

Psychosocial Interventions for ADHD-Inattentive Type
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Attention Deficit Hyperactivity Disorder-Predominantly Inattentive Type (ADHD-I) is characterized by serious and persistent impairment. Evidence also points to significant distinctions between inattentive and combined ADHD subtypes. ADHD-I and ADHD-C have been characterized by significant differences in demographic features, attentional/cognitive profiles, academic and social impairment, comorbidity, and motivation. Recently published longitudinal studies indicate that attention problems and impairment associated with ADHD-I persist over time. It was the most stable subtype in a large sample of girls over a 5 year period and in a mixed gender sample, 75% of boys and girls with ADHD-I continued to meet criteria 7-8 years after initial diagnosis. In addition, deficits across most areas of impairment (academic performance, social skills, peer relations, self-perceptions) and neuropsychological functioning have been found to persist over 5 years and also into adulthood. In fact, academic deficits (controlling for IQ) have been found to be significantly greater for children with ADHD-I than those with ADHD-C or comparison children over 8 years following initial diagnosis. In addition to consistent evidence of impairment in clinic samples, numerous studies document impairment for ADHD-I problems in representative community samples and cross-culturally. Academic and social impairments are routinely reported for ADHD-I and these impairments occur at school, at home and with peers. A host of additional impairments are also found—including adjustment problems, shyness and passivity, and fewer social activities. In fact, very few (11%) ADHD-I children from a report of a non clinic-referred sample were not impaired -- over 3/4 showed academic impairment and over half showed social and behavioral impairment. Across all types of ADHD, it is the persistent inattention that most clearly contributes to the poor academic outcome and educational attainment.

Characteristics distinguishing ADHD-I from ADHD-C

Prevalence and rates of disorder, age and gender characteristics: ADHD-I is one of the most prevalent disorders of childhood. In community (school-based) samples, teacher ratings yield estimates of prevalence averaging about 7% across studies, versus an average estimate of 4% for ADHD-C. Even in clinic-referred samples (which are unrepresentative because of referral bias for behavior problems), ADHD-I is common, ranging from 10% to 50% or more of all cases of ADHD; the average rate across studies is 31%. Only about half of ADHD-I cases in community samples are being referred to clinics, and when they are it is at an older age than those with ADHD-C, despite no age differences between the types in community samples, suggesting that those with ADHD-I are being under-referred. Whereas ADHD-I is more common among boys than girls, the sex discrepancy is less pronounced in ADHD-I than ADHD-C.

Attention/cognitive profiles: Evidence is emerging that the cognitive/attention deficits of ADHD-I are quite different from those of ADHD-C. Two types of attention problems have been identified from factor analyses of teacher ratings and direct observation: an inattentive-passive

form, and a persistence/distractibility form, with the former more closely related to ADHD-I. Studies also report that children with ADHD-I tend to have more severe alertness/orientation problems and symptoms of sluggish cognitive tempo (SCT) (i.e., daydreams, sluggish/drowsy) than those with ADHD-C. Furthermore, SCT has been found to be a stronger indicator of attention problems and impairment in ADHD-I than ADHD-C. Children with ADHD-I also have slower processing speed and fewer problems with behavioral inhibition than do children with ADHD-C. Studies also indicate difficulties for ADHD-I in terms of working memory and underarousal but less distractibility and disinhibition as seen in ADHD-C. These findings suggest that ADHD-I may be characterized by difficulty with attention and alertness, particularly related to SCT, whereas ADHD-C is a disorder involving behavioral inhibition. Underlying neuropsychological differences between the ADHD subtypes have not been shown to account for the substantial subtype differences in other areas.

Academic impairment: Children with ADHD-I, like those with ADHD-C, show considerable impairment in academic functioning including underachievement, underproductivity, and learning disabilities, both at home and at school, with some evidence for particular difficulty in math relative to those with ADHD-C. Recent longitudinal data suggest that the academic deficits of ADHD-I may be more profound and persistent than those of ADHD-C.

Comorbidity: Children with ADHD-I exhibit less aggression and fewer oppositional problems, and are less likely to meet criteria for Oppositional Defiant Disorder or Conduct Disorder, than children with ADHD-C. Still, rates of disruptive behavior disorders are higher in ADHD-I than in normal controls. It is not clear whether ADHD-I is accompanied by higher rates of anxiety and depression disorders than ADHD-C, although recent studies suggest not. However, children with ADHD-I show higher rates of internalizing problems than those without ADHD.

