

What do teachers know, think and intend to do about ADHD?

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Attention-Deficit/Hyperactivity Disorder (ADHD) is a common childhood disorder affecting approximately 5% of primary school-aged children. The disorder is characterised by severe difficulties in one or more of three areas; inattention, impulsivity, and hyperactivity. Considering that primary school teachers are often the first to notice behavioural difficulties in children, it is surprising that relatively little research has been undertaken with teachers. The limited research that has been conducted on teachers' knowledge has shown that knowledge scores range from 50 to 70%, and most attitudinal research has merely assessed knowledge. There is also a dearth of research assessing teachers' classroom management of children with ADHD, and very little emphasis has been placed on research within a theoretical context. This paper details a study aimed at understanding the links between teachers' knowledge, attitudes and behaviour using two social psychological theories: Theories of Reasoned Action (TRA) and Planned Behaviour (TPB).

According to the TRA, the performance of a behaviour is determined by three major constructs; intention, attitude, and subjective norm (Ajzen & Fishbein, 1980; see Figure 1). Intention is an indicator of how hard a person is willing to try and how much of an effort they are willing to exert to perform a particular behaviour (Ajzen, 1991a). An individual's intention to perform a given behaviour is seen as the immediate determinant of the individual performing that behaviour (Ajzen & Fishbein), and a person will usually act in accordance with their intentions (Ajzen, 1991b; Ajzen & Fishbein). The attitude factor refers to an individual's positive or negative evaluation of performing the behaviour (Ajzen & Fishbein; Manstead & Parker, 1995) – it does not assess attitude toward the object *per se*, but rather, attitude toward the performance of a particular behaviour (Eagly & Chaiken, 1993). The subjective norm factor refers to an individual's perception of the social pressures put on them to perform or not perform a particular behaviour (Ajzen & Fishbein; Manstead & Parker). That is, do others think I should or should not perform that behaviour?

Overall, according to the TRA, individuals will intend to perform, and subsequently perform, a given behaviour when they evaluate it positively (ie, have a positive attitude toward it) and when they believe that people that are important to them think they should perform it (Ajzen & Fishbein; Armitage & Conner, 1999).

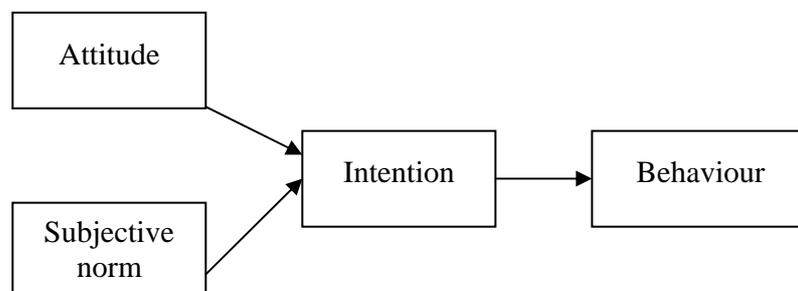


Figure 1. Theory of reasoned action

The TPB was developed to extend the TRA to include an assessment of perceived control (Ajzen, 2001, 1985; see Figure 2). Perceived behavioural control refers to a subjective assessment regarding the degree of ease or difficulty of performing the behaviour in question. This predictor does not measure the *actual* control an individual has over performing a given behaviour, but rather measures one's subjective belief regarding their control over performing that behaviour (Ajzen, 2001, 1996, 1991a, 1991b, 1985).

Perceived behavioural control may be linked to both intention and behaviour (see Figure 2). The theory assumes that perceived behavioural control is directly linked to intention, over and above the influence of attitude and subjective norm. Conceptually, if an individual believes they have little control over the performance of a particular behaviour, yet have a favourable attitude and subjective norm toward performing that behaviour, they are unlikely to form a strong intention to perform the behaviour (Ajzen, 1991a).

