviews.* Books and suggestions should be sent to the Reviews Editor: Tony Charman, The Behavioural Sciences Unit, Institute of Child Health, 30 Guilford Street, London WC1N 1EH. Email: t.charman@ich.ucl.ac.uk