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Fidget to Focus: A Coping Strategy for an Adult with AD/HD

A Doctoral Project

Presented to the Faculty of the

California School of Professional Psychology

San Diego

In Partial Fulfillment of

the Requirement for the Degree

Doctor of Psychology

---

by

Tiffany A. Hild

1997

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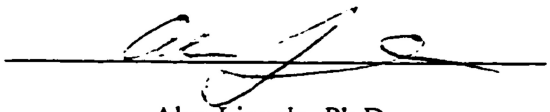
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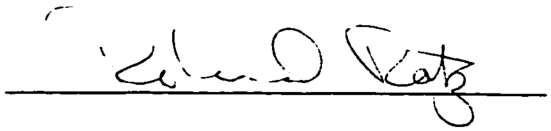
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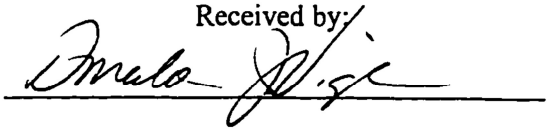


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ABSTRACT **242**

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I VALUE THE PEOPLE WHO SUPPORTED ME ALONG TWO DIFFICULT JOURNEYS...

Family and friends who I turned to and depended on: My brother wrote a three hundred-page book and proved it was possible. My father taught me perseverance and to break projects into doable pieces...one math assignment at a time. My mother taught me compassion, and showed me work can be like a trip to Disneyland. Dana Fillmore gave me a visual map, and suggested I not "talk off the top of my head." Bonnie Brown broke new ground, and explored our shared Fr.Ma. Jerry Hill edited in my final hour, and showed that living in the present is a hoot. Don Viglione served as a powerful mentor, and motivated me to overcome. Jennifer Wescott supported me in times of crisis, and let me know "it will be ok." Karen Martin showed me how to make things work when it seemed they wouldn't.

My committee who helped make the degree a reality: Roland Rotz's sparkle, ingenuity, and topic lit the way, like "things what fly in the night." Rob Brager ensured I dotted the "i's" and crossed the "t's," and allowed my independence. Alan Lincoln challenged my assumptions by exploring divergent theories and ideas.

Finally, the other necessities: PepsiCo, FM radio, the motion picture industry, Microsoft, coffee houses, cable TV, email, and Kinko's.

AND GREEN LIGHTS, BECAUSE SOMETIMES YOU NEED A CHANGE OF TEMPO.

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"All the really good ideas I ever had came to me while I was milking a cow."

Grant Wood

"The best time for planning a book is while you're doing the dishes."

Agatha Christie

"Nothing ever becomes real till it is experienced."

John Keats

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CHAPTER I: INTRODUCTION

Statement of the Problem

Attention-deficit/hyperactivity disorder (AD/HD) theory is in the midst of a paradigm shift (Barkley, 1995a; Ratey, Middledorp-Crispijn, & Leveroni, 1995; Wender, 1995). The recognition and study of AD/HD has traditionally focused upon school aged children, as the disorder was thought to abate by late adolescence (Wender, 1995). Research has not supported this theory of developmental abatement (Weiss & Hechtman, 1993). An age-related bias is now apparent in the diagnostic criteria and treatment protocols, which center around childhood symptoms and fail to adequately bridge developmental stages (APA, 1994; Barkley, 1995a). "This circumstance can, should, and will change as more articles are published in the lay media on the disorder, as more clinicians specializing in adult disorders get better educated about it, and as more papers on it appear in scientific journals" (Barkley, 1994, p. 3). The prevalence rate, based on the school aged children in the United States, has been estimated at 2-6% (American Psychiatric Association, 1994). Current research indicates the persistence of AD/HD into adulthood for 30-70% of the people diagnosed as children, or 1-3% of adults (Barkley, 1994; Weiss & Hechtman, 1993; Zametkin, 1989).

Despite extensive case studies, experiments, and investigations, the cause of AD/HD is still unresolved (Sandler, 1995). Most recently, the origin of

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AD/HD symptoms is identified as a dysregulation of "executive functions," including the ability to initiate, sustain, inhibit, and shift activity (Barkley, 1995a, 1995b, 1996). The insufficiency of these functions can result in persistent impulsivity, distractibility, and hyperactivity in excess of a person's developmental age—the core symptoms of AD/HD.

There is an emerging belief that a developmental progression of symptom patterns is observed when studying AD/HD over the lifespan (Barkley, 1995, 1995b; Weiss, & Hechtman, 1993). Features of attentional difficulty, restlessness, and impulsivity are maintained yet manifested in different ways as a person ages (Barkley, 1995a, 1995b; Weiss & Hechtman, 1993). In adulthood, attentional symptoms continue while hyperactivity and impulsivity diminish. Barkley (1994b) suggests that, by adulthood, compensatory strategies for the more overt symptoms of impulsivity and hyperactivity are developed, causing these symptoms to be less pronounced than they were in childhood (Barkley, 1994b).

Research has identified several neurobiological correlates of AD/HD, including underarousal of the frontal lobe, dysfunction in the subcortical components, and imbalances in neurotransmitter concentrations (Pennington, 1991; Quinn, 1995). These neurological mechanisms interact to carry out executive functions; it is hypothesized that dysregulation of a link in this system could result in the symptom array associated with AD/HD (Voeller, 1991).

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Sensory stimulation, activating and integrating neurological functions (Barkley, 1995b; Hunt, Hoehn, Stephens, Riley, & Osten, 1994; Voeller, 1991), is viewed as a coping strategy for AD/HD which may induce a delay in the cortical processing of other thoughts, events, and emotions. Based upon the homeostatic nature of the physiological system (Comings, 1990), the author suggests that adults have developed habits to sustain attention and effort during otherwise under-arousing or uninteresting activities prone to impulsive or disinhibited actions.

Goals of Project

The goals of this project were threefold. First, it attempted to delineate sensory stimulation strategies a person diagnosed with AD/HD uses to cope with the symptoms of the disorder. Behaviors noted during the assessment phase, which appeared to assist the person's performance, were developed into a plan for practical application. Through monitoring the use of these strategies and evaluating the potential applicability of these habits to daily living, a proactive coping strategy was explored.

Second, the rationale for employing these strategies was examined. A theoretical model for this coping strategy is presented which integrates the current research on the theorized origin of AD/HD symptoms, the efficacy of stimulant medication for symptom management, and the current knowledge of neurophysiological correlates of sensory stimulation.

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Third, information regarding the utility of a sensory stimulation strategy was evaluated and presented. The information was provided to the participant in this study, other people diagnosed with AD/HD, and practitioners that work with the AD/HD population. This contribution is an attempt to further the successful treatment of AD/HD.

Doctoral Project Summary

Research pertaining to sensory stimulation as a coping strategy for adults diagnosed with AD/HD is critically reviewed. The diagnostic characteristics and history of adult AD/HD are presented. Issues of co-morbidity and differential diagnosis in relation to AD/HD are explored. A discussion of the adult AD/HD assessment process is presented. Theoretical explanations and understandings of the central deficit of AD/HD are integrated into the current paradigm. Finally, the self-management of AD/HD using a sensory stimulation strategy is critically examined.

Clinical examples of the aforementioned literature and theories, gleaned during a diagnostic assessment, the time-limited application of the strategy, and an educational self-help group, are provided and integrated. Since limited research has been conducted with adults diagnosed with AD/HD, ways in which assessment and treatment can be modified to match an individual's needs are proposed.

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CHAPTER II: LITERATURE REVIEW

The following section is a review and critical evaluation of the major topics related to adults with Attention Deficit/Hyperactivity Disorder (AD/HD). The topics covered include: (1) evolution of AD/HD diagnostic criteria; (2) diagnostic criteria of AD/HD; (3) associated characteristics of AD/HD; (4) co-morbidity and differential diagnosis with AD/HD; (5) theoretical paradigms of AD/HD; (6) biological paradigms of AD/HD; (7) assessment process of adult AD/HD; (8) treatment options for adult AD/HD; and (9) simultaneous sensory stimulation as a coping strategy.

Evolution of AD/HD Diagnostic Criteria

Many authors and researchers (Barkley, 1994b; Jaffe, 1995; Wender, 1995) have chronicled the history of AD/HD. The acting out child has been noted in psychological, educational, and medical settings, progressively carrying the titles of minimal brain dysfunction (MBD), hyperkinetic reaction of childhood (HRC), and Attention-Deficit Disorder (ADD) (Barkley, 1994; Sandler, 1995; Wender, 1995). According to the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (APA, 1994), the syndrome is currently labeled Attention-Deficit/Hyperactivity Disorder (AD/HD). Theory on the etiology, symptom organization, and developmental trajectory continues to

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change with increased research and clinical attention (Barkley, 1996; Wender, 1995).

Initially, hyperactivity attributed to brain damage was seen as the defining symptom of AD/HD. Heinrich Hoffman, a 19th-century German physician, is cited as one of the original investigators of AD/HD based upon his case study of a hyperactive child (Barkley, 1994b). Children who were dysfunctional in their ability to use social norms or rules to govern their behavior, yet had normal or average intelligence and acceptable parenting, were described by Still in 1902. Still hypothesized that this represented a separate disorder not currently recognized by the medical community (Barkley, 1994b; Carlson & Rapport, 1989; Still, 1902).

The encephalitis pandemic of 1917 marked the beginning of research on the disorder within the United States. Children recovering from encephalitis were noted to be hyperactive, inattentive, and impulsive, yet bore no previous history of these symptoms (Barkley, 1994). Based upon the clinical theory that encephalitis had destroyed some of the brain tissue of these children, this disorder was labeled brain damage syndrome. This diagnostic tag was subsequently applied to children exhibiting these symptoms who did not have documented brain damage, leading to the new diagnostic label Minimal Brain Dysfunction (MBD). MBD implied the presence of neurological impairment, where no brain damage was known to have occurred. This diagnosis was based upon a theorized

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etiology, with little recognition of or control for type of symptoms (Wender, 1995). Wender (1995) states this disorder, "encompassed the whole cluster of externalizing disorders (DSM-III-R's Attention-deficit Hyperactivity Disorder, Conduct Disorder, and Oppositional Defiant Disorder) and the ill-defined group of 'learning disorders,' particularly the academic skill disorders" (p. 122). From its clinical beginnings, the focus of AD/HD study included the hyperactive symptoms as a result of neurological damage seen in children.

Continued study, however, discounted the presence of defined or focal neurological damage as a precursor to the MBD symptoms. In 1968, the description changed from hypothetical etiology to the behaviors or symptoms themselves. DSM-II (APA, 1968) labeled the syndrome as hyperkinetic reaction or hyperactive child, with Hyperkinetic Reaction of Childhood or Adolescence (HRC) becoming the formal diagnosis. Although the label dropped a theoretical etiology, the focus remained on children and overactivity. Additionally, this diagnostic category still failed to differentiate among AD/HD, Conduct Disorder, Oppositional Defiant Disorder, and the Specific Developmental Disorders. This failure dilutes the applicability of historical research findings on current populations due to blended research groups and mixed syndromes (Wender, 1995).

The emphasis on hyperactivity faded when researchers reported increasing evidence that inattention was the core of this syndrome. Mirroring this shift, in

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DSM-III (APA, 1980) the diagnostic nomenclature was changed to Attention Deficit Disorder with or without Hyperactivity (ADD-H, ADD), categorizing hyperactivity as a non-essential symptom. Paralleling the shift to inattentive symptoms, a new interest in adulthood status emerged. Using various methodologies (questionnaires, retrospective study, and prospective studies), fifty percent or more of children diagnosed with AD/HD continued to be symptomatic as adults (Laufer, 1971; Weiss, Hechtman, Milroy, & Perlman, 1985). The persistence of an attention deficit into adulthood was labeled in DSM-III as Attention Deficit Disorder, Residual Type (ADD-RT). The diagnosis of ADD-RT required a childhood history of ADD-H, remission of the hyperactivity, and continued impairment from inattention and impulsivity.

A debate ensued over the value and validity of the distinction between ADD and ADD-H (Barkley, 1981; Carlson, & Rapport, 1989). The revised edition of DSM-III (DSM-IIIR) (APA, 1987) reverted to including hyperactivity in the label as Attention-Deficit Hyperactivity Disorder (ADHD). What in DSM-III had been Attention Deficit Without Hyperactivity was then classified as Undifferentiated Attention Deficit Disorder, but DSM-III-R presented no formal criteria. In addition to changing the name, the format of the diagnostic criteria was changed from requiring specific signs of core symptoms (inattention, impulsivity, and hyperactivity) to requiring any eight of fourteen possible behavioral manifestations.

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The DSM-IV divides the symptoms of Attention-Deficit/Hyperactivity Disorder into two groups: "inattention" and "hyperactivity-impulsivity". To meet the diagnostic criteria, a person must display persistent and significant symptoms of inattention, hyperactivity, or impulsivity, in excess of an individual's developmental stage. Depending on the number and category of symptoms, a person can be diagnosed with the inattentive form, the hyperactive-impulsive form, or the combined form of AD/HD.

More recently, AD/HD has been investigated using a developmental framework, which cites disinhibition as the core problem. The various phenotypic results, including overactivity, minimal attention span, and acting without planning, are described as a difficulty delaying current impulses in favor of future returns (Barkley, 1994b; Barkley, Grodzinksy, & DuPaul, 1992; Chelune, Ferguson, Koon, & Dickey, 1986; Douglas, 1984; Gualtieri, Ondrusek, & Finley, 1985). Even though research does not support a three pronged symptom pattern, and "behavioral inhibition disorder" may serve as a more accurate description, the diagnostic label remains relatively unchanged in DSM-IV (Barkley, 1994b).

Diagnostic Criteria of AD/HD

Despite frequent name changes, the core components identified with AD/HD have remained relatively constant. DSM-IV describes AD/HD as "a persistent pattern of inattention and/or hyperactivity-impulsivity that is more

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frequent and severe than is typically observed in individuals at a comparable level of development" (p. 78). The relative deficiency, reflected by cognitive inattention, behavioral impulsivity, and motor hyperactivity, improves with age but remains significantly below the abilities displayed by same-aged peers (Barkley, 1994, 1994b). The symptoms are divided into two categories: "inattention" and "hyperactivity-impulsivity" (see Table A1). Using these two groups, DSM-IV denotes three subtypes of AD/HD:

1. Attention-Deficit/Hyperactivity Disorder, Combined Type (AD/HD-C) is diagnosed if at least six symptoms each of inattention and hyperactivity-impulsivity, inconsistent with developmental level and maladaptive, have persisted for at least six months.

2. Attention-Deficit/Hyperactivity Disorder, Predominantly Inattentive Type (AD/HD-I) is diagnosed if at least six symptoms of inattention, inconsistent with developmental level and maladaptive, have persisted for at least six months.

3. Attention-Deficit/Hyperactivity Disorder, Predominantly Hyperactive-Impulsive Type (AD/HD-H) is diagnosed if at least six symptoms of hyperactivity-impulsivity, inconsistent with developmental level and maladaptive, have persisted for at least six months.

For each of the three subtypes, further criteria must be met for diagnosis (APA, 1994). Some of the symptoms must appear before the age of seven. The symptoms must create significant impairment and delay in the development of

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academic, occupational, or social skills in at least two settings. Additionally, the behavioral or cognitive difficulties must not occur exclusively during the course or as the result of another mental or medical disorder.

A diagnostic variant of AD/HD is labeled Attention-Deficit/Hyperactivity Disorder, Not Otherwise Specified (AD/HD-NOS). This category identifies people who display symptoms of AD/HD, but do not meet the strict requirements of the classic condition. AD/HD-NOS recognizes cases where another agent may have caused the symptoms, such as substance abuse, traumatic head injury, or exposure to toxins (Murphy & LeVert, 1995). These sources of AD/HD may indicate different treatment protocols and outcomes, but the diagnosis serves to recognize the nature of observed behavioral patterns.

Several criticisms regarding the diagnostic criteria have been published. A central problem is the circular nature of the diagnostic process. As described by Goodman and Poillion (1992), "the rationale for [AD/HD] diagnoses flows from observation of symptoms, to inference of condition, then to validation of condition by observation of symptoms" (p. 53). An error of circular reasoning can contribute to erroneous assumptions about causality and connection, with no means of refuting the findings. The behavioral nature of the diagnostic symptoms for AD/HD ignores the process and etiology of the disorder. Ascribing a common cause to a set of symptoms where no connection exists can precipitate improper intervention plans based upon mis-diagnosis. However, the etiology of AD/HD is

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actively being researched with an open acknowledgment that the cause or causes of this syndrome are still unknown (Wender, 1995).

A related issue is the categorical nature of AD/HD's diagnostic criteria. A cluster of symptoms rather than a specific symptom pattern is sufficient for diagnosis. Potentially, several disorders with different etiologies, developmental trajectories, and treatment responses are combined under one diagnostic label. Many professionals have argued that AD/HD-I is a separate and distinct condition from the other variants of this disorder (August & Garfinkel, 1989; Barkley, 1995b, 1996; Lahey, Schaughnecy, & Hynd, 1987; Morgan, Hynd, Riccio, & Hall, 1996; Wender, 1995). Their research suggests that AD/HD-I, referred to as the "cognitive subtype," is more often associated with learning disabilities, chronic underachievement, and internalizing disorders, whereas AD/HD-H and AD/HD-C, the "behavioral subtypes," are more likely to coexist with conduct problems and other externalizing disorders. For treatment, the latter subtypes are more likely to have a positive response to stimulant medication (Weiss & Hechtman, 1993; Wender, 1995).

Historically, a gender-related sample bias has confounded the understanding of AD/HD, as research has focused upon the school-aged male with AD/HD-H. Prevalence of AD/HD has been estimated to be 3 to 9 times greater in males than females. With closer study, it is now believed that AD/HD has been under-reported and under-diagnosed in females, with the actual ratio

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approaching 1 to 1 for males to females (Barkley, 1990; Ratey, Middeldorp-Crispijn, & Leveroni, 1995; Ratey, Miller, & Nadeau, 1995). It is becoming evident that females present the symptoms of AD/HD in different manners than their male counterparts (Barkley, 1995a; Solden, 1995; Wender, 1995). Girls with AD/HD have more internalized symptoms than boys, tending to be shy, compliant, hypersensitive to criticism, challenged by group interaction or relationships, and socially isolated (Brown, Abramowitz, Madan-Swain, Eckstrand, & Dulcan, 1989; Solden, 1996).

> A girl with [AD/HD] who is doing poorly in school and feeling frustrated might withdraw and appear disinterested or depressed. A boy with the same problems might misbehave and get into trouble. The boy is more likely to be recognized and diagnosed. (Silver, 1992, p. 57)

The later, developmentally, a woman is diagnosed, the more ingrained her negative self esteem, depressive tendencies, and anxiety signs are likely to be (Solden, 1996). Based upon a lifetime of experience, she may feel "misunderstood" by herself and others, have a pattern of short term or problematic relationships, be highly emotional, feel trapped in a cycle of underachievement, and lack clearly defined goals (Ratey, Miller, & Nadeau, 1996; Solden, 1996). Her subsequent feelings of guilt, insecurity and failure tend to be more prevalent than those of her male peers (Solden, 1996).

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Social, cultural, and neurobiological theories have been offered to explain the gender variation associated with AD/HD (Barkley, 1996; Ratey, Miller, & Nadeau, 1995). In general, males are more frequently diagnosed with AD/HD than females, yet within gender groups females are more frequently diagnosed with AD/HD-I, and males more frequently diagnosed with AD/HD-H or AD/HD-C (Barkley, 1996). Theories citing environmental variables as the source or cause of AD/HD symptoms have not been supported by studies (Barkley, 1995b). Social factors and parenting have been associated with the prevalence and severity of co-morbid disorders, but only the severity of AD/HD symptoms (Barkley, 1995b; 1996). Thus, it is not likely that gender socialization is responsible for the differential rates of AD/HD-I, AD/HD-H, and AD/HD-C between males and females. However, given the behavioral nature of AD/HD symptoms and the role of cultural expectations, groups may be differentially evaluated, and hence diagnosed, according to social norms. What is viewed as "disordered" in one social group may be viewed as "normal or expected" in another group, which can skew the diagnostic rates.

A neurobiological theory suggests that males may be more at risk than females for AD/HD-H or AD/HD-C due to the role of testosterone in brain development (Ratey, Miller, & Nadeau, 1995). Testosterone is thought to inhibit frontal lobe development, which impedes the neurological development of males more than that of females (Geshwind, & Galaburda, 1985). Females are then

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more able to manage and control the symptoms of AD/HD, are less neurobiologically impaired, and have a potentially different disorder in AD/HD-I (Barkley, 1995b; 1996; Ratey, Miller, & Nadeau, 1995). According to this theory, different neurological processes are impaired for males, or a person diagnosed with AD/HD-H and AD/HD-C, which produces additional difficulties and dysfunction over and above that included in AD/HD-I (Ratey, Miller, & Nadeau, 1995). Based on this neurobiological theory, women, or at least those diagnosed with AD/HD-I, may suffer from a different diagnosis than males with AD/HD-H or AD/HD-C (Barkley, 1995b; 1996; Ratey, Miller, & Nadeau, 1995). As the diagnosis is based upon behavioral rather than etiological symptoms, it is difficult to determine the true source of gender variability in AD/HD symptoms and diagnoses.

A lack of acknowledgment for the developmental progression of AD/HD also confounds its accurate diagnosis. AD/HD research has focused upon school-aged children, which created a belief that the disorder was outgrown by late adolescence. However, prospective, retrospective, and field studies have not validated this perception (Weiss & Hechtman, 1993). Instead, "excessive gross motor behavior appeared to subside with increasing age (although frequently replaced by a more subtle fidgetiness) as a residual adult version of the attentional and impulsivity components prevailed in a majority of cases" (Carlson & Rapport, 1989, p. 580). Additionally, themes of underachievement, failure, and

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delinquency are common within the adult population (Barkley, 1994, 1995b, 1996; Brown, 1994, 1995b; Carlson & Rapport, 1989; Weiss, & Hechtmann, 1993; Weiss, Hechtman, Milroy, & Perlman, 1985; Wiener, 1989). These symptomatic patterns have often been mis-diagnosed as personality disorders—most prevalently, Antisocial Personality Disorder for adult males, and Borderline Personality Disorder for adult females (Solden, 1995; Wender, 1995). Again, acknowledging the effect of environmental or social variables on co-morbid disorders and symptom severity (Barkley, 1996), personality traits or disorders may be difficult to differentiate from chronic AD/HD. Differentially diagnosing AD/HD symptoms presented in an Axis II pattern could suggest AD/HD related interventions, including medication, behavioral strategies, and support (Ratey, Middeldorp-Crispijn, & Leveroni, 1995).

Individual differences, social setting, and other variables can moderate symptom presentation. For example, a person with above average intelligence may have inattentive, overactive, and impulsive symptoms that are not easily recognized yet contribute to difficulties for the person (Biggs, 1995). The person may be able to meet social expectations, yet experience underachievement, dissatisfaction, and demoralization in relation to AD/HD symptoms (Weiss & Hechtman, 1993). A person's environment also may value and encourage AD/HD symptoms, viewing impulsive actions, thoughts and ideas as creative. The social setting may not place demands upon the person that challenge the

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AD/HD symptoms. Instead, the environment may naturally accommodate the symptoms with individual attention, coaching, or supportive redirection. In these circumstances, AD/HD can remain undiagnosed where no impairment is apparent. However, if required to transition into a more regimented setting, difficulties related to the now pronounced AD/HD symptoms can arise (Barkley, 1981, 1995a).

Associated Characteristics of AD/HD

Secondary difficulties are often the presenting problems of adults seeking AD/HD assessments and treatment (Hallowell & Ratey, 1994; Wender, 1995). "Affective reactivity," "disorganized and erratic performance," "spontaneity and risk taking," and "memory impairment" are common secondary characteristics. During the diagnostic or assessment phase, these characteristics can serve to guide inquiry and elucidate more accurate and extensive symptom reports. Although the DSM-IV diagnostic symptoms of AD/HD are therapy resistant, the secondary characteristics are more readily ameliorated by treatment (Brown, Wynne, & Medenis, 1985; Gittelman, Abikoff, Pollack, Klein, Katz & Mattes, 1980; Gittelman-Klein, Klein, Abikoff, Katz, Gloisten, & Kates, 1976; Hallowell & Ratey, 1994; Robin & Foster, 1989; Wender, 1995; Zametkin & Borcherding, 1989).

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Affective Reactivity

People diagnosed with AD/HD are often described by others as being "moody" and emotionally reactive (Barkley, 1995b, 1996; Brown, 1996; Wender, 1995). Commonly, the emotional lability ranges from the lows of "demoralization, boredom, or insecurity," to the highs of feeling "wired, up, or energized." Temperamental outbursts of anger and irritability are also prevalent. These shifts can be categorized as internalizing, or self-directed, and externalizing, or outwardly directed (Brown, Abramowitz, Madan-Swain, Eckstrand, & Dalcan, 1989).

Adults with AD/HD are typically poor self-observers and "usually see themselves as less effective or powerful than other people do" (Hallowell & Ratey, 1994, p. 76). Low self esteem, and associated feelings of worthlessness, sadness, and hopelessness are common. Easily frustrated, discouraged, and annoyed, a person diagnosed with AD/HD is often stress intolerant and sensitive to criticism, which may interfere with effective problem solving (Brown, 1996; Wender, 1995). If overwhelmed, the person may have extreme emotional reactions that seem in excess of the situation to others. Alternatively, some people with AD/HD may function best in "crisis situations," appearing to crave the excitement and stimulation involved with urgent situations (Brown, 1996). A common example is the person who procrastinates to the point of emergency. To

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others, those who seek out crisis may seem like "poor planners," "daredevils," or "thrill-seekers."

Another variation of reactivity is linked to anger, with the person described as "hot tempered," or "having a short fuse." People diagnosed with AD/HD have an apparent difficulty with separating emotions from fact, then containing and delaying a response (Barkley, 1995b). Anger is rapidly experienced, expressed and released, rather than brooded over. This transient anger can contribute to relationship problems. "A frequently associated feature is [the person's] inability to understand why the other people involved can remain angry while [the person] recover[s] [his] composure so quickly" (Wender, 1995, p. 127). Based upon these findings, it appears that emotions serve to direct and motivate as well as disrupt the progress of people diagnosed with AD/HD to a greater extent than is typical with non-diagnosed people.

Disorganized and Erratic Performance

People diagnosed with AD/HD commonly display a haphazard manner of problem solving, decision-making, and working. A lack of perseverance, beginning new tasks before current projects are completed, and general disorganization are common (Wender, 1995). Difficulties vary by individual, but typical problems include delaying the initiation of work, difficulty with setting priorities, and problems maintaining goal directed effort or motivation (Barkley, 1995b, 1996; Brown, 1996; Wender, 1995). Specific examples include not

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knowing where to start a project, having a messy office or home, and daydreaming when trying to complete a project. Variability in effort and accomplishment contributes to a pattern of "consistent inconsistency, so a day of success is held against them for the rest of their lives" (J. Ratey, personal communication, November 17, 1995). Such a history of extremes in achievement and performance serve to reinforce feelings of demoralization, and can contribute to social withdrawal and learned helplessness.

Spontaneity and Risk Taking

An extension of the difficulty with sustained effort is a tendency toward impulsive actions. Included are creativity, independence, and exploration, along with the more negative aspects of interrupting others in conversation, excessive consumption, and impulsive buying. A pattern of saying or doing things without considering the ramifications of the action is typically found within the AD/HD population. As Russell Barkley (1995b) describes, there is a delay in or lack of internalized speech, diminishing an individual's ability to reflect and adhere to rules and moral reasoning. Histories of extreme interest in and enthusiasm for an activity, person, or idea, which change rapidly to boredom and disinterest, are common. As noted in the discussion of Affective Reactivity, many people diagnosed with AD/HD appear to seek out and function well in crisis situations. The sequelae of this search for crisis can include erratic relationships, extensive work histories, and criminal records.

