CONSTRUCT VALIDITY OF A TEST OF ATTENTION FOR CHILDREN

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ABSTRACT

The available measures of sustained attention, or vigilance, tend to require more than the ability to focus attention over a prolonged time period. A new test, the Seidel Continuous Attention Test (SCAT) designed for children, has previously been found to discriminate groups of Attention-deficit Hyperactivity Disordered (ADHD) children from normals. This research evaluated the SCAT's construct validity through an examination of its convergent, discriminant, and relative validity. It was hypothesized that the SCAT should be related to certain other neuropsychological tests (those thought to measure attention), while remaining free of confounding factors such as general intelligence. The hypotheses were tested by considering the patterns of correlations obtained between these measures.

The SCAT appears to have acceptable reliability, which is necessary for the test to be valid. It was generally unrelated to potential confounding factors which should not be measured by a test of attention; thus, its discriminant validity was supported. There were very few correlations between the SCAT and other tests thought to measure attention (a test of convergent validity); however, this result is not inconsistent with the SCAT's being a good measure, because it may be more "pure" than many other tests of attention.

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Chapter 1

INTRODUCTION

Attentional problems are present in many clinical populations. They are one of the most common cognitive deficits attributed to brain injury (Lezak, 1978), and are also thought to be central to some childhood disorders that do not involve demonstrable neuropathology, such as learning disabilities (Keogh & Margolis, 1976) and "hyperactivity" (Douglas, 1972; Douglas & Peters, 1979). For these reasons, it would seem important to have available for clinical use practical measures of attention. However, despite the prevalence of attentional problems in many populations, there are few clinically useful measures of attention, and these have not been carefully validated. The most frequently used tests are not derived from theories of attention (Stuss & Benson, 1986, chap. 6).

The paucity of validated measures of attention may be due in part to the fact that attention is a broad concept which is difficult to define. Various conceptualizations of the construct of attention have been proposed; depending on the underlying theory, different tests of attention are thought to measure different abilities. Therefore, attentional tests form a heterogeneous group. One model of attention postulates three related components: 1) alertness, regulated physiologically; 2) selective attention, a largely automatic process which causes some stimuli to be attended to more readily than others; and 3) voluntary attention, the product of conscious effort to achieve a goal (see Posner & Rafal, 1987, for further elaboration). It is this last component which is limited by the amount of information attended to and the time over which attention can be sustained. Tests of attention purport to measure one or more of these components, which interrelate to form a functional attentional system.

The terms "sustained attention" and "vigilance" denote types of voluntary attention, and are often used interchangeably; however, they have been differentiated (Stankov, 1983). Sustained attention refers to the layman's conception of attention, stressing continuous sustained application of mental effort (beyond simple signal detection). Vigilance is required for tasks involving detection of an infrequently occurring signal over a prolonged period of time. For the purposes of this thesis, these two terms will be used to describe the same ability.

Review of Tests of Attention:

There are many different measures currently employed as indicators of attentional abilities. However, there remains a lack of consensus as to what many of these tests actually measure. Some of them are used both as tests of attention and as tests of other abilities, such as abstract concept formation, mental tracking, mental flexibility, or speed of processing. Others are used as measures of attention when in fact some of the research suggests that they may not be.

The **Freedom from Distractibility factor** from the Wechsler

Intelligence Scale for Children - Revised (WISC-R; Wechsler, 1974) is one such controversial measure. Kaufman (1975), through factor analysis of the WISC-R subtests, extracted three factors which underlie the WISC-R, usually termed "Verbal Comprehension", "Perceptual Organization", and "Freedom from Distractibility" (FFD). Most studies of the WISC-R have suggested that its factor structure is stable among both normal and clinical populations (Ownby & Matthews, 1985). The Arithmetic, Digit Span, and Coding subtests have high loadings on the FFD factor. This factor has often been assumed to be a measure of attention, but some research poses serious questions to this assumption (Ownby & Matthews, 1985; Roszkowski, 1983; Finch, Spirito, & Brophy, 1982). Ownby and Matthews (1985) attempted to clarify the meaning of the FFD factor by assessing its relations to a battery of other neuropsychological measures sensitive to brain dysfunction and learning disorders. Measures with high loadings on this factor included those with visual-spatial, rapid cognitive processing, and organizational components. Despite limitations to the generalizability of these results, they suggest that the third factor may represent a more complex construct than simply freedom from distractibility, as its name suggests. Roszkowski (1983), studying a population of mentally retarded individuals, hypothesized that if the FFD factor was really a measure of attention, then, compared to the other two factors, it should show certain relationships to parts of the Adaptive Behavior Scale (Nihira, Foster, Shellhaas, & Leland, 1974) and to the Wechsler Adult Intelligence Scale IQ (WAIS; Wechsler, 1981). None of the hypotheses were supported, suggesting to the authors that the factor is misnamed, and actually measures a more cognitive factor such as memory or numerical ability. Cohen found a similar factor in analyses of the 1949 WISC, and fluctuated in his preference for the terms "Freedom from Distractibility" and "Memory" (1952, 1957; cited in Kaufman, 1975).

There are also compelling reasons to consider the third factor as being quantitative in nature. Arithmetic is obviously a numerical task, Digit Span requires the recall of numbers, and Coding B involves the association of numbers with abstract symbols. Osborne and Lindsey (1967; cited in Kaufman, 1975) considered the third factor to be a measure of numerical ability. Kaufman argues that there are at least as many valid reasons to label the factor "Freedom from Distractibility": for instance, the clinical observation that short-term memory and arithmetic skills are particularly affected by distractibility. Kaufman encouraged researchers to investigate the construct underlying the third WISC-R factor.

Various groups of children have been compared on the FFD factor. Some studies have found that impulsive or Attention-deficit Hyperactivity Disordered (ADHD [also referred to as ADD]; American Psychiatric Association, 1987) children perform worse than other groups on the factor (Lufi & Cohen, 1985). Lufi, Cohen, and Parish-Plass (1990) found the Arithmetic and Coding subtests to be powerful variables in differentiating ADHD from emotionally disturbed children. This latter finding has also been substantiated by others (Groff & Hubble, 1982; Peterson & Hart, 1979; Raviv, Margalith, Raviv, & Sade, 1981; cited in Lufi, Cohen, & Parish-Plass, 1990). However, other researchers have not found such differences. Zarski et al. (1987) found that an ADD group of children did not perform differently from a regular class group on the FFD factor subtests. The very existence of the factor in behavior-problem children was questioned by Finch et al. (1982), who reported no difference in FFD performance of reflective and impulsive emotionally disturbed children.

The Stroop Color-Word Test (Stroop, 1935) has been used to measure selective attention. The Victoria version is reported to be sensitive to left frontal lobe damage (Spreen & Strauss, 1991). Briefly, the original test consists of three parts, requiring color-naming, word-reading, and naming ink colors of printed color-names. There are different forms of the test with slightly different demand characteristics. The test's original purpose was to help examine the relationship between the speed of naming hues of words and the speed of word reading. Brown (1915; cited in Lufi et al., 1990) first reported that it takes longer to name color hues than it does to read their names. Word reading is consistently faster than naming the colors of words. Stroop (1935) proposed that the slower speed when naming colors of words is due to the "color-word interference effect": colors are associated with a variety of responses, while words are associated only with reading. In Golden's opinion, the word-reading response is occupying the neuropsychological pathways at the same time that the color naming response needs to be processed (1978, cited in Lazarus, Ludwig, & Aberson, 1984). Golden claimed that the Stroop could be used to detect brain damage (Lufi et al., 1990), which suggests that it may be sensitive to attentional deficits. Research on the Stroop suggests that the interference effect measures the ability to separate the word from its color. This requires an individual to sort information from the environment and to selectively attend to some of this information (Golden, 1978; cited in Lazarus et al., 1984). The interference effect was reported to be greater for patients with left frontal lobe damage than for other patient or control groups.

Some of the advantages of the test were noted by Lazarus et al.: 1) quick, easy administration; 2) no cultural bias; 3) it can be translated into foreign languages; 4) it is highly reliable and valid; 5) the effect of short-term visual and auditory memory does not confound the interpretation of the results; 6) it is only slightly affected by practice; 7) it is appropriate for people of all ages. Lazarus et al. suggested that for preschool children, shapes can be substituted for words. There is no mention of whether Stroop endorsed this idea, or whether any testing had been conducted to investigate the validity of this form of the test.