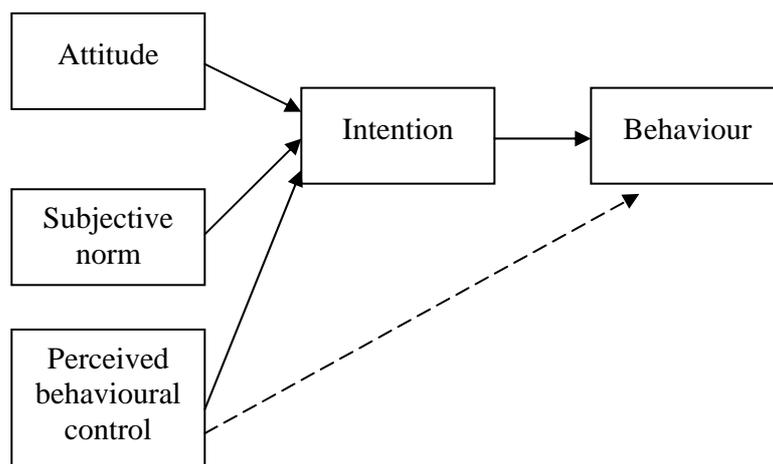


Figure 2. Theory of planned behaviour

General Information About the Survey

A self-report questionnaire was developed by the author and distributed to teachers. Completed questionnaires were collected from participating schools ($n = 16$ schools) two weeks later. There were 161 questionnaires delivered to teachers, and 120 teachers completed the survey (91 female, 29 male), giving a response rate of 74.5%. Of the sampled teachers, 83% (99/120) had taught a student with ADHD some time in their career. The number of students with ADHD taught ranged from 0 to 20, with an average of 5 students across a teacher's career. While only 42 teachers were currently teaching a student with ADHD, an additional 33 had taught such a student in the previous 12 months. In addition, 57 teachers stated that they had taught at least one student whom they thought had ADHD but had not been formally diagnosed.

Teachers' Knowledge about ADHD

Teachers were provided with 27 statements and were asked to indicate if each was correct, incorrect, or they did not know the answer. The majority of teachers correctly answered the items 'Children from any walk of life can have ADHD' (True: 96.7% correct) and 'ADHD affects male children only' (False: 95.8% correct). Interestingly, it was more likely for teachers to indicate that they did not know an answer than to answer it incorrectly. On average, teachers' actual knowledge was lower than was anticipated from past research. However, actual knowledge was better than teachers' perception of their own knowledge. Teachers' mean perceived knowledge score was 47.7%, while their mean actual knowledge score was 60.7%.

Correlations. Two-tailed Pearson, Point-biserial, or Phi-correlations ($\alpha = .05$) were carried out to investigate the relationships between perceived and actual knowledge, and teacher characteristics, including age, gender, additional ADHD training, years of teaching experience, having ever taught a student with ADHD, and number of ADHD students taught. Table 1 shows the relationships between these variables.

Inspection of Table 1 shows that older teachers were more likely than younger teachers to have had greater teaching experience in general, as well as being more likely to have ever taught a student with ADHD. Similarly, teachers with greater years of teaching experience were more likely than less experienced teachers to have ever taught a student with ADHD. However, the actual number of ADHD students taught was neither significantly related to age nor years of teaching experience. Teachers' perception of their own knowledge was moderately correlated with their actual knowledge scores. Having ever taught a student with ADHD was significantly related to both perceived knowledge and actual knowledge scores. Moreover, teachers with more years of teaching experience generally perceived themselves as having significantly more knowledge than did less experienced teachers. However, teaching experience was not significantly correlated with actual knowledge scores. Age was not related to perceived or actual knowledge.

Table 1
Correlation Coefficients for Various Teacher Characteristics

	1	2	3	4	5	6	7	8
1 Perceived knowledge								
2 Actual knowledge	.46**							
3 Age	.12	.04						
4 Sex	.03	.03	.11					
5 Additional training	.28**	.24*	.24	.12				
6 Years of teaching experience	.21	.06	.87**	.07	.22*			
7 Ever taught an ADHD student	.28**	.42**	.22*	.06	.20*	.33*		
8 Number taught	.11	.09	.04	.02	.05	.05	.48*	

* = $p < .05$; ** = $p < .01$

NOTE: r was used for correlations between two continuous variables, r_{pb} was used for correlations between one dichotomous and one continuous variable, and r_{ϕ} was used for correlations between two dichotomous variables.