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Memory Deficits

A common complaint of people diagnosed with AD/HD is of having a "bad memory." However, testing and assessments targeting memory do not consistently support memory deficits (Klee, Garfinkel, & Beauchesne, 1986; Mirsky, Anthony, Duncan, Ahearn, & Kelham, 1991). The domain of difficulty appears to be "working memory," or the process of holding information mentally while manipulating and acting upon it in an effective manner (Barkley, 1990, 1996; Brown, 1996; Klee, Garfinkel, & Beauchesne, 1986). Forgetfulness, problems memorizing new material, or having to reread passages numerous times for retention are examples of working memory problems (Barkley, 1995b, 1996; Brown, 1996; Wender, 1995). Anticipating or accurately predicting consequences is a common difficulty, as the current action is not held for problems solving (Barkley, 1995b, 1996). A distorted sense of time is frequently reported, as past, present, and future are not anchored with reference points. This distortion leaves a person diagnosed with AD/HD "present focused," having difficulty learning from the past and shaping behavior to maximize future benefits (Barkley, 1996).

Although not requisite according to the DSM-IV protocol, these characteristics of AD/HD can aid the therapist or diagnostician and the treatment-seeking individual. Overall, by exploring these areas of difficulty, a more accurate representation of AD/HD diagnostic criteria is possible. Also, these

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domains can provide effective intervention points, aiding the professional in treatment planning.

Co-morbidity and Differential Diagnosis with AD/HD

An accurate and extensive differential diagnosis is important with AD/HD, since the symptoms are largely nonspecific and are shared by other psychological disorders (APA, 1994). For example, distractibility is also associated with anxiety, mood, substance abuse, and the spectrum of schizophrenic disorders; any of these conditions, if better able to account for the symptoms, precludes a diagnosis of AD/HD (APA, 1994). However, more than fifty percent of people diagnosed with AD/HD have another psychiatric disorder, complicating the diagnostic process (Biederman, Faraone, Spencer, Wilens, Norman, Lapey, Mick, Lehman, & Doyle, 1993; Biederman, Newcorn, & Sprich, 1991; Brown, 1994). The conditions which most frequently simulate or coexist with AD/HD include: Normal variations of attention, hyperactivity, and impulsivity; Mood Disorders; Anxiety Disorders; Substance Abuse; Learning Disabilities; Obsessive-Compulsive Disorder; and Personality Disorders.

Behavior similar to the diagnostic symptoms of AD/HD exists on a continuum for all individuals (Kohn, 1989; Murphy & Barkley, 1995; Schrag & Divoky, 1975; Wender, 1995). However, to meet the criteria for diagnosis, the behavior must present in a chronic pattern, noticeably impact a person across several environments, not be better accounted for by some other variable or

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condition, and be developmentally inappropriate (APA, 1994). Deviance from the standard developmental trajectory is defined statistically, typically 1.5 standard deviations (93rd percentile) outside the mean for age-matched peers on a measure of behavior (Barkley, Fisher, Edelbrock, & Smallish, 1990; Trites, Dugas, Lynch, & Ferguson, 1979).

Mood Disorders

Prior to the recognition of AD/HD as an adult condition, Mood Disorders were the most common alternative diagnoses (Ratey, Greenburg, Bemporad, & Lindem, 1992). Major Depressive Disorder (MDD), Dysthymia, and Cyclothymia have significant symptom overlap with AD/HD, including the feelings of failure, discouragement, and boredom—often entitled demoralization (APA, 1994; Barkley, 1995b; Tzelepis, Schubiner, & Warbasse, 1995; Wender, 1995). Difficulty with task completion can represent the loss of energy characteristic of depression or the distractibility and boredom of AD/HD. However, unlike the mood disorders, the demoralization associated with AD/HD typically lacks anhedonia, suicidal ideation, and the vegetative symptoms. According to Wender (1995), the rapid "roller-coaster-like" mood shifts of AD/HD between excitement, boredom, and depression are associated with specific triggers, whereas the moodiness of a Mood Disorder typically lacks anchoring events. The differential diagnosis is more difficult with MDD-Mild, Dysthymia, significant demoralization and AD/HD, or a co-existing Mood

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Disorder and AD/HD. The latter is quite common given depressive disorders are significantly more frequent in the AD/HD population than with non-AD/HD adults (Biederman, Faraone, Spencer, Wilens, Norman, Lapey, Mick, Lehman, & Doyle, 1993; Milberger, Biederman, Faraone, Murphy, & Tsuang, 1995). With severe demoralization or a co-morbid Mood Disorder, treatment targeting the AD/HD symptoms often alleviates the depression (Solden, 1995; Tzelepis, Schubiner, & Warbasse, 1995). The person is able to more successfully function in daily life, which decreases perceptions of failure and inadequacy.

Other Mood Disorders, including Bipolar I, Bipolar II, and Hypomania share a significant number of symptoms with AD/HD, and are often mistaken for AD/HD (APA, 1994; Ratey, Greenberg, Bemporad, & Lindem, 1992). Distractibility, excessive activity, pressured speech, lack of goal-directed activity, and racing thoughts are noted as frequently shared symptoms. The clearest differential criterion is time. A manic episode must last a minimum of one week whereas the mood shifts of AD/HD tend to be less stable, lasting for hours to days, and typically have specific antecedents (Weller, Weller, & Fristad, 1995; Wender, 1995). Also, AD/HD tends to lack the extremity of mood swings, grandiosity and delusional thinking, which are common with manic episodes (Solden, 1995; Weller, Weller, & Fristad, 1995; Wender, 1995). Based upon the rate of familial transmission, specific inquiry about a family history of manic

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diagnoses can help identify people who require a more focused screening for manic mood disorders (Carlson, 1990).

Anxiety Disorders

Generalized Anxiety Disorder (GAD) shares many symptoms with AD/HD, and should be assessed as a rule-out and co-morbid disorder (APA, 1994). Both disorders share feelings of restlessness and tension, difficulty concentrating, irritability, and sleep disturbance. The chronic underachievement associated with AD/HD often translates into tension and anxiety of anticipated failure by adulthood (Tzelepis, Schubiner, & Warbasse, 1995). Excessive worry is the clearest differential symptom, typically not as overwhelming in AD/HD as in GAD (Tzelepis, Schubiner, & Warbasse, 1995). Co-morbidity of GAD with AD/HD research presents inconsistent findings; some studies report significant prevalence rates while other studies refute this association (Anderson, Williams, McGee, & Silva, 1987; Biederman, Faraone, & Keenan, 1991; Gittelman, Mannuzza, Shenker, 1985; Lahey, Schaughency, & Hynd, 1987; Mannuzza, Klein, Bessler, Malloy, & LaPadula, 1991; Ratey, Greenberg, Bemporad, & Lindem, 1992; Tzelepis, Schubiner, & Warbasse, 1995; Weiss & Hechtman, 1993; Woolston, Rosenthal, & Riddle, 1989). One explanation for this discrepancy is methodological. The studies employ different definitions of co-morbidity, including current state, occurred within the past year, or lifetime occurrence. Further, often the selection criteria for the study often are not

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reported, thus, the actual prevalence rate of Anxiety Disorders with AD/HD is unknown.

Another anxiety disorder to be differentially diagnosed from AD/HD is Posttraumatic Stress Disorder (PTSD). Although the diagnoses share symptoms of concentration problems, irritability, and emotional outbursts, PTSD requires the presence of a traumatic event which triggered these behaviors (APA, 1994). Likewise, additional symptoms related to the trauma are required for PTSD, such as the persistent re-experiencing of the event and avoidance of cues associated with the trauma, which do not resemble the symptoms of AD/HD (APA, 1994). To differentiate between the disorders, a history of the symptom onset and inquiry into the unique symptoms of PTSD can aid with accurate diagnosis. Currently, there is no research that suggests that people with AD/HD are more at risk for PTSD (Tzelepis, Schubiner, & Warbasse, 1995).

Substance Abuse

Substance abuse is also assessed, as symptom overlap with AD/HD is significant and co-morbidity is common (APA, 1994; Biederman, Wilens, Mick, Milberger, Spencer, & Faraone, 1995; Wender, 1995). Because intoxication and detoxification symptoms closely match AD/HD symptoms, when a person exhibits current substance use, the importance of assessing childhood symptoms and gaining the input of others increases for making a differential diagnosis (APA, 1994; Hoegerman, Resnick, & Schnoll, 1993). In the case of co-morbidity,

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impulsive actions, risk taking, and "self-medication" are common precursors to substance abuse with AD/HD (Biederman, Wilens, Mick, Milberger, Spencer, & Faraone, 1995; Tzelepis, Schubiner, & Warbasse, 1995; Wender, 1995). The use of stimulants, including caffeinated beverages and foods, antihistamines, nicotine, and controlled substances, to help focus and attend is one variant of "self medication" within the AD/HD population. Additionally, the use of alcohol, marijuana, and food, to numb the frustration associated with AD/HD, is common (Biederman, Wilens, Mick, Milberger, Spencer, & Faraone, 1995; Solden, 1995; Tzelepis, Schubiner, & Warbasse, 1995).

In addition to creating diagnostic difficulty, substance abuse occurring with AD/HD introduces treatment problems. Professionals are often reluctant to dispense medication to these clients, fearing addiction to or abuse of the prescriptions (Rey, Morris-Yates, Singh, Andrews, & Stewart, 1995). Case studies support successful stimulant medication treatment with no abuse or misuse patterns (Schubiner, Tzelepis, Isaacson, Warbasse, Zacharek, & Musial, 1995). However, based upon the elevated risk for substance abuse associated with AD/HD, consideration of non-stimulant medication or medication monitoring is recommended (Biederman, Wilens, Mick, Milberger, Spencer, & Faraone, 1995; Solden, 1995; Tzelepis, Schubiner, & Warbasse, 1995).

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Learning Disabilities

The prevalence estimate for the co-occurrence of learning disabilities (LD) and AD/HD ranges from 10% to 90% (Biederman, Wilens, Mick, Milberger, Spencer, & Faraone, 1995; Faraone, Biederman, Lehman, Keenan, Norman, Seidman, Kolodny, Kraus, Perrin, & Chen, 1993; Sandler, 1995). As described by Quinn (1995), the deficient areas for both conditions dovetail with typical environmental demands:

> Distractibility and the inability to stay on task are the failure to "put the brakes" on attention and thought; emotional lability and hypersensitivity are the failure to modulate limbic input; behavioral impulsivity and motor hyperactivity are the failure to delay gratification and inhibit actions. These symptoms, in turn, frequently influence learning, memory, and information processing. (Quinn, 1995, p. 26)

If AD/HD is assumed to impact the learning process in this way, various memory, language, and academic skill disorders are possible. Conversely, a pure LD is associated with attentional, organizational, and social problems, which mimic AD/HD problems (Sandler, 1995). A process approach to assessment aids in differentiation, as testing scores may be identical, but the reason behind the performance may be dramatically different (Solden, 1995).

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Obsessive-Compulsive Traits

Obsessive-Compulsive Disorder (OCD) and Obsessive-Compulsive Personality Disorder (OCPD) are likely co-morbid disorders. As a compensatory strategy, a pattern of over-controlling and under-producing often emerges with AD/HD. A person's entire day may be centered on organizing and planning in order to achieve perfection and avoid failure (Shekim, Asarnow, Hess, Zaucha, & Wheeler, 1990; Tzelepis, Schubiner, & Warbasse, 1995). Anticipation of disorganization, forgetfulness, or impropriety are common with AD/HD, leading to compulsive checking and organizing behaviors such as note-taking and list-making. If the behavior were strictly anxiety driven and based upon unrealistic fears, including the presence of obsessions and compulsions, a diagnosis of OCD would be considered. Compulsions can be differentiated from impulsive habits by assessing whether the behavior is accompanied by extreme anxiety, as in OCD (Tzelepis, Schubiner, & Warbasse, 1995). When the thoughts and behaviors are presented in rigid, maladaptive patterns that cause significant impairment, then a diagnosis of OCPD may be appropriate. However, if the habitual patterns reflect an attempt to create an organized environment based upon past failure experience, co-morbidity with AD/HD is more probable. By measuring the amount of time and energy dedicated to habits and assessing the emotional investment in maintaining these patterns, an accurate differential diagnosis is more likely (Solden, 1995).

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Personality Disorders

Other personality disorders in addition to Obsessive-Compulsive Personality Disorder have been studied in relation to AD/HD. Borderline Personality Disorder (BPD) and AD/HD share patterns of impulsivity, emotional reactivity, irritability, and interpersonal difficulties (APA, 1994; Burket, & Meyers, 1995; Meyers, Burket, & Otto, 1993; Rey, Morris-Yates, Singh, Andrews, & Stewart, 1995). However, several differences in presentation exist. With AD/HD, impulsive actions and thoughts tend to be situational and transient, whereas BPD carries a compulsive drive to act in shocking, non-traditional ways (Rey, Morris-Yates, Singh, Andrews, & Stewart, 1995). Likewise, the angry outbursts found with AD/HD tend to be episodic tantrums that pass quickly (Burket, & Meyers, 1995; Meyers, Burket, & Otto, 1993; Rey, Morris-Yates, Singh, Andrews, & Stewart, 1995). People diagnosed with BPD generally have a brooding quality, with anger as a constant emotion (APA, 1994). BPD also includes a pattern of intense unstable relationships, suicidal preoccupation, identity disturbance, fears of abandonment, and a chronic feeling of emptiness, qualities which are not typically associated with AD/HD (Rey, Morris-Yates, Singh, Andrews, & Stewart, 1995; Wender, 1995). The transient dissociative symptoms often associated with BPD tend to occur during stressful events, whereas the daydreaming or "zoning out" associated with AD/HD tends to occur during low intensity events (APA, 1994). Given the current level of

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understanding of both disorders, clinicians are advised that the two disorders should be considered exclusive of each other, despite some reports of the possible diagnostic co-occurrence (Kane, Mikalac, Benjamin, & Barkley, 1990; Tzelepis, Schubiner, & Warbasse, 1995).

Aside from conjecture, Histrionic Personality Disorder remains largely unexplored in conjunction with AD/HD. There is significant overlap in the symptoms, including impulsivity, fleeting and difficult interpersonal relationships, and over-reactivity (APA, 1994). Clients displaying emotional instability and "intense emotional reactivity to the immediate environment, often coupled with distractibility, suggest[s] impaired executive function" (Fogel & Ratey, 1995, p. 11). People displaying this type of emotional lability respond to stimulants or dopamine agonists not unlike traditional AD/HD cases (Fogel & Ratey, 1995). Barkley (1995a) suggests that AD/HD individuals are prone to develop histrionic styles, if not the full disorder, but this idea remains theoretical and lacks supporting research (Tzelepis, Schubiner, & Warbasse, 1995).

Well-documented co-morbid diagnoses with AD/HD include Antisocial Personality Disorder (ASPD) and Oppositional Defiant Disorder (ODD) (Burket, & Meyers, 1995; Loeber, & Keenan, 1994; Weiss, Hechtman, Milroy, & Perlman, 1985). Many symptoms are shared, including interrupting and annoying others, impulsivity, non-compliance with rules, failure to sustain work or effort, and irritability (APA, 1994). However, based upon current research, "antisocial

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behavior," such as lying, stealing, and fighting, is more prevalent than ASPD within the AD/HD population. The diagnostic difference appears to lie in motivation (Barkley, 1996; Loeber, & Keenan, 1994; Rey, 1995; Wender, 1995). Someone diagnosed with ASPD generally lacks remorse for having hurt others, whereas someone diagnosed AD/HD has no desire to violate rules and expectations, but has difficulty conforming to them (Barkley, 1996; Wender, 1995). Although trends of antisocial acts and ASPD diagnoses are found with the AD/HD adult population, seriously impaired behavior and disturbance is not elevated significantly (Weiss & Hechtman, 1993; Wood, Reimherr, Wender, & Johnson, 1976).

Theoretical Paradigms of AD/HD

Controversy over the difficulty that generates AD/HD symptoms continues. Historically, this disagreement has instigated change in the diagnostic label, from Hyperkinetic Reaction of Childhood (APA, 1968), to Attention-Deficit Disorder (APA, 1980), to Attention-Deficit/Hyperactivity Disorder (APA, 1994). Theoretical discourse regarding the source of AD/HD centers around three main domains: disinhibition (Barkley, 1996; Ratey, Middeldorp-Crispijn, & Leveroni, 1995; Quay, 1989; Schachar, & Logan, 1990), inattention (Brown, 1995b), and underarousal (Kinsbourne, 1984; Zentall & Zentall, 1983; Zuckerman, 1983). The dysregulation of one of these functions is purported to generate the symptoms associated with AD/HD. Because attention, inhibition,

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and arousal represent theoretical constructs, and not physiological processes, each will be reviewed using observable or behavioral measures.

Disinhibition

The failure to inhibit or delay a response has been presented as the cause of AD/HD symptoms (Barkley, 1996; Quay, 1989; Schachar & Logan, 1990). Behavioral inhibition includes the ability to create and protect a delayed response to an event, thought, or emotion (Barkley, 1996). An immature ability to inhibit a response is reflected by an impulsive style, where a person has an apparent inability to delay long enough to recognize and use available information (Douglas, 1983; Hunt, Hoehn, Stephens, Riley, & Osten, 1994). Significantly higher commission scores on CPTs by AD/HD children than by non-diagnosed children is cited as evidence of this difficulty (Barkley, DuPaul, & McMurray, 1990). Likewise, the significantly elevated number and severity of behavior problems—aggressive acts, substance abuse, and risk taking—as measured by rating scales completed on diagnosed people is noted as evidence of disinhibition (Barkley, DuPaul, & McMurray, 1990).

Inattention

"Attention" includes an array of functions, such as detecting, focusing, executing, sustaining, and shifting cognitive set (Mirsky, Fantie, & Tatman, 1995; Shum, McFarland, & Bain, 1994; Sohlberg & Mateer, 1989). Selective attention, or the ability to notice new and novel information, is generally average to above

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average for people diagnosed with AD/HD when compared to their peers (Biggs, 1995). In contrast, the AD/HD population repeatedly tests below average for sustained attention or vigilance (Seidel and Joschko, 1990). People with AD/HD are readily able to note and understand new information, but have difficulty maintaining a steady focus.

The attentional dichotomy has been researched in relation to AD/HD. Environmental cues and immediate positive reinforcement increase the level of sustained attention for people with AD/HD to that of age level peers (Barkley, 1981, 1994b, 1995b; Douglas, 1984; Kinsbourne, 1984). Likewise, Kinsbourne (1984) described the need for "something solid and concrete or frequent and salient" (p. 136) for a person diagnosed with AD/HD to sustain attention in an appropriate and goal directed way. In combination, this research suggests a way for people diagnosed with AD/HD to tap strengths and compensate for deficits.

Underarousal

The role of under-arousal has been explored as the source of AD/HD symptoms (Douglas, 1983; Zentall & Meyer, 1987; Zuckerman, 1983). Data suggest that those diagnosed with AD/HD are not operating in an optimal range of stimulation. Hypoarousal theory states that the hyperactivity, disinhibition, and distractibility associated with AD/HD are attempts to compensate for a chronic state of underarousal through sensory input. In a series of experiments, Zentall (1985; 1987) demonstrated that the performance of people with AD/HD could be

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normalized if allowed to incorporate more activity and greater stimulation into tasks (Zentall, Falkenberg, & Smith, 1985; Zentall & Meyer, 1987). Further, Zentall and colleagues suggest that those with AD/HD may have difficulty modulating their arousal level to match situational demands. In low stimulation or boring situations, people with AD/HD struggle to remain alert, and in high stimulation situations they become too excited to act appropriately or effectively (Douglas, 1983; Zentall & Meyer, 1987).

The difficulty with identifying the source of AD/HD symptoms as a theoretical construct is the lack of a measurable and testable hypothesis. Since there are no adequate, quantifiable measures of attention, inhibition, and arousal, experimentally proving or refuting hypothetical origins of AD/HD symptoms is problematic. The implications of an unknown cause confound the treatment of this disorder. It is possible that treatment could be improved or a cure developed if the cause of AD/HD is determined.

Biological Paradigms of AD/HD

Various theories have been explored regarding the substrate of AD/HD, including social factors, parenting styles, biological influences, and most recently neuropsychiatric factors (Barkley, 1995a; Ratey, Middeldorp-Crispijn, & Leveroni, 1995; Sandler, 1995). Assuming a neurodevelopmental component, a complex and varied interaction of neuroanatomical and neurochemical factors likely comprises the causal pathway of AD/HD (Ratey, Middeldorp-Crispijn, &

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Leveroni, 1995; Weiss & Hechtman, 1993). Likewise, paradigms of deficient attention, arousal, and inhibition are not mutually exclusive, but in combination are supported by the divergent research findings on neurological correlates. Ratey, Middledorp-Crispijn, et al. (1995) assert the following:

> The attentional system is an interactive one that involves the coordinated functioning of many systems. Pathways originating in the RAS [reticular activating system] provide a mechanism for the arousal of limbic and cortical structures, the limbic system selectively filters motivationally relevant information, and the frontal cortex initiates movements and actions by inhibiting or activating cortical and subcortical brain areas accordingly. (p. 99)

Several lines of research have focused upon potential neurobiological causes of AD/HD, including anatomical structures (focal brain pathology, magnetic resonance imagery (MRI)), autonomic system variables (skin conductance level (SCL), galvanic skin response (GSR)), event-related potential/evoked potential (ERP), cerebral blood flow, positron emission tomography (PET), and neurochemical studies.

Beginning with the encephalitis-related research and theory of AD/HD, anatomical studies have sought to determine the physical origin of symptoms (Barkley, 1994). The similarity between AD/HD symptoms and the behavioral

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patterns associated with injury, deterioration, and lesions of the frontal lobe has suggested this system as a site of dysfunction (Barkley, 1995a; Mattes, 1980). Frontal lobe lesions have been noted to precede disinhibited behavior, including affective lability, impulsivity, and hyperactivity. Although the intellectual abilities remain intact after a frontal lobe lesion, distractibility, disorganization, perseveration, and impersistence affect a person's application of knowledge (Barkley, 1995a; Ratey, Middeldorp-Crispijn, & Leveroni, 1995; Voeller, 1991).

Further anatomical studies utilizing MRI measurement to compare AD/HD and control groups have presented mixed results. In general, people diagnosed with AD/HD seem to lack the significant frontal lobe anterior asymmetry (Castellanos, Giedd, Eckburg, Marsh, Vaituzis, Kaysen, Hamburger, & Rapoport, 1994; Giedd, Castellanos, Casey-Kozuch, King, Hamburger, & Rapoport, 1994; Hynd, Semrud-Clikeman, Lorys, Novey, & Eliopulos, 1990) of right > left typically found in the general population (Galaburda, LeMay, Kemper, & Geschwind, 1978; Glicksohn, & Myslobodsky, 1993; Kolb, Sutherland, Nonneman, & Whishaw, 1982). Also, the corpus callosum (Castellanos, Giedd, Eckburg, Marsh, Vaituzis, Kaysen, Hamburger, & Rapoport, 1994; Giedd, Castellanos, Casey, Kozuch, King, Hamburger, & Rapoport, 1994; Hynd, Semrud-Clikeman, Lorys, Novey, & Eliopulos, 1990; Hynd, Semrud-Clikeman, Lorys, Novey, Eliopulos, & Lyytinen, 1991; Semrud-Clikeman, Filipek, Biederman, Steingard, & Kennedy, 1994) and right caudate nucleus (Castellanos,

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Giedd, Eckburg, Marsh, Vaituzis, Kaysen, Hamburger, & Rapoport, 1994; Hynd, Hern, Novey, Eliopulos, Marshall, Gonzalez, & Voeller, 1993) were significantly smaller in the AD/HD participants than in the non-clinical participants. In combination, these findings suggest a developmental abnormality in the frontal-striatal circuit for the AD/HD population (Castellanos, Giedd, Eckburg, Marsh, Vaituzis, Kaysen, Hamburger, & Rapoport, 1994).

Autonomic nervous system variables have been studied to explore the arousal theory of AD/HD. In an early study, a sample of children with AD/HD had lower resting skin conductance levels (SCL) and a smaller magnitude of galvanic skin response (GSR) in response to stimuli than did their non-diagnosed peers (Satterfield, & Dawson, 1971). These physiological correlates were interpreted as evidence of the hypoarousal theory for AD/HD. However, in replication studies, SCL and GSR group results were inconsistent between diagnosed and non-diagnosed people (Ross, & Ross, 1982; Zahn, Abate, Little, & Wender, 1975). Thus, electrodermal measures have not proven to be reliable diagnostic or etiologic variables of AD/HD. Peripheral indices, such as these, have long response latencies, which limits their accuracy as measures of central or cortical processes (Hastings, & Barkley, 1978; Naatanen, 1985).

Continuing to explore the arousal theory, event-related potentials (ERP), or evoked potentials—a measure of time-locked brain electrical changes when stimuli are presented—were compared between the AD/HD and non-diagnosed

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populations. Based upon the hypoarousal theory, it was hypothesized that ERP amplitudes would be lower and latencies longer for people with AD/HD than non-diagnosed people; a theory that was initially confirmed (Satterfield, Cantwell, & Satterfield, 1974). Further studies report a significantly decreased amplitude of the positive late component (P300 or P3) during attention tasks for people diagnosed with AD/HD than their non-diagnosed peers, whereas longer latency patterns are not reported consistently (Frank, Seiden, & Napolitano, 1994; Gordon, Lazzaro, Anderson, Barry, & Clark, 1994; Holcolmb, Ackerman, & Dykman, 1986; Klorman, 1991; Klorman, Brumaghim, Fitzpatrick, & Borgstedt, 1991, 1994;Loiselle, Stamm, Maitinsky, & Whipple, 1980; Holcomb, Ackerman, & Dykman, 1986; Satterfield, Schell, Nicholas, Satterfield, & Freese, 1994). Smaller P300 amplitudes are correlated with poorer performance on attentional tasks (Klorman, Brumaghim, Fitzpatrick, & Borgstedt, 1991, 1994). Animal research is used to complement the ERP findings (Berridge, Arnsten, & Foote, 1993; Pineda, Foote, & Neville, 1989). The P300 component and the focused or directed behavior of monkeys disappear if the locus coeruleus, primarily consisting of noradrenergic neurons, is destroyed. Corollary research indicates that the P300 does not reflect the functioning of a single structure, but represents the combined activity of several structures (Allison, McCarthy, & Wood, 1992; Okada, Kaufman, & Williamson, 1983). The repeated correlation of decreased P300 amplitudes with attentional and performance variability has supported its

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use as a measure of the disabilities found with AD/HD, including distractibility, disinhibition, and impulsivity.

Blending static anatomical measurement and dynamic functioning, PET scans allow the observation of localized brain activity based on cerebral glucose metabolism rates (CMRglu). Within the adult AD/HD population, initial results showed significantly lower CMRglu in the premotor and somatosensory (superior prefrontal) cortices during an auditory continuous performance task (Zametkin, Nordahl, & Gross, 1990). Replication studies have not substantiated this finding except with adolescent girls (Ernst, Liebenauer, King, Fitzgerald, Cohen, & Zametkin, 1994; Zametkin, Liebenauer, Fitzgerald, King, Minkunas, Herscovitch, Yamada, & Cohen, 1993). Likewise, with stimulant treatment, adults with AD/HD did not show increased CMRglu, yet did experience significant behavioral improvement (Ernst, Liebenauer, King, Fitzgerald, Cohen, & Zametkin, 1994; Matochik, Liebenauer, King, Szymanski, Cohen, & Zametkin, 1994; Matochik, Nordahl, Gross, Semple, King, Cohen, & Zametkin, 1993). These findings do not support a theory of reduced CMRglu resulting in the symptoms of AD/HD. Several procedural and methodological problems, such as using different inclusion/exclusion criteria, having varied testing conditions and tasks, failing to obtain baseline measures, and using mixed gender experimental groups, may have contributed to the varied results.