Social impairment: Social impairment is also very different for the ADHD subtypes. Children with ADHD-I tend to be unpopular and socially withdrawn and have social skill deficits rather than social performance problems per se. Children with ADHD-I receive more peer nominations of being very shy and being teased and left out than those with ADHD-C, who receive nominations for fighting and arguing and who tend to be more overtly rejected by peers. Teachers and parents report that, compared to youth with ADHD-C, children with ADHD-I are more socially passive, have difficulties with forming stable friendships, and are less assertive and less prone to initiate social interaction. They are more socially withdrawn during play groups--engaging in solitary play to a greater degree and having less sustained interaction. Their attention problems may lead to poor tracking and processing of social cues and faulty timing during interpersonal interactions. These unique deficits in ADHD-I also have been found on a computer-based chat-room task in which those with ADHD-I were more disengaged and had poorer memory for social conversation than those with ADHD-C.

Motivational Factors: ADHD-I is associated with a pattern of low motivation for learning, less interest in challenging tasks, less persistence, and proneness to becoming discouraged. Although children with ADHD-C are also often reported to have motivational deficits (particularly during low interest activities without external reinforcement), children with ADHD-I tend to give up more easily than those with ADHD-C when rewards were not as available. Also, children with ADHD-I have been reported to be more motivated to perform well to please the teacher and make good grades rather than for their own curiosity, interest, or internal drive.

Unique clinical manifestations: The following descriptive characteristics are drawn from our case formulations and observations of unique impairment—that is, problems different from those seen in ADHD-C. When attending to lectures/spoken material, children with ADHD-C go off-task because they are talking to peers, distracting themselves, etc. Children with ADHD-I more often seem to attempt to listen, but because of fluctuations of attention tone, there are gaps in their processing of the information. They may miss seconds or minutes of information during episodes of daydreaming or inattention, then have difficulty with new information because they missed prerequisite information needed to integrate what they do hear. Fluctuations of arousal impair the encoding of information and its consolidating into long-term memory, which manifests as "forgetting." There may be frequent difficulties with retrieval of stored information (including remembering where things have been put) and occasions of enacting a complex motor plan without full consciousness of their actions, (which also contribute to the phenomenon of moving objects and then "forgetting" where they were placed). Individuals with ADHD-I often report that while reading, they suddenly become aware that for the past several minutes, their eyes have been moving across the words on the page, but they have not been apprehending the content. There may be complaints of difficulty with spatial memory. Finally, we have noted a type of passivity, in that many individuals with ADHD-I fail to actively impose an organizational scheme on their activities or belongings, and instead "drift" through the day. As with any form of ADHD, these features may be intermittent and may even be punctuated by occasions of overfocusing and fierce organizational effort. These observations led us to draw parallels to children with mild diffuse brain injury, and to design our integrated approach to include rehabilitative and supportive strategies in addition to behavior modification.

Interventions for ADHD-I

Published studies of psychosocial treatment tailored to the needs of youth with ADHD-I are lacking. Note that the Multimodal Treatment Study of ADHD (MTA) excluded ADHD-I. A number of studies demonstrate that Stimulant Treatment (ST) can be effective in treating ADHD-I. However, decisions about psychosocial treatment for ADHD-I either as a sole treatment or as a complement to stimulant treatment currently cannot be based on empirical evidence for two reasons: (a) there are almost no published data on the efficacy of psychosocial treatment for ADHD-I, and (b) established psychosocial treatments for ADHD-C may not be optimal for ADHD-I without significant modification. The critical lack of treatment studies of ADHD-I was noted in the NIH Consensus Development Conference on ADHD with the recommendation that more systematized treatment strategies be developed and evaluated for ADHD-I and this call has been echoed by many others since then.

Child Life and Attention Skills Program

In response to this empirical gap, we developed the Child Life and Attention Skills Program (CLAS) through funding from NIMH. Components include behavior modification, cognitive treatments, skills training, and strategic environmental interventions directly targeting adaptive functioning specific to ADHD-I. CLAS incorporates skill- and reinforcement-based approaches supplemented with routines and scaffolding for executive deficits. Specifically, CLAS combines (a) a standard behavioral treatment for ADHD (group-based parent training) that has been adapted for ADHD-I impairments with (b) group-based child life skills training (including social and organizational components) and (c) teacher consultation. The program is provided over a 3-month period followed by monthly booster sessions into the subsequent school year.

Parent Component: The program begins with an overview of ADHD-I and the social learning model. Thereafter, a set of strategies is presented over the course of ten group sessions. Strategies covered include use of attending, rewards, and other positive consequences; establishing effective routines and planning activities; giving directions and commands; using prudent negative consequences; and changing environmental "antecedents" to promote attention and adaptive functioning. All families develop a "Home Challenge" (HC; token economy) with specific target behaviors and rewards individualized for each family. Parents are also taught skills for interacting effectively with teachers and how to develop, evaluate, and reinforce the school-home daily report card ("Classroom Challenge--CC"). Additionally, the modules covered in the children's groups (see below) are reviewed each week and parents are taught methods to promote and reinforce their child's use of skills taught during these sessions (e.g., via inclusion of the independence and social skills as targets on the home challenge). Parents attend ten, 1 ½ hour group sessions and up to 5 family sessions over the 12 weeks.

