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Responses to Interpersonal and Physically Provoking Situations: The utility and application of an observation schedule for school-aged students with and without attention deficit/hyperactivity disorder

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The present research describes the development and pilot testing of a new instrument, the Responses to Interpersonal and Physically Provoking Situations Schedule (RIPPS), designed to measure the reactivity of students with and without attention deficit/hyperactivity disorder (AD/HD) in the naturalistic setting of the classroom. For this study, 29 pre-service teachers from one university graduate school of education conducted structured observations on two students each, one clinically diagnosed student with AD/HD and the other with no diagnosed disorder, resulting in 58 Year 8–11 students (aged 13–17 years) participating in the study. Each student pair was observed for 40 minutes, with alternating observational blocks of two minutes per student. Observational data in the form of responses to emotionally provoking events and the triggers to the responses were clustered together and systematically coded, resulting in four distinct categories for responses and four distinct categories for triggers. Students with AD/HD exhibited significantly more solitary off-task behaviours, interactional off-task behaviours, and challenging behaviours than their non-AD/HD peers. There were no differences between the students in the perceived severity of responses. For triggers, failure to begin assigned tasks and peer-initiated triggers were the most common, with nearly half of the solitary off-task behaviours being attributed to environmental distractions and over a quarter attributed to teacher behaviours. While the RIPPS is a relatively new instrument, important data have been gathered in ecologically valid contexts and provide the framework for further development of an instrument of this nature.

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Attention deficit/hyperactivity disorder (AD/HD) is the current diagnostic label for one of the most prevalent neuro-developmental disorders of childhood (American Psychiatric Association, 2000). Attributed to a neurological dysfunction in the frontal lobes of the brain (Rubia, Oosterlaan, Sergeant, Brandeis, & Leeuwen, 1998), the core behavioural markers of the disorder are excesses in hyperactivity, impulsivity, inattention, and distractibility (Barkley, 1997, 2000; Rubia et al., 1998). Barkley (1997) ascribes such difficulties with self-control and self-regulation (Houghton et al., 1999; Pennington & Ozonoff, 1996) to deficits in inhibitory control. Inhibitory deficits, in turn, diminish the efficiency of the brain’s executive functions, namely working memory, internalisation of speech, reconstitution, and self-regulation of affect, motivation, and arousal (Barkley, 1997). In addition, deficits in inhibitory control lead to increases in impulsive behaviours, an over-reliance on external cues, reduced ability to postpone gratification, and difficulties in executing motor behaviour control (Barkley, 2000; Berlin, Bohlin, Nyberg, & Janols, 2004; Houghton et al., 1999; Schachar, Tannock, & Logan, 1993; Shea & Fisher, 1996).

Barkley’s theory of defective inhibitory control has also been used to explain the emotional functioning of individuals diagnosed with AD/HD (Braaten & Rosen, 2000; Maedgen & Carlson, 2000; Pelham & Bender, 1982). In this theory, it is posited that deficits in inhibitory control contribute to secondary impairments in the self-regulation of affect (i.e., the capacity of the executive system to moderate and control emotions; Barkley, 1997; Derryberry & Rothbart, 1988). One distinct aspect of emotional functioning is emotional reactivity (ER), which is said to mediate the relationship between emotional regulation skills and subsequent behaviour (Eisenberg et al., 1995; Fabes et al., 1999). In this regard, the ability to stay calm in emotionally arousing situations is thought to facilitate better solutions, whereas over-stimulation is believed to result in aggressive, withdrawal, or disruptive behaviours (Eisenberg, Fabes, Nyman, Bernzweig, & Pinuelles, 1994). While no consensus currently exists among researchers as to whether ER exists as part of, or as adjunct to, regulation skills, it is clear that ER is implicated in most behavioural responses (Eisenberg et al., 1995; Fabes et al., 1999).