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Catecholamines have also been investigated in relation to the cause of AD/HD, with dopamine and norepinephrine most frequently targeted. Variable and inconsistent results have not determined a single pathway (Barkley, 1990; Shenker, 1992; Zametkin, & Rapoport, 1987), but support the interconnected nature of the neurological systems. Dopaminergic neurons, through two main channels—the meso-cortico-limbic and the nigrostriatal systems (Comings, 1990)—serve a predominantly inhibitory role in the frontal lobe (Bannon, Roth, 1983; Glowinski, Tassin, & Thierry, 1984; Jay, Glowinski, & Thierry, 1995). The meso-cortico-limbic system originates in the ventral tegemental area (VTA), and projects to the nucleus accumbens, olfactory tubercle, septum, and the frontal cortex. The nigrostriatal system initiates in the substantia nigra, which projects to the corpus striatum. Norepinephrine is the primary excitatory neurotransmitter in the frontal lobe, with the majority of cells in the locus coeruleus activated by this neurotransmitter. Further, dopamine is synthesized into norepinephrine, with production regulated through a feedback system (Zametkin & Rapoport, 1987). The prefrontal cortex connects these varied systems, as it receives input from the limbic system and ascending RAS, is activated during motor activity, and receives projections from the sensory and motor neurons of the temporal and parietal lobes (Comings, 1990). Difficulties with inhibiting behavior and subsequently initiating new behaviors are theorized to stem from underactivation of the frontal lobes, and subsequent hyperfunctioning of the subcortical areas (Barkley, 1996).

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Hence, abnormal functioning in any part of this system could impact other parts of the system (McCracken, 1991).

Based upon the inconsistency of physiological attention-related research, and the lack of a verifiable precursor to AD/HD, a better theory on the cause of AD/HD acknowledges the interaction of neurological structures and chemicals as a working system (Mirsky, 1987; Zametkin & Rapoport, 1987). The regions, processes, and functions are interdependent, so intervention at any part of the neurological system is likely to result in some benefit.

Assessment Process of Adult AD/HD

Many factors limit the effectiveness of AD/HD assessment. Few published studies examine the efficacy and accuracy of psychodiagnostic assessment for adults with AD/HD, and most of these studies are based upon small sample sizes (Hechtman, 1989; Mirsky, Anthony, Duncan, Ahearn, & Kellam, 1991). The lack of well-normed instruments, including few well substantiated cut-off scores or comparison tables for the adult AD/HD population, also creates difficulty. Additionally, all people to a certain degree experience the symptoms of adult AD/HD, so the diagnosis is based on chronicity, severity, and frequency. The reliance on gradation rather than presence or absence results in many false positive and negative diagnoses. Findings are often varied, with no single test or assessment battery proven to diagnose AD/HD in adults (Mapou, 1995; Murphy, 1996). However, a number of assessment measures are useful in

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symptom and strength/weakness identification. These include: (1) Rating scales; (2) Review of previous records; (3) Comprehensive interview; and (4) Testing (Biggs, 1995; Murphy, 1996).

Rating Scales

Behavioral rating scales are a rapid and relatively effective method for assessing adult AD/HD. The Wender Utah Rating Scale (WURS; Ward, Wender, & Reimherr, 1993) is used with adults for the retrospective diagnosis of childhood AD/HD, targeting the presence and severity of childhood symptoms. This scale bases the adult diagnosis upon the self-rating of historical symptoms. The construction of the WURS targets symptoms of hyperactivity and impulsivity more than those of inattention, resulting in frequent false negative diagnoses of AD/HD-I (Biggs, 1995; Brown, 1995b). The WURS is useful for differential diagnosis, as research has shown the WURS to successfully discriminate between AD/HD and depression with adults (Biggs, 1995; Stein, Sandoval, Szumowski, Roizen, Reinecke, & Blondis, 1995).

Unlike the WURS, the Brown Attention-Activation Disorder Scale - 2 (BAADS2: Brown, & Gammon, 1991) and the Brown Attention Deficit Disorder Scales (BADDS: Brown, 1995) assess functioning within the past month and target issues of underachievement, lack of motivation, and attentional difficulties. These scales are useful for identifying the AD/HD-I population and delineating the internalizing components of this disorder (Brown & Gammon, 1991).

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The ADHD Behavior Checklist for Adults (Murphy, & Barkley, 1995) identifies both current and childhood patterns of inattention and hyperactivity-impulsivity. Recognizing the developmental shift of AD/HD, this scale offers age-adjusted norms (Murphy & Barkley, 1995). Since all of the rating scales presented here have different time references and strengths in identification, combined administration is suggested (Biggs, 1995).

Review of Records

A review of academic, work, and personal records is often helpful for elucidating childhood and lifespan symptom patterns (Biggs, 1995; Wender, 1995). Trends of underachievement, varying motivation, risk taking, and social difficulty can often be noted. Patterns of creativity, ingenuity, entrepreneurism, and independence are also often traced. Examination of historical data can provide an objective measure of the person's performance and can serve to confirm or refute a self-report of lifetime symptoms.

Semi-Structured Interview

To focus the clinical interview on pertinent issues of co-morbidity, differential diagnosis, and the criteria of AD/HD, a semi-structured interview is useful (Biggs, 1995). The Semistructured Interview for Adult ADHD (Barkley, 1991) and the Evaluation Interview for Adult ADHD (Murphy, 1992) effectively assess historical information, current functioning, co-morbidity and AD/HD symptoms. Murphy's interview (1992) uses a flowchart approach to differentially

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diagnose a number of disorders. Use of one of these interviews can minimize mis-diagnosis by inquiring about a broader range of symptoms and diagnostic patterns than those relevant to AD/HD.

Cognitive Testing

Intelligence tests such as the Wechsler Adult Intelligence Scale-Revised (WAIS-R; Wechsler, 1981) can help identify specific cognitive strengths and weaknesses. Behavioral observations made during testing can also aid in diagnosis, as patterns of carelessness, low frustration tolerance, hyper-verbalization, inattention, and impulsive responding are commonly displayed (Biggs, 1995). Some researchers have identified the Digit Symbol, Arithmetic, and Digit Span subtests as relatively impaired with AD/HD adults (Barkley, 1990; Klee, Garfinkel, & Beauchesne, 1986). These subtests target working memory and sequencing deficits. However, no standard pattern of decreased test performance has been proven to reliably and validly indicate AD/HD (Biggs, 1995).

Achievement tests are often included in combination with standard intelligence tests for AD/HD assessments, especially if a co-morbid learning disability or communication deficit is suspected (Sandler, 1995). A wide variety of educational tests are available, including the Wechsler Individual Achievement Test (WIAT; Wechsler, 1992), the Wide Range Achievement Test - Revised (WRAT-R; Jastak, & Wilkinson, 1984), and the Woodcock-Johnson Psycho-

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Educational Battery-Revised Tests of Achievement (Woodcock & Johnson, 1989). However, in their brevity, most of the tests are not likely to identify the significant daily organizational, planning, and execution difficulties associated with AD/HD (Biggs, 1995; Sandler, 1995).

Neuropsychological Testing

Neuropsychological tests, similar to other assessment measures, have not been proven to confirm or refute an AD/HD diagnosis (Barkley & Grodzinsky, 1994; Elwood, 1993; Gorenstein, Mammato, & Sandy, 1989). However, the additional information regarding processing style, sensory learning preferences, individual strengths and weaknesses, and organizational approach, provided by neuropsychological measures, can help to shape recommendations and treatment strategies (Biggs, 1995).

Tests interpreted to quantify a person's ability to sustain and shift attention quickly and smoothly while inhibiting automatic responses include Trail Making Tests, Parts A and B (Reitan, 1986), the Stroop Word-Color Association Test (Stroop, 1935), and the Letter Cancellation Test (Talland & Schwab, 1964). These tests have been successful in differentiating AD/HD from non-AD/HD children, but have not shown the same discriminatory sensitivity with adults (Reader, Harris, Schuerholz, & Denckla, 1994; Voeller & Heilman, 1988). In conjunction with other testing and behavioral observations, these measures can serve to

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quantify the impulsivity and sequencing difficulties often noted during AD/HD assessments (Biggs, 1995).

Planning and executive functioning are revealed by performance on some neuropsychological tests. The Halstead Category Test (Halstead, 1947), the Wisconsin Card Sorting Test (WCST) (Heaton, Chelune, Talley, Kay, & Curtiss, 1993), the Letter Cancellation Test (Talland, & Schwab, 1964), and the Rey-Osterrieth Complex Figure Task (Rey-O) (Spreen & Strauss, 1991) measure a person's ability to organize and execute a solution. The WCST shows significant performance differences between AD/HD and non-diagnosed children (Reader, Harris, Schuerholz, & Denckla, 1994), but the test has not proven useful for adolescent or adult assessment, as clinically diagnosed individuals perform within the average range (Barkley, Grodzinsky, & DuPaul, 1992; Chelune, Ferguson, Koon, & Dickey, 1986). Mixed results on the other tests have been obtained, but again, observations of problem solving style, impulsivity, frustration tolerance, and distractibility are of diagnostic value (Biggs, 1995).

Continuous performance tests require a person to sustain attention and respond only when a specific combination of visual or auditory signals is presented. Visual versions that have shown modest sensitivity to identifying AD/HD include The Test of Variables of Attention (TOVA: McCarney & Greenberg, 1990), Gordon Diagnostic System (GDS: Gordon, 1986), and the Conners' Continuous Performance Test (CPT: Conners, 1992). However, the

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false-negative rate for these tests is significant, with 15% to 35% of people diagnosed with AD/HD scoring in the average range; the false-positive rate is low, only mis-classifying 2% of non-AD/HD people (Gordon, Mettelman, & DiNiro, 1989; Trommer, Hoeppner, Lorber, & Armstrong, 1988). Commission scores, a measure of responding when a response is not appropriate, are more reliable for identifying the adult with AD/HD than are other continuous performance measures (Barkley & Grodzinsky, 1994).

Social-Emotional and Personality Testing

To further elucidate personality variables, associated or secondary characteristics, and co-morbid conditions, a variety of personality and syndrome driven tests can be administered. The Minnesota Multiphasic Personality Inventory-Second Edition (MMPI-2: Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989) (Mapou, 1995; Svanum & Ehrmann, 1992; Tzelepis, Schubiner, & Warbasse, 1995) and Beck Depression Inventory (BDI: Beck & Steer, 1987) are useful for identifying co-morbid anxiety, mood, and substance abuse disorders (Tzelepis, Schubiner, & Warbasse, 1995; Wender, 1995). This information can also be gathered through a clinical interview.

Assessment Concerns

The accuracy of self-report for assessing adult AD/HD has been questioned. Systematic assessment methods, including gathering input from others in the person's life via interview, rating scales, or both, and using semi-

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structured interviews minimize self report errors (Biederman & Faraone, 1990; Brown & Gammon, 1991).

Given the chronic nature of AD/HD, the lack of a standardized test or battery for AD/HD, and the accuracy of interview and rating scale information, the value of conducting a complete psychological assessment has been questioned (Biggs, 1995). However, "adult outcomes are determined as much by strengths as by weaknesses" (Sandler, 1995, p. 68). Assessment batteries for AD/HD that identify individual strengths and skills, as well as the diagnostic symptoms, can prove useful for future treatment and effective coping strategy development.

Treatment Options for Adults with AD/HD

Since the causal pathway has yet to be determined, to date there is no cure for AD/HD (Barkley, 1990, 1995b). Treatment of the disorder commences with diagnostic assessment, which often prompts both relief and grief for the person when a label is attached to a lifetime of difficulties (Hallowell & Ratey, 1994; Solden, 1996; Wender, 1995). Current treatment models for adults with AD/HD parallel the flexible assessment process, which allows treatment to be tailored to the needs of the individual. Four components are typically included in treatment: medication, education, social support, and individual work (Hallowell & Ratey, 1994; Solden, 1996; Wender, 1995). Outcome research for treatment with diagnosed adults has focused on medication efficacy (Gualtieri, Ondrusek, & Finley, 1985; Mattes, Boswell, & Oliver, 1984; Spencer, Wilens, Biederman,

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Faraone, Ablon, & Lapey, 1995; Wender, Reimherr, & Wood, 1981,1985; Wood, Reimherr, Wender, & Johnson, 1976), while other methods for modulating the symptoms have not been critically evaluated (Barkley, 1990; Fargason & Ford, 1994; Wender, 1995; Zametkin & Borcherding, 1989). To extrapolate adult treatment planning from researched treatment with children (Barkley, 1990), co-morbid conditions can be effectively ameliorated with psychosocial treatment but AD/HD symptoms are not significantly affected (Brown, Wynne, & Medenis, 1985; Gittelman, Abikoff, Pollack, Klein, Katz & Mattes, 1980; Gittelman-Klein, Klein, Abikoff, Katz, Gloisten, & Kates, 1976; Robin & Foster, 1989; Wender, 1995; Zametkin & Borcherding, 1989).

Medication

Psychostimulant medication, which is the most consistently effective treatment for AD/HD symptoms (DuPaul & Costello, 1995; Gualtieri, Ondrusek, & Finley, 1985; Mattes, Boswell, & Oliver, 1984; Spencer, Wilens, Biederman, Faraone, Ablon, & Lapey, 1995; Wender, Reimherr, & Wood, 1985; Wender, 1995; Wilens, Biederman, Spencer, & Prince, 1995), can be used as a model for developing and assessing new treatment strategies. Although the specific mode of medication intervention is undetermined, with stimulant treatment the extracellular dopamine levels increase by blocking the reuptake and increasing the release of the neurotransmitter (Elia, Borcherding, Potter, Mefford, Rapoport, & Keysor, 1990; Kuhar, Rize, & Boja, 1991; Seiden, Sabol, & Ricaurte, 1993;

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Sulzer, Chen, Lau, Kristensen, Rayport, & Ewing, 1995). Altered levels of norepinephrine were also explored, but noradrenergic effects seem to occur through indirect homeostatic changes (Elia, Borcherding, Potter, Mefford, Rapoport, & Keysor, 1990; Hunt, Cohen, Anderson, & Clark, 1984). Serotonergic functioning does not seem to be related to stimulant medication (Donnelly, Rapoport, Potter, Oliver, Keysor, & Murphy, 1989; Nemzer, Arnold, Votolato, & McConnell, 1986; Zametkin & Rapoport, 1987), but may be associated with AD/HD via co-morbid mood disorders. Both stimulant medication and dopamine inhibit synaptic transmission between the prelimbic cortex and the nucleus accumbens, allowing greater control of norepinephrine mediated channels in the frontal cortex. This relational change precedes decreased motor activity, decreased impulsivity, and increased focused attention (Porrino, Lucignani, Dow-Edwards, & Sokoloff, 1984; Solanto, 1984). Stimulant treatment appears to alter the transmission of dopaminergic neurons through an increase in available dopamine and indirectly facilitates norepinephrine-mediated functions in crucial brain areas (Elia, Borcherding, Potter, Mefford, Rapoport, & Keysor, 1990; Zametkin & Rapport, 1987).

A variety of physiological measures have been used to monitor the impact of stimulant treatment within the AD/HD population. PET scan comparisons of non-medicated baseline measurements and medicated (acute intravenous, acute oral, and chronic oral administration) measurements show no significant increase

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in global cerebral metabolism, despite significant improvement on behavioral measures (Ernst, Zametkin, Matochik, Liebenauer, Fitzgerald, & Cohen, 1994; Matochik, Liebenauer, King, Szymanski, Cohen, & Zametkin, 1994; Matochik, Nordahl, Gross, Semple, King, Cohen, & Zametkin, 1993). However, as previously mentioned, PET scan research has been flawed by methodological inconsistency. In addition to behavioral change (Ernst, Zametkin, Matochik, Liebenauer, Fitzgerald, & Cohen, 1994; Klorman, Brumaghim, Fitzpatrick, & Borgstedt, 1991, 1994; Matochik, Liebenauer, King, Szymanski, Cohen, & Zametkin, 1994; Matochik, Nordahl, Gross, Semple, King, Cohen, & Zametkin, 1993), P300 amplitude has been shown to increase and normalize during stimulant treatment (Gordon, Lazzaro, Anderson, Barry, & Clark, 1994; Klorman, Brumaghim, Fitzpatrick, & Borgstedt, 1991, 1994; Verbaten, Overtoom, Koelega, & Swaab-Barneveldt, 1994; Young, Perros, Price, & Sadler, 1995).

Overall, stimulant medication appears to bring about behavioral change by impacting the neurobiological cascade. The symptom relief provided by medication can improve a person's ability to benefit from psychosocial interventions (Hallowell, & Ratey, 1994; Wender, 1995). "The medication works like a pair of glasses, helping the individual to focus. It can also reduce the sense of inner turmoil and anxiety that is so common with [AD/HD]" (Hallowell & Ratey, 1994, p. 20). By affecting the brain regions or processes that participate in

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regulating inhibition, attention, and emotion, people with AD/HD may gain access to and control of their abilities.

Education

The most widely advocated psychosocial intervention for AD/HD is education (Barkley, 1995b; Hallowell & Ratey, 1994; Solden, 1995; Wender, 1995). Analogous to reactions to diagnostic assessment, education about the disorder can elicit emotional responses from diagnosed adults. While conferences, publications, lectures, and classes can provide opportunities to learn about the nature of the disorder, current research findings, and treatment options, they may also decrease the perceptions of social isolation that are common within the AD/HD population (Solden, 1995). The more a person learns about AD/HD, the greater the potential for understanding how the disorder impacts daily living, and then identifying and evaluating ways to address it (Hallowell & Ratey, 1994; Solden, 1995). Insight into the disorder and its long term impact can prepare a person to intelligently self-advocate and successfully manage daily living (Hallowell, & Ratey, 1994).

Social Support

A second key intervention for adult AD/HD is accessing social support. This support ranges from public to personalized avenues (Hallowell & Ratey, 1994; Solden, 1995). Large national support groups, such as Children and Adults with Attention Deficit Disorder (CHADD), the National Attention Deficit

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Disorder Association (ADDA), and the Learning Disabilities Association of America (LDA) sponsor conventions, regional support groups, and advocacy programs. Local support, therapy, or self-help groups are another source of connection and current education on AD/HD. Personalized interventions for mobilizing social support include couples or family therapy, which can address specific issues and goals. Group therapy can serve additionally to recreate the situations that are most problematic for the individual, then allow the person to access training and skills to ameliorate those difficulties (Hallowell & Ratey, 1994; Solden, 1995). It has been anecdotally noted that structured, time-limited groups are more successful than open-ended process groups when working with the AD/HD population (Weiss, 1992).

Individual Work

A final form of psychosocial intervention suggested for adults with AD/HD is individual work. Included under this heading are developing structured strategies, coaching, and psychotherapy. Structuring a person's lifestyle or environment to develop external limits or cues helps channel work, relationships, and personal growth (Hallowell & Ratey, 1994; Solden, 1995). Such practical changes as making lists, using daily planners, or recording voice mail reminders can help compensate for deficits and access strengths in a way which increases the person's success, productivity, and sense of self control (Hallowell & Ratey, 1994; Nadeau, 1996; Ratey, Hillyard, & Coe, 1996). Another example of a

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structure strategy is the use of verbalization strategies by adults with AD/HD. A large proportion of the "impulsive," "distracting," and "inappropriate" speech displayed by the AD/HD population (Barkley, 1990; Zentall, 1988) is situation relevant (Barkley, 1995b; Berk & Landau, 1993; Behrend, Rosengren, & Perlmutter, 1992). The speech often describes activities, verbalizes problem-solving steps, and reflects brainstorming; these comments may serve a self-regulatory function for the person. Further, increased verbalization has been correlated with increased task success (Azmitia, 1991; Berk & Landau, 1993; Roberts, 1979). The potential impact of this strategy is observable in the treatment of children diagnosed with AD/HD, when the management of impulsive behavior is, "assisted by having the child think aloud and talk himself or herself through the task" (Barkley, 1990, p. 61). Overall, accessing external sources of structure helps guide the thoughts and actions of an adult with AD/HD.

Individual therapy can again aid with the understanding of the disorder and treatment of associated conditions, behaviors, and attitudes (Hallowell & Ratey, 1994; Wender, 1995). Supportive, interactive, educational treatment that addresses daily social, cognitive, and emotional struggles in a problem-solving manner is appropriate. A related development receiving considerable attention in the treatment of AD/HD is the practice of "coaching." A "coach," who may be a professional or lay person, provides regular structured encouragement, reminders, and refocusing prompts to the individual. Although directive therapy is

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beneficial, over-subscription to behavior modification can lead to perceptions of authoritarianism and undermine the goals of individual work (Solden, 1995).

The study of psychosocial intervention for adults with AD/HD is in its infancy. Relying upon anecdotal reports and theoretical models, treatment is currently under exploration and awaits validation. Borrowing from executive-function rehabilitation research, the guiding principles behind successful interventions are to develop new strategies for structuring the environment and to problem solve in a clearly defined manner (Ben-Yishay, & Diller, 1983; Cicerone & Wood, 1987; Sohlberg & Mateer, 1989; Williamson, Scott, & Adams, 1996). However, self-management strategies and cognitive therapy for ADHD, in isolation, have proven clinically insufficient (Abikoff, 1991; Hinshaw, 1996). Integrating psychosocial interventions with medication treatment is considered optimal (Hinshaw, 1996).

Simultaneous Sensory Stimulation as an Individual Coping Strategy

The integration of knowledge on stimulant medication treatment, coping strategies, and anecdotally noted interventions for adults diagnosed with AD/HD yields a model for the self-management of AD/HD symptoms based on sensory stimulation.

In laboratory settings, the same neurological systems targeted by stimulant medication have been explored in relation to auditory, visual, and somatosensory stimulation (Hof, Mufson, & Morrison, 1995; Barbas, 1995; Morecraft, Geula, &

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Mesulam, 1993). The results from PET scans (Cohen, Semple, Gross, King, & Nordahl, 1992; Corbetta, Miezin, Dobmeyer, Shulman, & Petersen, 1991; Corbetta, Miezin, Shulman, & Petersen, 1993; Grafton, Woods, Mazziotta, & Phelps, 1991; Mazziotta, Phelps, & Carson, 1982, 1984; Pardo, Pardo, Janer, & Raichle, 1990; Rumsey, Andreason, Zametkin, & King, 1994; Seitz, Roland, Bohm, Greitz, & Stone-Elander, 1991) and the results from dopaminergic and noradrenergic system measurement (Corbetta, Miezin, Shulman, & Petersen, 1993; Freed & Yamamoto, 1985; Meeusen & De Meirleir, 1995) parallel the measured cortical and subcortical results of psychostimulants. Incoming stimuli, external and internal, are projected from the ventral tegmentum to the reticular activating system, thalamus, and primary and secondary association areas (Comings, 1990; Kolb & Whishaw, 1980). Tertiary association areas, such as the amygdala and inferior parietal area, cross-modally compare and integrate sensory information (Aggleton & Mishkin, 1983; Comings, 1990; Mishkin & Appenzeller, 1987). The prefrontal cortex connects bi-directionally with the sensory association areas, the premotor cortex—including the striatum or caudate-putamen—and the limbic system and cingulate (Kolb & Whishaw, 1980). This system integrates and regulates emotional responses (Kolb & Whishaw, 1980). Blending local and general theories of brain-behavior functioning (Crockett, Clark, Klonoff, 1981), the integration of sensory stimulation, emotional arousal,

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and motor response is believed to direct attention through differential cortical activation (Alexander, DeLong, Strick, 1986; Gerfen, 1992).

"Divided attention" experiments have studied the simultaneous presentation of auditory and visual stimulation in laboratory settings (Bernstein, 1970; Squires, Donchin, & Squires, 1977; Wickens, 1980). When a person is instructed to attend to one modality and ignore the other, novel events in the irrelevant mode precede activation of the locus coeruleus, elicit P300 waves, and serve to delay responses to the other sensory mode (Satterfield, Schell, Nicholas, Satterfield, & Freese, 1990; Squires, Donchin, & Squires, 1977; Treisman & Davies, 1973; Wickens, 1980). However, the irrelevant information elicits smaller P300 waves than the primary mode unless it is extremely strong, novel, or deviant (Ritter, Vaughan, & Costa, 1968; Smith, Donchin, Cohen, & Starr, 1970; Squires, Donchin, Squires, & Grossberg, 1977). Given that people with AD/HD seem deficient in the ability to delay responses to ongoing events (Barkley, 1996), by accessing neurological processes like those presented during situations involving multi-tasking or simultaneous sensory stimulation (Satterfield, Schell, Nicholas, Satterfield, & Freese, 1990; Squires, Donchin, & Squires, 1977; Treisman & Davies, 1973; Wickens, 1980), a natural source for decreased impulsivity may be tapped.

Natural settings have also been used to research the use of sensory stimulation. Using a behavioral observation checklist, the activity of children

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diagnosed with AD/HD was monitored both with background music playing and with only typical classroom background noise (Cripe, 1986). Results indicated a statistically significant decrease in off-task behavior in the music condition, but no difference in attention span. However, the methods for measuring performance quality and attention span were not reported. A follow-up study compared the arithmetic performance of children diagnosed with AD/HD and those non-diagnosed during high (music), low (speech), and no (silence) extra stimulation conditions. Children with AD/HD performed significantly better during the music or high sensory stimulation condition (Abikoff, Courtney, Szeibel, & Koplewicz, 1996). Dual stimulation via unattended music and the arithmetic tasks correlated with improved persistence and performance for children with AD/HD, apparently serving to limit impulsive behaviors and distractibility.

In clinical application, the introduction of color to increase the stimulation value of a vigilance task normalizes the performance of children and adolescents diagnosed with AD/HD (Zentall, 1986; Zentall, & Dwyer, 1989; Zentall, & Kruczek, 1988; Zentall, Falkenberg, & Smith, 1985). With a more challenging concept-formation task, the introduction of additional stimulation (e.g., adding color to the visual presentation) early in the learning process appears to be equally disruptive to children with AD/HD and non-diagnosed peers (Zentall, 1989; Zentall & Shaw, 1980). Adding stimulation in later stages of learning, however,

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is associated with improved persistence in goal-directed behavior for the diagnosed children (Zentall, 1986).

Sensory interference in problem solving has also been demonstrated with visual cues. When a false cue is presented in a more stimulating manner, and involves the same sense required to complete the task, the performance of people diagnosed with AD/HD is noticeably more impaired than that of non-diagnosed people (Campbell, Douglas, & Morgenstern, 1971; Carter, Krener, Chaderjian, Northcutt, 1995; Rosenthal, & Allen, 1980; Steinkamp, 1980; Zentall, & Kruczek, 1988). Significantly below average scores on both the Stroop Color-Naming Task (Carter, Krener, Chaderjian, Northcutt, 1995) and timed spelling tests with non-relevant letters colorized (Zentall, & Kruczek, 1988) have been cited in support of deficient sensory cue gating for people diagnosed with AD/HD. However, performance on time sensitive tests is likely to be impaired by delayed responses, corresponding with the role of sensory stimulation on "divided attention" tests.