Older teachers were more likely than younger teachers to have engaged in additional ADHD training. Additional training was also more common in teachers with longer teaching careers, and for teachers who had ever taught a student with ADHD, but was unrelated to the number of ADHD students taught. Furthermore, teachers who had engaged in additional ADHD training perceived their ADHD knowledge to be significantly higher than teachers without such training, and these teachers tended to score significantly higher on the actual knowledge questionnaire than did their non-trained counterparts.

Teachers' Attitudes about ADHD

Mean scores were calculated for each of the 31 individual attitude items. Teachers generally perceived ADHD to be a legitimate educational problem and a valid diagnosis. They also believed that the disorder is diagnosed too often and that children with ADHD should be taught in the regular school system. Further, there was a strong belief against the statements that managing the behaviour of ADHD students is easy and that ADHD children misbehave because they are naughty.

Factor Analysis. A series of exploratory factor analyses (with varimax rotation) were conducted to investigate any links between the 31 attitude items. With a criterion level of eigen values greater than 1,

the most interpretable and parsimonious model contained a seven-factor solution. This model explained 59.6% of the variance. Of the 31 items entered into the analysis, all had communalities greater than .5, and 27 loaded significantly on one of the seven factors included in the final solution. The seven factors were; lack of control, negative classroom effects, diagnostic legitimacy, perceived competence, influences to management, expectations, and external control.

Factor 1, *Lack of control*, indicated a perception by teachers that children with ADHD have very little control over their own behaviour, and that managing the behaviour of these children is quite difficult. *Negative classroom effects* (Factor 2), showed a belief that children with ADHD have a negative effect on the classroom environment, where children were seen as a disruption and a frustration to teaching. Factor 3, *Diagnostic legitimacy*, indicated an acceptance of the diagnosis of ADHD. Whilst there was a belief that ADHD is diagnosed too often, there was a general consensus that ADHD is a valid and legitimate diagnosis

Factor 4, *Perceived competence*, showed that teachers believed they have the skills and ability to manage students with ADHD. *Influences to management* (Factor 5) indicated that teachers' classroom management of a student with ADHD would not be strongly influenced by parental or staff beliefs, or the ADHD-status of a child. The sixth factor, *Expectations* revealed that teachers hold some expectations about ADHD and the children with the condition. Finally, factor 7, *External control*, implied a belief that external agents (eg, medication and policy) may be required in the management of ADHD.

Classroom Management of Students with ADHD

Each of the 42 teachers who were currently teaching a student with ADHD was asked to record their behaviour in relation to a student with ADHD over a one-week period. Of these teachers, 25 completed and returned the behaviour recording sheet, giving a response rate of 59.5%. Teachers were asked to keep a tally of the strategies they used by placing a tick in the respective column (referred to as the classroom recording sheet). Of the 25 teachers, 24 also agreed to complete the second task – the *behaviour management strategy recording diary*. The second task asked teachers to record the actual strategies they used over a one-week period to manage the behaviour of a student with ADHD, including the antecedents and consequences for each strategy used. Of the 24 diaries sent to teachers, 13 were returned. One diary was not useable because of substantial missing data, which left a useable response rate of 50%.

Demographic details. The mean age of teachers was 40.7 years ($SD = 9.4$ years), 18 (13 female, 5 male) taught in Catholic schools, and 7 (4 female, 3 male) taught in private schools. Teaching experience ranged from 1 to 30 years, with a mean of 16 years ($SD = 9$ years). There were no significant differences in terms of age, sex, or teaching experience between this sub-sample of 25 participants and the remaining 95 participants who did not complete the classroom recording sheet. Data collected for the students with ADHD ($n = 25$), showed that 8 were in junior levels (prep, 1, 2), 10 in middle school grades (3,4), and 7 in the senior grade levels (5,6). The ages of the students with ADHD ranged from 6 to 13 years, with an average of 9.2 years ($SD = 2.1$ years). Twenty-two of the ADHD students were male and three were female. Finally, 22 of the 25 students were reportedly currently taking medication as a treatment for ADHD.