The research literature frequently refers to the deficits in emotional inhibition which purportedly result in greater emotional reactivity to specific events and to a reduced capacity to regulate emotional states in those with AD/HD (Barkley, 1997). Furthermore, this literature often emphasises the intense, aggressive, overly-reactive, and physically active interpersonal styles of individuals diagnosed with AD/HD (Barkley, 1997; Pelham & Bender, 1982; Whalen & Henker, 1982; Whalen, Henker, Collins, Flinck, & Dotemoto, 1979). To date, however, there has only been limited systematic study of emotional regulation in children with AD/HD (Melnick & Hinshaw, 2000). This is somewhat puzzling given that Barkley’s (1997) theory of defective inhibitory control provides a theoretical model through which to open empirical investigation (Braaten & Rosen, 2000). Thus, the situation is that the relationship between deficits in cognitive impulsivity and observed emotional functioning in those with AD/HD remains relatively unknown. It may be that one limiting factor in conducting this type of research is the current lack of a suitable
measure for use in the collection of observational data in naturalistic settings such as school classrooms.

Evidence suggesting a link between impulsive behaviour and emotional regulation exists. For example, Shea and Fisher (1996) revealed that frequent displays of behavioural impulsivity in the classroom are related to negative and variable self-ratings of affect. In particular, those children identified by teachers as being more impulsive were noted to experience more variable and negative emotions in the classroom. While scarce, the existing data pertaining to individuals with externalising disorders tentatively support an association between behavioural and emotional disinhibition. For example, Zahn and Kruesi (1993) reported the existence of a strong relationship between parental ratings of behavioural impulsivity and measures of physiological arousal used to indicate emotionality and regulation skills in boys with disruptive behaviour disorders. In line with this, Braaten and Rosen (2000) recently found that children with AD/HD are typically rated by their parents as being less able to manage their behaviour and negative emotions and also to display more overt signs of anger, sadness, and guilt than their peers without AD/HD.

All behaviour is deemed to be the product of interactions between individuals and their environment or “social ecology” (Whalen, Henker, Collins, Flinck, et al., 1979). As such, inappropriate behaviours are thought to occur in children with AD/HD when an incongruity exists in their emotional response to a provocative or stimulating event. Information on the antecedent events which trigger emotional and behavioural responses is therefore vital to the efficacious management of emotional and behavioural outbursts in naturalistic settings such as the school classroom (Kinch, Lewis-Palmer, Hagan-Burke, & Sugai, 2001). Investigations over the last 30 years into the antecedent events that influence the behaviour and emotionality of children with attentional deficits in schools have identified a number of environmental and interactional triggers. For example, early research (Whalen, Henker, Collins, Flinck, et al., 1979) examined the impact of auditory stimulation on behaviour and established certain environmental factors or “provocation ecologies” (p. 66) that are, at times, problematic for children with attentional deficits (Klein & Young, 1979). These results indicated that children with hyperactive symptoms generally spend less time on-task, move around more in noisy conditions, and produce greater numbers of negative verbalisations during quiet periods.

Early observational studies of children with AD/HD (Cunningham & Siegel, 1987; Klein & Young, 1979; Madan-Swain & Zentall, 1990; Pelham & Bender, 1982; Schleifer et al., 1975) noted differences between the behaviours of children with and without attentional deficits during “structured” low-stimulus activities in which children are required to remain seated and complete teacher-led activities. These studies noted that students with AD/HD frequently left their seats in search of stimulation, exhibited less cooperation, were disruptive, and indulged more often in non-verbal off-task behaviour, rough play, and negative verbalisations than their peers without AD/HD. Similar behaviours have also been observed during low-stimulus “unstructured” activities. In contrast, students have been observed to make
positive verbal requests, demonstrate less rough play, and vocalise fewer negative statements during high-stimulus structured tasks (Madan-Swain & Zentall, 1990).