Hyperactivity may be mis-classified as a deficit of AD/HD, rather than being recognized as a coping strategy to maintain an attentional focus (Barkley, 1990; Comings, 1990). "Obvious motor restlessness (fidgeting and moving about, yawning and stretching, talkativeness, or a combination of these) is the individual's attempt to improve alertness" (Weinberg & Harper, 1993, p. 59). Stimulation of the neural systems involved with movement seems to normalize and reduce AD/HD symptoms (Barkley, 1990; Comings, 1990; Grenell, Glasser,

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& Katz, 1987; Weiss, 1976). As noted by J. Ratey (personal communication, November 17, 1995),

> Physical movement increases some neurotransmitters we use medicine for. Many of my ADD business executives can only read if they are on their Stairmaster or on their bike, and had to bring the equipment into their offices.

In fact, auditory ERP studies involving children diagnosed with AD/HD have reported a significant negative correlation between cortical arousal level and the initiation of hyperactive behavior (Satterfield, Cantwell, Satterfield, 1971; Satterfield & Dawson, 1974). Hannaford (1995) describes this paradoxical situation:

> Teachers become frustrated with [children's] constant movement and tell them to "sit still." Wanting to stay alert, the children's next strategy is to activate their balance centers by tilting their chairs so that only the back two legs of the chair are supporting them. The teacher's response is to demand that they "sit up right and pay attention." But this is a contradiction for these children. If their heads and bodies are still, there will be reduced activation of their brains. (p. 158)

The interaction of stimulation and attention provides a neuropsychological bridge. When a person is alerted to novelty or change, the noradrenergic locus

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coeruleus cells of the posterolateral tegmentum are activated (Nicola, Kombian, & Malenka, 1996; Van Bockstaele, Akaoka, & Aston-Jones, 1993; Van Bockstaele, & Aston-Jones, 1995). The alerting response rapidly dissipates with acclimation or habituation (Tairov, Smirnov, & Islamova, 1982), implicating the noradrenergic system in the gating of sensory systems and the shifting of focused attention (Sara, Vankov, & Herve, 1994; Tairov, Smirnov, & Islamova, 1982). Dopaminergic neurons in the frontal lobe are inhibitory; these neurons are stimulatory in subcortical areas, including the nucleus accumbens (Comings, 1990; Nicola, Kombian, & Malenka, 1996). Lowered dopamine levels, based on these two pathways, precedes disinhibited limbic activity (Comings, 1990; Nicola, Kombian, & Malenka, 1996). Associated with this disinhibition are behavioral activity, emotional reactivity, and impulsive or non-directed cognitive functioning (Hechtman, 1994). When studying a neurological function, the interconnection of physiological systems creates difficulty in identifying its source as the neurochemical, anatomical, or regulatory feedback system.

The relationship between sensory stimulation and arousal can be conceptualized as an inverted-U model. Sensory deprivation and low intensity rhythmic stimulation reduce autonomic arousal (Brauchli, Michel, & Zeier, 1995; Morse, 1993; Turner, Ewy, Sershon, & Freundlich, 1989; Turner & Fine, 1991) and decrease cortical activity (Hayashi, Morikawa, & Hori, 1992). Increasing the strength, complexity, and variability of the sensory input increases autonomic

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arousal to a threshold; arousal decreases by habituation or by inhibition of the reticular formation if the threshold is exceeded (Brauchli, Michel, & Zeier, 1995; Goldberger, 1982; Lindsley, 1961; Lipowsky, 1975; Zuckerman, 1983). Optimal cortical arousal has been related to the introduction of moderately intense rhythmic visual (Brauchli, Michel, & Zeier, 1995; Michel, Kaufman, & Williamson, 1994; Pfurtscheller, 1986; Riedl-Bratengeyer, 1993) and auditory stimulation (Kaufman, Curtis, Wang, & Williamson, 1992; Riedl-Bratengeyer, 1993).

The model of arousal mirrors the pattern of difficulties experienced by people diagnosed with AD/HD. At low and high levels of environmental or sensory stimulation, deviant patterns of behavior, impulsivity, and attentional focus are seen (Barkley, 1996), which may suggest a difficulty with modulation (Bloom, 1994; Douglas, 1983, 1984). Since voluntary movement has been associated with decreased cortical response to other sensory stimuli, its utility as a modulating strategy is possible (Kristeva-Feige, Rossi, Pizzella, Lopez, Erne, Edrich, & Rossini, 1996). Likewise, environmental auditory and visual stimulation correlate with significant behavioral and performance improvement for children diagnosed with AD/HD (Abikoff, Courtney, Szeibel, & Koplewicz, 1996; Steinkamp, 1980).

The direction of attention and cortical arousal is reliant upon the transmission of limbic information to the neocortex, if attentional mechanisms

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serve to focus a person on events, stimuli, or processes which are important for survival, and the limbic system mediates emotional and motivational responses (Barkley, 1995a; Comings, 1990). When the environment does not naturally provide these alerting forces, it is posited that sensory stimulation can serve as a catalyst, inducing neurological and subsequent behavioral delayed responses to irrelevant environmental cues. Beginning in childhood, people diagnosed with AD/HD gravitate toward sensory exploration more than age-matched peers, engaging in play that is less symbolic and organized but more novel and stimulating (Alessandri, 1992; Barkley, 1994b). This sensory focus may progress from play to subtle tactics that enable a person to focus and delay a response. In this sense, simultaneous sensory stimulation represents a form of adaptation, whereby people develop skills to succeed and perform within their environment (Schultz & Schkade, 1992). The theory supporting this strategy parallels the rehabilitation model of neuropsychology, "teaching the person to use intact systems in order to produce behavior similar to that mediated previously by damaged systems" (Filskov, Grimm, & Lewis, 1981, p. 50). Extending this theory, activating the sensory system would serve to modulate the functioning of other physiological systems by accessing homeostatic feedback cycles.

Simultaneous sensory stimulation strategies are anecdotally noted by practicing professionals, including R. Barkley, J. Ratey, and A. Tzelepis. However, minimal methodical research has examined the effects or utility of this

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approach across the lifespan (Cripe, 1986; Evans, Pelham, & Grudberg, 1995; Zentall & Smith, 1992). Integrating research on the treatment effects of stimulant medication (Elia, Borcherding, Potter, Mefford, Rapoport, & Keysor, 1990; Gordon, Lazzaro, Anderson, Barry, & Clark, 1994; Verbaten, Overtoom, Koelega, & Swaab-Barneveldt, 1994; Young, Perros, Price, & Sadler, 1995; Zametkin & Rapport, 1987), the theorized neurological pathways of sensory stimulation (Comings, 1990; Kolb, & Whishaw, 1980, Sara, Vankov, & Herve, 1994), and the sparse research and anecdotal literature on the effects of sensory stimulation, a self-management simultaneous sensory stimulation strategy for coping with AD/HD was proposed. The assertion that simultaneously engaging in two activities will aid the inhibition of impulsive or reactive actions is supported by the theory of limited attention and sensorimotor gating (Kristeva-Feige, Rossi, Pizzella, Lopez, Erne, Edrich, & Rossini, 1996; Sara, Vankov, & Herve, 1994). Accessing the "attentional" or sensory processing systems through self-directed stimulation is assumed to create a delay in processing other incoming information (Satterfield, Schell, Nicholas, Satterfield, & Freese, 1990; Squires, Donchin, Squires, & Grossberg, 1977; Treisman & Davies, 1973; Wickens, 1980). If this assumption is correct, neurological stimulation can be used to compensate for the difficulties of AD/HD.

Sensory Integration Therapy (SIT), which proposes stimulating the sensory systems to achieve permanent change in neural processing (Ayers, 1972,

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1979), could be modified for the management of AD/HD. Application of these strategies (i.e. rhythmically activating various senses during rote activities or low intensity situations) could maintain neurochemical equilibrium. This sensory management intervention, which recognizes the transient efficacy of treatment, parallels the dosage administration of stimulant medication. As observed by Zentall and Zentall (1983), "temporary increases in stimulation-seeking behavior may allow the children to perform more efficiently during the time that they are attending." (p. 456) What may be perceived as distracting behaviors to the non-AD/HD observer, may function as a refocusing or inhibitory cue for the AD/HD child or adult (Zentall & Meyer, 1987).

By actively developing and employing sensorimotor stimulation tactics for use during rote tasks, people diagnosed with AD/HD could improve persistence, focus, and success (Hunt, Hoehn, Stephens, Riley, & Osten, 1994; Zentall & Meyer, 1987; Zentall & Zentall, 1983). Integrating theories of neurological processing, it was posited by the author that these changes in attentional direction and inhibition are related to inducing cortical activation through sensorimotor stimulation.

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CHAPTER III: METHOD AND PROCEDURE

Method of Study

Using the exploratory case study approach, an in-depth investigation of an adult's experience with Attention Deficit/Hyperactivity Disorder (AD/HD) was conducted. The case provides an organized and integrated clinical example of adult AD/HD, the application of generally accepted treatment practices, and the implementation of simultaneous sensory stimulation as a coping strategy for AD/HD. The focused nature of this investigation allowed for the individual exploration of processes, variables, and interactions that deserve more extensive attention (Isaac, & Michael, 1981). Specifically, simultaneous sensory stimulation strategies were revealed that aided a person diagnosed with AD/HD to sustain effort during tasks and achieve greater success in day to day living.

Weaknesses of the case study approach are also recognized. Due to the narrow focus and sample size of one, the single case study does not allow for reliable generalizations to the adult AD/HD population. However, reasonable clinical impressions were formulated which warrant investigation and validation. Since this case study does not include specific hypotheses to be empirically tested and validated, no statement of proven effectiveness or causality is intended in this study. Additionally, case studies are vulnerable to subjective biases. The participant's patterns and experiences may not be representative of the AD/HD population. Likewise, the researcher may be subject to selection and interpretive

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bias based upon preconceptions (Isaac & Michael, 1981). To help control for selection bias, the specific rule-in and rule-out criteria were established prior to client selection. Interpretive bias was minimized by using standard testing protocols and basing findings upon available normative data.

Participant

The following criteria were met for inclusion in the study: (1) currently (within the past six months) met the full DSM-IV criteria (at least six symptoms of inattention or hyperactivity-impulsivity) for a diagnosis of AD/HD (APA, 1994); (2) described a chronic course of AD/HD symptoms from childhood (some symptoms before the age of 7) to adulthood; (3) chronological age was within the range of 30 to 49 years old; (4) endorsed sufficient items on the Wender Utah Rating Scale (WURS) to score 46, the Brown Attention Deficit Disorder Scale (BADDS) to score 50, and positively endorsed (score 2 or 3; often or very often) at least 4 of 9 symptoms from either the "inattention" or the "hyperactivity-impulsivity" scale on the Adult ADHD Checklist. The following conditions, identified via self-report during the Semi-structured Clinical Interview for Adult ADHD (Barkley, 1991), were not met to necessitate exclusion from the study: (1) active Substance Dependence or Abuse; (2) diagnosis of Borderline Personality Disorder, any Psychotic Disorder, any Bipolar Disorder, or Mental Retardation; (3) the symptoms of AD/HD better accounted for by another DSM-IV psychiatric condition or environmental influence; (4) history of traumatic head injury or loss

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of consciousness, (5) history of encephalitis, seizure disorder, anoxia, nor any other neurologically based disease.

Clinical Work Sample Procedures

The clinical work sample illustrates modifying the assessment and treatment interventions for an adult with AD/HD, so as to provide useful information for the client and practitioner. The clinical work sample includes psychodiagnostic testing, three individual follow-up sessions, and five educational, support group sessions. Beginning with the test battery, the treatment approach is based upon a cognitive-behavioral (CBT) model.

AD/HD is often associated with thoughts, feelings, and behaviors that decrease a person's satisfaction or functioning on a daily basis (Hallowell, 1995; Weiss, 1994; Wender, 1995). This pattern can be interpreted from the CBT perspective (Hawton, Salkovskis, Kirk, & Clark, 1989). Early experiences with AD/HD symptoms and problems contribute to a person's assumptions about self, others, and the world. These assumptions are used to evaluate new experiences and information. Some assumptions are likely rigid and inaccurate, and can be described as "dysfunctional." Subsequent "critical incidents," which corroborate the dysfunctional assumptions, prompt "negative automatic thoughts." The thoughts are associated with unpleasant emotions and are reactive rather than logical. An upsurge of negative automatic thoughts leads to other symptoms in physical, cognitive, emotional, behavioral, and interpersonal domains. A cycle is

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then formed, as the symptoms prompt more negative automatic thoughts, and in turn reinforce the dysfunctional assumptions. Such thoughts do not cause psychiatric disorders, but they do interact with social, biological, and developmental factors to trigger and maintain other symptoms. Hence, negative automatic thoughts are an effective point for clinical intervention.

Application of CBT with adults diagnosed with AD/HD is conceptualized in four stages (Hallowell, 1995; McDermott, 1994; Murphy, 1995). The initial stage is to develop a collaborative relationship and conceptualize the case by examining the advantages and disadvantages of the person's beliefs. Together, the participant and the researcher establish treatment goals and target problems through specific, operational definitions. Interventions targeting the AD/HD symptoms, negative automatic thoughts, and underlying assumptions are initiated. These interventions include developing and adopting strategies which help structure the person's environment, maintaining behavioral records, and challenging the underlying beliefs generally categorized as unacceptability and helplessness. Finally, reviewing the change achieved through treatment, targeting historical problem situations and cycles, and decatastrophizing potential future problems facilitates relapse prevention. Hawton, et al (1989) summarize the general intervention package as follows:

> Problem solving is an important and integral part of treatment. All aspects of therapy are made explicit to the patient, and the therapist and patient

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> endeavor to work in a collaborative relationship in which they plan together strategies to deal with clearly identified problems. (Hawton, Salkovskis, Kirk, & Clark, 1989, p. 12)

The participant was recruited from a pool of self-referred individuals requesting a psychodiagnostic assessment at a private, outpatient, psychological services center. Learning Development Services, San Diego (LDS), is a for-profit program, which offers educational, psychological, and neuropsychological assessment, therapy, and tutoring to children, adolescents and adults. The adult who was selected, based upon the inclusion and exclusion criteria, was informed of the nature of the study. Informed consent was obtained and documented with the appropriate forms. The researcher arranged dates and times to complete the three stages of clinical data collection.

The initial phase of clinical work was the diagnostic assessment (See Appendix D). To date, no single battery of tests has been shown to reliably and validly diagnose adult AD/HD (Mapou, 1995; Murphy, 1996). However, the following measures were selected based upon their sensitivity to unique cognitive strengths and weaknesses, personality traits, symptoms, emotional functioning, and the sensory strategies used by the individual:

Semi-structured Clinical Interview for Adult ADHD: (Barkley, 1991). The interview assesses six main domains: (1) level and source of knowledge

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about AD/HD diagnosis and treatment; (2) childhood and current symptoms, including those relevant to AD/HD; (3) history of psychiatric conditions, diagnoses, and treatment; (4) presence of a personality disorder or syndromes; (5) presence of substance abuse or dependence, including nicotine, caffeine, alcohol, prescription and non-prescription drugs; (6) detailed history of social, occupational, academic, and legal functioning. A mental status evaluation is conducted by beginning the interview in an open-ended manner, allowing for assessment of the individual's attentiveness, thought process, responsiveness, organizational ability, mood, and affect (Kane, Mikalac, Benjamin, & Barkley, 1990). The interview channels discussion along lines of relevant symptoms, historical or developmental trends, and differential diagnosis.

ADHD Behavior Checklist for Adults: (Murphy & Barkley, 1995). The ADHD Behavior Checklist for Adults is a self-report questionnaire that targets the DSM-IV symptom list for ADHD. Questions prompt a person to answer on a likert scale from 0—3 (Rarely or never, Sometimes, Often, or Very Often, respectively). The scale is administered twice, once based on the prior six months and once based on the adult's retrospective memory of behavior from ages 6—12. Based on current normative data and the age criteria for the prospective participant, positive endorsement (score 2 or 3; often or very often) on 4 of 9 symptoms from either the inattention or the hyperactivity-impulsivity scale was required for inclusion (Murphy & Barkley, 1995).

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Wender Utah Rating Scale: (WURS; Ward, Wender, & Reimherr, 1993) The WURS is a self-report 61-item scale given to adults to retrospectively describe their own childhood behavior. Items are rated from a 0 (Not at all or very slightly) to 4 (Very much). Twenty five of the items, targeting AD/HD symptoms, are scored and totaled. A cutoff score of thirty-six or higher correctly identifies 96% of adults with AD/HD and 96% of non-diagnosed adults. By increasing the cutoff score to forty six or higher, the Type II error of not diagnosing adults with AD/HD increases, correctly identifying only 86%. However, 81% of adults diagnosed with unipolar depression and 99% of adults with no targeted diagnosis are identified, serving as an effective tool for differentiating between depressive mood disorder and AD/HD (Ward, Wender, & Reimherr, 1993). Based on inclusion criteria for this study, a score of forty-six or higher was required to support differentiation between a depressive disorder and AD/HD.

Brown Attention Deficit Disorder Scales: (BADDS; Brown, 1995) The BADDS is a scale initially designed to assess attention-activation disorder—an expanded form of AD/HD, Predominantly Inattentive Type (AD/HD-I). The 40 self-report items target the cognitive and affective symptoms reported by persons diagnosed with AD/HD. Questions are rated on a scale of 0—3, and summed to gain a total score. A cut off score of fifty, which yields .08 Type I and .04 Type II error, is typically used in clinical practice and was required for inclusion in this

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study. The BADDS screens for the symptoms associated with the inattentive criteria and the associated characteristics of AD/HD (Brown, 1996). Five clusters of symptoms are noted, including (1) organizing and activating to work; (2) sustaining attention and concentration; (3) sustaining energy and effort; (4) managing affective interference; and (5) utilizing "working memory" and accessing recall.

Wechsler Adult Intelligence Scale - Revised: (WAIS-R; Wechsler, 1981) The WAIS-R is a test of major mental abilities, which consists of eleven subtests divided into six verbal subtests and five performance subtests (Wechsler, 1981). No specific intellectual testing pattern is diagnostic for AD/HD (Barkley, 1990). However, intellectual testing can be beneficial to assess ability strengths and weaknesses, including process observations to tap individual strategies for success (Kane, Mikalac, Benjamin, & Barkley, 1990). Despite the lack of a specific diagnostic pattern, some testing trends have been observed with AD/HD populations. Difficulties with sustained attention and short-term memory can be associated with relative weaknesses on Digit Span-Forward and Digit Symbol (Mapou, 1995; Mateer, 1995; Shum, McFarland, & Bain, 1990). The deficits with working memory, or mental manipulation of information from memory, can often impact and lower performance on Digit Span-Backwards, Digit Symbol, and Arithmetic (Barkley, 1990; Klee, Garfinkel, & Beauchesne, 1986; Mapou, 1995; Mateer, 1995; Mirsky, Fantie, & Tatman, 1995). As attention can be seen as a

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building block for memory, poor long-term retention or recall is sometimes evidenced by adults diagnosed with AD/HD and associated with a lowered Information score (Sohlberg & Mateer, 1989). Higher level cognitive skills of reasoning and abstraction are often maintained with AD/HD, displayed as relative strengths on Similarities and Picture Completion (Mapou, 1995, Mateer, 1995). Additionally, response styles including inattention to detail, impulsivity, forgetfulness, and either halting or tangential speech are common with adults diagnosed with AD/HD (Barkley, 1995b, 1996; Biggs, 1995).

Wechsler Individual Achievement Test - Screener: (WIAT, Wechsler, 1992) The WIAT-Screener is a brief, individually administered measure that assesses achievement based on three of the WIAT subtests: Basic Reading, Mathematics Reasoning, and Spelling. Additionally, Reading Comprehension and Listening Comprehension were administered to qualitatively note the functioning of working memory (Kane, Mikalac, Benjamin, & Barkley, 1990). Reading Comprehension was administered in an altered format, allowing the individual to read the passage then removing it before asking the subtest questions. Difficulties with holding and manipulating information from memory can be observed (Biggs, 1995; Kane, Mikalac, Benjamin, & Barkley, 1990), but no norms are available for this technique. Likewise, norms on the WIAT are limited to 19 years, 11 months, 30 days, which adds error to the use of this measure with people over this age. The measure was used to gather qualitative

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information on how the participant applied knowledge in academic domains. The WIAT was also a rough screen for learning disabilities by comparing the subtest scores to WAIS-R ability scores, and noting significant differences. Given the high co-morbidity rate with AD/HD and learning disabilities, a discrepancy was expected (Kane, Mikalac, Benjamin, & Barkley, 1990; Sandler, 1995).

Rey-Osterreith Complex Figure Test: (Rey; Spreen & Strauss, 1991). The Rey-O is a paper-and-pencil task requiring planning and visual-spatial-constructional abilities. Performance on this test is sensitive to deficits from frontal lobe injuries (Lezak, 1994). The task requires the person to copy a complex geometric shape. No robust findings regarding adult AD/HD performance on this test have been found, but process observations have been noted about the problem solving style and organization of approach (Kane, Mikalac, Benjamin, & Barkley, 1990; Mapou, 1995; Mateer, 1995).

Trail Making Test (Parts A & B) (Trails, Reitan, 1986). Trails is a measure of sequencing, vigilance, and mental flexibility (Heaton, Grant, & Matthews, 1991). The Trail Making Test Intermediate version was used and is comprised of two parts: A and B. In Part A, the person connects a series of numbered circles distributed arbitrarily on a page. Part B requires the person to draw a line connecting numbers "1" to "13" and letters "A" to "G" in alternating ascending sequential order. Shifting and sequencing tasks requires focused attention, the ability to switch approaches, and the inhibition of inappropriate

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responses. The scores on Trails are the times the person requires completing each part. Part A is relatively insensitive to AD/HD difficulties (Kane, Mikalac, Benjamin, & Barkley, 1990: Mateer, 1995; Pogge, Stokes, & Harvey, 1994). Recognizing the typical struggle with switching cognitive set of people diagnosed with AD/HD, the time on Part B was anticipated to exceed the norm by more than 1.5 standard deviations and errors were likely (Heaton, Grant, & Matthews, 1991; Mapou, 1995; Pogge, Stokes, & Harvey, 1994).

Beck Depression Inventory: (BDI; Beck & Steer, 1987) The BDI is a twenty one item, self report measure that screens for the presence of depressive symptoms (Beck & Steer, 1987). Each domain is rated using a four choice format, which indicate increasingly extreme presentations of the symptom. The statements are then rated on a 0-3 point basis and summed for a total score. A score of 10-29 suggests minimal to severe depression (Beck & Steer, 1987; Marsella, Sanborn, Kamboka, Shizure, & Brennan, 1974). Based upon the level of demoralization commonly found in the AD/HD population (Tzelepis, Schubiner, & Warbasse, 1995; Wender, 1995), the participating individual's score was expected to be within this range.

Minnesota Multiphasic Personality Inventory - 2: (MMPI-2, Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989) The MMPI-2 is a self-administered test, including 567 true/false questions, which yield 10 clinical scales and 3 validity scales. The MMPI-2 was used to gain a fuller perspective of

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the participant's personality, issues, and the hypothesized impact of AD/HD symptoms on her lifestyle (Mapou, 1995). Successful use of the MMPI-2 in developing a treatment plan for clients who have difficulties with impulsivity has been reported (Svanum & Ehrmann, 1992), and was used to tailor interventions with the participant in this study.

Robust findings regarding the performance of adults with AD/HD have not been reported. Based on clinical practice, the most common two-point codes within the AD/HD group are "78/87" (10.7%), "27/72" (10.1%), "68/86" (8.2%) "47/74" (7.6%), and "24/42" (6.5%) (Tzelepis, Schubiner, & Warbasse, 1995). Together, these five code-types account for 43.1% of the two-point codes. Research conducted with brain injured individuals has shown an artificial elevation related to neurological symptoms on several scales, including "1" (Hypochondriasis), "2" (Depression), "3" (Hysteria), "7" (Psychasthenia) and "8" (Schizophrenia) (Alfano, Finlayson, & Stearns, 1990; Dikman & Reitan, 1977; Gass, 1991, Hamilton, Finlayson, & Alfano, 1994). Integrating these bodies of work, elevations on scales "2", "7", and "8" were expected, while other scale elevations would not have been unusual.

Fidget to Focus: (FTF, Rotz & Hild, 1996) The FTF is a self-report measure used to identify the sensorimotor habits a person has developed and currently does during monotonous tasks. The underlying assumption of this scale is that the habitual behaviors help the person to maintain attention and focus

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during the monotonous tasks from which a person with AD/HD is easily distracted. Based upon the overactivity or fidgeting associated with AD/HD (DSM-IV) and the variability in sensory learning styles (Frender, 1990; Hannaford, 1995), a range of responses bridging multiple senses was expected. The individual was interviewed about her item endorsements to approximate the frequency, duration, and the perceived effect on persistence and goal completion associated with these stimulation strategies. The author attempted to minimize iatrogenic effects on the participant's descriptions by wording the inquiries in a non-directional manner.

Treatment for adults with AD/HD commences at the time of assessment and diagnosis (Barkley, 1990; Hallowell, 1995; Murphy, 1995). For this study, the test battery helped elucidate the participant's difficulties with inattention and impulsivity, as well as the strengths or learning styles she used to compensate for vulnerabilities. Likewise, information regarding personality, coping style and emotional issues was manifest in the testing results. Gathered data was written into an integrated interpretation addressing diagnostic criteria, issues of co-morbidity, and the individual's processing style. Using the CBT approach, the assessment emphasized the possibility of change by clarifying individual strengths and weaknesses, focusing on the functional relationships between these arenas, and identifying current and potential applications (Kirk, 1989).

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The second stage of the clinical sample was strategy implementation, through assessment feedback and individual intervention. Education and introduction to self-monitoring were the foci of the feedback meeting.

> If clinicians can help patients understand the disorder, frame it as something treatable, and instill hope and optimism for the future, then patients are more likely to feel motivated to work at and follow through with treatment. This should also result in more positive outcomes. Conversely, if patients are left with only a vague notion of what ADD is, are confused or unsure of how they might be helped, and are not activated to feel hope, then they are far less likely to persevere and achieve a positive outcome. (Murphy, 1995, p. 138)

Goals of the feedback session included: (1) discussing the results of the assessment, diagnostic information and recommendations; (2) reviewing the simultaneous sensory stimulation strategies she habitually used during the assessment and which appeared to improve her performance; and (3) collaboratively developing a written plan for her to proactively use these strategies. By using a "behavioral log" or written plan, self-monitoring was concretized and introduced as a gauge of change by noting specific target behaviors.

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During the two weeks proceeding the feedback session, one follow up meeting per week was scheduled. These one-hour meetings involved reviewing the behavior logs, noting any perceived change in task completion, and exploring associated thoughts and feelings. Since the frequency and nature of a behavior has been noted to change with the introduction of self-monitoring (Barlow, Hayes, & Nelson, 1984), anticipated variation in performance change was discussed and normalized with the participant. To encourage perceptions of self-control, continued self-monitoring, and improved performance, these meetings allowed for collaborative adjustments in the simultaneous sensory stimulation strategy plan based upon the participant's perception of its effectiveness.

The final phase of clinical work involved participation in a time-limited group for adults diagnosed with AD/HD. The overarching treatment goals included becoming educated on AD/HD, building personal awareness, and experiencing social acceptance (Barkley, 1995a; Nadeau, 1995, Rostain, 1991; Weiss, 1992; Wender, Woods, & Reimherr, 1985; Woods, 1986). To help the participants become educated consumers of psychological resources, identify individual processes, and choose appropriate and effective coping strategies, basic information related to AD/HD was presented (Murphy, & LeVert, 1995). Members were encouraged to question, apply and share relevant experiences, interactively furthering the three treatment goals. Singly, peer acceptance "is reassuring, and feelings of being different and isolated are counteracted by the

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discovery that these same feelings and problems may be shared by others" (Aguilera, 1990, p. 34). For adults with AD/HD, this social process can provide a sense of relief related to common perceptions of chronic social isolation and rejection (Barkley, 1995a; Weiss, & Hectman, 1993).