Broverman, Clarkson, Klaiber, & Vogel (1972; cited in Lufi et al., 1990) found that "hyperkinetic" children scored low on the word reading part of the Stroop, and proposed that this was due to their poor automatizing skills (i.e., they are slow to benefit from practice). Lufi et al. (1990) compared the performance of three groups of children on the WISC-R and the Stroop. They suggest that the WISC-R scores are helpful in differentiating ADHD from normal children, and that the Stroop scores can make the finer discrimination between ADHD and emotionally disturbed children. They found that the Stroop did not help to discriminate ADHD from normal control children.

From these various experiments, it is clear that there are differing ideas regarding which underlying ability is measured by the Stroop Test, and whether it can be useful in differentiating children with attentional problems from normal children and other clinical groups.

The Wisconsin Card Sorting Test (WCST; Berg, 1948; Grant & Berg, 1948; cited in Spreen & Strauss, 1991) is one of the most extensively used measures in the assessment of frontal lobe function. The subject is required to sort a deck of cards depicting colored shapes, guided by four key cards; the cards can be sorted by color, by shape, or by number. The subject uses feedback from his correct or incorrect responses to infer the sorting principle, which changes without warning. The WCST is generally believed to test frontal lobe integrity (especially dorsolateral frontal lobe, according to Milner, 1963), i.e., the ability to form abstract concepts, to shift and maintain cognitive sets, and to ignore irrelevant stimuli. Voluntary attention is generally conceived of as a frontally-mediated function. The WCST requires selective attention, in order to inhibit responding on the basis of sorting principles other than the current one. The WCST also requires sustained attention, to avoid errors caused by failure to maintain cognitive set.

Surprisingly, Zarski, Cook, West, & O'Keefe (1987) reported no differences in WCST performance of ADD, regular classroom, and special education children. They suggest that this may point out the insensitivity of the WCST in identifying children with ADD. However, Bornstein (1986; cited in Spreen & Strauss, 1991) reported that the WCST, together with three other measures, correctly classified more left frontal lesion patients than other patients. Taken with the assumption that some attentional deficits are related to frontal lobe dysfunction, this result may indicate that the WCST does have some validity as an attentional measure. Again, there are evidently differing opinions among researchers regarding the usefulness of the WCST for the assessment of attention.

The popular **Trail Making Test**, originally part of the Army

Individual Test Battery (1944) and now part of the Halstead-Reitan Neuropsychological Battery, is used as a test of attention, speed of visual search, visual-conceptual and visuomotor tracking, and mental flexibility. Like other tests involving motor speed and attention, this test is highly vulnerable to effects of brain injury (Spreen & Benton, 1965; cited in Lezak, 1983), and can be used to screen for brain injury. Part A requires the patient to connect, in the correct sequence, 25 randomly placed numbers on a page; Part B is a similar task involving letters and numbers which the patient must connect in an alternating order. The test has two forms: the "Intermediate" Form for children aged 9 to 14, and the Adult Form for ages 15 and above. Part B is especially sensitive to brain damage (Dodrill, 1978; cited in Spreen & Strauss, 1991), and correlates with the Digit Symbol WISC-R subtest (Shum et al., 1990). The Trail Making Test has discriminating power for many clinical populations, including young adult LD subjects (O'Donnel, 1983; cited in Spreen & Strauss, 1991). As a test of attention, however, its validity has not been reported. There are important potential confounding factors in the measure of attention using this test, due to the other skills involved, namely visual scanning and fine motor function.

The **Progressive Figures Test** (Reitan & Davidson, 1974) is similar conceptually to the Trail Making Test, and is used with young children 5 to 8 years old. Because younger children may not yet be fully familiar with the alphabet and counting, shapes are used instead. The test consists of a page on which there are large shapes each containing a smaller shape. The starting point is designated, and the subject is told to notice the small shape within it and to draw a line to the large shape which matches this small shape. The rest of the page is completed, the object being to attend to the inside shapes in order to know where to draw the line next. A sample sequence could be: Start at large circle containing small triangle; go to large triangle, which contains small square; therefore go to large square, and so on. Like the Trail Making Test, the Progressive Figures Test involves mental tracking, visual search, fine motor, and attentional components.

According to Gardner (1979), a test of motor steadiness can be one of the most sensitive and practical tools for measuring hyperactivity. Consistent with the notion that an ADHD child's excessive activity results from the inability to sustain attention (Douglas, 1972), one would expect that such children would perform poorly on a steadiness tester that requires prolonged sustained attention. The Holes Steadiness Test from the Wisconsin Motor Steadiness Battery (Klove, 1967) is such a tool; Gardner, Gardner, Caemmerer, & Broman (1979; cited in Gardner, 1979) redesigned the instrument in an attempt to improve it. The task is simple: the subject is instructed to hold a stylus in a hole, and to avoid touching the edges of the hole. This is repeated with progressively smaller holes (5- to 8-year-old children use the largest 4 holes; a second row of 5 smaller holes is used with 9- to 14-year-old children), for 10 seconds per trial. Two measures are derived: a score for the number of touches, and one for the total time during which the stylus was touching the sides of the hole. Attention is clearly necessary to perform this task, in addition to motor steadiness (motor impersistence, resting tremors, and choreiform movements also affect test performance). Gardner considers this test a "purer" measure than many others, since the subject is confined to one particular attention-demanding activity. Gardner adds that children generally are attracted to the task and enjoy the challenge, which enhances cooperation and predictability of results. From their collection of normative data, Gardner et al. found that the Minimal Brain Dysfunction (MBD) children had longer touch-time scores than normals at all age levels; this finding supports the belief that MBD children are more active than normals. (Since the publication of Gardner's work, the term MBD has been largely abandoned in favor of such terms as ADHD; his group likely was more diverse than an ADHD group would be, by the current diagnostic criteria.) In addition, there was a linear decrease in touch-time scores as age increased. This is consistent with the fact that attentional abilities develop with age. Gardner reports little or no improvement after practice with the instrument.

Other authors have also reported co-occurrence of attentional deficits and poor visuo-motor coordination in children (Oommen, Kapur, & Sarmukaddam, 1987; Nash-Wortham, 1987).

Cancellation tasks assess several functions (Lezak, 1983), one of the most important being the capacity for sustained attention. Accurate visual scanning and activation and inhibition of rapid responses are also required. Low scores may reflect inattentiveness, general response slowing, unilateral spatial neglect, or difficulty shifting response sets (Spreen & Strauss, 1991). The D2 Test is one paper-and-pencil cancellation task modelled after other such tasks. Factor-analytic studies with normal people consistently reveal high loadings on an attentional factor, but not on motor speed, motor coordination or visual discrimination factors (Brickenkamp, 1975, 1981; cited in Spreen & Strauss, 1991). For populations other than normals, some of these other abilities may be assessed in addition to attention, contaminating the latter measure. There are also letter cancellation tasks, in which, typically, the subject is presented with a page full of letters and must cross out all the target letters and none of the distractors, as quickly as possible. ADD children have been found to make significantly more omission and commission errors than controls on cancellation tasks (Aman & Turbott, 1986).

The **Paced Auditory Serial Addition Test** (PASAT; Gronwall & Sampson, 1974; Gronwall & Wrightson, 1974; Gronwall, 1977, cited in Spreen & Strauss, 1991) is used to assess rate of information processing and sustained attention, and is sensitive to the effects of minimal brain damage. The subject is required to comprehend auditory input, respond verbally, then inhibit encoding of his/her own response while attending to the next stimulus in the series; in addition, the subject must perform at a predetermined pace. Clearly, this is a complex task requiring arithmetic skill and quick verbal responses in addition to attention; these demands make the PASAT unlikely to be useful with children.

The **Continuous Performance Test** (CPT) has been a popular research instrument in the literature on attention. CPTs are designed to measure sustained attention or vigilance, that is, the ability to keep the attention focused on one task for an extended time period. The CPT was originally developed to detect brain damage (Rosvold, Mirsky, Sarason, Bransome, & Beck, 1956). Rosvold et al. found their test to be somewhat more reliable in reflecting the presence than the absence of brain damage (BD); in addition, the test was more discriminating when applied to the children in the study (discriminating BD from non-BD children). Although they were first designed to detect brain damage, CPTs have demonstrated utility in discriminating groups of subjects thought to have attention deficits. This fact is probably explained by the finding that attentional deficits are commonly associated with brain injury. Klee and Garfinkel (1983), using a CPT, found that all measures derived from the CPT were positively correlated with both an inattention and a hyperactivity factor. These researchers reported significant correlations between their CPT and other psychometric and behavioral ratings of inattention, impulsivity, and hyperactivity. The authors concluded that while CPT performance appears to be related to behaviors associated with ADD, their study did not demonstrate that poor CPT performance was unique to ADD; children with Conduct Disorder may exhibit similar CPT deficits. This study was limited by the sample used - hospitalized children -and by the fact that the admission diagnoses were not cross-validated. It remains unknown to date whether a CPT could be used clinically to detect attentional difficulties in individuals.