Social factors also present challenges for the management of emotional and behavioural responses in naturalistic settings. Hinshaw, Buhrmester, and Heller (1989), for example, explored the reactions of children with AD/HD to verbal provocation following cognitive-behavioural training, and demonstrated that these children react at greater intensity to provocation by an adult than to provocation by a peer. Peer provocation appears to be particularly problematic during periods of transition (Hoza, Waschbusch, Pelham, Molina, & Milisch, 2000). Moreover, the proximity and number of peers present are thought to also affect subsequent behaviour. In particular, differences in the behaviour of children with and without AD/HD are less noticeable when they work in dyads (Klein & Young, 1979; Madan-Swain & Zentall, 1990). Such behavioural differences are thought to occur because dyads are generally privy to more individual attention than children who work in groups (Whalen, Henker, Collins, McAuliffe, & Vaux, 1979). The availability of peer attention, however, may negate the effects of structure. For example, Madan-Swain and Zentall (1990) found no differences in the behaviours of paired students with and without hyperactivity in conditions of high structure, where the task directions were explicit, and in conditions of low structure, where choice of activity was left to each child. Control by others, including peers, may thus constitute structure for children with AD/HD as they attempt to modulate behaviour (Cunningham & Siegel, 1987). Alternatively, peer attention has been shown to reinforce disruptive behaviour in children with attentional deficits in the absence of methylphenidate (Northup et al., 1997). Trials of psychostimulants in the classroom found medication to have little effect on the behaviour of children with AD/HD where little or no external supervision was applied (Wodrich & Kush, 1998).

Peers provide powerful antecedents and consequences for the behaviour of children with AD/HD (Cunningham & Siegel, 1987). Children, for example, who are able to stay calm in emotionally arousing situations seem to choose better solutions and interact more competently (Fabes et al., 1999) and harmoniously with peers (Eisenberg et al., 1995). This ability to remain calm also helps in the students’ inclusion and acceptance (Fabes et al., 1999). In contrast, a lack of emotional regulation skills and over-stimulation frequently result in aggressive, withdrawal, and/or disruptive behaviours (Eisenberg et al., 1994). Furthermore, the social transactions of students with AD/HD are typically characterised by high degrees of conflict (Hodgens, Cole, & Boldizar, 2000), more negative behaviour (Klein & Young, 1979; Pelham & Bender, 1982), fewer friendships (Hinshaw, Henker, & Whalen, 1984), and less popularity among peers (Hinshaw & Melnick, 1995; Hodgens et al., 2000; Maedgen & Carlson, 2000; Pelham & Bender, 1982). In addition, students with AD/HD generally exhibit a higher degree of physical and verbal aggression during their interactions with peers than do students without AD/HD (Hinshaw & Melnick, 1995; Pelham & Bender, 1982).

It is evident that a number of contextual features may influence the ability of children, including those with AD/HD, to control their behaviour and emotions in
naturalistic environments (Whalen, Henker, Collins, Flinck, et al., 1979). Despite this, however, only a relatively small research base has emanated on the topic over the past 30 years (Fabes et al., 1999). Arising out of the need for a “user friendly” observational measure, the present research describes the development and pilot testing of a new instrument, the Responses to Interpersonal and Physically Provoking Situations Schedule (RIPSS), constructed by Houghton, Carroll, West, Taylor, and List-Kerz (2003), which is designed to measure the reactivity of students with and without AD/HD in the naturalistic setting of the classroom.

Method

Participants

Pre-service teachers from one university graduate school of education, 29 in all, conducted structured observations on 58 Year 8–11 students (aged 13–17 years) attending government and non-government high schools within the metropolitan area of Perth, Western Australia. Each of the 29 pre-service teachers observed two students, one student clinically diagnosed by a paediatrician with AD/HD and one peer without disorders. Of the 29 students diagnosed with AD/HD, 26 were male and three were female. In addition, 16 of the students with AD/HD were medicated on the day that the observations were conducted, 12 were not medicated, and for one student medication status was unknown. AD/HD paediatric diagnosis was confirmed by the school psychologists in the participating schools who reported that the Child Behaviour Check List (CBCL) Parent Report Form (Achenbach, 1991), a widely used scale that provides T scores for nine different dimensions of child psychopathology, and the Conners (1997) Parent Rating Scales had been among the battery of tests administered during the assessment process. These data were not available to the researchers, however.