The treatment in this study employed the model developed by Lynn Weiss (1992). The weekly agenda of 1½-hour sessions follows:

Week 1: The introductory meeting focuses on presenting current knowledge of AD/HD, including symptoms, theoretical etiology, diagnostic process, and common treatments. Participants share personal experiences and examples of each. Additionally, each participant lists specific problems encountered on a daily basis and solicits other group members for solutions. Participants choose one coping strategy to employ and monitor during the following week. They plan to log the perceived impact of the strategy, and provide feedback to the group at the next meeting. Such goal directed self-monitoring is believed to be a key step to improving daily functioning and satisfaction (Nadeau, 1995; Parente, & Anderson-Parente, 1991).

Week 2: During the feedback discussion, participants report on the use of the chosen coping strategy. The educational topic of this meeting centers on the common emotional issues of reactivity, anger, and depression. Often, grief work is important for people diagnosed with AD/HD in order for them to process losses incurred because of the condition (Hallowell, 1995; Murphy, 1995; Wender,

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1995). Hence, education and discussion of the grieving process, including the stages of shock and denial, guilt and anger, bargaining, depression, and acceptance (Kubler-Ross, 1969), is included. Group members share present and past feelings about personal difficulties associated with AD/HD. They also discuss the diagnostic process and ways to make changes in light of new information about the condition. Finally, the application of the chosen coping strategy and group problem solving for individual emotional issues concludes this meeting.

Week 3: The meeting begins with a follow-up discussion on the utility of coping strategies. Further discussion centers on difficulties with organizing and activating in daily living. Basic strategies for time management, spatial organization, and "housekeeping" are discussed, with each member presenting personal examples of difficulties. The idea of "coaching" is also introduced (Hallowell, & Ratey, 1994; Nadeau, 1995). Members target an organizational strategy to use and identify potential coaches outside of the group.

Week 4: Following review of the use of the coping strategy and progress on obtaining a coach, discussion centers on interpersonal relationships in relation to AD/HD. Discussion of workplace, educational, social, and family relationships is included. Communication, anger management, and disclosure or discussion of AD/HD issues are explored in the context of each type of relationship (Nadeau, 1995; Weiss, 1994).

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Week 5: Adding to the Weiss model, an individual "feedback session" is scheduled with each group member in order to review and evaluate progress. Additionally, the practitioner provides recommendations and referrals for future education, therapy, and change. The participant's appraisal of the group as a mode of growth and change is solicited to measure the utility of this approach and the researcher's interventions with newly diagnosed adults.

Within the group, the practitioner monitored members' participation in discussion, completion of homework, and solicitation of additional information. Likewise, awareness of personal symptoms, associated difficulties, and attempts to develop new strategies were noted for each member. Instances of symptom presentation during the group time were identified and processed within the forum.

Since other group members did not actively participate in this study, only summaries and transcriptions related to the targeted individual are included with the research documents. To preserve the distinction of the group process, individual sessions with the participant did not overlap with the group timeline. Brief contacts of less than fifteen minutes at the end of group sessions were used to track the participant's strategy development and behavior logs.

In summary, the clinical work sample includes: (1) an integrated diagnostic interpretation; (2) the written plan for the application of simultaneous sensory stimulation strategies during daily tasks; (3) the written summarization of

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the participant's implementation of the plan; (4) the written summarization of the participant's process and progress through the group meetings. The therapeutic goals of this treatment plan were developed and implemented using a cognitive-behavioral problem-solving framework. The goals included education about and insight into individual strengths and deficits, in order to cope proactively with the difficulties associated with AD/HD. The participant and practitioner collaboratively developed coping strategies for her to use to effectively change specific thoughts, feelings, and behaviors. Individual characteristics, "fidget to focus" strategies, and learning styles identified during the assessment phase were used to direct and structure strategy implementation and to focus group-based interventions for the individual.

Methods for Presenting, Interpreting, and Discussing Clinical Data

The culmination of this project entails integration of the reviewed literature and the clinical data. Observations of the difficulties related to AD/HD, participation in individual and group sessions, and the use of sensory stimulation strategies were used to evaluate and critique current theories.

First, clinical work yielded an illustration of adult AD/HD. The test scores and behavioral observations reflected inattention and impulsivity. The impact of AD/HD symptoms on the participant's social, occupational, and educational functioning were observed and recorded, supporting theoretical models to complete the clinical case study. Based on validity research of adult reports of

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AD/HD symptoms (Biederman, & Faraone, 1990; Brown, & Gammon, 1991), problems with self-report data were not anticipated. To correct for potential self-reporting errors, observations made by the researcher throughout the assessment, group, and follow-up sessions were included.

Second, the participant's personal examples of the practical use and effects of simultaneous sensory stimulation strategies were used to explore theories related to simultaneous sensory stimulation and AD/HD. Examples were gathered during follow up and group session discussions and observed by the researcher. Where the collected data did not support theory, hypotheses for the discrepancy were offered.

Third, proposals for future research were offered based on the process and results of this study. When clinical data did not support theory, discrepancies were noted and suggested for further exploration. The clinical case study was used to clarify and illustrate the critically reviewed literature on adult AD/HD and sensory stimulation as a coping strategy.

Ethical Considerations

The project was approved by the Institutional Review Board (IRB), at the California School of Professional Psychology - San Diego, as noted in Appendix B. Administration procedures and interpretation of the tests utilized in this project were reviewed in consultation with a qualified psychologist trained and experienced in the use and interpretation of these procedures. The potential

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consequences related to participation in this study were explained through the use of informed consent. Potential benefits were also explained, including (1) the opportunity for education, support, and potential solutions; (2) the potential for recognizing simultaneous sensory stimulation strategies already being utilized; and (3) the subsequent application of these strategies in a more proactive way to enhance and refine the methods used to cope with AD/HD symptoms. The option to withdraw consent, or decline participation without penalty, was clarified for the participant. A copy of the informed consent form is attached as Appendix C. The results of the assessment were discussed with the participant prior to individual and group treatment. All clinical data was maintained in a secure manner consistent with APA recommendations and guidelines (American Psychological Association, 1992).

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CHAPTER IV: CLINICAL CASE STUDY

This doctoral project involved the in-depth study of an adult with the condition of Attention Deficit/Hyperactivity Disorder (AD/HD). Psychological assessment, feedback sessions, brief individual cognitive behavioral therapy (CBT), and a closed ended psychoeducational AD/HD group were the primary means by which theories regarding AD/HD were examined and clinical competence was demonstrated. Current models for the assessment and treatment of adult AD/HD were synthesized and modified to more effectively match the individual's circumstances.

The case was described and analyzed in terms of a cognitive conceptualization (J. Beck, 1995; Persons, 1989). The assessment data include behavioral observations, presenting problem and its history, relevant personal history, test analysis, and a clinical diagnosis. A comprehensive conceptualization is presented to provide the framework for understanding the psychological functioning of the participant. Finally, the tracked impact of psychoeducation, support, and the sensory strategy intervention are described according to individual session and group session reports and observations. Prior to implementing any clinical methodology, it was decided to observe behaviors and attitudes under non-medicated (i.e., stimulant, antidepressant, etc.) circumstances in order to draw a clearer connection between strategy implementation and concurrent changes. The final discussion more clearly

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identifies the interplay of AD/HD symptoms, personal history, and the impact of interventions for the participant.

Assessment

Mental Status

Appearance, Attitude, Activity: Joy* is a 31-year-old Caucasian woman. She stands five feet four inches tall and weighs 275 pounds. She was dressed casually for the evaluation sessions. She appeared interested in the process and motivated to do her best. She was cooperative, but became frustrated when her testing performance declined. Joy became tearful once when describing her "failed life." Her gross-motor movements were labored; she often struggled to stand up from her chair and her breathing was labored when walking. While seated, she slowly rocked back and forth on the back two legs of the chair throughout the assessment.

Mood and Affect: Stating "I just don't know what to do anymore," Joy's mood was frustrated, apprehensive, and sad. Her affect was mildly labile, but was congruent with the subject matter that was discussed. She made several curt comments about her personal history. She was enthusiastic about the process, but anxious about her performance and the diagnostic conclusions.

* All names and identifying information have been changed to preserve the participant's confidentiality.

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Speech and Language: Joy's receptive and expressive language skills are considered well developed. Her responses to direct questions were often short and incomplete, in that she communicated general ideas but left out descriptive details. She was able to elaborate on her answers with additional questioning.

Thought Content and Process and Perception: Joy's remarks were, at times, self-derogatory and she conveyed perceptions of failure. Her conversation was slightly tangential, but the associations were obvious. She made several references to physical difficulties, which reflected her preoccupation with her health. She denied delusions, hallucinations, suicidal ideation, or homicidal ideation.

Cognition: Joy was oriented in all spheres. Her concentration was somewhat poor. Ambient noises and conversational topics or ideas easily distracted her. She requested the assessor repeat instructions on various subtests. Joy often interrupted questions or rapidly responded to them, and consequently provided answers based upon incomplete or misunderstood information. If asked to check her answer, she was able to readily correct errors. Often, Joy did not guess about possible solutions when she encountered difficult problems, but said, "I don't know." She guessed when encouraged to do so, and often gave correct answers. Verbally talking herself through tasks, using tactile cues, and writing out steps were all successful strategies Joy used to complete the testing.

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Insight and Judgment: Concentration lapses, impulsive responding, and poor self esteem interfered with Joy's application of planning, organizational, and problem solving abilities. She was largely unaware of what factors aided her performance, and seemed to commit cognitive errors of absolutist thinking and minimization-magnification. Her impulsive style, emotional reactivity, and self-preoccupation limited her judgment.

Semi-Structured Clinical Interview for Adult AD/HD

Joy sought a psychological evaluation complaining of problems with forgetfulness, feeling overwhelmed by organizational tasks, daydreaming, feeling like "nothing ever gets accomplished," impulsive eating, frequent job changes, and "being moody since childhood." Given the similarity of these symptoms to her daughter's, who was recently diagnosed with AD/HD, Joy, herself, questioned the possibility of having the disorder.

Joy resides with her ex-husband, Dave, and their two daughters, Toni, age nine, and Suzy, age five. She hopes to develop a home-based sales and marketing program, but is currently working as a newspaper carrier. Joy views herself as overextended because of parental, work, and housekeeping obligations. She spends free time with her family and a close friend.

School was a successful experience for Joy. She prided herself on her academic record and ability to compensate for difficulties. A review of her school records showed mainly 'B' level work. She stated she had an affinity for reading

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and writing beginning in elementary school. Joy still turns to books for support as an adult, and "gets lost in the words." Math, however, was a struggle for her in school, as reflected by her lower grades in math and science courses. Joy stated, "I still count on my fingers, because I can't hold the numbers in my head." She enjoyed the hands-on learning in geology, but remembers she needed music playing in the background to study and focus on technical science books. The use of music to compensate for attentional difficulties is an example of Joy's early strategies. Despite her academic success, she withdrew from high school as a senior. She earned her GED the following year. Looking to continue her education, Joy enrolled in two community college courses but withdrew when she realized they did not meet her expectations.

Relationships and social conduct have been sources of complication for Joy from childhood through adulthood. According to her mother's report and qualitative school record notes, she was typically seen as a quiet and studious young girl. However, Joy recalls being repeatedly reprimanded at school and home for interrupting others and having half hour periods of "uncontrollable giggling." She remembers adults often scolding her for "forgetfulness or being spacey, like I'd lose my head if it wasn't attached." She recalls playing a stronger role at home, where she was the eldest sibling in a family of three children. Joy reports that, as an adolescent, she instigated heated arguments with her sister.

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Since Joy was six years older, these fights often resulted in her punishment for being a poor role model.

Her role as the eldest child in her family differed from that with her peers, where Joy reports being regarded as an outsider or a victim. Due to her family's repeated moves between California and Idaho, she changed social groups every two years. By the time she entered middle school, Joy did "not make many friends since [she] was so shy." She attributes her social uncertainty to being taunted and ridiculed by children after the many moves. The final move with her family was to Idaho the summer before her senior year in high school. Joy wanted to return to her friends from the past two years, so over the phone agreed to marry a platonic friend, Dave. "We were going to date each other when I got back to see if it worked."

Her marriage at the age of 18 marked a significant transition for Joy. Returning to California, she moved in with Dave, dropped out of high school, and began working at a fast food restaurant. Dave and Joy divorced four years after their marriage, following the birth of their first daughter. The emotional turmoil of these events prompted Joy to seek counseling. According to Joy, the marital problems resulted from mutual difficulties organizing and directing their home, careers, and social life. They reconciled after several months apart, but chose to live together rather than remarry. Joy gave birth to their second daughter three years later. Joy believes that she carries most of the responsibilities for parenting

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their daughters and for completing the household chores. Her social circle mainly includes her family, one local friend, and infrequent letter writing to friends. Joy describes her letter writing as enjoyable but frustrating, because she has "a hard time keeping it contained to one page. I just can't tell what's important and what to cut."

Joy describes her work history as a search for an interesting job. She explains her numerous job changes as occurring when the requirements became too mundane or "dealing with people made me nuts." Her current position as a newspaper carrier has lasted for four years, a length she attributes to the factors of solitude and driving. Although photography has been an interest and skill of hers since childhood, she withdrew from community college training courses and she has not pursued it professionally. Joy is trying to join a home based sales program which would allow her to set her own schedule, work on her own, and increase her income. She has not yet pursued this career, fearing she will "mess that up, too, then where would [my family] be?"

Joy listed several physical complaints and medical problems. Significantly overweight since the age of 16, she describes an impulsive pattern of eating which she has tried to control using numerous treatments and programs. Joy described other impulsive behaviors, including nine speeding tickets and several traffic accidents. She has undergone multiple hernia operations, experiences continuous nausea and diarrhea, and suffers from mild head and

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backaches. Joy acknowledges drinking approximately 1-2 glasses of wine a week, sometimes using alcohol to "numb the pain and escape boredom," but never to the point of drunkenness. She reports forming the same habit with sleeping pills following her marital separation, although she has since discontinued her use of this medication. Joy reported receiving a complete physical examination five months prior to this evaluation, with no medical problems indicated other than her weight. Joy reported no other substance misuse, developmental delays, significant allergies, medical conditions, head injuries, or other traumatic events.

In summary, Joy's history has included a pattern of impulsive emotional reactions, behaviors, and unstable relationships. Criticism from others for her conflicts, mistakes, and emotional behavior during childhood seems to have contributed to Joy's poor self-image, passivity, and physical displacement of emotions in adulthood. Complaints of headaches, backaches, and gastrointestinal problems began in her teen years, and have continued to the time of the evaluation, despite no known medical cause. She also described a pattern of sadness and irritability, low self esteem, and overeating which has persisted during the past five years.

ADHD Behavior Checklist for Adults

Scales completed by Joy and others reflect symptoms of both Inattentive and Hyperactive-Impulsive behaviors (see Table F1). For retrospective recall of

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childhood symptoms, Joy consistently scores more than 1.5 standard deviations above her peer group in the domains of inattention and overall ADHD symptoms. She also scores 1.5 standard deviations above her peers in the number of hyperactive-impulsive symptoms she has, but has inconsistent scores in the severity of their impact. Her mother sees these symptoms as more disabling than does Joy. Adulthood scores for Joy are more than 1.5 standard deviations above the mean of her peer group in the areas of inattention and overall ADHD symptoms according to her mother's, husband's, friend's and her own report. Behaviors which were consistently noted to occur "Very Often" included not following through with instructions, failing to finish work, having difficulty organizing tasks and activities, losing things necessary for tasks or activities, and being forgetful in daily activities. Joy also displayed significantly more symptoms of hyperactivity and impulsivity than her peers did according to her mother's and husband's reports. These symptoms included blurting out answers before questions had been completed, interrupting or intruding upon others, and being constantly on the go. Poor self observation has been associated with AD/HD, which increases the value of reports from significant others and can explain differences in self and other symptom reports (Wender, 1995). Overall, this scale indicates Joy has significant problems with disorganization, impulsive speech, a lack of social awareness, and under performance.

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Wender Utah Rating Scale (WURS)

Joy's completion of the WURS yielded a summed score of 67, indicating she had significantly more of the problems associated with AD/HD during childhood than her non-diagnosed peers (see Table F2). A cutoff score of 36 or higher has been shown to correctly identify 96% of adults diagnosed with AD/HD (Ward, Wender, & Reimherr, 1993). Scores exceeding 46 correctly differentiate 81% of adults diagnosed with unipolar depression and 99% of adults with no clinical diagnosis from adults with AD/HD (Ward, Wender, & Reimherr, 1993).

Qualitatively, Joy's responses indicate significant difficulty with disorganization and variable motivation; specifically, problems are noted with concentration, underachievement, distractibility, and difficulty following through to complete projects. She also experiences extreme irritability, agitation, temperamental outbursts, moodiness, feelings of regret, and a poor opinion of herself. Themes of impulsivity that are endorsed include acting without thinking and tending to be irrational. Joy acknowledged social difficulties as a child, including being unpopular, not keeping friends for long, and having trouble seeing things from someone else's point of view. Altogether, Joy's response pattern supported childhood patterns of inattention, hyperactivity, and impulsivity.

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Brown Attention Deficit Disorder Scales (BADDS)

Joy's total score of 85 on the BADDS (see Table F3) indicates that she sees herself as having many of the symptoms and problems associated with AD/HD. The five cluster scores—organizing and activating to work, sustaining attention and concentration, sustaining energy and effort, managing affective interference, and utilizing working memory and accessing recall—are more than 1.5 standard deviations above the nonclinical mean for her peer group. Joy acknowledged the most difficulty with sustaining effort and managing affect. Within the domain of sustaining effort and energy, she endorsed items including "doesn't follow through," "needs to be reminded by others to get started or to keep working on tasks that need to be done," "starts tasks but doesn't complete them," "is criticized by self or others for being lazy," and " produces inconsistent quality of work" as daily problems. Classified as difficulty managing affective interference, Joy also endorsed "has difficulty expressing anger appropriately to others," "doesn't stand up for self," "tends to be a loner among peers, keeps to self, and is shy," "is easily frustrated and excessively impatient," "is sensitive to criticism from others," and "becomes irritated easily" as daily issues. From the other subscales, she acknowledged "excessively rigid or is a perfectionist," "feels excessively stressed or overwhelmed" by manageable tasks, "has difficulty setting priorities, getting organized, and then getting started," and "procrastinates excessively" as daily difficulties. Many examples of forgetfulness were described

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as being problematic on a daily basis. In summary, Joy recognizes that erratic performance, disorganization, emotionality, and forgetfulness significantly interfere with her day to day functioning.

Wechsler Adult Intelligence Scale - Revised (WAIS-R)

Joy obtained a Verbal Scale IQ of 94 +/- 5, a Performance Scale IQ of 102 +/- 8, and a Full Scale IQ of 97 +/- 4 on the WAIS-R (see Table G1). Joy's Verbal IQ, Performance IQ, and Full Scale IQ are classified in the Average range (Wechsler, 1981). The range of her intersubtest scatter, from age corrected scores of seven to thirteen, suggests differences in her learning style and her ability to handle different types of stimuli (Lezak, 1995). Her performance on the Similarities and Block Design subtests reveal significant strengths, whereas her performance on Information and Digit Span reflect significant weaknesses (Silverstein, 1982). Difference patterns, which approach but do not qualify for significance, were used to stimulate hypotheses for further testing (Lezak, 1995). High intrasubtest scatter is also evident in Joy's performance, which may indicate neurobiological or emotional variability (Lezak, 1995).

Abstract reasoning, or the ability to conceptualize a problem and solve it, is a significant strength for Joy. The ability to analyze and synthesize is reflected in her performance on the Block Design and Similarities subtests, which requires her to distinguish important from unimportant details and understand subtle relationships (Sattler, 1992). Joy's strong performance on the Vocabulary subtest,

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cited as the most reliable measure of overall intelligence, converges with the verbal abstraction ability shown on the Similarities subtest (Sattler, 1992). Overall, when supplied with either a verbal or nonverbal framework to guide her reasoning, she is able to perform at a higher level than when no external framework is provided.

Joy has difficulty with problem solving when she is unable to assign meaning to information or when external structure (i.e., directions or a visual diagram) is not provided. She does not effectively use trial and error reasoning. The difficulty is potentially reflected by a relative weakness in Object Assembly versus Picture Arrangement and Block Design subtests. On one puzzle, she shifted the pieces, repeatedly attempting the same incorrect placements. She finally stated, "Oh, it's an elephant," and then rapidly completed the puzzle. The same weakness is displayed by her performance on the Digit Symbol subtest. When asked how she would memorize the code, she replied, "I'd look for connectors. Like 'X' is when you cross in a figure 8, but I didn't have time." Likewise, on the Digit Span subtest she indicated trying to group numbers like telephone numbers, but required more time for rehearsal.

A relative strength in verbal reasoning is also suggested. The subtests which allow for more expression and broader discussion, namely Vocabulary, Similarities, and Comprehension, were stronger for Joy than those which require specific answers, including Information, Arithmetic, and Digit Span (Sattler,

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1992). Additionally, when Joy talked through her process of problem solving on nonverbal tasks, it seemed to improve her performance. For example, during the Picture Assembly and Object Assembly subtests, she verbalized the details in the pictures to guide her work. When asked about this practice, she stated, "I talk myself through the thinking. Like a director calls shots."

Joy displays a significant weakness in immediate recall, reflected by her scores on Information and Digit Span (Sattler, 1992). Additional difficulties are conveyed via Joy's performance on the Arithmetic and Digit Symbol subtests, suggesting possible deficits in attention, concentration, and memory (Sattler, 1992). Depressed scores on these scales have been associated with the executive functions and short term memory processes involved in planning, monitoring, and evaluating task performance (Wielkiewicz, 1990), also acknowledged as areas of deficit by Joy. These same difficulties were evident in Joy's behavior, such as her continued checking of the code for each response on Digit Symbol. At the end of the test, she was asked to recall the code that correlated to numbers. She initially completed three of the nine codes. With prompting to guess on the remaining six, she was able to correctly recall two additional codes but made errors on the other four.

Behaviorally, Joy alternated between haphazard and hesitant performance. On the Block Design and Object Assembly subtests, she used a trial and error approach. She repeatedly made the same constructional mistakes and did not

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appear to learn from her experience. Joy did not appear to contemplate questions before responding, and often interjected an answer before the question had been completed. On both visual motor and verbal tasks, Joy attempted to self-correct her initial responses until she believed her answer was accurate. Her assumption of accuracy was conveyed by statements such as "that's right now" or "finally got it." However, Joy did not attempt to respond unless she was confident about her solutions and answers. When uncertain, she stated, "I don't know," instead of guessing. As with the Digit Symbol memory example, when encouraged to try she was often correct.

Wechsler Individual Achievement Test - Screener (WIAT)

Because Joy is outside the normative administration and interpretation ages, raw scores were converted to grade equivalents in an attempt to minimize an age bias (see Table G2). The test was included in the battery in order to make qualitative comments on her problem solving and academic achievement. On this measure of applied knowledge and learning ability, Joy generally performed at the level of a high school graduate (>12.9) which is consistent with her educational history. In the area of math reasoning, her score equaled that of a person educated through the end of the tenth grade (10.8). Her grade equivalent performance on this subtest is significantly below her grade equivalent performance on the other subtests, and is interpreted as a significant weakness. Her performance on the mathematical subtest parallels her description of difficulties with math since grade

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school. Most consistently, she made errors on word problems that did not overtly provide directions or problem solving strategies, but required her to identify necessary information and mathematical functions to arrive at the answer. Joy's performance also reflects her difficulty with understanding and applying basic math principles, such as percentages, fractions, and geometry.

Joy's ability to hold and manipulate information she reads or hears was also evaluated. The Reading Comprehension subtest was administered in an altered format. She was instructed to read the target passage, and then answer the subtest questions with the passage removed from her sight. After Joy's response was recorded, she was again shown the passage, and allowed to change her answer. No normative data for this procedure was available, so behavioral observations and differences in performance were descriptively noted. Joy has difficulty remembering information she has just read in a way that enables her to answer both general and specific questions regarding the content. When allowed to reread the passage in order to answer the question, her performance improved, changing from a grade equivalent of 11.3 (raw score 30) to a high school graduate (>12.9, raw score 38). This difference in her performance with and without visual cues is not supported by her performance on the Listening Comprehension subtest, which is not measurably depressed.

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Rey-Osterrieth Complex Figure Test (Rey-O)

On this measure of visual-spatial perception, processing, and memory (Spreen & Strauss, 1991), Joy was able to copy the Rey-O figure with ease and accuracy. Her performance is within normal limits for her age group (see Table H1). However, her score for recall of the design after a half hour delay is one standard deviation below the score obtained by individuals of the same age, suggesting she has difficulty with visual memory for non-meaningful information. On the test, Joy also experienced difficulty planning an effective problem solving approach for an unstructured task; she had difficulty breaking down wholes into component parts and organizing the reproduction. A piecemeal approach to copying the figure is often displayed by groups of brain-damaged adults and normal children; this strategy may result in accurate reproduction, but the person's recall is often impaired (Spreen & Strauss, 1991). Difficulty planning a construction approach is often associated with frontal lobe dysfunction (Spreen & Strauss, 1991). The results of this test suggest that Joy possesses adequate visual spatial perception, but that her processing, planning, and memory skills are mildly impaired.

Trail Making Test: Parts A and B

On the Trails A, (see Table H2) which required her to sequentially connect numbers, she obtained a T score of 67 which falls in the Above Average range of performance for her age group (Heaton, Grant, & Matthews, 1991). However, on

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Trails B, which required her to alternate between sequentially connecting numbers and letters, Joy obtained a T score of 38, which falls in the range of Mild Impairment (Heaton, Grant, & Matthews, 1991). The pattern of adequate performance on Trails A, but impaired performance on Trails B, has been associated with learning disabled and brain injured populations (Heaton, Grant, & Matthews, 1991; O'Donnell, 1983). Both Trails A and B require sequencing and vigilance, but, in addition, mental flexibility is required for successful completion of Trails B (Heaton, Grant, & Matthews, 1991). After making 3 sequencing errors on Trails B, she began talking her way through the task. Joy committed no further mistakes and maintained a constant speed when she orally coached herself.

Wisconsin Card Sorting Test (WCST)

The Wisconsin Card Sorting Test (WCST) was included in the battery in order to evaluate her ability to shift concepts. The WCST was added to the evaluation after integrating Joy's self reported inability to learn from experience, subsequent mildly impaired performance on the Digit Symbol and Object Assembly subtests of the WAIS-R, her significantly strong performance on the Block Design subtest of the WAIS-R, and depressed performance on Trails B. The WCST has been used to measure "mental flexibility." Perseverative responses are considered to reflect inflexibility and possibly rigid thinking (Spreen & Strauss, 1991). The number of perseverative responses, with a normal distribution in the nonclinical population, has been found to be the most sensitive

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WCST measure of frontal lobe dysfunction (Heaton, Grant, & Matthews, 1991). Real life expressions of frontal lobe dysfunction include emotional reactivity, hyperactivity, and impulsive or non-directed cognitive functioning (Hechtman, 1994). Joy's Perseverative Response T score is 32, which is classified in the range of Mild to Moderate Impairment (see Table H3). She was observed to display an unusually intense emotional reaction to errors, making self-derogatory comments and gestures. Joy reported feeling frustrated, discouraged, and annoyed during the test, and the comments she made matched her facial and verbal expressions.