The **Gordon Diagnostic System** (GDS; Gordon, 1983) is a behavioral measure of attention and self-control, developed to aid in the evaluation of children referred for ADD/Hyperactivity. It is the first such instrument to be standardized on a large sample. The GDS is a microprocessor-based, portable device that administers a series of tasks requiring sustained attention and inhibition of responding. Previous research has shown that GDS scores discriminate between hyperactive and nonhyperactive groups (Gordon, 1979; McClure & Gordon, 1984; cited in Gordon & Mettelman, 1988). In a sample of school-referred children, the GDS distinguished ADD children from those classified as reading-disabled, overanxious, and normal (Gordon & McClure, 1983a; cited in Gordon & Mettelman, 1988). The GDS has also shown sensitivity to the effects of stimulant medication (Barkley & Edelbrock, 1986; cited in Gordon & Mettelman, 1988). Currently, the GDS is employed by mental health professionals, schools, and pediatricians, as part of ADD/Hyperactivity assessments. It is also being used for evaluations of adults with attentional problems. This electronic device administers three game-like tasks: 1) the Delay Task requires the child to inhibit responding for six seconds in order to gain a point, and measures the ability to control impulsive responding; 2) the Vigilance Task is based on the CPT (Rosvold et al., 1956), and the object is, when presented with a series of digits, to respond only to a specified combination ("1" followed by "9"); 3) the Distractibility Task presents numbers in three columns across the screen, and the child must respond to the "1/9" combination only when it appears in the middle column. Gordon and Mettelman (1988) have provided extensive normative data for the GDS, using randomly selected well-functioning school children. The 1266 subjects ranged in age from 4 to 16 years, and most came from the greater Syracuse, New York area. Age was the only variable that was significantly related to performance on the Vigilance and Distractibility tasks; the main GDS scores did not correlate with IQ at any age level. Test-retest reliability coefficients for the various tasks were generally high over short and longer (1 year) intervals, and ranged from .52 to .94. These norms are limited by their geographical restriction (although Syracuse has been identified as representative of a U.S. national sample). Grant, Ilai, Nussbaum, and Bigler (1990) investigated the correlations between GDS scores and scores on a variety of other tests. They obtained low to moderate correlations between two main GDS scores (number of correct responses for the Vigilance and Distractibility tasks) and traditional measures used to assess attentional functioning; this finding supports the concurrent validity of CPTs, while also suggesting that they offer some unique information. Conclusions from this study are limited by its exclusion of girls and by its restricted age range (6-12).

The preceding review of tests used to measure attention, and research findings regarding them, illustrated several points. First, nearly all the tests appear to measure more than the unitary construct of attention. In fact, performance of these tasks generally seems to be influenced by several abilities. Second, it seems doubtful whether attention is even measured by some of these tests. Third, there is confusion surrounding the utility of several tests: different clinicians may make different interpretations from the same test result. Last, it is clear that there are few, if any, tests of attention that have been carefully validated, and even fewer tests of sustained attention which would be useful in a clinical setting specifically for children.

The Seidel Continuous Attention Test (SCAT):

Seidel and Joschko (1989, 1991) reported preliminary data on the validity and reliability of the Seidel Continuous Attention Test (SCAT; Seidel, 1988), a CPT designed for use with children. The SCAT requires the child to sustain attention and to inhibit impulsive responding; these two dimensions are considered central to the problems of the ADHD child (Douglas & Peters, 1979). The SCAT discriminates between groups of ADHD children and normal control groups. This finding replicates prior CPT research (Tarnowski, Prinz, & Nay, 1986), and supplies some evidence of criterion validity. This test also appears sensitive to the attentional problems of some brain-damaged children (Joschko, 1990).

Some evidence of the construct-related validity of the SCAT has previously been obtained: two of the three WISC-R subtests which make up the FFD factor were correlated with SCAT performance. Specifically, Arithmetic and Digit Span (as well as Information) were related to SCAT performance, while Similarities was not (Seidel & Joschko, 1991). Further construct-related evidence was provided by modest, but significant, correlations between SCAT performance and factor scales that seem to relate most to attention on both the Conners Teacher and Parent Rating Scales (Index scales such as Hyperactive, Inattentive, and Impulsive). On the other hand, nonsignificant correlations were obtained between SCAT performance and those scales that appear to be less related to attention (i.e., Conduct Problems, Psychosomatic, and Anxiety scales).

Preliminary investigations of the SCAT's reliability revealed satisfactory figures for the majority of its measures (Seidel & Joschko, 1991). However, these researchers emphasized that additional research is needed to cross-validate these reliability and validity findings before the SCAT's clinical usefulness can be assessed.

For detailed descriptions of the hardware and software of the SCAT, please refer to Seidel (1988). The test is presented on the Apple II series of computers. A series of letters, in random order, is flashed one by one on the monitor, at a rate of 1.5 seconds, lasting 0.2 seconds each. The child's dominant index finger rests below the keyboard's "space" bar, on a red sticker. In the first of the two SCAT tasks, subjects are asked to press the "space" bar (on which there is a green sticker) whenever they see the letter "X". In the second task, which was designed to be more difficult than the first, subjects are to press the "space" bar only if the letter "X" appears on the screen immediately following the letter "A". Each of the tasks lasts 15 minutes, making the entire SCAT 30 minutes long (excluding instructions and practice). Several measures of the child's performance are recorded and stored on disk: number of correct responses (hits), number of responses to non-targets (false alarms), response time, variability in response time, performance decrements over the three 5-minute blocks, and two signal detection theory measures: sensitivity and response bias.

Purpose Of This Study:

The aim of the present study is to further test the validity of the SCAT through investigation of its relationships to other neuropsychological measures. It is expected that such a study will help to clarify what the SCAT measures, what factors may confound this measure, and whether the SCAT can add useful information (i.e., information not provided by other tests of attention) to a clinical assessment. Essentially, this study focuses on examining the SCAT's construct validity. A brief review of relevant concepts in validity follows.

Construct Validity and the Multitrait-Multimethod Matrix:

The validity of a test addresses the question of whether it is measuring what it is intended to measure. There are several types of validity; for a review, please refer to Anastasi (1982). The assessment of construct validity often encompasses the other types in the process. The construct-related validity of a test is the extent to which the test may be said to measure a theoretical construct or trait (Anastasi, 1982). Attention is one such construct.

> Each construct...derives from established inter-relationships among behavioral measures. Construct validation requires the gradual accumulation of information from a variety of sources. Any data throwing light on the nature of the trait under consideration and the conditions affecting its development and manifestations represent appropriate evidence for this validation (Anastasi, 1982).

Following this model of construct validation, this study will investigate some relationships between the SCAT and other neuropsychological measures, having hypothesized how they should relate according to theory about the construct of attention. The validation procedure used will be a variation of the multitrait-multimethod matrix, first described by Campbell and Fiske (1959). A multitrait-multimethod matrix is a correlational technique in which more than one trait (hereafter called an "ability") and more than one method (i.e., test) are compared in all possible combinations, in order to obtain the desired information. All the cells of the matrix need not be examined; if only one method's validity is being investigated, and/or if each measure samples a specific ability rather than several, then only some parts of the matrix apply. This procedure allows the investigator to check three assumptions, or conceptual hypotheses, about an ability and its measurement. These three assumptions are:

1) Reliability - the measure should produce reasonably consistent results; that is, the measure should be relatively free of error. Acceptable reliability should be confirmed prior to investigating a test's validity.

2) **Convergent validity** - different measures that purport to measure the same ability should converge on the same point on the ability dimension for the same person. This offers validation for both the ability and the measure.

3) **Discriminant validity** - the ability should prove to be independent of other abilities from which it is distinguished conceptually. It is important to test this assumption for abilities which could be incidentally related to the one of interest. Points 2) and 3) will be explained further in the following section.

If a measure empirically satisfies these three criteria - reliability, convergent validity, and discriminant validity - then it is probably measuring what it is thought to measure. If not, there may be reason to doubt its validity.

Convergent validity simultaneously tests both the construct and the measure under consideration. In terms of the construct (an ability such as attention), it tests the conceptual hypothesis that any ability is a general disposition which will be apparent in a variety of situations, i.e., across several types of measures. For example, an inattentive person will supposedly be inattentive in many different real-life situations. For any measure, convergent validity tests the research hypothesis that scores are not associated mainly with this specific method - that they are not method-specific. A test of inattention should elicit high scores for an inattentive person if other inattentiveness measures also yield high scores for this person. Thus, in order to test convergent validity, when two or more methods of measuring the same ability are compared, they should correlate highly (Campbell & Fiske, 1959).