The control group comprised 25 male and four female students; school records indicated they were free of any diagnosed disruptive behaviour disorders. In total, 19.3 hours (1,150 minutes) of observations were conducted on 29 children with AD/HD and 29 controls (i.e., within a 40-minute period of time each of the 29 pre-service teachers conducted 10 two-minute observations of both a student with and without AD/HD; thus, each pre-service teacher conducted 20 observations resulting in a total of 580 observations overall). All observations were conducted across seven subject areas, namely art (n = 3 students), biology (n = 2), English (n = 7), information technology (n = 1), mathematics (n = 4), science (n = 5), and society and environment (n = 7).

Instruments

The Responses to Interpersonal and Physically Provoking Situations (RIPPS; Houghton et al., 2003), which is reproduced in Appendix 1, is a classroom observation schedule specifically developed for recording instances of emotional responses
in students with and without AD/HD. In particular, the RIPPS by way of its structured observation format was designed to provide users with a means of comparing the frequency and severity of student responses and the triggers for these. In this regard, observations that are conducted using the RIPPS employ a time-sampling procedure whereby each of two targeted students (i.e., one student with and one student without AD/HD) are alternatively observed for a total of 20 minutes, within a continuous 40-minute time period.

The RIPPS comprises two sections, namely a sample data record keeping section and an observation recording section. The first section allows the observer to record pertinent participant/lesson details prior to the commencement of the observation (e.g., gender of student and class teacher, academic subject being taught). For students with AD/HD, additional information was included pertaining to their AD/HD sub-type and medication status.

The second section of the RIPPS, the observation recording section, comprises two sub-sections. Both sub-sections are designed to be completed as the observation progresses. In this regard, the observer records specific information related to the lesson events. For example, for each of the 20 two-minute observation periods the observer is required in the first sub-section to record whether the lesson activity in which the class is engaged is self- or teacher-initiated, whether it is conducted independently or with the assistance of others, and whether it is conducted at the student’s desk or not, by circling the appropriate lesson event options. In addition, observers also record whether the observed student is required to listen to instructions or wait before beginning the assigned task, and if the student’s responses (and the antecedent events that trigger such responses) occur within a period of transition between activities within the lesson.

The second sub-section of the observation recording section is also completed as the observation progresses and requires the observer to observe alternately two students for two minutes each and to detail not only the exact nature of the students’ responses but also (if apparent) what triggered the responses. Moreover, observers are required to rate on a five-point Likert scale (ranging from 1 = low severity to 5 = extreme severity) the level of severity that they ascribe to the students’ responses. Any response (e.g., talking inappropriately) which persists for more than five seconds within a two-minute observational period is recorded as a single response. Overlapping responses (e.g., student cries, shouts, and punches peer) that occur almost simultaneously are recorded as a single response, with the first recorded observation. In instances where two distinct responses occur and are separated by a pause of five or more seconds (e.g., draws on book and seven seconds later draws on ruler), then each occurrence is recorded as a discrete response.

The open-ended format of the RIPPS recording section allows the observational data to be coded at a later stage and for measures of inter-coder reliability to be calculated. Like most observation schedules, the RIPPS has face validity insofar as it allows observed instances of inappropriate responses to be recorded (Merrett & Wheldall, 1986).
Procedure

Permission to conduct the research was obtained from the Human Research Ethics Committee of the University of Western Australia (UWA). School principals hosting 29 pre-service teachers enrolled in a pre-service teacher course in special education were provided with an information letter explaining the research. In addition, these principals were also provided with a consent form seeking their permission for the observations to be conducted. All host principals agreed to this request.