At the completion of the test, the directions were modified. She was instructed to verbalize her decision making processes and problem solving strategies based upon her successful application of this approach on the WAIS-R and Trails B. Her performance improved dramatically. She was able to achieve three more categories while committing only five additional errors.

Beck Depression Inventory (BDI)

Joy's obtained a score of 19 (see Table I1) which is classified in the range of Mild to Moderate Depression (Beck & Steer, 1987). Her responses indicate lethargy, hopelessness, personal failure, guilt, irritation, and self-recrimination. Further inquiries into her responses revealed that the feelings and beliefs she endorsed had their onset during her childhood and adolescence, and have remained fairly constant throughout her life. When asked about her endorsement

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of items on the anticipation of punishment, guilt, and failure, Joy stated, "I'm tough on myself, 'cause I think I should've done better."

Minnesota Multiphasic Personality Inventory - Second Edition (MMPI-2)

Joy produced an MMPI-2 profile (see Figures I1 and I2) corresponding to a Welsh code of 23'160+785-94 F+-L/:K. To assess the manner in which Joy approached the test and to infer her lifestyle attitudes, the validity scale configuration was interpreted (Graham, 1990). Collectively, her profile reflects a person who may be, "naive, open, and disturbed" (Graham, 1990, p. 146). Her L (Lie) scale T score of 57 suggests she experiences a rigid moralistic concern in her appraisal of others, a tendency to conform, and probably relies upon denial to avoid distress (Graham, 1990; Lewak, Marks, & Nelson, 1990). Her F (measure of deviant or atypical responses) scale T score of 65 (raw score of 8) and Fb (Back F) scale T score of 65 indicate a moderate endorsement of odd or unusual experiences, a pattern which is often associated with distress, moodiness, and dissatisfaction (Graham, 1990). A moderate VRIN (Variable Response Inconsistency) scale T score of 54, and TRIN (True Response Inconsistency) scale T score of 65 further reveal an acceptable, consistent pattern of response on the test (Butcher, Graham, Williams, & Ben-Yorath, 1990; Graham, 1990). Her low K (index of deviant test taking attitude) scale T score of 35 (raw score of 8) suggests self criticism, limited insight, ineffectiveness in dealing with problems of daily life, dissatisfaction, social compliance, and skepticism (Graham, 1990;

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Lewak, Marks, & Nelson, 1990). Joy's overall response pattern reflects a valid profile. Her MMPI-2 results indicate she tends to be self-critical in her attempts to conform to social standards. Joy acknowledges a significant degree of psychological distress. Her responses reveal that she views herself as unable to adequately cope with most problems and that she tends to deny the distress in an effort to minimize its disruptive effects.

Identifying the relevant two point codetype, and supplementing it with content scale and item endorsement information (Butcher, 1990; Butcher, Graham, Williams, & Ben-Yorath, 1990; Graham, 1990) can expand MMPI-2 clinical scale interpretation. Joy's "2-3" (Depression-Hysteria) codetype has been associated with women who feel anxious, sad, and hopeless. People who obtain a "2-3" pattern tend to be emotionally over controlled and may somatize distress rather than directly expressing it. They are often easily fatigued, socially uninvolved, and unmotivated (Graham, 1990).

Persons producing a "2-3" profile are typically distressed, worried, and sad (Graham, 1990; Greene, 1980). Although they may experience a pervasive sense of stress or unhappiness, disabling anxiety and depression are not common (Graham, 1990). They may have difficulty expressing emotional distress. They may behave in an over controlled manner. People who produce high "2-3" scores often complain of fatigue and their physical activity is limited (Graham, 1990; Green, 1980). Somatic complaints, gastrointestinal disorders and headaches are

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common (Graham, 1990; Greene, 1980). Research has been conducted on the meaning of elevations on the HEA (Health Concerns) scale (Butcher, Graham, Williams, & Ben-Porath, 1990; Graham, 1990). Butcher, et al. (1990) report that most HEA scale T scores above 65 are achieved by people seeking treatment for chronic physical complaints. Elevated HEA scale T scores, such as Joy's score of 72, are associated with people who focus excessively upon poor physical health; they report feeling exhausted and a variety of vague physical symptoms (Graham, 1990). In sum, it is likely that Joy's emotional and cognitive distress is often expressed through physical complaints and difficulties.

People who produce a "2-3" profile often have a poor self-image (Graham, 1990). Self-perceptions of inadequacy, helplessness, and insecurity are commonly reported by them (Graham, 1990). A high score on the LSE (Low Self Esteem) scale (Butcher, Graham, Williams, & Ben-Yorath, 1990; Graham, 1990) further illustrates this. People who obtain a T score of 74, such as Joy, may be overwhelmed by the faults they see in themselves (Butcher, Graham, Williams, & Ben-Yorath, 1990). These negative opinions of themselves are often associated with feelings of uselessness, anticipation of failure, sensitivity to criticism, passivity in relationships, difficulty making decisions, and excessive worry (Graham, 1990). Despite their negative perceptions, people who obtain the "2-3" code are typically interested in achievement, status, and power (Graham, 1990). To avoid failure and additional stress, they commonly make only superficial

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gestures at competing for success (Graham, 1990). They often believe they do not get adequate recognition for their accomplishments, and they may be easily hurt by even mild criticism (Graham, 1990). They tend to deny unacceptable impulses and, when denial fails, they may feel anxious and guilty (Graham, 1990).

Individuals with a "2-3" profile are often socially withdrawn and passive, yet dependent upon those they trust (Graham, 1990; Greene, 1980). They may be plagued by self-doubt and a perception of social inadequacy, and they may tend to avoid social involvement (Graham, 1990). Women obtaining a "2-3" profile may be especially uncomfortable with members of the opposite sex; they may have sexual maladjustment problems or experience frigidity (Graham, 1990; Greene, 1980). Joy's T score of 69 on the CYN (Cynicism) scale, in conjunction with her perceptions of social inadequacy, suggest that she views others as untrustworthy, and believes she needs to be on guard around others for the purpose of self protection (Butcher, Graham, Williams, & Ben-Yorath, 1990). Additionally, her T score of 69 on the SOD (Social Discomfort) scale is associated with shyness, including uneasiness around other people and a preference for solitude (Butcher, Graham, Williams, & Ben-Yorath, 1990). This preference may reflect Joy's cynical view of people. Her T score of 66 on the 0 (Social Introversion) scale, which may suggest that others describe her as shy, aloof, lacking in social skills, and socially introverted, provides additional support for this stance.

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Profiles dominated by a "2-3" pattern typically reflect chronic difficulties, and suggest a person has learned to tolerate and accept unhappiness that has been experienced over a long period of time (Graham, 1990; Greene, 1980). Rather than indicating incapacitating symptoms, the profile suggests a lowered level of efficiency for prolonged periods (Graham, 1990; Greene, 1980). People with a "2-3" profile most commonly meet the criteria for a diagnosis of a depressive disorder (Graham, 1990). They are not generally introspective, are resistant to confrontation, and may respond poorly to traditional psychotherapy (Graham, 1990; Greene, 1980). Their tolerance of the unhappiness they experience may undermine their motivation to change (Graham, 1990; Greene, 1980).

Overall, Joy's results suggest she is a person who has learned to tolerate a chronic state of unhappiness and distress. She is not inclined to explicitly express intense emotions; Joy, instead, tends to experience and complain of vague physical difficulties. Her expectations of failure and ineptitude likely are translated into a cynical self-perspective and self-criticism. Her insecurity and feelings of hopelessness often lead to compliance and conformity, or avoidance of distinction at the risk of ridicule. Like other women who produce such a profile, Joy tends to socially withdraw, typically experiences herself as awkward, and is mistrustful of others and their motives. Joy's attitudes and perceptions likely prompt social avoidance and dependence on a small circle of trusted people. She

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tends to doubt her ability, and relies upon and conforms to the opinions of others in her life.

Fidget to Focus (FTF)

Joy endorsed a wide variety of behaviors on the Fidget to Focus (FTF) scale (see Table J1). The majority of her behaviors are classified in the oral, tactile, and kinesthetic categories. She recalls, since childhood, "always having something in my mouth," often chewing on the ends of her ponytails and cuffs of her pajamas. By her mother's report, Joy used a pacifier until she was six years old. Joy also recalls constantly doodling upon her pages of notes throughout school. She equates this doodling behavior with now needing to have a notepad for sketching while talking on the telephone. Joy also spoke of "always fiddling with something," including keys, pocket change, and her daughters' hair. She also acknowledges that, since childhood, she has used music to persist with tasks. Throughout her schooling, Joy turned on the radio when reading technical math or science books, subject matter she did not find interesting. This is a pattern she continues in adulthood, playing her "Sunday paper music" to read the newspaper so she does not become distracted; she perceives that the music enables her to sustain attention and concentrate.

Integrated Interpretation

Joy is a woman whose skills have been obscured by her lack of self-confidence. In the context of viewing her performance, throughout her life, as

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below her own and others' expectations, she has formed a belief that she is a failure. Joy learned, as a child, from her parents and teachers, that her emotions, thoughts, and actions were unacceptable; she began repressing her reactions. She defended herself by expressing her thoughts and feelings through indirect means, often developing vague physical complaints. She has internalized angry feelings. Joy berates herself rather than risking punishment for criticizing others. Joy is insecure; she has persistently and pervasively experienced feelings of hopelessness and sadness since adolescence.

Problems with inattention and impulsivity have contributed to Joy's perception of inadequacy. Her difficulty with maintaining focused and directed activity has impaired her accomplishment of goals. The variability in her level of motivation, which rapidly shifts from high effort to disinterest, has prompted the criticism of others and guilt. Joy's tendency to interrupt others in conversation has contributed to her social difficulties. Impulsive decisions have helped shape Joy's relationships in ways she regrets. A history of impulsive actions, under-achievement, and criticism has contributed to her assumption of "failure."

Joy has strong reasoning abilities, and she is able to use her verbal skills to compensate for other difficulties. When visual cues are available, Joy is readily able to use them as guides to structure her problem solving. Recall, working memory, and mathematical performance are areas of significant weakness for Joy. Difficulty with learning from immediate experience impairs her mental flexibility;

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she often focuses on one solution while overlooking other options. Alternately, her impulsive style of answering often has an adverse impact upon her performance, since she reacts before gathering relevant information that would aid her.

Joy's tendency to shift between a haphazard problem solving style and a hesitant demeanor adversely affects her efforts to achieve goals in a planned and organized manner. Impulsivity and poor planning likely contribute to her marital difficulties. Likewise, without the external structure provided by a school, her parents, or a manager, Joy struggles to set new goals and work towards them. Her lack of self-confidence has prompted her to withdraw from competitive professional and academic situations. Joy's daily procrastination and poor ability to initiate change has held her back. Her fear of failure, weak ability to identify and form a plan of action, and difficulty with processing technical information has hindered Joy's pursuit of a career interest in the photographic arts. Although she possesses significant strengths to compensate for her difficulties, she does not proactively apply them to achieve her goals.

Interpersonally, Joy tends to be mistrustful, sensitive, and easily hurt. She is uncomfortable in many social situations, anticipates failure, and fears criticism from others. These beliefs have prompted her to socially withdraw rather than risk rejection. Her social fear and discomfort make relationships difficult to

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attain, and she has been overly dependent upon the few friends and family she trusts.

Joy's inefficient coping skills have contributed to a chronic experience of distress. She feels overwhelmed by her own expectations, family responsibilities, and work requirements; her difficulties with planning, organizing, and initiating action have intensified the distress she feels. In addition, Joy's discomfort about expressing thoughts and feelings has inhibited her from turning to others. Instead, when upset, she has often developed physical difficulties, overeaten, misused medication or alcohol, or become self-disparaging.

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Diagnostic Impressions

In combination, the assessment results suggest the following DSM-IV diagnostic conditions:

Axis I: Clinical Disorders

314.01 Attention Deficit/Hyperactivity Disorder, Combined Type

300.4 Dysthymic Disorder, Early Onset, with Atypical Features: Mood Reactivity, Increased Appetite, and Interpersonal Sensitivity

Rule Out Disorders:

300.81 Undifferentiated Somatoform Disorder

315.1 Mathematics Disorder

Axis II: Personality Disorders, Mental Retardation

V71.09 No Diagnosis

Axis III: General Medical Conditions

Rule Out Disorders:

Obesity and Related Medical Conditions

Axis IV: Psychosocial and Environmental Problems

Problems with Primary Support Group: marital discord, primary caregiver for daughters, primary household manager

Occupational Problems: indecision in career, dissatisfaction

Problems related to the Social Environment: inadequate social support

Axis V: Global Assessment of Functioning

GAF = 55 (current) Moderate difficulty in social and occupational functioning, having few friends, ongoing disagreements with husband, lack of career achievement, limited household performance

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Individual Oriented Interventions

Feedback Session

The treatment goals of this meeting were education and plan development. These goals were accomplished by discussing the assessment results, identifying at least two coping strategies for Joy to use, and developing a plan for her to apply these strategies to work towards a goal.

Reviewing the assessment results included discussing Joy's strengths and weaknesses, personality traits, and diagnoses. Her abilities were apparent during this session, including her enthusiasm, rapid understanding of concepts, and willingness to rely upon social standards. Joy's difficulties were also apparent; during the feedback session, she was emotionally controlled, repeatedly interrupted the author, and displayed "absolutist" thinking as in her comments, "I've finally got an answer. Now I can fix everything."

The development of a workable plan for improving her daily performance, which incorporated Joy's sensory strategies, goals, and core self-beliefs, was the second aim of the meeting. Using a cognitive-behavioral approach, the simultaneous sensory stimulation strategy plan was used as a method to change Joy's unhelpful and distorted core beliefs. The targeted belief was, "I'm a total failure." Joy's expectations of being in error, perceptions of helplessness, and a fear of ridicule supported her belief. These expectations were reflected in her "automatic thoughts." Thoughts such as "I'm wrong," "I'll look stupid," and "I

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can't do it" seemed to prompt Joy's perfectionism, social reticence, and perceptions of helplessness.

Depressive thinking or learned helplessness is most ingrained for a person when negative events or situations are attributed to global, stable, and internal causes (Sweeney, Anderson, & Bailey, 1986), such as personality traits. Likewise, learned helplessness is associated with attributing positive events to external, unstable, and specific causes, such as luck (Sweeney, Anderson, & Bailey, 1986). Joy's responses on the Fidget to Focus (FTF) scale, behaviors during the assessment, and recounts of historical practices were combined to develop coping strategies to improve her performance. The aim of this intervention was to reframe positive or goal directed behaviors as being within her control rather than a matter of chance.

First, Joy's ability to use visual information to aid memory, planning, and understanding was targeted. This ability was incorporated from the beginning of the feedback meeting, when she was provided with paper and pen and encouraged to take notes. By the end of the assessment review, Joy had listed some of her strengths as being, "if I can see it I understand it," "great at reading," and "quickly get the big picture." Some of the weaknesses she had noted included "keeping on track without a guide," "organizing," and "listening for information." Reinforcing her successful use of this strategy, the use of notetaking was

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identified as her initial strategy. She intended to carry a pocket-sized notepad and pen for planning, generating ideas, and minimizing outside distractions.

Joy's second sensory strategy was verbalizing her thoughts while working or problem solving. Such task related verbalization has been associated with improved work performance (Azmitia, 1991; Berk & Landau, 1993; Roberts, 1979). Talking through her work during the assessment had positively affected Joy's performance, in that she made fewer errors and was more focused in her approach. She intended to use the verbalization strategy when setting priorities, making decisions, or planning a project.

Her third strategy was to use background music during dull tasks. This sensory selection was made based upon her successful use of it during school and while reading the newspaper. As with the other strategies, the use of music was thought to channel her attention and enable her to remain focused on a given task (Abikoff, Courtney, Szeibel, & Koplewicz, 1996; Cripe, 1986). Playing music in the background was a method for controlling and structuring the environment; using familiar music was to have decreased the novelty of potential auditory stimulation and helped to diminish her distractibility.

Joy's power of choice, important in developing a sense of self-control (Sweeney, Anderson, & Bailey, 1986), was reinforced by encouraging her to select or deselect strategies. For example, in her FTF results she endorsed many oral activities, ranging from eating and drinking to biting her nails. She also

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recalled repeatedly being reprimanded during childhood for "chewing my ponytails and sucking on the cuffs of my pajamas." Acknowledging her sensitivity to these behaviors and her concern with weight loss, a verbalization strategy seemed like an acceptable extension or substitution.

To narrow the focus of her selected strategies, Joy developed specific goals to work toward during the treatment program. First, she intended to change her and her family's eating behavior. She stated, "We eat fast food most times. I haven't cooked since Suzy was born [four years ago]." Joy recognized many problems with this practice, including nutrition and cost. Her second goal was to organize and store holiday decorations that had collected in her family room over the past few years. Finally, Joy's third goal was to learn more about AD/HD in relation to herself and her daughter.

Joy's plan for engaging in strategies, based upon her strengths, to accomplish goals and alter her core beliefs was the basis for self-monitoring. By selecting a strategy that fit the needs of a situation, she monitored the effectiveness of her subsequent performance and associated thoughts or feelings. She agreed to include this behavioral log in the pocket notebook, and review it during subsequent meetings. In sum, a method for noting the application of her three strategies, her perceived success, and associated thoughts or feelings was developed.

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Individual Session 1

The first individual session focused on reviewing Joy's strategy implementation. She entered the session frustrated and embarrassed, stating, "I tried and screwed up again." With further explanation, her note taking strategy involved long periods of reorganizing "To-Do-Lists" for the correct order and often abandoning them, saying, "I can't spell it, so I give up." Considering her description, the technique of "mindmapping," a pictorial free formed note taking or problem solving approach (Wycoff, 1990), was introduced as a possible solution. Joy's obsession with correcting her lists was interpreted as a behavioral expression of her fear of failure. She attempted to avoid errors by reorganizing her plan, persisting with one behavior and overlooking other options.

Despite comments she made on her perceptions of failure, Joy had begun monitoring her self-criticism by recognizing the behavior when it happened. She stated:

> There have been ups and downs. Good days and bad. First I thought, "Okay, so I know what's wrong so I'll fix it." And things were great for a couple days. Then I blew it and cried. Thought I was a real mess. But I see it changes slowly. Like the dieting. You eat a chocolate bar and think you blew it, but it's just one piece of candy. I'm learning to stay out of the candy store.

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From these statements, Joy's efforts of the past week were reframed as a success. She acknowledged actively making changes in her daily routine, attempting to use the strategies, and generally feeling successful with their use. Joy reported improved housekeeping performance, cleaning the kitchen, bathroom, and bedrooms while using a portable headset to play country music. Additionally, she had set daily goals for herself by talking out her plans. "I talked about going to the library and getting a book on attention deficit and reading some. And I wrote it out then really did it." During the same library visit, she checked out a cookbook to begin planning meals for her family.

Overall, Joy's behavioral log traced general patterns of improvement—both behavioral and emotional—with some instances of negative emotional impact. Joy had progressed on two goals, while using her strategies, changing her family's dietary habits and becoming educated about AD/HD. The only untouched goal was her holiday decoration organization. She also noted some tasks that were started but not completed. Despite the positive application of her strategies and progress, Joy perceived her week as "a failure, because I didn't do all my goals." To address her absolutist thinking pattern, her behavioral log was collaboratively reviewed as a measure of her progress. At the end of the session she recognized the steps as positive, but seemed to lack the emotional conviction that this was significant.

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Individual Session 2

Joy reported progress since the previous week. She acknowledged the cognitive mapping, now called her "note-doodling" strategy, had improved her planning process. She believed that she did not deliberate for such long periods on her notes. According to Joy's log, it now felt like, "doodling out my day," which made the planning more enjoyable and lessened her concern with precision. Although improved, Joy still recognized that a drive for perfectionism intruded upon her work. "When I'm doing something, I want it to be perfect."

As an adjunctive approach, the idea of coaching was introduced. Joy had read of using a support individual for daily contact, and was interested in adopting this practice. She appeared uncertain about her idea, and seemed to seek validation of her thoughts and feelings. To support her ingenuity while reinforcing her sense of control, the use of her verbalization and note taking strategies for further planning was suggested. After using these practices Joy decided to ask a friend, Jackie, to act as a coach. She appeared excited and hopeful about this change.

Progress on her goals was also reported. In addition to the reading on AD/HD coaching, Joy reported taking steps in meal planning for her family. Joy had gone grocery shopping and prepared two meals using the library cookbook. She also addressed her third goal by purchasing sets of plastic storage tubs for the holiday decorations, but had not started packing. Joy was proud of her

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accomplishments, yet initially bashful about reporting them. She said, "It's amazing what I can do. I'm not as stupid as I thought." Steps she had taken to meet her goals seemed to have made small changes in her self-perception.

Emotional reactivity was also addressed during this session. Joy described feeling guilty for "flying off" and "yelling at everyone" during the past two weeks. She thought these behaviors would not happen after gaining a better understanding of herself and her daughter. With further exploration and demonstrations, it seemed likely that what Joy perceived as inappropriate or extreme anger did not appear that way to others. This supposition was supported by Joy's acknowledgment that her family did not know when she was angry, and thought of her as mild mannered. These differences in perception were discussed as possible examples of her absolutist thinking, and used as prompts for working on more direct communication.

The beginning of group sessions was also discussed under the heading of emotional topics. Joy expressed concern about meeting the other group members. Fearful of their perceptions of her, she stated, "They'll think I'm stupid if I say something wrong." Her anxiety was normalized, but also discussed as an example of her general social worries. A plan for her participation was discussed, allowing her time to acclimate before asking questions or commenting.

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Group Oriented Intervention

Group Session 1

The first group was introductory in nature. The group was comprised of two men and two women, all recently diagnosed with AD/HD. Joy chose not to disclose her participation in this research project. However, all participants were informed of the researcher's ongoing doctoral research project, and signed releases for the use of general information on the group process and dynamics. The participants were informed that identifying information would not be included in the research project. Pens and scratch paper were provided to group members, and discussion outlines were written on the white board; these interventions were made based on information from Joy's assessment and strategy selection.

Two main goals were targeted for this meeting. Basic information about AD/HD was presented and goal focused self-monitoring was introduced. For the latter goal, each participant identified one recurrent problem and potential coping strategy to address throughout the group.

Joy was socially withdrawn during most of the group. Initially hesitant to speak, she offered information from her reading and individual work on coping skills during the last half-hour. She shared with the group her use of "note-doodling" in daily situations to aid with focus, planning, and task completion, stating, "I have to see it to do it and keep it in my mind." Joy also volunteered her

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use of a pocket notebook and behavioral log, which prompted discussion of the various listing strategies others had used. Her contributions were supported by the group, and often initiated group discussions and questions of her as an expert. Joy was outwardly pleased with this social acknowledgment. She smiled, turned towards the other members, and spoke in an animated manner. Her willingness to participate in group discussion was interpreted as a positive change in Joy's anticipation of failure and social ridicule.

During the post group follow up, Joy's behavioral log was similar to the prior week's, with instances of completed and aborted projects. There was an increase in the use of her coach that, like the other strategies, was associated with positive thoughts of competence and feelings of happiness and relief.

Group Session 2

The second meeting began with a discussion of strategy use. Joy was critical of herself for not organizing her holiday decorations, but was rapidly corrected by the group for being too harsh. She laughed and stated, "you guys get down on me for getting down on me." Her disclosure prompted introduction of the week's topic, dealing with emotional issues and the grief process involved with AD/HD.

Discussion of emotionality crossed lifespan issues, reactions to diagnosis, and relationships. All members shared experiences of sadness, anger, and frustration, many of which Joy acknowledged as applying to herself. Describing

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her journey, Joy stated "I was surprised when the counselor was telling me about Toni, because he was telling my childhood. Felt like I was no better than my kid daughter." She shared her perceptions of inadequacy, failure, and solitude, which she felt were intensified by receiving fewer positive statements from her husband than she would have liked. Joy shared how she felt angry with her husband and children, but believed that was evidence of her failure as a wife and parent. She was encouraged by the group to speak with her family more directly, both in asking for support and expressing anger.

Joy recognized that her tendency to make impulsive decisions was intensified by her "emotional roller coaster ride." Another group member shared this pattern and, as a pair, they solicited input from the rest of the group. Collectively, they decided to use a listing strategy for decision making, writing out both pros and cons, which would allow time to make a wiser decision. Joy also tapped her sensory strategy, saying, "Music helps me relax. Stops the thoughts and feelings from swirling. Lets me think through stuff." Other members questioned her about this coping strategy, which encouraged discussions of relaxation techniques, yoga, and other habits people engaged in for calm thinking.

During the post group consultation, Joy was excited about the social connections she was making. Her behavioral log reflected continued progress on the dietary goal, and use of her coach. Entries were made about cooking a meal

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together, and the associated feelings of success and aptitude. Joy was progressing in her use of strategies, including note taking, using a coach, and verbalizing. These activities seemed to assuage her perceptions of failure and ineptitude.

Group Session 3

Goals for this meeting included organization and motivation, time management, and an introduction to coaching. All members acknowledged difficulties with making priorities, initiating, and maintaining momentum on tasks. Joy described her organizational problems with respect to her holiday decorations, stating, "I look at the piles and don't know where to start. I get so worked up that I just leave." The group discussed how difficulty with organizing intertwined with emotional reactivity, which created a complicated problem. All recognized the need to break down projects into smaller tasks, but subsequently struggled with identifying how much was manageable, and in which order to address the tasks. Joy shared her use of strategies to help prevent feeling overwhelmed, including verbalizing her thinking, writing her thoughts, and developing "To-Do-Lists" with her coach.

The group discussion of coaching was met with both enthusiasm and confusion. The idea of daily contact with someone to help structure progress was interesting to all participants. Joy likened it to, "Having a secretary to help keep you on schedule." She shared specific experiences with Jackie, such as setting realistic goals, identifying necessary steps, and using lunch dates as incentives to

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complete her goals by a deadline. There was some confusion as to who can serve as a coach. The options of professional, paraprofessional, and layperson coaches were discussed, and the group generated a substantial list of pros and cons for each.

The group also discussed the idea of tailoring options to fit an individual. During this conversation, Joy decided to stop using music as a strategy, "With other people around they think I'm nuts." The group discussed Joy's negative view of herself, but supported her on making changes that she felt would be more helpful.

During the post session follow up, Joy asked if her discontinuation of the music strategy was disappointing for the researcher, and offered to reinstate it. As in the past sessions, her power of choice and control were supported, along with her process of making the decision. Joy described using the pro and con listing strategy to reach her conclusion. Her willingness to declare her decisions in public, after using strategies to channel her thinking, was collaboratively viewed as progress in altering her perception of failure. However, her reticence to stand by her decision was viewed as a residual fear of ridicule or errors. Her behavioral log indicated a plateau of progress, making no new steps toward AD/HD education or dietary change. When asked why she had not included group sessions in her log as educational, Joy replied with a belief that it did not count, as it was a scheduled meeting. Progress had been made on the decoration

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organization, which was annotated with feelings of relief and happiness, but also dread about "never finishing it."

Group Session 4

The focus of the fourth group session was social skills. Relationships at home, work, and with friends were discussed, targeting communication skills and anger management. Joy shared her trend toward social isolation that began in grade school. She also described dependency upon her husband, children, and a friend as her only social outlets.

The topic of anger met with varied reactions from the group. The range of anger management histories included spousal abuse, screaming fits, and Joy's own internalizing passivity. She stated, "I don't get angry. I used to scream at my brother and sister when we were kids and my mom said I had no right to be mad. I should be a better role model." A group member recalled Joy's previous discussion of feeling angry and wanting support, but not expressing this need directly. Ways to openly and appropriately communicate both thoughts and feelings were discussed and practiced through role-playing. Joy stated that feelings of frustration often precipitated stronger emotions for her, which was an observation shared by the group. The group debated the use of strategies and communication to proactively intervene at the stage of frustration. All acknowledged that often anger or a similar emotion was upon them and gone before they had a chance to think rationally about the situation.