Reliability and convergent validity provide positive evidence for a measure's accuracy. However, this is not sufficient to prove that a measure is valid. The purpose of discriminant validity is to test the assumption that the measure in question is relatively uncontaminated by other abilities that it is NOT supposed to be measuring. To test this, the target measure is compared to measures of supposedly independent abilities; these correlations should therefore be low and non-significant. That is, a test of attention should measure only attention - not, for example, intelligence or vision. In this sort of analysis, an ability should be proven independent both of those which the author says are independent, and of those which have been found to contaminate its measurement (Bavelas, 1978).

Because many psychological tests are multifactorial, discriminant validity is often difficult to demonstrate. "Relative validity" exists when the reliability and convergent validity are higher than the discriminant validity (meaning that a measure correlates better with itself, and with other measures of the same ability, than with a measure of something else).

There is reason to believe that the SCAT is a "purer" measure than some of the other tests traditionally used to assess attentional abilities. Some of its advantages are: only a very simple motor response is required (e.g., tracing ability, like that required for the Trail Making Test, is unimportant for the SCAT); no verbal responses are required; and no abstract concept formation or shifting of response sets is required. In terms of the SCAT's face validity, it appears that little more than the ability to pay attention is being measured by this task. If this is the case, the SCAT may have fewer confounding variables than some other tests thought to measure attention.

Consistent with Cronbach and Meehl's statement that experimenters "...need to form hypotheses that can be proved or disproved in the validation process" (1955; cited in Anastasi, 1982, p.161), the following hypotheses have been developed to test in this study.

Hypotheses:

1) The SCAT's reliability coefficients, as reported (Seidel & Joschko, 1991), will be higher than its convergent validity correlations.

2) The SCAT's correlation with other tests of attention will be moderately high - this is a test of the SCAT's convergent validity. A moderate, as opposed to a high, correlation is expected since it is believed that the SCAT differs from other tests in its "pureness".

3) The correlation between the SCAT and theoretically unrelated abilities will be non-significant, though not zero. This is a test of the SCAT's discriminant validity. (The reason that the correlation would never be expected to be zero is that some attention must be paid to most neuro-psychological tests in order to perform them.) Abilities which are theoretically independent of attention but which could conceivably confound the measure are: a) general intelligence: some researchers (Stankov, 1983) feel that intelligence correlates with attention; however, Seidel and Joschko (1991) suggest that "...the practical influence of psychometric intelligence on SCAT performance is probably minimal."; b) short-term memory: the SCAT should not be measuring the child's ability to remember that the "X" is the target, nor his ability to remember how to respond to the target; in other words, children with below-average to excellent short-term memory should all be able to perform the SCAT; c) fine motor function with the dominant hand: coordination in pressing the space bar quickly and accurately should not be an important part of what the SCAT measures; and d) visual analysis: the SCAT should not be measuring primarily the child's ability to recognize an "X" as distinct from other letters, although this ability is necessary.

4) Relative validity will also be tested: the hypothesis is that the reliability and convergent validity correlations will both be higher than the discriminant validity correlations.

Chapter 2

METHOD

Subjects:

Subjects for this study were obtained from neuropsychological files which were created from previous assessments conducted for clinical purposes. Subjects were selected according to their age and the tests they were given. The sample consisted of a heterogeneous group of 47 children between the ages of 6 and 11 years who were referred for complete clinical neuropsychological assessments - including the SCAT - between 1988 and the present, at the Arbutus Society for Children, in Victoria, B.C. These children presented with a wide variety of problems, including attentional disorders with or without hyperactivity, conduct problems, and general and specific learning disabilities.

Testing Conditions:

All subjects were tested individually by, or under the direct supervision of, senior psychologists who were experienced in the assessment of children. Substantial portions of the actual testing were accomplished by supervised graduate students or psychometricians. Testing was carried out during daytime hours at either the G. R. Pearkes Centre for Children or Jack Ledger House Child and Adolescent Psychiatric Unit, both part of the Arbutus Society for Children. Examiners followed Seidel's standard instructions to introduce the SCAT (for details see Seidel, 1988).

Data Used in Analysis:

Two measures from the SCAT combined (summed) X- and AX-tasks were used in this study: Hits and False Alarms. The combined measure was used since its reliability is higher than those of the X-task and the AX-task (Seidel & Joschko, 1991). Hits and False Alarms were chosen as variables because they best represent the definition of ADHD, with Hits thought to be measuring sustained attention and False Alarms thought to be measuring inability to inhibit impulsive responding. In addition, Seidel (1988, p.75) found that these two measures differentiated most effectively between clinical (ADHD) and control groups.

The following measures of attention were part of the analysis, as convergent validity measures: 1) the Progressive Figures Test (for ages 6-8)/ Trail Making Test Part B (for ages 9-11); 2) the Holes test; 3) the Freedom From Distractibility (FFD) Factor of the WISC-R. These tests are all commonly used as indicators of capacity for sustained attention, and would therefore be expected to correlate at least moderately with the SCAT. Only Part B of the Trail Making Test was used since it is more demanding and more reliable (Lezak, 1982) than Part A.

The measures used to test discriminant validity were: 1) the WISC-R Full-Scale IQ; 2) the Sentence Repetition Test (Spreen & Benton, 1969, 1977; cited in Spreen & Strauss, 1991) as a short-term memory test; 3) the Finger Tapping test

(Reitan, 1969; cited in Spreen & Strauss, 1991), dominant hand, to measure fine motor coordination; 4) the Picture Completion subtest of the WISC-R (a component of the Perceptual Organization factor), as a measure of visual analysis. The abilities measured by these discriminant tests are theoretically unrelated to attention, and should not be measured to any large degree by the SCAT; therefore, their correlations with the SCAT were expected to be low. These convergent and discriminant measures were chosen as opposed to potential others because 1) they are administered to all children in the age range for this study; and 2) they appear to have the most acceptable reliabilities, where estimates exist.

Test Reliabilities:

There are as many definitions of what constitutes "good" or "acceptable" reliability as there are authors on the subject. Bloom (1964; cited in Sarazin & Spreen, 1986) suggests that correlation coefficients of .5 or better are indicators of good long-term (i.e., over a period of years) stability, or test-retest reliability. Others (Anastasi, 1982, chap. 5) consider reliability coefficients of at least .8 to be reasonable for tests of cognitive abilities (for intervals of less than six months). Preliminary investigations of the SCAT's internal consistency have suggested that the measures Hits, False Alarms, and Reaction Time are all potentially satisfactory (i.e., correlations of at least .8; Seidel &

Joschko, 1991). Estimates of temporal stability are more exploratory in nature (based on smaller samples), but nonetheless reveal potentially sufficient reliability coefficients (although well below .8 for False Alarms).

No reliabilities are available for the Progressive Figures Test. For the Trail Making Test, a wide range of reliabilities have been reported with various populations. Goldstein and Watson (1989), in a study using 150 chronic neuropsychiatric adult patients, reported reliabilities ranging from .69 (whole group) to .94 (smaller subgroup) for Part A, and from .66 to .86 for Part B. Lezak (1982) reported a significant practice effect with repeated administrations for Part A but not for Part B. desRosiers and Kavanagh (1987) obtained encouraging test-retest correlations for Trails A and B combined: .95 for controls and .94 for closed head injury group. It should be noted that some of the above mentioned studies dealt with small populations, which may artificially inflate correlations.

There is no reported reliability for the Holes Steadiness Test in the existing literature. The only information about it is from Gardner's clinical experience, in which he found little, if any, practice effect.

Brown, Rourke and Cicchetti (1989), in a study using a heterogeneous sample of 248 youngsters to test reliabilities of child neuropsychological measures, reported that among the highest were the WISC summary indices (VIQ, PIQ, and FSIQ) which were all above .75, and memory tests such as the **Sentence Memory** test (.71). Subtest scaled scores were somewhat less reliable: the **FFD** component subtest reliabilities ranged from .48 to .56; the reliability of the Picture Completion subtest scaled score was .51. These estimates are considered "good" by the authors. The WISC-R manual (Wechsler, 1974) reports even higher reliabilities from the normative group data: .78 for **Digit Span**, .72 for **Coding**, .77 for **Arithmetic** (these three make up the FFD factor), .77 for **Picture Completion**, and .96 for **FSIQ**.

Finger Tapping performance with each hand is quite stable over time, even with intervals up to two years long. Reliability coefficients ranging from .58 to .93 have been reported with normal as well as neurologically impaired subjects (Spreen & Strauss, 1991). In the Brown et al. study they ranged from .58 to .64. The authors emphasize that all of their estimates are conservative, and that the true correlations are likely higher. Sarazin and Spreen (1986) report similar results over an interval of 15 years.