Prior to the commencement of the observations all pre-service teachers received training in the use of the RIPPS. First, it was clarified that no observations were to be conducted within the first 10 or last 10 minutes of a standard 60-minute lesson. Then the training session continued during which the pre-service teachers watched a series of classroom video scenarios of classroom interactions from the highly successful “Positive Teaching” package (Wheldall & Merrett, 1988) and practised using the RIPPS. When all pre-service teachers were consistently recording the behaviours presented in the video at an inter-rater reliability greater than 80%, the training session concluded. The duration of the training session was approximately 45 minutes.

The order of conducting the observations was determined by the day of the month on which the observation occurred. For example, if the observation was conducted on an even date (e.g., the 16th) then the student with AD/HD was observed first and the control student second. If, however, the observation was conducted on an uneven date (e.g., the 17th) then the order of the observations was to be reversed (i.e., control student first and the student with AD/HD second).

To establish the reliability of the observations a second person trained in the use of the RIPPS schedule conducted simultaneous observations during 15% of the observed sessions. The level of inter-rater reliability was calculated as the number of agreements divided by the number of agreements plus the number of disagreements. This value was then converted to a percentage. Overall the inter-rater reliability was 89%. Given that inter-rater agreement figures of 80% and above are considered to be acceptable and as indicating good reliability (Gelfand & Hartmann, 1975), the RIPPS may be considered reliable.

Results

Data Coding

All observed responses to and triggers for classroom situations collected on the participants were clustered together and systematically coded into categories. From the initial clustering process, nine categories of response emerged, namely work avoidance, opposing teacher instructions, verbal noises, off-task behaviours, misuse of equipment, hindering others, physical contact with peers, inappropriate talking, and fidgeting. A further clustering process was conducted by a panel of four academics trained in the field of observational analysis. This resulted in the students’
responses being reorganised into four broad categories: solitary off-task behaviours, interactional off-task behaviours, vocalisations, and challenging behaviours, with 23 response sub-categories (see Table 1).

The reliability of coding using these four categories was determined by having two independent raters code the data obtained from four RIPPS forms. Inter-coder reliability was then calculated by dividing the number of instances of agreement by the number of instances of agreement plus the number of instances of disagreement. This figure was then multiplied by 100 to convert the inter-coder reliability to a percentage (Merrett & Wheldall, 1986). This resulted in an inter-coder reliability of 88% for students with AD/HD and 92% for control students.

An identical clustering and categorisation process was conducted for the triggers and, as a result of this process, four broad categories emerged, namely failure to begin the assigned task (e.g., cannot find relevant page or equipment), environmental distractions (i.e., movement or noise), peer-initiated distractions (i.e., peer talking to or teasing the student), and teacher behaviours (i.e., issuing multiple commands or frequent switching of task instructions). In addition, the number of responses attributed to each of the four triggers was calculated separately for each of the four response categories (i.e., solitary off-task behaviours, interactional off-task behaviours, vocalisations, and challenging behaviours).
Data Analyses

Responses to triggers. A one-way MANOVA was used to compare the frequencies of solitary off-task behaviours, interactional off-task behaviours, vocalisations, and challenging behaviours of students with AD/HD and controls. The results revealed a significant multivariate main effect for group ($F[4,53] = 5.96, p < .001$), which was supported by univariate effects on solitary off-task behaviours ($F[1,56] = 14.38, p < .001, es = .96$), interactional off-task behaviours ($F[1,56] = 10.02, p = .003, es = .83$), and challenging behaviours ($F[1,56] = 8.45, p = .005, es = .78$). The univariate effect for vocalisations was not significant ($F[1,56] = 3.47, p = .068, es = .78$). The mean frequencies per minute for students with AD/HD and control students for each of the four categories are presented in Table 2.