Of the 12 teachers who completed the second task, 9 taught in the Catholic school system (7 female, 2 male), and 3 taught in private schools (3 female). Their ages ranged from 25 to 55 years, with a mean age of 42.3 years ($SD = 10.8$ years). Six teachers were teaching junior grade levels (prep, grades 1 & 2), four taught middle school grade levels (grades 3 & 4), and two taught in the senior grades (grades 5 & 6). The duration of teaching experience for these 12 teachers ranged from 2 to 31 years, with average teaching experience being 19 years ($SD = 9.7$ years). Average years of teaching experience for the samples used in tasks 1 and 2 were not significantly different.

Classroom Recording Sheet: Frequency of Use of Strategies

The number of ticks recorded for each strategy was tallied and descriptive statistics were calculated. The tally showed that the most commonly reported strategy was reinforcement, with an average of 7.9 ($SD = 6.3$) instances of this strategy being used per teacher over the week. On the other hand, the least commonly used strategy was planned ignoring, which was used only 2.1 times per teacher on average.

A series of 10 repeated-measures t -tests were conducted to assess if any of the five strategies were used significantly more often than another strategy. Due to the use of multiple comparisons, an adjusted error rate of .005 was used to assess statistical significance across the analyses. Under this more stringent probability level, three significant results were shown. On average, teachers used reinforcement significantly more frequently than negative consequences, planned ignoring, or emotional support. No other comparisons were significant.

Predicting Actual Behaviour: Testing the TRA and TPB

Five, one-tailed Pearson correlation analyses were carried out to investigate the relationships between the four TPB predictors and each of the five behaviour management strategies. The first correlation assessed the relationship between the TPB predictors and teachers' use of reinforcement strategies over a one-week period for a student with ADHD. The results showed that attitude toward reinforcement and perceived control were significantly correlated, and so were the teacher and parent subjective norm measures. Teacher norm and parent norm were significantly correlated with teachers' intention to engage in each of the remaining four behaviour management strategies as well. Teachers' attitude toward both negative consequences and planned ignoring were significantly correlated with teachers' intention to perform these strategies. Furthermore, teachers' attitude toward organising the classroom and curriculum strategies was significantly correlated with parent norm, perceived control and teachers' intention to use these strategies. Finally, perceived control and intention were significantly correlated with teachers' reported use of strategies indicative of both organising the classroom and curriculum and emotional support.

Behaviour Management Strategy Recording Diary: Frequency of Use of Strategies

Again, the most commonly used strategy was reinforcement, which was used 38 times over the one-week recording period and across the 12 teachers. These teachers also commonly used strategies indicative of organising the classroom and curriculum. The least used strategy was planned ignoring, which was closely followed by emotional support strategies.

Teachers' Accuracy of Identifying Strategies

Each of the 96 examples of behaviour management strategies were then coded by the researcher to check accuracy at identifying the strategies reportedly used. That is, if a teacher ticked the reinforcement box to indicate that the strategy they had described was an example of reinforcement, was it? Two lay people known to the author also coded the examples given by teachers. The author explained each of the five behaviour management strategies to the two lay people, and also provided them with the recording sheets presented to teachers. Inter-rater reliability was 100%.

Inspection of the data showed that teachers were on the whole very accurate at identifying the types of strategies they used during the one-week period. In fact, of the 96 described behaviours, there was only one instance where a teacher incorrectly identified a strategy. The behaviour the teacher engaged in was "Sent the child to get his medication 10 minutes early". However, this is clearly not an accurate example of planned ignoring. Rather, this behaviour is more indicative of either reinforcement or negative consequences, depending on the antecedent and consequence of the behaviour, as well as the child's

perception of being sent out of class early. For example, if the child was sent out early during a difficult mathematics task for being disruptive, it is likely that he would perceive the behaviour of his teacher positively, and thus be more inclined to be disruptive in the future when he does not wish to engage in the class (positive reinforcement). On the other hand, if the child was sent out early during an enjoyable class activity for being disruptive, it is likely that he would perceive the behaviour of his teacher negatively, and thus be less inclined to be disruptive again in the future (negative consequences).