Descriptive Data:

In addition to the above mentioned test scores, the following information was obtained from files, for descriptive purposes: sex, handedness, birthdate, testing date, and an estimate of socioeconomic status (SES). The latter was obtained using information in the Psychology Department's Parent Questionnaire. SES was quantified using the revised

Blishen scales (Blishen & McRoberts, 1976). These scales, based on income level, educational status, and prestige ranking, provide a socioeconomic index of occupations in Canada. The index ranges from 14.4 to 75.3, and can be grouped into six socioeconomic class intervals. Family SES was arbitrarily based on the parent with the highest occupational ranking on the scales.

Correlations (their significance, as well as their interrelationships) were examined for the presence or absence of the hypothesized patterns; i.e., to determine whether convergent, discriminant, and relative validity exist as defined above.

Chapter 3

RESULTS

Data Checks:

All raw and z scores (not only those used for the analyses) from each subject profile were collected. This was in the event that other variables were of interest later, or that exploratory analyses were performed. To ensure the accuracy of the data, ten percent of the entered subject profiles were verified directly against the test protocols. Their corresponding z scores were also re-calculated, using the available norms. For the main variables (i.e., the SCAT and the convergent and discriminant validity measures) all z scores were verified for all 47 subjects.

Any questionable scores in profiles (e.g., where the psychologist or tester had written "error?" or "?") were re-scored, and corrected if possible. This usually involved referring to the test protocols. A few of the older profiles did not include z scores, which were therefore calculated by hand.

Data Manipulation:

Descriptive information (e.g., handedness), raw scores, and z scores for each profile were entered into a LOTUS 1-2-3 Spreadsheet file. Subjects were identified only by case numbers. Cells for which no data were available were left blank. This Spreadsheet file was then imported directly into the SYSTAT statistical package. Main variable z scores were extracted from this file for analysis, and all were verified against the LOTUS entries to ensure that they were accurate. Finally, the main z scores file was divided into two files, one for the younger children (given the Progressive Figures Test [PFT]) and one for the older children (given the Trail Making Test). All remaining variables were identical in the two groups. PFT and Trails B values were verified following the separation of the age groups.

Preliminary Considerations and Observations:

There were some missing data among the non-main variables, for two reasons: 1) individual testing requirements and/or constraints for certain children alter the standard test battery; 2) scores which were considered by the tester or the psychologist to be of questionable validity were omitted (only a few scores were omitted for this latter reason).

SCAT Hits and False Alarms (F.A.) z scores have been divided by two on the Neuropsychological profiles, in an attempt to correct their distributions (make them approximate a normal curve); this transformation was maintained in the present data. Even with this correction, there were several outlying SCAT z scores. To deal with this problem, Spearman rank correlations were used (elaborated below). Significance tests were one-tailed, since the direction of the difference was hypothesized.

The alpha level was not protected in testing the significance of these correlations within the same matrix.

This approach was taken since a) there were specific a priori hypotheses; and b) the conservative alpha level which would result from Bonferroni protection could prevent important patterns from being observed.

Description of the Sample:

The mean SES Index for the sample was 47.00 (S.D. = 13.69); the mean SES class was 3.29 (S.D. = 1.44). Since the analyses were done on two different samples, the descriptive data (except SES) are presented separately for each group. Table 1 summarizes some characteristics of the sample. Table 2 provides some statistics for the two groups.

SCAT reliability:

Seidel and Joschko (1991) have provided the following estimates. For the overall normative group (n=122), the internal reliability coefficient was .960 for Hits (ranging from .610 to .980 across the ages 6-11) and .826 for False Alarms (ranging from .541 to .911). A split-half procedure was used, in which the halves were determined by an odd-even division and correlated with each other. For the clinical group (n=22), internal reliability coefficients were .986 for Hits and .998 for False Alarms. Test-retest reliability coefficients for the normative group (n=42) following a one-month interval were .771 for Hits and .398 for F.A. For a combined group (normative group plus three ADDH children; n=45) coefficients were .793 and .539 for Hits and False Alarms respectively. The combined group was created since the restricted range of scores obtained by the normative group appeared to lower the test-retest reliability coefficients. All of the reliabilities reported are significant at the p < .01 level.

Outliers:

Outliers were located through visual inspection of scatterplots and/or frequency distributions, and were defined as those data points that fell well outside of the main concentration of scores. Table 3 lists the outlying z scores, which were all below the mean. Such scores can either falsely increase or decrease Pearson correlation coefficients between the SCAT and other variables.

The cases with outlying scores on one or more tests were examined by reference to their neuropsychological files, in order to determine a) whether there was anything special about these children that may make them atypical of this admittedly diverse sample; or b) whether the same child obtained outlying scores on several tests, and thus may be atypical. Neither of these possibilities was found to be the case (see Table 3).

Rationale for Spearman Rank Correlations:

The option of excluding the outliers was rejected, as it was felt that they are an attribute of the population which the test is intended for. That is, the SCAT was designed to identify attentional difficulties of varying severity, and extremely low scores appear (from clinicians' experience with the SCAT) to be obtained by children with extremely poor attention. It would be inappropriate to exclude part of the population that the test is being validated for. Another option was to truncate all scores below a certain cutoff. This, however, would equalize many scores which were actually quite different, weighting correlations falsely. Grouping or truncating variables can have the effect of distorting a measure of association (Loether & McTavish, 1980). A final consideration was that the SCAT norms, at this point, are still preliminary. This is a reason not to analyse z scores derived from them. For these reasons, the decision was made to use Spearman rank correlations, which consider only the rank order of scores, not their actual values. They protect coefficients from the influence of outlying scores, yet preserve the essential information for this study. Namely, the goal was to determine whether, for instance, low scores on the SCAT correlate with low scores on the FFD factor. Rank correlations are comparable to Pearson rs, though they tend to be very slightly lower (McNemar, 1969), and so can be treated in the same manner in terms of comparing coefficients.

Significance tests:

In the 6-8 group, nearly all discriminant measures failed to significantly correlate with the SCAT measures, as expected. The only exception was FSIQ, which correlated with Hits (r = .383, $p<.05$). Two convergent measures, Progressive Figures Errors and FFD, also correlated with Hits (r = .486, $p<.01$ and r = .378, $p<.05$, respectively). None of the measures were significantly related to F.A. (see Table 4).

In the 9-11 group, three discriminant measures correlated with the SCAT: Picture Completion correlated with both Hits (*r* = .454, *p*<.05) and F.A. (*r* = .468, *p*<.05); Sentence Memory correlated negatively with F.A. (*r* = -.386, *p*<.05). In addition, Finger Tapping was significantly related to Hits (*r* = .508, *p*<.01). These discriminant measures were hypothesized not to correlate with the SCAT. In terms of the convergent measures, only FFD correlated with the SCAT (Hits; *r* = .424, *p*<.05).

Overall, the SCAT's discriminant validity was supported more strongly than its convergent validity. That is, there was a greater proportion of instances in which the SCAT showed lack of correlation with "unrelated" abilities (as predicted) than where the SCAT correlated with other tests of attention (as was also hypothesized). The two ratios were 11/16 (69%) and 3/20 (15%), respectively. Also noteworthy is the fact that the measure Hits was able to correlate with some other tests thought to measure attention (i.e., had some convergent correlations), while F.A. was not. Both Hits and F.A. correlated with some theoretically unrelated abilities, although again Hits had more correlations overall.

Comparisons of coefficients:

In those cases where a convergent correlation was significant (i.e., the variable correlated with the SCAT as expected), that correlation was compared to each discriminant correlation for the same SCAT variable. To test for significant differences between coefficients (specifically, to test whether convergent correlations were significantly greater than discriminant correlations), a formula was employed which is interpretable by the $\underline{t}$ table (McNemar, 1969).

$$\underline{t} = \frac{(\underline{r}_{12} - \underline{r}_{13})\sqrt{(\underline{N} - 3)(1 + \underline{r}_{23})}}{\sqrt{2(1 - \underline{r}^2_{12} - \underline{r}^2_{13} - \underline{r}^2_{23} + 2\underline{r}_{12}\underline{r}_{13}\underline{r}_{23})}} \qquad (1)$$

A particular advantage of this formula is that in its computation, the term $\underline{r}_{23}$ is included, which allows for the fact that the two correlations are based on the same sample, and are therefore not independent. Using this method, the twelve possible pairs of coefficients (i.e., when the convergent correlation was significant) were tested. None of the pairs demonstrated significant differences from each other. In three of the twelve pairs, the hypothesized direction was reversed - that is, the convergent correlation was less than the discriminant one (see Table 5). Thus, when a convergent correlation was significant, it was larger than the discriminant correlation in 75% of cases, although not significantly so.