As can be seen in Table 2, the mean frequencies per minute of the responses were higher for students with AD/HD than controls in all four categories. To assist interpretation, the mean number of observed responses per hour of lesson time for students with AD/HD and controls was 23.4 per hour for students with AD/HD and 10.2 per hour for control students. There were 9.0 interactional off-task behaviours per hour for students with AD/HD and 3.6 per hour for controls. The number of vocalisations was 12.0 per hour for students with AD/HD and 7.8 per hour for control students. Finally, there were 4.8 challenging behaviours per hour for students with AD/HD and 0.6 per hour for controls.

The average severity of response from students with AD/HD and control students was compared using a series of one-way analyses of variance. The results of the analyses revealed no significant differences in the mean severity of response between students with AD/HD and control students. The average severity of response in each of the four categories is presented for students with AD/HD and control students in Table 3.

Triggers eliciting the observed responses. A series of $4 \times 2$ contingency table analyses was used to examine the strength of the association between group (AD/HD versus control) and each of the four triggers. The values of the chi-square statistics obtained revealed that the interaction of group and triggers was significant for solitary off-task behaviours ($\chi^2[3] = 11.92, p = .008, es = .24$) and vocalisations ($\chi^2[3] = 13.94, p = .003, es = .39$). There was no significant interaction of group and triggers for

<table>
<thead>
<tr>
<th>Category</th>
<th>AD/HD</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solitary off-task behaviours</td>
<td>.39 (.27)</td>
<td>.17 (.18)</td>
</tr>
<tr>
<td>Interactional off-task behaviours</td>
<td>.15 (.13)</td>
<td>.06 (.08)</td>
</tr>
<tr>
<td>Vocalisations</td>
<td>.20 (.19)</td>
<td>.13 (.10)</td>
</tr>
<tr>
<td>Challenging behaviours</td>
<td>.08 (.12)</td>
<td>.01 (.04)</td>
</tr>
</tbody>
</table>

Examination of the relative frequency of the triggers revealed that in the case of students with AD/HD, failure to begin assigned task (18%) and peer-initiated distractions (16%) were common. Moreover, 26% of triggers were attributed to teacher behaviours and 40% to environmental distractions. For the non-AD/HD controls, solitary off-task behaviours were primarily attributed to environmental distractions (49%) and teacher behaviours (41.5%), with failure to begin assigned task and peer-initiated distractions accounting for only 4% and 5.5% of triggers respectively.

In the case of vocalisations, triggers were more likely to be peer-initiated distractions for students with AD/HD (63%) than for controls (27%). Conversely, vocalisations were less commonly attributed to teacher behaviours among students with AD/HD (16%) than controls (43%). A similar proportion of vocalisations were attributed to failure to begin assigned task among students with AD/HD (11%) and controls (9%). Environmental distractions accounted for the remaining 10% among students with AD/HD and 21% for controls.

While there was no significant interaction of group and triggers for interactional off-task behaviours, environmental distractions were the most common trigger for both students with AD/HD (39%) and controls (35%). Similarly, the interaction of group and triggers was not significant for challenging behaviours. The majority of challenging behaviours were attributed to teacher behaviours for both students with AD/HD (66%) and control students (50%).

Medication effects. A one-way MANOVA was used to compare the frequencies of solitary off-task behaviours, interactional off-task behaviours, vocalisations, and challenging behaviours for students diagnosed with AD/HD who were medicated and those who were not. The results revealed a significant multivariate main effect for medication status ($F[4,23] = 3.53, p = .022$), which was supported by univariate effects on vocalisations ($F[1,26] = 5.76, p = .024, es = .90$) and challenging behaviours ($F[1,26] = 5.54, p = .026, es = .84$). The mean frequencies per minute for students with AD/HD and control students for each of the four categories are presented in Table 4.
As can be seen in Table 4, the mean frequencies per minute of the responses were significantly higher for non-medicated students with AD/HD than medicated students with AD/HD. To assist interpretation, the mean observed responses per hour of lesson time for medicated and non-medicated students with AD/HD were as follows. The number of solitary off-task behaviours was 20.4 per hour for medicated students with AD/HD and 27.6 per hour for non-medicated students. There were 6.6 interactional off-task behaviours per hour for medicated students with AD/HD and 11.4 per hour for non-medicated students with AD/HD. The number of vocalisations was 7.8 per hour for medicated students with AD/HD and 15.0 per hour for non-medicated students. Finally, there were 2.4 challenging behaviours per hour for medicated students with AD/HD and 8.4 per hour for non-medicated students.

