

An Investigation of School-Year Follow-up Procedures Following a Summer Treatment Program for Children with ADHD

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INTRODUCTION

- Behavior modification (Pelham, Wheeler, & Chronis, 1998), stimulant medication (Swanson, McBurnett, Christian, & Wigal, 1995), and the combination of behavior modification and stimulant medication (Pelham & Waschbusch, 1999) are the evidence-based treatments for attention-deficit/hyperactivity disorder (ADHD).
- The Summer Treatment Program (STP) has long been a model, intensive, behavioral treatment program for children with ADHD, and participants in the STP benefit from the intensive behavior modification (Pelham, Fabiano, Gnagy, Greiner, & Hoza, in press; Pelham et al., 2000; Pelham & Hoza, 1996).
- To date, however, no systematic study has investigated the maintenance of the STP during the school year.
- Based on the recent American Academy of Pediatrics treatment guidelines (2001), which conceptualize ADHD as a chronic disorder and require models of treatment to be chronic, such studies are sorely needed.
- A unique aspect of the current study is that, unlike some recent, prominent studies (e.g., MTA Cooperative Group, 1999), treatment begins with behavior modification *first*, and need for medication is added only when needed.
- That is, the aim of the study is to determine whether continued behavioral treatments can prevent or delay the need for medication, or result in a lower efficacious medication dose if medication is initiated (e.g., Abramowitz, O'Leary, Eckstrand, & Dulcan, 1992).

PARTICIPANTS AND SETTING

To investigate the effectiveness of two approaches to follow-up treatment following the STP (Pelham et al., in press; Pelham, Greiner, & Gnagy, 1997; Pelham & Hoza, 1996), thirty-nine participants in the STP 2002 (Coles et al., 2003; Fabiano et al., 2003; Pelham et al., 2003; Burrows-MacLean et al., 2003) were randomly assigned to one of two groups immediately after the summer for follow-up treatment (nine eligible participants did not enroll because the parents were unwilling to start the school year without medication. All of these 9 subjects had been medicated prior to the STP). Participants did not differ from non-participants on measures of ADHD symptoms or IQ, but non-participants were significantly older than participants ($p < .05$).

PROCEDURES

- Children could be assigned to a behavior modification consultation group (BMC) or a no behavior modification consultation (NBMC) group.
- For those in the BMC group, teachers received three behavior modification consultation visits at the beginning of the school year aimed to improve existing classroom behavior modification programs and to institute a daily report card. Parents also received monthly group booster parent training meetings (all parents in the follow-up had received 12 sessions of parent training classes during the summer). Both teachers and parents received three additional individual meetings if behavior ratings indicated impairment or as otherwise needed. The modal number of additional parent and teacher visits was 1 with a range of 0-3 for teachers and 1-3 for parents.
- Participants in the NBMC group received no additional consultation from the study staff.
- Teachers and parents in both groups completed weekly ratings of ADHD symptoms and impairment.
- If ratings indicated the need for additional treatment or special services for two weeks in a row, and teachers and parents agreed that medication was indicated, a double-blind, placebo-controlled, school-based medication assessment (Pelham, 1993) was conducted to select the optimal dose and children subsequently began a medication regimen.
- Medication was introduced in a step-wise manner. That is, medication was introduced in the school first. Only after a medication regimen was established in school could a medication trial be initiated in the home.

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MEASURES

Primary Outcome Measure

Latency to Medication Use: The primary goals of this study were to investigate the effectiveness of continuing behavior modification to maintain gains obtained in the STP and also determine whether behavior modification follow-up affected the need for medication. Thus, the number of weeks the child attended school unmedicated is the primary outcome measure.

Secondary Measures

Each week, the child's parent and teacher completed the IOWA Conners Rating Scale (Loney & Milich, 1982; Pelham, Milich, Murphy, & Murphy, 1989) and a modified version of the impairment rating scale (Fabiano et al., under review). These measures were used to track the child's behavior throughout the school year, and implement additional behavioral or pharmacological treatments as necessary.

RESULTS

The results of the school portion of the study are presented in this paper. For the results of the home-based component, please see Coles et al. (2003).