The assumption that SCAT reliability coefficients are larger than both convergent and discriminant coefficients was also tested (this contributes to the test of relative validity). Following the same reasoning as in the previous section, only the significant correlations were compared to reliabilities. The normative group's internal reliabilities reported by Seidel and Joschko (1991) were divided into age groups corresponding to the ones in this study (the mean reliability for the age group was calculated), rather than using the total group estimate. This procedure was chosen because the two age groups' mean reliabilities appeared significantly different. Thus, the mean of the reported coefficients for ages 6, 7, and 8 was compared to significant SCAT correlations in the 6-8 group (separately for Hits and F.A.); in the same way, the mean of the coefficients for ages 9, 10, and 11 was compared to SCAT correlations in the 9-11 group. The clinical group and test-retest reliabilities reported by Seidel and Joschko (1991) were not separated according to age group, because these breakdowns were not available. The formula employed for these r comparisons was appropriate for testing the difference between rs when the two correlations were obtained from different samples (Garrett, 1958):

$$\underline{t} = \frac{z_1 - z_2}{\sqrt{\frac{1}{\underline{N}_1 - 3} + \frac{1}{\underline{N}_2 - 3}}} \qquad (2)$$

z1 and z2 were obtained from the correlation coefficients, via Fisher's r-to-z transformation; $\underline{N}_1$ and $\underline{N}_2$ are the respective sample sizes.

Of the resulting 24 comparisons, all but one were significant at the $\underline{p}<.05$ or $\underline{p}<.01$ level. Thus, the part of the hypothesis which requires the SCAT's reliability to be greater than its convergent and discriminant validity is largely supported. The exception was the comparison between test-retest reliability of the "combined" normative group (F.A.) and Picture Completion for the 9-11 group.

Chapter 4

DISCUSSION

General Discussion:

This study evaluated the construct validity of a computerized test of attention through an examination of its convergent, discriminant, and relative validity. Hypothesis 1 (reliability coefficients should exceed convergent correlations) was supported. Hypothesis 2 (convergent correlations should be moderately high) was not supported, as few of them reached significance, and those that did were not always greater than the discriminant correlations. Hypothesis 3 (discriminant correlations should be non-significant) was generally supported. Hypothesis 4 (relative validity: reliability and convergent correlations should both be greater than discriminant correlations) was partially demonstrated. Reliability exceeded discriminant correlations, but convergent correlations generally did not. Thus, the SCAT's discriminant validity was found to be more favorable than its convergent validity. The following paragraphs discuss some interesting results apart from those related to the hypotheses.

In both age groups, Hits obtained more significant correlations with other variables, both convergent and discriminant, than did False Alarms (F.A., which in fact had no convergent correlations in either group). As mentioned previously, attentional problems are generally viewed as consisting of two dimensions: the inability to sustain attention, and difficulty inhibiting impulsive responses. In this study, the SCAT Hits measure (thought to correspond to the ability to sustain attention) correlated with some other tests thought to measure attention, whereas F.A. (supposedly influenced by the ability to inhibit impulsive responding) did not. This finding may imply that Hits is a more effective measure of overall attentional functioning than is F.A. Alternatively, it may indicate that the other tests of attention used here tend to load more on the ability to sustain attention than on inhibition of impulses. Logically (in examining test demands), it would appear that the convergent tests - the Holes Steadiness Test, Trail Making/Progressive Figures Test, and Freedom from Distractibility factor - do indeed require both of the dimensions of attentional skills, rather than relying on sustained attention exclusively. Given this fact, it seems likely that the former possibility is the case: Hits may be a more useful measure of attention, as it is currently defined, than is F.A. This could be because it is more reliable. In preliminary findings (Seidel & Joschko, 1991), Hits tends to have higher reliability coefficients than F.A.; the fact that Hits obtained more significant correlations overall also suggests higher reliability. Of course, the preceding ideas are based on the assumptions that the two dimensions of attention exist, and that Hits and F.A. do in fact measure them.

The second point worth discussion is the difference in results of the two age groups. The purpose of the study was not to compare the performance of younger versus older children; however, the findings point to what may be a common problem when assessing mental abilities of young children. In the younger group, 9 of the 18 correlations examined (50%) supported the hypotheses about convergent and discriminant validity. In the older group, only 5 out of 18 correlations (28%) were as predicted. This was largely due to an increase in the number of discriminant variables that correlated significantly with the SCAT, against prediction. The results of the younger group may be in part artifactual. Specifically, it is well known by neuropsychologists that the constancy of the IQ increases as the child gets older (Sattler, 1982). As discussed above, abilities that are reliably testable are more able to correlate with other abilities. Therefore, an older group of children may be more likely to show significant correlations between any intellectual abilities. This is certainly not to imply that the researcher should attempt to control for this confound through selection of younger subjects. Rather, in similar research in the future, one way to remove the influence of developmental changes in stability of test results would be to use a group of children who are all the same age.

Limitations

Generalizability of Results:

It is important to remember that this study used a special sample. Therefore, even if the SCAT were well validated here, it would not necessarily follow that it is valid for other populations. Also, it may not even be proven valid for ADHD children, since this sample includes children with ADHD, learning disabilities, conduct disorder, emotional problems, etc.

A limited age range was used as well. The reason was that norms for the SCAT only exist for ages 6 to 11 at this time. Again, the problem of generalizability comes up: construct validity for this sample may not mean validity also exists for younger or older children. Following these arguments, the results obtained here could in actuality be different for a pure ADHD group, or for different ages. This is an area for future research.

Considerations About Analysis:

z scores were used for the analysis, as opposed to *T* scores. Both are standardized; however, *z* scores have a smaller range than *T*. They were used because they have greater clinical relevance. The effect of *z* scores is that some fine differentiation between test scores is obscured. For the purpose of this study, this small effect is probably not important.

The use of Spearman rank correlations was the data transformation which suited this design, and best eliminated the effect of outliers. Again, the tradeoff is that one loses some information about the actual distribution of scores, since each interval is considered the same. It is possible that the pattern of correlations may have been closer to (or farther from) prediction had standard Pearson _r_s been used; however, such results may have been spurious. The conservative approach was taken, to avoid Type 1 errors. Future studies will perhaps investigate these correlations leaving the distributions intact; if results replicate, then they can be trusted.

Another effect of a specific sample is that the **range of scores** on tests can be limited compared to those of a more diverse group. It has been shown that curtailment of range on both variables tends to depress the correlation coefficient (McNemar, 1969). This study could be affected positively and negatively by lower correlations, since both correlation and lack of correlation were hypothesized. The effect is probably considerable for these data: it is clear that many of the variables' mean _z_ scores fall below 0, and their distributions tend to be mainly on the negative side, thus restricting the range of scores.

The **reliability** of the SCAT is not yet firmly established (though it looks promising judging from preliminary research). Reliabilities of the other tests in this study are variable:

some are consistently fair or good, while others are poor, and others still have no reliability data available. The correlation between variables is a function of the reliability of their measurement; therefore, there are limits placed on _r_ as a result of fallible scores (McNemar, 1969). As stated by Loether and McTavish (1980),

> In general, unreliable measurements will depress the magnitude of a correlation coefficient. Consequently, if a correlation is weak, it may be because of poor measurement instruments rather than a lack of relationship between the variables being studied.

The effect of such variable reliabilities is that these results provide a conservative estimate of the true correlations between the SCAT and the other measures. Furthermore, it seems likely that the SCAT's reliability is less problematic in this way than are some of the other tests' reliabilities, because its reliability appears to be higher than those of many other tests currently used.

The ability to correlate with some (any) other test is a criterion without which a test cannot be said to have any reliability. For the SCAT, this criterion has been met in this study, adding to its encouraging reliability estimates.

Ambiguity of Negative and Positive Results:

This study found that the SCAT failed to converge with other tests of attention in most cases, rejecting the hypothesis that these correlations would be moderate to good. There are several possible reasons for this. First, it is possible that the SCAT does not measure attention, but rather some other ability. Or, perhaps the chosen convergent measures do not measure attention (as was shown previously in the review of tests, there is evidence that most tests of attention measure other abilities as well). Third, the construct of attention may not exist as currently defined. That is, maybe the ability we are trying to measure with these tests is not what we think it is.

On the other hand, the SCAT does appear to discriminate whatever ability it measures from other possible confounding abilities, as hypothesized. Also, relative validity was partially demonstrated. These positive findings require replication in order to rule out various artifacts which could cause the correlations.