**Table 4. Mean frequencies per minute for the four response categories and standard deviations (in parentheses) of medicated and non-medicated students with AD/HD**

<table>
<thead>
<tr>
<th>Category</th>
<th>Medicated</th>
<th>Non-medicated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solitary off-task behaviours</td>
<td>.34 (.30)</td>
<td>.46 (.23)</td>
</tr>
<tr>
<td>Interactional off-task behaviours</td>
<td>.11 (.12)</td>
<td>.19 (.12)</td>
</tr>
<tr>
<td>Vocalisations</td>
<td>.13 (.12)</td>
<td>.25 (.14)</td>
</tr>
<tr>
<td>Challenging behaviours</td>
<td>.04 (.05)</td>
<td>.14 (.16)</td>
</tr>
</tbody>
</table>

**Discussion**

The results of the analyses revealed that students with AD/HD exhibited more than twice as many solitary off-task behaviours (e.g., drawing on their ruler, doing homework instead of class work, and swinging on their chair) than control students. Students with AD/HD were also more likely to refuse to complete set work and displayed more than twice as many interactional off-task behaviours than controls, including wandering around the classroom, disturbing others (by tapping pens), knocking others’ work off desks, and borrowing classroom equipment. In addition, students with AD/HD displayed approximately eight times as many challenging behaviours as control students, such as talking back to the teacher, shouting obscenities, and yelling aggressively. A similar number of vocalisations were recorded for students with AD/HD and controls, and consisted of whispering, inappropriate talking, laughing, and singing.

Although students with AD/HD engaged in significantly more solitary off-task behaviours, interactional off-task behaviours, and challenging behaviours, there were no differences in the perceived severity of the responses of students with AD/HD and controls. Therefore, while more inappropriate responses are exhibited by students with AD/HD, these responses are typically no more extreme than those displayed by non-AD/HD controls. Therefore, it may be as Melnick and Hinshaw (2000) suggest – that children with AD/HD use less constructive emotional regulation strategies such as avoiding the task or focusing on its negative aspects while disregarding...
positive strategies such as reinterpreting the task in an empowering way. The level of severity of the response does not differ but there is a strong inverse relationship between the capacity to react to the negative behaviours and to regulate the situation.

Examination of the triggers of the responses revealed that in the case of students with AD/HD, nearly half of the solitary off-task behaviours were attributed to environmental distractions (e.g., noise, movement outside the classroom), with a further quarter being attributed to teacher behaviours (e.g., multiple instructions). Additionally, 18% of inappropriate responses were attributed to failure to begin the assigned task, while 16% were attributed to peer-initiated distractions (e.g., peer teasing). Peer-initiated distractions were the most common trigger of inappropriate vocalisations among students with AD/HD (e.g., put-downs by peers). Environmental distractions were the most common trigger for interactional off-task behaviours and teacher behaviours accounted for the majority of challenging behaviours. In comparison, for control students the majority of behavioural responses in all four categories were attributed to either environmental distractions (e.g., movement within the classroom) and/or teacher behaviours (e.g., teacher reprimands).