To investigate the latency to medication use between the two groups, a Kaplan-Meier survival analysis was conducted. Some children withdrew from the study and began medication, even though their teacher/parent ratings did not indicate impairment. In these cases, the date of medication initiation was entered into the survival curve. The Breslow statistic ($1 = 2.77, p < .10$) approached significance. The survival curve is displayed graphically in figure 1.

A hypothesized moderator of treatment outcome was prior stimulant medication use. That is, children who were previously medicated in school would be more likely to have medication initiated during the school year. The percentage of medication naive children in the BMOD and No BMOD groups who began stimulant medication during the study, and the percentage of children in the BMOD and No BMOD groups who were not medication naive are presented graphically in figure 2.

Independent sample t-tests were computed on end of treatment IOWA Conners scores on the inattentive/overactive and oppositional/defiant factors. Scores for the two groups at post-treatment were not significantly different from each other.

Figure 1. Latency to School Medication

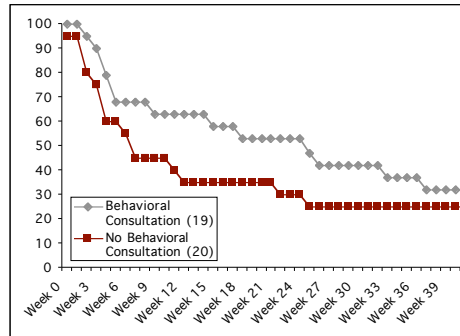
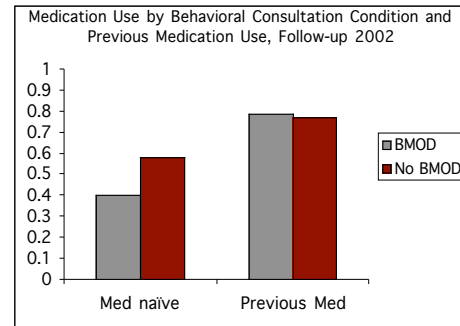


Figure 2. Use of medication by treatment group and prior medication use



DISCUSSION

- The results presented herein are preliminary results from a planned three year study. Given the small sample size, results must be interpreted with caution.
- The results of this preliminary investigation document a trend toward a delay in medication use for children assigned to the BMOD group. Specifically, the "need for medication" and therefore the onset of medication was slower for children who received behavioral consultation at the beginning of the school year.
- Importantly, the behavioral consultation used in this investigation was of a low intensity (i.e., three school consultation visits, booster parent training groups, three follow-up visits for use during the remainder of the school year). Other studies document that high intensity behavior modification treatments virtually eliminate the need for stimulant medication (Fabiano et al., 2003; Pelham et al., 2000; Pelham et al., 2003). Had the treatment intensity in the BMOD group been greater (e.g., use of contingency management strategies in the classroom), the results may have been even more pronounced.
- The results of cross-over to medication by prior medication use have important clinical implications. Children whose parents and/or teachers had seen the effects of medication were much more likely to return to medication use in school, regardless of whether BMOD consultation occurred or not, replicating similar findings of the MTA study (Pelham, 1999). Perhaps in these cases, parents and teachers knew the effects of medication were immediate, and would therefore result in rapid improvement in behavior. Alternatively, parents and teachers may have been less willing to work to make a school-based behavioral program effective, if they had knowledge of a treatment that would require less effort.
- Given these results, for parents and teachers who wish to utilize behavior modification, the use of stimulant medication should be avoided until a behavioral program is established and implemented for a significant period of time.

Limitations

- The small sample size and preliminary nature of these data make any conclusions reached from this study tentative. Given the trend toward significance in the survival analysis, it is expected that with a larger sample size, group differences will become more pronounced, with children in the BMOD group less likely to be on medication, or having medication initiation delayed. A larger sample size is also required to determine the moderating role of medication naïveté.
- The study is also limited by the use of only two treatment intensities - No BMOD and BMOD of low intensity. Starting with the second cohort and third cohort of subjects, we will include a high intensity BMOD group that will include more parent and teacher visits and the use of contingency management strategies in the classroom. We hypothesize that the high intensity BMOD will reduce or eliminate medication use even further because it will permit parents and teachers to continue working with BMOD and not resort to medication because no other treatment is available.

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