Lastly, correlations among variables measured on groups are not the same as correlations measured on individuals (in spite of the fact that those individuals may form the groups). This "Ecological Fallacy" is a hindrance to inferences we wish to make in studies of neuropsychological tests. Simply because SCAT Hits correlates with FFD, it is not reasonable to conclude that an individual child who does poorly on the SCAT will also obtain a low FFD score. For instance, for Subject 1 these scores were -2.6 and -2.5 respectively, which are very similar; for Subject 40, however, the scores were -3.1 and 0.3, showing different performance on the two tasks.

Concluding Remarks:

This study has provided some useful information about the SCAT, to supplement what has been learned in other research.
1) There is more evidence for the SCAT's good reliability, not through replication of the preliminary estimates, but through the magnitude of its reliability coefficients relative to convergent and discriminant correlations. Acceptable reliability is one of the first requirement for a test if it is ever to be proven valid. A formal evaluation of reliability would still be an aim of future research before proceeding with widespread use of the SCAT.
2) The SCAT appears, overall, to be uncontaminated by potential confounding influences (of course, there could be others not tested here). In a sense this is more important for the time being than whether the SCAT measures a similar ability to other tests of attention. As long as the test measures a distinct ability, research can continue to clarify exactly what that ability is.
3) There is no evidence against the idea that the SCAT provides a more "pure" measure of attention than other popular tests. However, caution must be used in this interpretation, because given these results, it may measure an ability which is too different from the others to call it a better test of the same ability.
4) The suggestion arises that the Hits measure may be sufficient to get at the essence of sustained attention. If

this is the case, the test could perhaps be shortened, since less information would be required out of a testing session. This, in turn, might make the SCAT more appropriate for children younger than the group used to collect the current norms. (There is evidence that the SCAT may be too demanding for 4- and 5-year olds [Christensen, 1990].) Omitting F.A. would seem to go against the current definition of attention, by ignoring the impulsivity aspect. However, there is evidence (Joschko, 1990) for the existence of subtypes of attentional deficits, some of which primarily involve inattentiveness, while others are mainly impulsive. In this study F.A. failed to correlate with other measures that may measure impulsivity. It is possible that the children in this sample did not have sufficiently severe impulsivity for such behavior to appear on several tests. Future research should attempt to clarify whether or not F.A. adds useful information to SCAT results for various subtypes of attentional deficits.

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Table 1

Characteristics of the Sample

	Number	
	6-8 Group	9-11 Group
Total	25	22
Male	18	15
Female	7	7
Right-handed	21	19
Left-handed	4	3
Mean FSIQ	96.8	94.0

Table 2

Descriptive Statistics of Variables

6-8 Group

Variable	Minimum	Maximum	Mean	S.D.
SCAT Hits	-4.3	0.5	-1.248	1.282
SCAT F.A.	-22.5	0.2	-4.992	5.642
FSIQ	-2.5	1.7	-0.220	0.947
Pic. Comp.	-2.0	1.7	0.168	0.960
Tapping	-2.9	3.7	0.292	1.601
Sent. Rep.	-2.7	0.9	-1.132	0.853
Holes Time	-5.2	1.1	-0.380	1.555
Holes Counter	-5.1	1.7	-0.824	1.941
P. Fig. Time	-4.0	1.5	0.156	1.405
P. Fig. Err.	-3.8	2.1	0.944	1.461
FFD	-2.5	0.9	-0.760	0.899

Table 2 (cont'd)

9-11 Group

Variable	Minimum	Maximum	Mean	S.D.
SCAT Hits	-15.2	0.6	-2.827	3.667
SCAT F.A.	-13.4	0.2	-3.118	3.810
FSIQ	-3.0	1.2	-0.405	1.071
Pic. Comp.	-3.0	2.0	0.064	1.301
Tapping	-2.5	2.2	-0.214	1.313
Sent. Rep.	-3.0	-0.3	-1.568	0.712
Holes Time	-3.3	0.2	-1.350	1.017
Holes Counter	-1.4	1.0	-0.059	0.608
Trails Time	-13.7	0.8	-1.644	3.142
Trails Err.	-6.9	0.6	-0.805	2.129
FFD	-2.9	0.6	-1.264	0.915

Note. Statistics are calculated on *z* scores.

Table 3

Information Regarding Outliers

6-8 Group

Variable	Number	z score	Case #	Diagnosis[a]
Holes Time	2	-5.2	3	Overactive, L.P.
		-4.3	31	ADD
P. Fig. Time	2	-4.0	7	L.P., mild CP, epil.
		-4.0	22	Impulsive, L.P.
SCAT F.A.	3	-14.6	38	LD
		-17.9	45	LD, problem behavior
		-22.5	22	Impulsive, L.P.

Table 3 (cont'd)

9-11 Group

Variable	Number	z score	Case #	Diagnosis
Trails Time	1	-13.7	16	Visual dyslexia, LD
Trails Err.	3	-4.5	10	ADHD, Dev. L.D., FAS
		-5.5	16	Visual dyslexia, LD
		-6.9	44	Overactive, L.P.
SCAT Hits	1	-15.2	30	Gen. Dev. Delay

Note. L.P. = learning problems; LD = learning disability; CP = cerebral palsy; epil. = epilepsy; Dev. L.D. = Developmental Learning Disorder; FAS = Fetal Alcohol Syndrome; Gen. Dev. Delay = Generalized Developmental Delay.

[a]Diagnosis often refers to descriptive information in the child's file, rather than a specific diagnosis.

Table 4

Spearman Rank Correlations Between SCAT Measures and Convergent and Discriminant Variables

6-8 Group

Variable	Hits	False alarms
Discriminant		
FSIQ	.383*	.235
Pic. Comp.	.242	.042
Sent. Rep.	.259	-.130
Tapping	.287	-.176
Convergent		
Holes Counter	.190	.267
Holes Time	.170	.226
P. Fig. Err.	.486**	.316
P. Fig. Time	.310	-.066
FFD	.378*	.071

Table 4 (cont'd)

9-11 Group

Variable	Hits	False Alarms
Discriminant		
FSIQ	.290	.185
Pic. Comp.	.454*	.468*
Sent. Rep.	.087	-.386*
Tapping	.508**	.213
Convergent		
Holes Counter	.009	.020
Holes Time	.282	.138
Trails Err.	.154	-.130
Trails Time	-.047	.038
FFD	.424*	.167

Note. Significance tests are one-tailed.

$^{*}p<.05$, $^{**}p<.01$.

Table 5

Convergent and Discriminant Variables' Correlations with the SCAT, and Comparison Tests of Differences Between Correlations.

6-8 Group

Hits

Convergent variable		Discriminant variable		Dir.	Compar.
Test	r	Test	r		
Holes C.	.190				
Holes T.	.170				
P. Fig. E.	.486**	FSIQ	.383*	Y	NS
		Pic. Comp.	.242	Y	NS
		Sent. Rep.	.259	Y	NS
		Tapping	.287	Y	NS
P. Fig. T.	.310				
FFD	.378*	FSIQ	.383	N	NS
		Pic. Comp.	.242	Y	NS
		Sent. Rep.	.259	Y	NS
		Tapping	.287	Y	NS

Table 5 (cont'd)

False Alarms

Convergent variable	
Test	r
Holes C.	.267
Holes T.	.226
P. Fig. E.	.316
P. Fig. T.	-.066
FFD	.071

Table 5 (cont'd)

9-11 Group

Hits

Convergent variable		Discriminant variable		Dir.	Compar.
Test	*r*	Test	*r*		
Holes C.	.009				
Holes T.	.282				
Trails E.	.154				
Trails T.	-.047				
FFD	.424*	FSIQ	.290	Y	NS
		Pic. Comp.	.454*	N	NS
		Sent. Rep.	.087	Y	NS
		Tapping	.508*	N	NS

Table 5 (cont'd)

False Alarms

Convergent variable	
Test	r
Holes C.	.020
Holes T.	.138
Trails E.	-.130
Trails T.	.038
FFD	.167

Note. Significance tests are one-tailed. The table should be read from left to right, following the logical sequence of the procedure: in cases where the convergent correlation was significant, the discriminant correlations were compared to it. The far right column shows the result of this comparison test (using Formula 1).

Dir. = Direction, i.e., whether the difference between correlations is in the hypothesized direction (convergent > discriminant) or not (discriminant > convergent). Compar. = Comparison test.

*p<.05, **p<.01.