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The final topic for this meeting was a review of the agenda for the upcoming feedback session. Participants were told the objectives would be to collaboratively review their progress throughout the group, to identify future goals or objectives, and to provide suggestions for alteration of the group. They would also be given appropriate recommendations for additional treatment or goals by the researcher.

All group members remained past the end of group time, while they exchanged phone numbers and said good bye. Joy ended the group by crying and stating, "I've finally got you who understand me, and now it's over." Based upon her social history and mistrust of others, her disclosure and behavior were interpreted as a significant change for Joy. She had established social connections, and felt comfortable revealing private information, thoughts, and feelings in a semi public context. However, this was a further example of her absolutist thinking without looking for options. She viewed the group as a source of social understanding and acceptance, and perceived the end of the group as representing the end of her social acceptance. Joy did not consider other options for maintaining contact with group members, such as exchanging phone numbers and meeting without the confines of the group. She also did not consider other ways to develop a social circle, such as attending events sponsored by C.H.A.D.D. (Children and Adults with Attention Deficit Disorder).

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The post session meeting focused on the upcoming feedback session. Joy agreed to audiotape the session for the research study, but requested a portion of the time be allocated to private discussion. When asked for the rationale behind this, she stated, "What if I start crying? Look like an idiot. I don't want to talk about that kind of thing for people to hear."

Group Session 5

For purposes of the study, Joy's feedback session was divided into two parts; the first half was audio taped while the second half was not. Deviating from the proposed protocol, an additional BDI was administered between the first and second halves of this meeting. The BDI was re-administered to serve as a concrete form of feedback to Joy on potential changes in her attitudes, as support for her efforts and as guidance for future areas of work. The test-retest reliability on the BDI is relatively poor for an unstable condition such as depression, ranging from .60 to .83 (Gregory, 1996), so this was not intended as strong evidence of treatment efficacy.

A notable decrease in Joy's score on the BDI was recorded (See Table I), from an initial classification of "mild to moderate" at the time of assessment to a final classification of "minimal or normal" depressive symptoms at the conclusion of individual and group treatment (Beck & Steer, 1987). The scored items were used as interview probes to gather a richer explanation of Joy's experience and

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responses. In the case of decreased scores, her understanding of the changed symptoms was explored.

In reviewing her progress, Joy perceived the treatment process and education on AD/HD as a significant changing point in her life. She stated:

> Feels like I've gone to school on myself. Reading stuff on it and hearing the others talk, I found lots of wrong ideas I had about myself and my kid. Not our fault, but I can't blame it for everything. Still am responsible, I just need new ways to get things done.

Joy was able to actively incorporate her strategies into daily living. Prior to treatment, her chronic disorganization and forgetfulness had left her feeling helpless to achieve change. At the conclusion of treatment, Joy believed she still had these difficulties but had gained the skills and awareness to partially compensate for them. For example, she came to the final session prepared with outlines of what she wanted to say, and continued to take notes for herself during the session in order to remain focused and remember key ideas.

The outcome of her strategy implementation was both directly and indirectly apparent. Joy had progressed on all her initial goals. She attributed some of this progress to her use of her simultaneous sensory strategies. She was most pleased with changing the dietary habits of her family; this was her first goal. She had started preparing meals on a semi regular basis, made cooking a

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family event, and believed she had lost some weight. She stated, "I'm still fat, but, like I said, I feel lighter and maybe it's 'cause I've lost some weight."

Joy's second goal, becoming educated on AD/HD, had been accomplished mainly through participation in the group, and with some supplemental reading and research. Joy acknowledged that she had a better understanding of the condition shared by herself and her daughter, which she believed helped her to be more aware and empathic. She stated AD/HD was not an excuse for behavior and did not absolve her of responsibility, but explained some of her history. Joy seemed to recognize many of her difficulties were not because she was "a bad role model or an awful mother, just someone who has to work differently." However, she still had gaps in her knowledge, such as questioning whether she had caused her daughter's AD/HD through poor parenting. In addition to suggesting a lack of understanding of the disorder, these comments also illustrated her self-criticism and continued, although diminished, feelings of guilt. She stated, "I still feel guilty sometimes for stuff I do, but [I] am beginning to understand part [of it] isn't my fault."

The last of Joy's goals was to store the miscellaneous holiday decorations that had collected in her family room over the past several years. During the course of treatment, she had purchased storage bins, and organized and stored some boxes of decorations. She had accomplished less of this project than she had hoped, which she stated was, "because I feel like they all have to be

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organized completely." A noticeable thread throughout treatment was Joy's perfectionism. Her tendency to over-control and under-produce, was interpreted to be a compensatory strategy developed after making social, emotional, and cognitive errors. Attempting to achieve perfection in order to avoid failure is commonly associated with adult AD/HD (Shekim, Asarnow, Hess, Zaucha, & Wheeler, 1990; Solden, 1995; Tzelepis, Schubiner, & Warbasse, 1995). Only minimal change had been noticed on this attitude, yet improvement in related areas such as decreased fear of social criticism, increased ability to plan and organize, and greater understanding of her strengths and weaknesses, enabled Joy to begin and complete projects in a more timely manner. In summary, Joy had attended to and made significant progress on all three of her goals.

The partial completion of her goals raises another targeted practice of Joy's—her "absolutist thinking." She tended to judge situations and herself in extreme terms, from an "absolutist" perspective, which contributed to her perceptions of failure. Her pattern of self-criticism had been addressed throughout assessment, individual, and group treatment, but she believed it was not likely to dramatically change. Joy believed that she was more realistic in her expectations, though, and not as unreasonable in her criticism by the end of treatment. Through self-monitoring and maintaining a concrete record of her performance, Joy had begun to change this behavior. Without the concrete log of her accomplishment, Joy minimized her progress retrospectively. When

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presented with the tracking of her work, she acknowledged her successes and change, but believed she had much progress yet to make. She felt less discouraged, saying, "I know I'll be able to learn more and find out ways to cope with this, instead of just floundering."

Joy described experiences of transient discouragement or helplessness, which seemed to be related to frustration with a specific task rather than reflecting a pervasive pattern. This transient experience was especially noticeable when she forgot to break down large tasks into pieces, as in her statement, "I just have so many more lists to complete. It's overwhelming." She reported relying upon her coach for assistance in pacing her work, which seemed to diminish her experience of being overwhelmed. Joy's "absolutist" thinking also contributed to her perceptions of helplessness. She seemed to believe that if a task was not completed, then she had failed, and she would never be able to succeed.

Social withdrawal was a further difficulty for Joy at the beginning of treatment. Since childhood she had pulled back from other people fearing their chastisement and ridicule. The interactive group and support of her coach helped her feel more comfortable in social settings. She stated, "I've always felt so weird, like a loser. Now I know I'm not alone." Joy seemed better able to control her impulsive interrupting by using her note-taking strategy. Her tendency to interrupt others had previously led to significant social criticism. Interested in continued social connection, Joy contacted the local C.H.A.D.D. (Children and

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Adults with Attention Deficit Disorder) sponsored group in order to begin attending their meetings and seminars with her coach.

A broader goal of treatment was to help Joy shift a self-perception of failure to a more realistic view of her potential, and to assist her in developing self-confidence and self-forgiveness. Following the assessment and intervention, she recognized her strengths and weaknesses and used them to develop strategies to progress on her goals. Although she still saw her past as a collection of failures and incomplete projects, Joy was more hopeful about the future. She realized that these changes were not an easy adjustment, but would require much hard work and would have variable results. These transitions had an interesting impact on her emotional state. Joy had begun to use relaxation techniques for managing and addressing anger or frustration, and incorporated her verbalization technique to improve her outlook, repeating affirmations such as, "you're gonna have a great day." Nonetheless, she stated she still felt sad much of the time. "It's not like I'm crying all day or feeling crushed, but it makes me sad to think of the time and chances I've missed."

Treatment recommendations were provided at the conclusion of the study. Her personal goals were all supported, including developing a connection with her local C.H.A.D.D. group, maintaining a relationship with her coach, and continuing with her current goals and strategies until they were accomplished. In addition, she was referred to three psychologists and two psychiatrists who were

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competent in the treatment of adult AD/HD and practiced in a more convenient location for her. Given the communication difficulties she had experienced with her husband and daughters, family therapy was raised as a possibility to educate the family on AD/HD and improve relationships. In an effort to support her continued education on AD/HD, Women with Attention Deficit Disorder (Solden, 1996), Driven to Distraction (Hallowell, & Ratey, 1994), and ADD: A Different Perspective (Hartmann, 1993) were suggested as a partial substitute for the group meetings. Joy continued to resist the idea that her physical problems, including her gastrointestinal difficulties, backaches, and headaches, were possibly related to emotional issues. In light of her recent dietary and weight changes and her continued physical complaints, consultation with her physician was recommended.

Joy also gave her appraisal of the group. She had some structural suggestions for modification. Despite the variable attention span of members, she suggested extending the groups to a two-hour format, with a half-hour break in the middle. She felt this would allow the members more time to talk about "non-group" topics, and help them bond more rapidly. She made an additional suggestion with regard to the educational aspect of the group. Joy stated, "Give more handouts. Sometimes it was hard to listen, take notes, understand, and talk together."

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CHAPTER V: DISCUSSION OF CLINICAL CASE AND THEORY

The final chapter of this project presents the case study in the context of current theory and research. Included are (1) an illustration of debated issues in the theory and the treatment of Attention Deficit/Hyperactivity (AD/HD) in adulthood; (2) the recognized limitations of the study; and (3) suggestions for further research.

Integration of Results in Relation to Theory

Diagnostic Issues

The central feature of AD/HD is still questioned. Historically, the diagnosis has been considered to be primarily a disorder of hyperactivity, inattention, and disinhibition (Barkley, 1996). The impaired inhibition of cognition, emotion, and behavior embodies both the inattentive and the hyperactive-impulsive symptoms of this disorder: the "hyperactive thoughts," the "emotional roller coaster," and the "fidgeting" reflect reactivity. Joy's AD/HD symptoms involve a difficulty with inhibiting responses. She described many examples including her poor driving record, her fidgeting, her withdrawal from school, and her impulsive marital history. Joy's difficulty with organizing holiday decorations, for example, involved many forms of disinhibition. Her poor emotional control was evident when she became rapidly "overwhelmed" by experiences of frustration and hopelessness. Her negative automatic thoughts regarding the organizational task were expressed as "I can't do it. It will never

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get done." Finally, cognitive disinhibition, or distractibility, further contributed to her difficulty; she described losing track of her progress and intermittently beginning new projects. Joy reacts emotionally in an internalizing manner, including expressing anger as sadness, somatizing feelings, and having negative automatic thoughts. Overall, Joy's disinhibition of emotional reactions may be a primary problem that interferes with her daily functioning.

Many authors contend that multiple conditions may be collapsed under the diagnostic heading of AD/HD (August & Garfinkel, 1989; Barkley, 1995b, 1996; Lahey, Schaughnecy, & Hynd, 1987; Morgan, Hynd, Riccio, & Hall, 1996; Wender, 1995). This view of separate disorders is supported by research on comorbidity. AD/HD-Predominantly Hyperactive-Impulsive Type (AD/HD-H) and AD/HD-Combined Type (AD/HD-C) are often associated with "externalizing" problems, including aggression and criminality, whereas AD/HD, Predominantly Inattentive Type (AD/HD-I) is frequently paired with learning disabilities and "internalizing" disorders (Barkley, 1996; Brown, Abramowitz, Madan-Swain, Eckstrand, & Dulcan, 1989; Solden, 1996; Weiss & Hechtmann, 1993). The internalizing patterns associated with AD/HD-I are also associated with AD/HD diagnosed women and the developmental progression of AD/HD (Brown, Abramowitz, Madan-Swain, Eckstrand, & Dulcan, 1989; Solden, 1996).

The theory that the disorder is one of disinhibition would label hyperactivity, impulsivity, and inattention as phenotypic variants rather than

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separate disorders. Each symptom domain would reflect the inability to inhibit an action, thought, or emotion. This perspective resolves the difference between the experience of many AD/HD diagnosed women and the expected course of AD/HD-H or AD/HD-C being associated with more externalizing than internalizing behaviors. Joy's history is more reflective of the internalizing patterns. She reported childhood experiences of shyness, social compliance, and hypersensitivity to criticism; additionally, Joy described feeling guilty, being misunderstood, and having significant insecurity in adulthood. Likewise, she acknowledged academic, professional, and social underachievement that had its onset during childhood. Her diagnostic profile parallels that associated with an internalizing presentation, including a learning, a depressive, and a somatoform disorder. Although not specifically cited in the reviewed literature, her assumed somatization was interpreted as reflecting emotional and physiological disinhibition. Unlike the expected behavior for AD/HD-C that would be associated with a history of extreme forms of externalizing behaviors, she reports a history that reflects impulsivity.

A socialization effect related to gender is offered as a contributing factor to Joy's symptom history. Assertive and aggressive behaviors were punished for Joy by her parents, teachers, and siblings, whereas internalizing behaviors were treated as more acceptable. It is posited that her disinhibition was channeled into inattentive impulsive symptoms, whereas symptoms and secondary characteristics

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typically associated with hyperactivity were more effectively suppressed and diminished throughout her lifetime. Thus, she is equally disinhibited as someone with hyperactive symptoms, but the difficulties have been displayed in internalizing ways. Although social forces did not cause or cure her AD/HD, symptom severity and co-morbid presentation appear to have been effected by the role of gender and socio-cultural factors.

A description of symptoms which begins in childhood is required for the diagnosis of AD/HD in adulthood (APA, 1994). Since accurate historical reports are needed to satisfy this criterion, the validity of self-report measures has been questioned (Biederman & Faraone, 1990; Brown & Gammon, 1991). To avoid the mis-representation of symptoms, input and symptom descriptions were gathered from others in Joy's life to supplement her self-report (See Table F1). Joy's mother endorsed more hyperactive-impulsive problems for Joy during childhood than are indicated in the self-report. With respect to current symptoms, Joy's mother and husband described similar hyperactive-impulsive and inattentive problems, whereas Joy and her friend endorsed primarily inattentive symptoms. The author's observation of Joy during treatment was more consistent with the reports of both hyperactive-impulsive and inattentive symptoms. Joy fidgets and verbally intrudes upon others more frequently than she reports. This variability supports the themes of poor self-observation and inconsistent symptom presentation that are found within the AD/HD population. Based on the results of

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this case, using the reports of others provides a richer and potentially more accurate picture of a person's current and historical AD/HD symptoms.

A related diagnostic issue is the child-anchored nature of the criteria, which can contribute to the mis-diagnosis of adults (APA, 1994; Barkley, 1995a). To compensate for this problem, semi-structured interviews and rating scales for adult AD/HD translate the diagnostic criteria into adult oriented descriptions (Murphy & Barkley, 1995; Brown, 1995). Completed AD/HD rating scales can guide further clinical inquiry. Endorsed items, inconsistent responses, and symptom patterns can be used as interview prompts, helping to structure the interview around diagnostic questions. These techniques were used for this project to structure the participant's symptom description without unduly biasing her report. For example, when asked what prompted her endorsement of "Don't follow through on instructions and fail to finish work," (Murphy & Barkley, 1995) as being descriptive of her behavior "Very Often," Joy discussed daily examples of housekeeping and organizational problems. The same illustrations of symptoms were collaboratively selected as treatment goals.

The associated characteristics of AD/HD, including affective reactivity, disorganization, spontaneity, and memory difficulties, provide contextual information for evaluating the diagnostic criteria. These categories help guide and enrich the clinical interview, and suggest relevant treatment interventions (Brown, Wynne, & Medenis, 1985). Joy's presenting problem reflected the

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impact of organizational problems associated with AD/HD on her daily life, as she stated, "Jobs seem overwhelming and nothing ever gets accomplished. I don't know where to begin on stuff." Her comments were corroborated by testing results, which indicated haphazard problem solving and planning. Integrating these sources of information, treatment interventions and goals were developed which helped Joy approach projects in a more organized manner. Specifically, she was able to use notetaking and verbalizing strategies, as well as her personal coach, to break down and develop priorities with respect to various tasks; these interventions preceded a reported increase in her completion of projects.

Determining which cognitive, behavioral, and social symptoms are subsumed by an accurate AD/HD diagnosis, and which satisfy criteria for additional diagnoses, is often difficult. Mood and personality disorders are commonly misdiagnosed for AD/HD, yet the symptoms of these disorders may be incorrectly attributed to AD/HD criteria within the AD/HD population (Ratey, Greenburg, Bemporad, & Lindem, 1992; Ratey, Middeldorp-Crispijn, & Leveroni, 1995; Wender, 1995). Ineffective treatment intervention and education can accompany these forms of inaccurate diagnosis. For this project, the participant's behaviors and attitudes were evaluated within the context of AD/HD.

Combining information from Joy's interview, the MMPI-2 scale elevations, and her BDI results, themes of chronic dysphoria emerged. Her patterns of irritability, hopelessness, sadness, and insecurity, persisting since

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adolescence, exceed the irritability and frustration associated with AD/HD; these symptoms were understood to reflect a co-existent Dysthymic Disorder. It is the author's opinion that the Dysthymic Disorder encompasses Joy's greatest difficulties, in adulthood. During childhood and adolescence, her AD/HD symptoms, including difficulty organizing, persisting, and completing projects that required sustained attention, interrupting others, and fidgeting, contributed significantly to her lowered level of functioning. Her behavioral problems prompted the criticism and rejection of her family, peers, and teachers. Joy subsequently developed a sense of distrust, expectations of failure, and pervasive feelings of dissatisfaction. As an adult, she still experiences the symptoms of AD/HD. Joy has difficulty organizing and following through with tasks, fidgeting, feeling restless, interrupting, and intruding on others. However, her doubts of herself and others, perceptions of hopelessness, difficulty making decisions and depressed mood more severely limit her social and professional functioning. Joy often does not attempt projects or take advantage of opportunities as she anticipates failure. Thus, by adulthood, the diagnosis of AD/HD seems to be secondary to her mood disorder.

Joy also reported and displayed traits that may be associated with a personality disorder. For example, her reliance upon a close group of people for support and guidance, and her unwillingness to openly criticize them, could be indicative of a Dependent Personality Disorder (APA, 1994), but is also social

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behavior common for AD/HD diagnosed women (Brown, Abramowitz, Madan-Swain, Eckstrand, & Dulcan, 1989; Solden, 1996). Joy's fear and avoidance of social situations suggests an Avoidant Personality Disorder (APA, 1994), but again is associated with several AD/HD diagnosed groups (Barkley, 1996; Solden, 1996; Weiss & Hechtmann, 1993). Her preoccupation with perfection and order is related to an Obsessive-Compulsive Personality Disorder (APA, 1994), but is also a compensatory trait often found within the AD/HD population (Shekim, Asarnow, Hess, Zaucha, & Wheeler, 1990; Tzelepis, Schubiner, & Warbasse, 1995). The features of many personality disorders are present, but the criteria for none are met. A mixed personality disorder, or Personality Disorder Not Otherwise Specified, is also not appropriate, as Joy's personality traits are considered by the author to be a manifestation of AD/HD.

Joy's personality traits reflect the variability of AD/HD symptoms and her Dysthymic Disorder. She described the development of her social uncertainty, social avoidance, and perfectionism as being consequences of inattention and impulsivity. Her social uncertainty and mistrust developed after repeatedly making mistakes, being forgetful, and being criticized. Joy's reliance on a small group of trusted family and friends also developed in relation to these experiences with social criticism. Her patterns of perfectionism began in her attempt to correct and avoid mistakes related to inattention, forgetfulness, and impulsivity. These traits developed in late adolescence, fluctuate with the intensity of Joy's

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dysphoria, and are often prevailed over by her inattention and impulsivity. For example, Joy's perfectionism increases with her self-dissatisfaction, yet she is frequently unable to complete the given project becoming distracted from the work.

In sum, the patterns of thought, emotion, and interpersonal relationships a person develops when adjusting to a lifetime of AD/HD symptoms can mirror those found in personality disorders. However, after being treated for the symptoms of AD/HD, the patterns of thought, emotion, and interpersonal relationships diminish. Joy's patterns of social avoidance, social uncertainty, and perfectionism similarly diminished from the beginning to the end of treatment, decreasing the likelihood of a Personality Disorder.

Treatment Process

The treatment of AD/HD in adulthood is not well researched. Intervention programs typically use medication, education, support, and individual treatment to increase a person's knowledge, personal awareness, and perceptions of social acceptance (Hallowell & Ratey, 1994; Solden, 1995; Wender, 1995). Medication treatment was not included during this project, so as to gain a cleaner measure of the impact of the psychosocial interventions; education, support, and individually oriented interventions were interlaced throughout the treatment. According to the CBT model, these interventions are effective by altering unhealthy beliefs (Hawton, Salkovskis, Kirk, & Clark, 1989). A history of critical experiences

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leads a person to develop negative automatic thoughts, which reflect dysfunctional assumptions or beliefs. The daily triggering of the automatic thoughts leads to a cycle of symptom presentation, crossing behavioral, cognitive, and affective domains. Typically, treatment cannot intervene at the critical incident level, as these experiences occur in unpredictable settings outside of treatment and precede entering treatment for most people. The belief system is likely treatment resistant as a history of experiences has served to reinforce these perceptions. Interventions are most common at the level of negative automatic thoughts, as they are current, easily tracked, and amenable to change. By directly changing this pattern of behavior and perception, a gradual change of the person's belief system is achieved. Such was the case with Joy's assessment and treatment.

The utility of conducting a full assessment when diagnosing AD/HD has been questioned (Biggs, 1995). The diagnosis is made based upon a person's history, not a diagnostic instrument or a testing profile (Barkley & Grodzinsky, 1994; Biggs, 1995; Wender, 1995). An assessment can, however, provide useful treatment information if undertaken with the aim of discovering the person's strengths as well as limitations. This assessment approach was used for this project. Joy's identified strengths and weaknesses were targeted to develop new habits or strategies during individual and group interventions. As an example, Joy has difficulty remembering information and staying task focused when visual

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information is not available. This pattern contributes to her problems with planning meals, organizing household items, and interrupting in conversations. Joy combined her areas of strength and difficulty by developing the strategy of note-doodling to use while planning and listening. The ensuing improvement in her housekeeping and conversational style was associated with a decline in her negative automatic thoughts. In turn, she perceived herself to be more successful, in control, and socially adept; this was interpreted as a shift in her dysfunctional assumption of failure.

Coaching, as applied to AD/HD treatment, is a form of solution focused counseling which provides structured problem solving and immediate feedback (Hallowell & Ratey, 1994). Joy described this as "having a secretary to help keep you on schedule." Her approach to coaching integrates information from her assessment, which identifies difficulties with planning, setting priorities, and shifting to new options, with her strategies of verbalizing and note taking. Approximately once every two days, Joy called her coach, Jackie, and set goals for the day. Jackie prompted her to explicitly state and write the ways in which she would accomplish these projects, making a detailed "To-Do-List." In addition to the support in problem solving, planning, and option identification, this intervention provided social interaction. Rather than experiencing ridicule, criticism, and punishment to reinforce her assumption of failure, Joy experienced "positive support." A subsequent willingness to socialize was reflected in her

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increased group participation, planned attendance at C.H.A.D.D. (Children and Adults with Attention Deficit Disorder) group events, and critical evaluation of treatment with the author.

Participation in a self help group can help counteract the perceptions of separation, abnormality, and unacceptability which are common for people diagnosed with AD/HD (Aguilera, 1990; Barkley, 1995b; Hallowell & Ratey, 1994; Weiss & Hechtman, 1993). The lessening of these beliefs is what Joy found most helpful about the group, rather than the specific educational components. This process can be traced throughout the group. Before the first meeting, she described being fearful of making errors and being thought of as "stupid" by the other members. Indeed, for most of the first group meeting, she remained silent and socially withdrawn. In the following weeks, however, Joy became increasingly interactive, and volunteered to express more of her thoughts, experiences, and questions. By the end of group treatment, she acknowledged feeling understood and accepted by the other participants. This acceptance was accompanied by a decrease in her negative automatic thoughts, or her anticipation of ridicule, criticism, and exclusion. Overall, she appeared to have shifted the belief that she must be perfect or would be perceived as a failure by others.

Simultaneous Sensory Stimulation Strategy Outcome

The application of sensory stimulation as a coping strategy during this project generated more questions than answers. Anecdotal commentary notes this

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strategy to be an effective way for people diagnosed with AD/HD to manage their symptoms (Barkley, 1990; Hallowell & Ratey, 1994; Weinberg & Harper, 1993). Talking through problem solving (Barkley, 1990) and playing background music while working (Abikoff, Courtney, Szeibel, & Koplewicz, 1996; Cripe, 1986) are both associated with increased task performance for diagnosed children. Using sensory stimulation as a proactive strategy, though, has not been researched with diagnosed adults.

Joy adopted three sensory strategies during treatment. Two of her strategies, note-doodling and verbalizing, were based upon her performance during the assessment and her endorsement of tactile, kinesthetic, and oral fidgeting behaviors since childhood. During her second individual session, she modified the note taking strategy to more closely match her needs and strengths. Joy used both of these strategies throughout the treatment. She subsequently described accomplishing more housekeeping tasks after creating her to-do-lists, and being more confident about her decisions.

Joy's third strategy, playing background music while she worked on projects, was based on her historical and current use of it. She initially reported positive results associated with the strategy during treatment; she successfully cleaned and organized rooms in her house and cooked a meal with her coach. As stated during one group, the music was relaxing for her and stopped her "thoughts and feelings from swirling." Part way through treatment, Joy discontinued this

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strategy based upon her perceptions of social peculiarity when using it. Joy's decision was interpreted as a reflection of her dysfunctional assumption of perfection and failure, and the resulting fear of social error. During the final session, her comments revealed that she still considers it to be a viable strategy, which is interpreted as further evidence of the potential efficacy of the strategy and as a shift in her dysfunctional assumption.

Perceived changes in Joy's performance following the application of sensory stimulation strategies are evaluated through three paths: false attribution, neurobiology, and cognitive-behavioral theory. The possibility of incorrectly assigning causality to an intervention (i.e., placebo effect or false attribution) can be explored by reviewing Joy's history. She reported persisting longer at tasks while doodling and playing music since childhood. These behaviors were inquired about and described by Joy before she knew the hypothesized effect, which would counter the theory of post-treatment or iatrogenic false attribution. The possibility of pre-treatment false attribution is not excluded, and may have contributed to the apparent treatment effects. Her preconceptions regarding music and note-doodling may have been enhanced by the treatment suggestion, which could produce a placebo effect. Changes in her performance due to the introduction of self-monitoring are also probable (Barlow, Hayes, & Nelson, 1984). This effect likely contributed to Joy's initial high rate of success in achieving her goals which eventually plateaus. However, her post-treatment rate

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of performance and success was perceived to be greater than her pre-treatment rate, which may suggest a more enduring change.

A second route of interpretation is through neurobiological channels. Divided attention studies have indicated that irrelevant stimuli serve to delay neuropsychological responses to relevant stimuli in laboratory settings (Satterfield, Schell, Nicholas, Satterfield, & Freese, 1990; Squires, Donchin, & Squires, 1977; Treisman & Davies, 1973; Wickens, 1980). A delayed response would appear to facilitate cognitive, emotional, and behavioral inhibition for people with AD/HD. When Joy used the note-doodling strategy, she did not interrupt people during the individual and group sessions as she had interrupted the author during the assessment and feedback phases. Likewise, Joy reported that her family and friends commented on this change in her daily living. Despite these reported changes, the path of sensory stimulation is unclear. The stimuli and environment were variable, and no neurobiological measurement was taken, so statements about the route and efficacy of intervention are not robust. Speculation cites activation of the frontal lobe and association areas through the sensory channels, which serves to delay a person's responses to other stimuli.