Teacher Component: Consultation consists of an orientation meeting providing an overview of behavioral interventions and classroom-based accommodations for working with children having ADHD-I, followed by up to 5 weekly meetings of teacher, parent, child, and therapist over the 12 weeks. In the first two of these meetings, a school-home daily report card (CC) is designed and implemented. A special notebook is created for each child containing copies of the CC. Target behaviors are individualized based on the needs of the child and include common problem areas for ADHD-I: academic work (e.g., completion of assigned work, completion and return of homework, accuracy of completed work), work behavior/study skills (e.g., following directions, having necessary materials to begin work, getting started on work, staying on-task), and social interactions (e.g., entering peer groups, accepting consequences, being a good sport, using assertive behavior). Skills taught in the child group are shared with teachers so that the child's use of these skills can be reinforced (often by including as a target on the CC) in the naturalistic environment of the school. During the remaining meetings, the program is reviewed using the "Challenge Review" script to ensure that all critical points are covered and to help parents develop a set of transferable skills for working with their child's teachers. In addition to the daily report card, environmental or academic accommodations (e.g., preferential seating, reduction in workload, assignment book, organizational systems, time limits, reminders) are implemented depending on the child's needs and the teacher's teaching style.

Child Skills Component: The child component is divided into modules to teach independence at school and home, and modules to improve social competence. Modules address both skill knowledge deficits (e.g., how to enter peer groups, complete work, keep work space organized, track homework) and performance problems through didactic instruction, behavior rehearsal and in vivo practice in the context of a dense, reward-based contingency management program. Self-management of alertness is supported by group-reinforced "attention checks" during which time children are prompted to repeat the last comment made or activity that occurred. In addition to the behavioral interventions, children are taught cognitive-behavioral strategies (e.g., problem-solving steps, how to use cues/verbal mediation strategies to stay on-task and focused, use of reminder lists of activities to be completed) including skills for self-monitoring and self-evaluation. The social skills modules include skills specific to the needs of ADHD-I in the areas of friendship-making and playdate skills. Modules include: being a good sport, accepting consequences, assertion, dealing with teasing, problem-solving, and friendship-making skills. Modules focused on independence include the following: homework/study skills, self-care skills (e.g., getting ready for school, etc.), getting chores done independently, planning

and time management. Role-plays of common problem scenarios for ADHD-I are covered as a part of each module (e.g., joining a game, responding to being teased or being left out of an activity, combating “spaciness” during a game, staying on-task during homework, staying focused when getting ready in the morning). Children also practice new skills during play activities and mock school/home routines with high doses of positive reinforcement. Each week, children bring in their earnings from their home and school challenges in exchange for rewards (to facilitate generalization of behaviors). Children attend child group while parents attend the parent group (ten, 1 ½ hour meetings). During the last 5-10 min. of group, parents and children meet together to go over the “skill of the week” and plan homework for the week.

Results from randomized controlled trials: Results from an initial randomized controlled trial (N=66) comparing CLAS to usual care indicate significant improvement on mean parent and teacher ratings for inattention ($p<.001$, $d=.97$) and hyperactivity/impulsivity symptoms ($p=.001$, $d=.84$), sluggish cognitive tempo ($p<.0001$, $d=1.07$), organizational skills (Children’s Organizational Skills Scale) ($p=.0093$, $d=.91$), homework problems (Homework Problems Checklist, parent only) ($p<.0001$, $d=1.36$), and social skills on the Social Skills Rating System ($p=.0065$, $d=.71$) (Pfiffner et al., 2007). Gains made at post-treatment in the CLAS group were maintained at follow-up (all p-values for change from post to follow-up were $>.08$) (Pfiffner et al., 2007). We attribute our large treatment effects to a number of factors including use of a peer group format to introduce skills to children and parents, group-based contingencies, a curriculum tailored to the impairments of ADHD-I, and coordination of treatment components across all of the child’s relevant life settings (home, school). Coordination was achieved through use of a common language and program at school and home and cross-domain contingencies which ensured that the components of CLAS worked together to produce generalized treatment effects.

To follow up these results, we are completing a NIMH-funded large-scale, two-site, randomized clinical trial of CLAS with 199 children having ADHD-I, ages 7-11 (PIs: UCSF: Linda Pfiffner, UCB: Steve Hinshaw). The goal of the RCT is to test whether CLAS provides superior reduction in attention problems and improvement in academic and social impairment in comparison to 2 control conditions: 1) typical community treatment, and 2) parent-focused treatment, which constitutes an active treatment control. During the CHADD institute, the CLAS treatment components will be described and sample sessions reviewed. Findings from our current RCT also will be presented.

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** Findings from initial outcome study of CLAS