These findings are clearly in line with those of other researchers who have examined the antecedent events that influence the behaviour and emotionality of children with attentional deficits (e.g., Cunningham & Seigel, 1987; Hoza et al., 2000; Klein & Young, 1979; Whalen, Henker, Collins, Flinch, et al., 1979). Previous studies have found that in environmentally distracting conditions, students with AD/HD spend less time on task and move around more (Klein & Young, 1979). Contrary to the findings of the present research, Hinshaw et al. (1989) found that children with AD/HD reacted at greater intensity when reprimanded or provoked by an adult.

Interestingly, peer-initiated distractions served as triggers in all areas of behavioural responses to a greater extent for students with AD/HD than for their non-AD/HD counterparts. These findings add to the anecdotal evidence of Hinshaw et al. (1989) relating to the abilities of peers to incite emotional reactions by provocation and verbal and physical taunting and teasing. It may be, as Melnick and Hinshaw (2000) suggest, that children who are able to “keep cool” under emotionally provoking events are more likely to devise competent and peer-oriented solutions that enable interpersonal harmony and cooperation.

Examination of medication status revealed that students with AD/HD who were medicated engaged in significantly fewer vocalisations and challenging behaviours than non-medicated students. In particular, non-medicated students with AD/HD exhibited approximately twice as many inappropriate vocalisations as medicated students with AD/HD. Non-medicated students with AD/HD also displayed more than three times as many challenging behaviours as medicated students with AD/HD. These findings lend support to the body of literature that suggests that psycho-stimulant medications prescribed to children with AD/HD decreases externalising behaviours (National Institute of Health, 1998), and leads to reduced classroom distractions and disturbances, and increased self-control (Hinshaw et al., 1989).

It must be acknowledged that the structured observations were conducted on a relatively small sample of students with AD/HD ($n = 29$) and control students ($n = 29$).
Furthermore, observations alternated between participants rather than being continuous, which may mean that certain responses were missed. Nevertheless, some 19.3 hours of observations were conducted by trained observers, thereby providing an intensive database from which to work. It should also be noted that the triggers and the severity of responses were subjective judgements made by the observers and should therefore be interpreted with a degree of caution. Having made this point, however, the data obtained appear to be consistent, revealing differences in the mean frequencies of solitary off-task behaviours, interactional off-task behaviours, and challenging behaviours. The pattern of triggers also differed between students with AD/HD and control students for solitary off-task behaviours and vocalisations. There were no differences in the severity of responses observed between students with AD/HD and control students.

Irrespective of the points made, the reliability and validity of the RIPPS has yet to be established since the instrument is in the pilot stage of its development. Although a small sample (15%) of observations produced excellent inter-rater reliability data (89%), research is still necessary to establish further the reliability of observations made using the RIPPS, and the extent to which the RIPPS measures responses. Furthermore, future research may examine the relationship between certain events that act as triggers for responses of students with AD/HD.

In conclusion, this research has provided observational data of triggers, and responses to those triggers, of individuals with and without AD/HD. The fact that these data have been gathered at the point of performance in ecologically valid contexts provides the framework for the further development of the RIPPS, which may in turn lead to the implementation of more efficacious classroom-based interventions.

Acknowledgement

The research reported in this paper was supported by the Australian Research Council Discovery Grant Scheme.

References


Appendix 1
Responses to Interpersonal and Physically Provoking Situations Schedule

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<thead>
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<th>ADHD/</th>
<th>Male/</th>
<th>Medicated:</th>
<th>Year:</th>
<th>Teacher:</th>
<th>Time of Class:</th>
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<tr>
<td>Control</td>
<td>Female</td>
<td>YES/NO</td>
<td>Subject:</td>
<td>M/F</td>
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<table>
<thead>
<tr>
<th>LESSON EVENT:</th>
<th>EMOTIONAL OR BEHAVIOURAL RESPONSES AND TRIGGER</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R:</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Self/Teacher Chosen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independent/With Others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At Desk/Not At Desk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transition: YES/NO</td>
<td></td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Required to Listen: YES/NO</td>
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<td></td>
</tr>
<tr>
<td>Required to Wait: YES/NO</td>
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