A final interpretation of the sensory stimulation strategy is from the perspective of cognitive behavioral theory (CBT). Helplessness and depressive thinking are displayed by people who attribute negative outcomes to a global, stable, and internal cause, whereas positive events are attributed to specific,

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unstable, and external causes (Sweeney, Anderson, & Bailey, 1986). By adulthood, a person's experience with AD/HD is likely to fit this pattern. Joy revealed these beliefs throughout treatment, viewing herself as a failure and not anticipating positive outcomes. The simultaneous sensory stimulation intervention is a variation of the "Premack Principle" (Hawton, Salkovskis, Kirk, & Clark, 1989); an activity which is naturally performed at a high rate can be used to increase or reinforce a person's propensity to perform an activity which occurs at a low base rate. Assigning Joy's natural fidgeting behaviors of note-doodling, talking, and listening to music as simultaneous behavior to other work, her low frequency activities, such as cooking, organizing the house, and planning, were reinforced. The high frequency behavior is to be contingent upon the low frequency behavior, but for this project that condition was not practical. The increase in low frequency behavior was associated with a change in Joy's beliefs at the end of treatment. She perceives herself to be more in control of her situations and able to enact change. Joy's self perception and expectation of failure also shifted, and she seemed to become less absolutist in her thinking.

Interpretation of Treatment

This project explored the diagnosis, treatment, and experience of an adult with AD/HD. The study was formulated from a cognitive-behavioral perspective. For the participant, Joy, several early experiences shaped her beliefs, or dysfunctional assumptions. As a child, she was punished for expressing

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emotions, interrupting others, and being forgetful. Repeatedly relocating and being ridiculed by her peers during childhood were powerful social experiences for Joy. She developed the belief that if she was not "perfect," then she was a "failure." During adulthood, she experienced many "critical incidents" which reinforced her belief: her withdrawal from school, her divorce, and the diagnosis of her daughter with AD/HD. Subtle daily experiences served as "critical incidents" for Joy. Her housekeeping difficulties, incomplete goals, lack of career advancement are examples. These trigger her negative automatic thoughts, which were noted on her behavioral log and stated during sessions. Examples of her thoughts include "I'm a loser," "What I do is wrong," "I'm stupid," and "I'll be punished." A variety of symptoms arose from these thoughts, including her social withdrawal, discouragement, guilt, helplessness, overeating, and somatization. These, in combination with the ongoing AD/HD symptoms, reinforced her dysfunctional assumption and negative automatic thoughts. Treatment was not expected to and did not enable Joy to completely change these patterns, as revealed by her statements during the final session fearing errors and subsequent social ridicule. However, she made progress toward attaining treatment goals, displayed a decrease in depressive thinking, and reduced the frequency and rigidity of her absolutist perceptions.

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Limitations of the Current Study

Retrospectively evaluating the treatment process, a combination of individual therapy and strategy development interventions might have been more helpful to the participant than the focused strategy development interventions used in this project. The individual treatment could have been supplemented with psychoeducational support group participation to gain the benefits of social normalization and interaction. Lengthening the treatment process might have more effectively addressed the interplay of situational factors, problematic personality styles, and specific problems associated with AD/HD than did the model in this study. To correct for the problems associated with the brief, focused treatment used in this study, post treatment referrals and recommendations were reviewed with the participant.

Adding measurements of change also might have improved the quality of this study. Gathering feedback from others in the participant's life following the development and implementation of her coping strategies might have been useful for treatment monitoring. Repeated administrations of the AD/HD rating scales with the participant and others throughout treatment would have been one possible method. Measures used in laboratory research, such as event-related potentials (ERPs) and positron emission tomography (PET) scans, could have provided additional data during the assessment phase of treatment regarding the path of efficacy for sensory strategies. Physiological data might have been useful

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for directing future research. Independent measurements (i.e., physiological measures, independent observation) of sensory stimulation strategies in conjunction with task performance might have provided additional outcome data.

Modification of the group sessions might also have been beneficial to the participant and other group members. The provision of reading handouts and session outlines to increase the external structure for the educational components may have been helpful. Greater attention to the specific needs of all members and an increased sensitivity as to how each client's issues were having an impact on the treatment group may have improved the efficacy of the group sessions.

The design of the study was not sufficient to address the full range of difficulties the participant was experiencing. Although the author recognized these problems existed, the issues often were not adequately addressed. In retrospect, it might have been more beneficial to the participant if opportunities to address emotional difficulties in greater depth had been integrated into the services that were provided.

As stated in the discussion of methods and procedures, the case study research model inherently limited the ability to generalize findings to the greater population. Also, no specific hypotheses were offered or tested, so no statements of causality or change can be offered. However, insights that may be useful for future study were gained.

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Implications for Future Research

The completion of this project raises several questions for future research. The diagnostic criteria could be further refined in order to reduce gender, age, and cultural biases. Further research on differential criteria between personality disorders, mood disorders, and chronic patterns of AD/HD would benefit accurate diagnosis and treatment. Since many behavioral criteria are shared amongst these disorders, criteria that target the developmental pattern or process of AD/HD might aid in the diagnosis. Based on an accurate diagnosis of AD/HD, strategy development, group therapy, or pharmacological treatment which can help the person to manage the symptoms and associated characteristics of the disorder, rather than blaming the person for the deficits of the disorder, might be more possible and more clinically effective. Exploration of the origin or origins of AD/HD may be useful for predicting longitudinal patterns and treatment options. Further exploration of the effect of simultaneous stimulation strategies on the task persistence for a person diagnosed with AD/HD using controlled, experimental measures would be of interest. Given the researched utility of medication treatment and assuming a significant impact of the sensory strategies, a study of the efficacy of sensory strategies with and without medication might also be beneficial. Additionally, a longitudinal study might demonstrate how improved task persistence affects self-esteem, social functioning and job performance. In

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summary, much research is yet to be conducted on the origin, experience, and treatment of AD/HD through the lifespan.

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APPENDICES

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Appendix A: Diagnostic Symptoms of AD/HD

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Table A1. Diagnostic Symptoms for Attention Deficit/Hyperactivity Disorder

Inattention	Hyperactivity
1. Often fails to give close attention to details or makes careless mistakes	1. Often fidgets with hands or feet or squirms in seat
2. Often has difficulty sustaining attention	2. Often leaves seat in situations in which remaining seated is expected
3. Often does not seem to listen when spoken to directly	3. Often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)
4. Often does not follow through on instructions and fails to finish duties	4. Often has difficulty playing or engaging in leisure activities quietly
5. Often has difficulty organizing tasks and activities	5. Is often "on the go" or acts as if "driven by a motor"
6. Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort	6. Often talks excessively
7. Often loses things necessary for tasks or activities	**Impulsivity**
8. Is often easily distracted by extraneous stimuli	1. Often blurts out answers before questions have been completed
9. Is often forgetful in daily activities	2. Often has difficulty awaiting turn
	3. Often interrupts or intrudes on others (e.g., butts into conversations or games)

[a] From (APA, 1994).

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Appendix B: Institutional Review Board Form

1. Description of the participant: An adult between the ages of 30 to 49, exhibiting the symptoms included in the diagnosis of attention deficit/hyperactivity disorder (DSM-IV).

2. Recruitment techniques: Active solicitation is not anticipated. The participant is to be obtained through ongoing self-referred assessment requests at a local private, for profit, outpatient psychological services facility.

3. Proposed procedures of study: The participant will undergo a psychological assessment, have a feedback session, have two follow up sessions to develop and monitor identified coping strategies, and participate in a closed-end group for adults with AD/HD.
    a) Assessment: Semi-structured clinical interview; self-report rating scales targeting AD/HD symptoms, depression, and fidgeting behavior; MMPI-2; WAIS-R; WIAT; Trails A & B; Rey-Osterrieth Complex Figure Drawing.
    b) Feedback Session: Testing results are reviewed, diagnosis given, and sensory (visual, auditory, kinesthetic, etc.) strategies organized into a plan for use with daily tasks.
    c) Follow-up Sessions: Two 1-hour sessions to track the use of sensory strategies used to improve persistence and goal achievement.
    d) Educational/Support Group: Five 1 ½ hour sessions (one per week following feedback session) targeting information, resources, and strategies tailored to adults with AD/HD.

4. No specific regulations or laws are known to apply to this population.

5. Debriefing timeline: The time between assessment and feedback is not anticipated to exceed 2 weeks, and completion of the assessment through the end of the support group is not anticipated to exceed 2 months. Information obtained during the assessment (including cognitive, social, and emotional factors and diagnosis(es)) will be thoroughly explained to the participant, and provided to him/her in a written report. The following 2 weeks will be a collaborative planning process, with the participant fully informed and interactive. Following the feedback session, the participant will be involved in a five week educational-support group where the members will be fully interactive.

6. No concealment or deception is involved.

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7. Issues of confidentiality: Information regarding social/emotional/intellectual development will be documented. Name, birth date, and identifying details of the participant and group members will be excluded from any written work.

8. Potential risks: The potential for harm related to participation in this study will be explained, acknowledging the distress that may be associated with psychological assessment and treatment, including (1) performance stress during assessment; (2) an adverse reaction after receiving a diagnosis, and (3) acknowledgment of and attention to areas of difficulty as possible sources of psychological distress.

9. Risk evaluation: In addition to the potential liabilities mentioned above, the potential benefits will also be explained to the participant, including (1) recognizing and diagnosing the AD/HD condition the person has coped with throughout life; (2) the opportunity for subsequent education about this condition and for support or solutions; and (3) the potential for recognizing simultaneous sensory stimulation strategies the participant already uses and applying these strategies in a more proactive way to enhance and refine the methods he or she uses to cope with the AD/HD symptomatology.

   The option to withdraw consent or decline participation without penalty should the person decide not to continue in the study will be clarified. When the participant understands the potential risks and benefits of entering this study, informed consent will be obtained and documented.

10. Auspices of involvement: The participant will be obtained through a psychological assistantship position, and the researcher will be supervised by a licensed psychologist trained in all necessary and relevant procedures.

11. Supervisor: Mark Katz, Ph. D. License # PSY 4866

12. Copy of informed consent form: See attached

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Appendix C: Consent Form

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California School of Professional Psychology
San Diego Campus

Consent to Participate in a Research Project

I understand that Tiffany Hild, a doctoral student at the California School of Professional Psychology, is collecting information about adult experiences with attention deficit / hyperactivity disorder (AD/HD) for her research project. As part of the project, I will be involved in interviewing, psychological testing, and using coping strategies. The results of the testing will be discussed with and summarized for me in a written report at the conclusion of my evaluation. Two one-hour follow up sessions will be scheduled, one each during the two weeks after my testing. Additionally, I will participate in an educational-support group for adults with AD/HD after receiving the evaluation results. The group will consist of five 1 ½-hour sessions, once a week which will begin no more than one month following the feedback session. I understand my active involvement in the process is not expected to exceed 20 hours over a two month period.

I understand that there are no known harmful effects from participating in this study, however, it is possible I may feel distressed by answering some of the questions, completing the testing, or applying the new skills and ideas gathered during the assessment and educational-support group. At the end of my participation, I will be provided with resources which I may choose to explore, develop, and use in learning about and coping with the symptoms of AD/HD.

All identifying information will be removed from all the papers and the research records will be confidential. The interview, psychological testing, and summaries of the follow up sessions and group sessions will be presented to fulfill the requirements of the doctoral program to supervisors and CSPP faculty. I understand that information gathered during this process will be held in strict confidence and will be used only for the purpose of completing the research. The project has been approved by the CSPP-San Diego Institutional Review Board.

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By signing this form, I have read it, understand it, and agree to it, and voluntarily consent to participate in the project as described above. I also understand and agree that I may withdraw from this study at any time. I understand that I may decline to participate. There will be no consequences for declining or withdrawing. My signature indicates that I have read and agreed to the above:

Name: _____ Date: __/__/__.

Researcher: _____ Date: __/__/__.

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Appendix D: List of Assessment Protocol

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Review of Academic Records

Semi-Structured Clinical Interview for Adult AD/HD (Barkley, 1991)

Collateral Interview with the Participant's Mother

ADHD Behavior Checklist for Adults (Murphy, & Barkley, 1995), one self report, three collateral reports

Wender Utah Rating Scale (WURS; Ward, Wender, & Reimherr, 1993)

Brown Attention Deficit Disorder Scales (BADDS; Brown, 1995)

Wechsler Adult Intelligence Scale - Revised (WAIS-R; Wechsler, 1981)

Wechsler Individual Achievement Test - Screener (WIAT; Wechsler, 1992)

Rey-Osterrieth Complex Figure Test (Rey-O; Spreen & Strauss, 1991)

Trail Making Test: Parts A and B (Trails; Reitan, 1986)

Wisconsin Card Sorting Test (WCST; Heaton, 1981)

Beck Depression Inventory (BDI; Beck & Steer, 1987)

Minnesota Multiphasic Personality Inventory - 2 (MMPI-2; Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989)

Fidget to Focus (FTF; Rotz, & Hild, 1996)

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Appendix E: Fidget to Focus Scale

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FIDGET TO FOCUS

These are all small subtle tricks many people unknowingly use to remain alert and focused on chores, relationships, or activities that otherwise may seem too tedious. For example, in conversations you may find it easier to listen while chewing gum, jiggling your foot, or glancing at passing traffic. While trying to fall asleep, you may find it helpful to rub the sheet or listen to the TV. Everyone discovers different approaches to stay with difficult situations.

To FOCUS ON a boring or monotonous task, I OFTEN find myself DOING the following:

(√Check all that apply)

MOUTH: *Putting something in my mouth* while I'm reading, listening, working, etc.

- ☐ smoking
- ☐ biting nails or cuticles
- ☐ chewing on buttons, sweatshirt string, cuff
- ☐ licking, sucking, or biting your lips/cheeks
- ☐ biting / chewing on _____ (e.g. pen, gum, ice)
- ☐ snacking on _____ (e.g. chips, veggies, sweets)
- ☐ drinking _____ (e.g. coffee, soda, beer)
- ☐ sucking on _____ (e.g. candy, ice, tobacco)
- ☐ Other _____
- ☐ Other _____

MOVEMENT: *Wiggling, moving, or doing something* while I'm listening, studying, talking, etc.

- ☐ doodling
- ☐ jingling items in pocket
- ☐ swinging / bouncing foot or leg
- ☐ clenching /grinding teeth
- ☐ stretching / flexing / shaking body
- ☐ wiggling toes
- ☐ playing with joystick
- ☐ balancing a chair on 2 legs
- ☐ driving a car, motorcycle, boat, etc.
- ☐ rocking, fidgeting, or squirming
- ☐ drumming / tapping fingers or pen
- ☐ exercising (e.g. cycling, jogging)
- ☐ pacing in circles, back and forth, etc.
- ☐ sporting activities (e.g. golfing, skating, surfing)
- ☐ dancing
- ☐ note taking
- ☐ walking
- ☐ Other _____
- ☐ Other _____

TOUCH: *Holding, feeling, or handling something* while I'm watching, listening, talking, etc.

- ☐ playing with paper (e.g. fold, tear, wad)
- ☐ clicking pen / mechanical pencil
- ☐ stroking / rubbing neck, clothes, pet, etc.
- ☐ kneading, cooking, stirring, mixing, etc.
- ☐ painting, sketching, drawing
- ☐ needleworking (e.g. knitting, sewing)
- ☐ twisting / stroking hair
- ☐ twisting phone cord, necklace, watch, etc.
- ☐ shuffling cards
- ☐ fiddling / fidgeting with _____ (e.g. keys, coins)
- ☐ sculpting, throwing pottery, whittling
- ☐ playing a musical instrument
- ☐ Other _____
- ☐ Other _____

SIGHTS: *Watching, noticing, or tracking something* while I'm listening, thinking, studying, etc.

- ☐ glancing out of a window
- ☐ selecting colorful furnishings, walls, etc.
- ☐ using adjustable lighting
- ☐ watching a fish tank, water / oil toy, etc.
- ☐ watching flickering flames / fireplace
- ☐ creating a decorated desk or work area
- ☐ scanning TV shows
- ☐ playing video / computer games
- ☐ using colorful tools (e.g. pens, folders, highlighters)
- ☐ maintaining an active and organized work area
- ☐ Other _____
- ☐ Other _____

SOUNDS: *Listening to or hearing something* while I'm reading, talking, planning, etc.

- ☐ whistling / humming
- ☐ talking to self
- ☐ playing soft music _____ (e.g. classical, rock, jazz)
- ☐ playing loud music _____ (e.g. classical, rock, jazz)

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Appendix F: ADHD Rating Scales for Adults Results

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Table F1. ADHD Behavior Checklist for Adults

	Nonclinical adults [a]					
	M	SD	Self	Mother	Husband	Friend
Adulthood (N = 316)						
Inattention						
Symptom Count	0.9	1.6	7[b]	7[b]	9[b]	8[b]
Score	5.5	4.4	19[b]	17[b]	25[b]	17[b]
Hyperactive-Impulsive						
Symptom Count	1.5	1.8	2	5[b]	6[b]	4
Score	6.7	4.3	8	15[b]	14[b]	12
Total						
Symptom Count	2.3	2.9	9[b]	12[b]	15[b]	12[b]
Score	12.0	7.8	30[b]	32[b]	39[b]	29[b]
Childhood (N = 182)						
Inattention						
Symptom Count	1.7	2.6	7[b]	8[b]		
Score	7.2	6.1	19[b]	19[b]		
Hyperactive-Impulsive						
Symptom Count	1.4	2.0	6[b]	6[b]		
Score	6.0	5.1	13	17[b]		
Total						
Symptom Count	3.1	4.3	13[b]	14[b]		
Score	13.2	10.8	33[b]	35[b]		

[a] From (Murphy & Barkley, 1996). [b] More than 1.5 standard deviations above the mean for the 30-49 year old female peer group.

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Table F2. Wender Utah Rating Scale

		Nonclinical		Depressed		AD/HD	
	Participant	Adults (N = 100) [a]		Adults (N = 70) [a]		Adults (N = 81) [a]	
		M	SD	M	SD	M	SD
Total Score	67 [b]	16.1	10.6	31.7	17.4	62.2	14.6

[a] From (Ward, Wender, & Reimherr, 1993). [b] More than 1.5 standard deviations above the mean for nonclinical and depressed adults.

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Table F3. Brown Attention Deficit Disorder Scale

	Participant		Nonclinical Adults (N = 143) [a]		AD/HD Adults (N = 142) [a]	
	Raw	T Score	M	SD	M	SD
Total Score	86	85	30.9	15.8	77.9	16.3
Cluster 1	18	75	7.7	4.2	18.6	4.7
Cluster 2	16	69	7.5	4.6	19.8	4.5
Cluster 3	20	86	5.8	4.0	16.3	5.4
Cluster 4	19	92	5.4	3.2	12.3	3.9
Cluster 5	13	79	4.6	2.9	10.9	3.7

[a] From (Brown, 1996).

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Appendix G: Cognitive Testing Results

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Table G1. WAIS-R

Subtest	Age Scaled Score	Intelligence Quotient
Verbal Scale		94*
Information	7	
Digit Span	7	
Vocabulary	12	
Arithmetic	8	
Comprehension	10	
Similarities	13	
Performance Scale		102*
Picture Completion	12	
Picture Arrangement	11	
Block Design	13	
Object Assembly	8	
Digit Symbol	8	
Full Scale		97

* $p < .10$ of obtaining this VIQ < PIQ difference by chance alone.

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Table G2. WIAT

	Grade-Equivalent
Basic Reading	> 12.9
Mathematical Reasoning	10.8
Spelling	> 12.9
Reading Comprehension	
No visual stimulus	11.3
Visual stimulus	> 12.9
Listening Comprehension	> 12.9
Screener Composite	> 12.9

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Appendix H: Neuropsychological Testing Results

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Table H1. Rey-Osterrieth Complex Figure Drawing

		Same Age Peers [a]	
	Participant	M	SD
Copy:	36	33.20	6.1
Delay:	11.5	19.5	6.7 *

[a] Source: Kolb & Whishaw (1985)

* 1 SD below normative mean

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Table H2. Trails Test: Parts A and B

			Same Age Peers: Percentile [a]	
Part	Participant	Scaled Score	T Score	Qualitative Descriptor
A	15	15	67	Above Average
B	82	9	38	Mild Impairment

[a] Source: Source: Heaton, Grant, & Matthews (1991)

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Table H3. Wisconsin Card Sorting Test

		Same Age Peers [a]	
Measure	Participant	Scaled Score	T Score
Categories Achieved	4	-	-
Total Errors	46	-	-
Perseverative Errors	36	-	-
Perseverative Responses	42	6	32

[a] Source: Heaton, Grant, & Matthews (1991), for women, educated 12 years, 20 to 34 years of age.

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Appendix I: Social-Emotional and Personality Testing Results

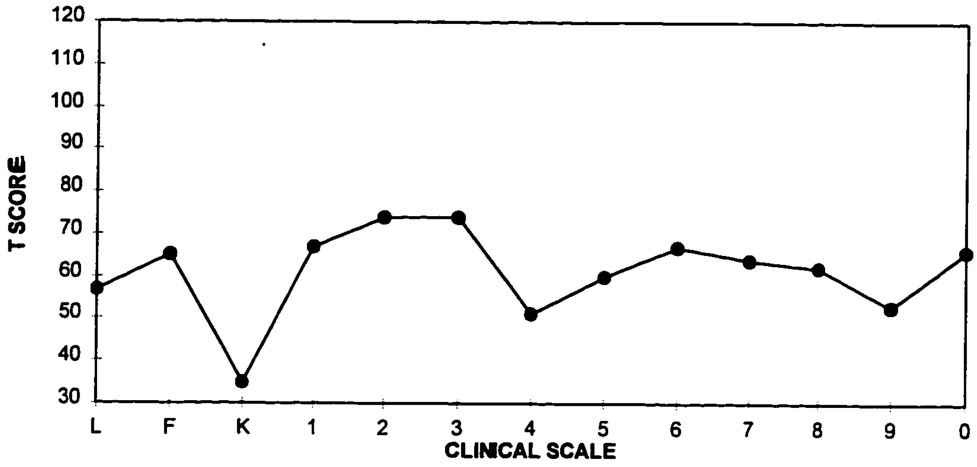
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Table I1. Beck Depression Inventory

Scored Item Endorsement:			
Assessment		Post Treatment	
Statement	Score	Statement	Score
I feel sad.	1	I feel sad.	1
I feel discouraged about the future.	1	I am not particularly discouraged about the future.	0
As I look back on my life, all I can see is a lot of failures.	2	As I look back on my life, all I can see is a lot of failures.	2
I feel quite guilty most of the time.	2	I don't feel particularly guilty.	0
I expect to be punished.	2	I don't feel I am being punished.	0
I am disgusted with myself.	2	I am disappointed in myself.	1
I am critical of myself for my weaknesses or mistakes.	1	I am critical of myself for my weaknesses or mistakes.	1
I feel irritated all the time now.	2	I am no more irritated now than I ever am.	0
I believe that I look ugly.	3	I feel that there are permanent changes in my appearance that make me look unattractive.	2
I have to push myself very hard to do anything.	2	It takes an extra effort to get started at doing something.	1
I am worried about physical problems such as aches, pains, upset stomach, or constipation.	1	I am worried about physical problems such as aches, pains, upset stomach, or constipation.	1
Total	19	Total	9

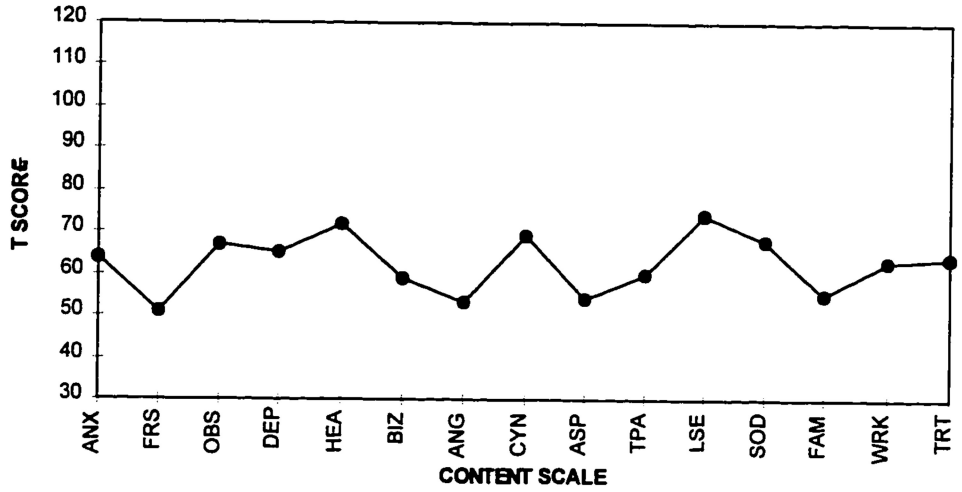
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Figure I1. MMPI-2 Clinical Scales.



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Figure I2. MMPI-2 Content Scales.



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Appendix J: Sensory Strategy Testing Results

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Table J1. Fidget to Focus Scale

Domain	Sensory Habit
Mouth	
	Bit nails for 30 years
	Licking and biting lips
	Bite/chew on pen, gum, etc.
	Snack on crunchy foods
	Drink anything
	Suck on hard candy
Movement	
	Doodling
	Swinging legs
	Balancing in a chair on two legs
	Rocking, fidgeting, and squirming
	Drumming fingers
Touch	
	Folding paper
	Clicking pen
	Twisting ends of hair
	Twisting phone cord
	Fiddling with keys
Sound	
	Whistle and hum
	Talk to self
	Play soft music in the background
	Play loud music in the background
Sight	
	Glancing out window

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Fidget to Focus: A Coping Strategy for an Adult with AD/HD

An Abstract of a Doctoral Project

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by

Tiffany A. Hild
1997

Approved by:



Rob Brager, Psy.D.

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ABSTRACT

The experience, diagnosis, and treatment of Attention Deficit/Hyperactivity Disorder (AD/HD), in adulthood, is not well documented. This clinical case study explores the use of simultaneous sensory stimulation as a coping strategy for an adult with AD/HD.

AD/HD is conceptualized as a disorder of disinhibition, including the diagnostic symptoms of hyperactivity, impulsivity, and inattention. The source of disinhibition is assumed to be a neurobiological dysfunction. Based on the efficacy of stimulant medication treatment and the neurobiological role of sensory stimulation, it was hypothesized that sensory stimulation could be used as a coping strategy to reduce the symptoms of AD/HD. Clinical examples were gathered during a psychodiagnostic assessment, short-term individual-oriented sessions, and a 5-week psychoeducational group for AD/HD adults.

The clinical participant in the case study is a thirty-one-year-old, Caucasian woman. She was diagnosed with AD/HD, Combined Type and Dysthymic Disorder (DSM-IV) during the assessment. Gender, age, and personality characteristics contributed to diagnostic difficulties in this case, with the female participant displaying many internalizing traits. The participant developed, employed, and modified sensory stimulation strategies throughout the 8 weeks of treatment. Her progress was monitored through direct observation,

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self-report, and behavioral logs. She reported fewer depressive symptoms, increased social interaction, and increased self-esteem at the end of treatment.

The findings of this case study support the use of multimodal treatment, including individual treatment, psychoeducational group treatment, and simultaneous sensory stimulation coping strategies. The process of simultaneous sensory stimulation as a coping strategy is interpreted from the aspects of false attribution, neurobiological channels, and cognitive-behavioral theory. Intensive treatment is suggested for more ingrained affective, cognitive, and social problems.

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