Summary and Suggestions

Overall, the assessment of teachers' behaviour showed that the most commonly used strategy to manage the behaviour of a student with ADHD was reinforcement. Reinforcement was used significantly more frequently than negative consequences, planned ignoring or emotional support, and planned ignoring was the least commonly used strategy. Given that all of these strategies have been thoroughly validated in the literature when implemented correctly, it is suggested that programs be developed to instruct teachers on the correct use of each of them. This is important because if the strategies are implemented incorrectly they may be ineffective. Teachers should also be encouraged to use these strategies equally often in their classroom to manage students with ADHD.

While statistically teachers were shown to use reinforcement more often than other strategies, they only used reinforcement once or twice a day. Considering that children with ADHD often require frequent reinforcement scheduling to obtain significant behaviour change (DuPaul & Stoner, 2003), it is unlikely that the behaviour of a child with ADHD would improve if a teacher reinforced him once or twice daily. Therefore, to enact significant behaviour change in these children, teachers need to increase their use of reinforcement considerably (eg, at least once or twice per task). Future studies should involve the development of training packages designed to inform teachers of the importance of the repeated use of reinforcement, as well as highlighting the effectiveness of frequent use of the remaining management strategies.

Theoretical Limitations and Suggestions for Future Research

The use of self-reported behaviour measures is a theoretical limitation. While most studies in the literature have relied on self-reported behaviour, Armitage and Conner (2001) indicated that the TPB accounts for 11% more of the variance in behaviour when self-report measures are used than when behaviour is observed objectively. Therefore, future studies in this area should involve an objective assessment of teachers' classroom management of students with ADHD. However, caution must also be taken when directly observing another's behaviour because it is possible that a teacher might change their usual classroom practices, either purposefully or otherwise, simply because they are being observed (Aronson, Wilson, & Akert, 2004).

Practical and Theoretical Implications

Two important findings from the present study were that additional ADHD training and experience with teaching students with ADHD were both significantly associated with teachers' knowledge about ADHD. These findings have significance for continued teacher training – they indicate that additional training (eg, workshops or seminars) specifically aimed at increasing the ADHD knowledge of primary school teachers is useful, and should include exposure to students with ADHD. When developing additional ADHD training packages for teachers it is imperative to take into account the mismatch between teaching experience and ADHD knowledge, as well as teachers' apparent reluctance to attend additional training opportunities. To have the best chance of changing teachers' misperceptions and increasing their knowledge, the content of ADHD training packages should be both well researched and validated, and should be targeted at teachers' level of understanding.

It is suggested that universities develop and implement core ADHD-specific units for education students. Furthermore, given the positive relationship between ADHD knowledge and ADHD-specific teaching experience, it is recommended that pre-service teachers be exposed to students with ADHD during their practical placements. With regard to in-service teachers, it is suggested that classes be organised in such a way as to maximise the opportunity for teachers to gain experience in teaching ADHD students and that extra training in ADHD be offered to all teachers.

Conclusions

This paper has shown that Victorian (Australian) primary school teachers' knowledge about ADHD was reasonable, though there was considerable room for improvement. Further, teachers perceived themselves to know significantly less than they actually know about the disorder, which may indicate that teachers are aware of their lack of ADHD knowledge. The exploratory factor analysis of teachers' attitudes toward ADHD revealed a seven-factor solution; lack of control, negative classroom effects, diagnostic legitimacy, perceived competence, influences to management, expectations, and external control.

Task 1 showed that positive reinforcement was the most commonly used strategy in the classroom management of children with ADHD, and that planned ignoring was the least commonly used strategy. Task 2 supported these findings, and also showed that teachers were able to accurately label the strategies they used. Teachers were only using reinforcement about once or twice a day however, which is unlikely to have a strong impact on altering the behaviour of a student with ADHD.

Implications for the theories of reasoned action and planned behaviour were suggested, and included the importance of understanding an individual's perceptions about their own skills, resources, and opportunities about performing a particular behaviour, and that assessing subjective norm as an individual factor is preferred to separating it into two components.

I hope this paper has enhanced your knowledge about ADHD and the education system in general, and specifically, provided you with an insight into primary school teachers' knowledge, attitudes, and behaviour toward children with ADHD.

Further reading

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