APPENDIX

DATA: Raw and *z* scores

SUBJECT	BDATE	TESTDATE	SEX	HANDED	SES	FSIQ_R
1	811203	891010	F	R	55.4962	89
2	810820	890317	F	R	39.0288	105
3	830131	901106	M	R	40.4164	95
4	820606	910122	M	R	67.8389	88
5	810718	891024	F	R	60.869	115
6	801106	890119	M	R	62.5002	94
7	830110	910219	M	R		78
8	820902	910228	M	L		105
9	820617	910111	M	R	37.6721	89
10	810904	910124	M	R	55.5801	87
11	780505	900130	M	R	51.3173	83
12	800912	910522	M	R	51.3173	112
13	840120	910418	M	R		98
14	780801	891219	M	R	52.4014	101
15	790606	900219	M	R	29.7365	87
16	810403	900911	M	R	45.977	89
17	811108	910627	F	R	38.2307	87
18	800411	910613	M	R	67.41	105
19	810711	910523	M	L		82
20	831101	910606	M	R	66.8855	94
21	791101	890321	F	R	54.5601	107
22	800825	890320	M	L	32.289	62
23	800803	890220	M	R	51.3173	96
24	830226	910425	M	R	32.1517	109
25	811119	901127	M	R	52.4014	118
26	780807	891121	M	R	24.9784	106
27	801022	890622	F	R	24.5828	105
28	780910	891023	M	R	66.6958	101
29	830807	891213	M	R		103
30	791109	891204	M	L	53.2098	78
31	811130	900115	M	R	24.5828	121
32	800115	910516	M	R	51.3173	118
33	791217	890828	M	R	40.6897	96
34	801127	900619	F	R	41.4111	81
35	810502	890417	M	L	28.0382	84
36	800229	890206	F	R	51.3173	102
37	780709	890705	F	R	62.0921	87
38	830807	901218	F	R	70.7401	84
39	810509	910514	F	R	53.5215	71
40	810525	910705	M	R	32.2318	111
41	810726	910708	F	R	65.7778	106
42	820613	901206	M	R	40.4164	85
43	840801	910722	M	L	28.8448	126
44	810320	910716	F	L	41.4111	55
45	840317	910730	M	R	52.2331	91
46	830902	910723	F	R	48.7367	115
47	820904	910729	M	R	25.6197	87

FSIQ_Z	VIQ_R	VIQ_Z	PIQ_R	PIQ_Z	VC_R	VC_Z
−0.7	95	−0.3	86	−0.9	92.65	−0.5
0.3	97	−0.2	114	0.9	97	−0.2
−0.3	101	0.1	90	−0.7	104.41	0.3
−0.8	86	−0.9	92	−0.5	89.71	−0.7
1	117	1.1	109	0.6	114.7	1
−0.4	98	−0.1	91	−0.6	99	−0.1
−1.5	85	−1	73	−1.8	86.77	−0.2
0.3	112	0.8	98	−0.1	120.58	1.4
−0.7	97	−0.2	82	−1.2	102.94	0.2
−0.9	88	−0.8	88	−0.8	92.65	−0.5
−1.1	101	0.1	68	−2.1	101.47	0.1
0.8	101	0.1	124	1.6	105.88	0.4
−0.1	94	−0.4	104	0.3	95.59	−0.3
0.1	88	−0.8	115	1	89.71	−0.7
−0.9	85	−1	92	−0.5	89.71	−0.7
−0.7	87	−0.9	92	−0.5	95.59	−0.3
−0.9	73	−1.9	105	0.3	75.01	−1.7
0.3	117	1.1	92	−0.5	123.52	1.6
−1.2	86	−0.9	81	−1.3	89.71	−0.7
−0.4	88	−0.8	102	0.1	91.18	−0.6
0.5	106	0.4	108	0.5	107.4	0.5
−2.5	67	−2.2	63	−2.5	69	−2.1
−0.3	112	0.8	81	−1.3	116	1.1
0.6	107	0.5	111	0.7	110.29	0.7
1.2	127	1.8	102	0.1	126.46	1.8
0.4	101	0.1	112	0.8	107	0.5
0.3	113	0.9	95	−0.3	113.23	0.9
0.1	102	0.1	101	0.1	105.88	0.4
0.2	96	−0.3	112	0.8	97.06	−0.2
−1.5	72	−1.9	88	−0.8	73.54	−1.8
1.4	123	1.5	112	0.8	124.99	1.7
1.2	106	0.4	128	1.9	113.23	0.9
−0.3	90	−0.7	105	0.3	86.77	−0.9
−1.3	86	−0.9	80	−1.3	89.71	−0.7
−1.1	82	−1.2	87	−0.9	82.36	−1.2
0.1	106	0.4	100	0	108.82	0.6
−0.9	79	−1.4	100	0	82.36	−1.2
−1.1	88	−0.8	82	−1.2	94.12	−0.4
−1.9	72	−1.9	73	−1.8	73.54	−1.8
0.7	107	0.5	114	0.9	110.29	0.7
0.4	103	0.2	109	0.6	110	0.7
−1	77	−1.5	98	−0.1	77.95	−1.5
1.7	120	1.3	128	1.9	125	1.7
−3	64	−2.4	54	−3.1	67.66	−2.2
−0.6	94	−0.4	90	−0.7	97.06	−0.2
1	111	0.7	117	1.1	114.7	1
−0.9	81	−1.3	96	−0.3	82.36	−1.2

PO_R	PO_Z	FFD_R	FFD_Z	INFO_R	INFO_Z	SIM_R
90.4	−0.6	93.4	−0.4	6	−1.3	11
114	0.9	93	−0.5	12	0.7	8
96.8	−0.2	82.4	−1.2	10	0	13
98.4	−0.1	75.8	−1.6	7	−1	10
109.6	0.6	113.2	0.9	12	0.7	15
100	0	93	−0.5	10	0	13
77.6	−1.5	89	−0.7	8	−0.7	3
108	0.5	71.4	−1.9	10	0	18
90.4	−0.6	75.8	−1.6	7	−1	12
87.2	−0.9	84.6	−1	10	0	13
74.4	−1.7	84.6	−1	11	0.3	9
124	1.6	91	−0.6	9	−0.3	13
106.4	0.4	86.8	−0.9	6	−1.3	11
122.4	1.5	84.6	−1	7	−1	8
103.2	0.2	62.6	−2.5	9	−0.3	9
100	0	62.6	−2.5	6	−1.3	7
104.8	0.3	78	−1.5	3	−2.3	8
96.8	−0.2	84.6	−1	13	1	16
88.8	−0.8	69.2	−2.1	5	−1.7	7
111.2	0.7	80.2	−1.3	7	−1	10
113	0.9	89	−0.7	7	−1	13
65	−2.3	63	−2.5	6	−1.3	5
82	−1.2	91	−0.6	9	−0.3	13
117.6	1.2	86.8	−0.9	6	−1.3	15
111.2	0.8	108.8	0.6	14	1.3	16
119	1.3	87	−0.9	10	0	14
101.6	0.1	91.2	−0.6	12	0.7	10
106.4	0.4	93.4	−0.4	10	0	12
112.8	0.9	97.8	−0.1	9	−0.3	15
96.8	−0.2	67	−2.2	3	−2.3	9
119.2	1.3	102.2	0.1	12	0.7	14
136.8	2.5	73.6	−1.8	12	0.7	12
111.2	0.7	97.8	−0.1	8	−0.7	7
84	−1.1	78	−1.5	7	−1	12
79.2	−1.4	106.6	0.4	8	−0.7	3
92	−0.5	108.8	0.6	11	0.3	11
106.4	0.4	71.4	−1.9	4	−2	11
84	−1.1	80.2	−1.3	6	−1.3	10
72.8	−1.8	73.6	−1.8	7	−1	6
111.2	0.7	104.4	0.3	9	−0.3	14
116	1.1	80	−1.3	11	0.3	13
103.2	0.2	73.6	−1.8	6	−1.3	8
122	1.5	111	0.7	16	2	15
50.4	−3.3	56	−2.9	4	−2	2
90.4	−0.6	82.4	−1.2	9	−0.3	10
117.6	1.2	97.8	−0.1	11	0.3	13
106.4	0.4	69.2	−2	6	−1.3	7

SIM_Z	ARITH_R	ARITH_Z	VOCAB_R	VOCAB_Z	COMPR_R	COMPR_Z
0.3	11	0.3	10	0	8	−0.7
−0.7	10	0	10	0	8	−0.7
1	8	−0.7	12	0.7	8	−0.7
0	6	−1.3	7	−1	9	−0.3
1.7	14	1.3	10	0	13	1
1	10	0	10	0	6	−1.3
−2.3	7	−1	8	−0.7	12	0.7
2.7	6	−1.3	14	1.3	12	0.7
0.7	6	−1.3	10	0	13	1
1	6	−1.3	6	−1.3	6	−1.3
−0.3	10	0	13	1	8	−0.7
1	7	−1	11	0.3	11	0.3
0.3	8	−0.7	11	0.3	9	−0.3
−0.7	8	−0.7	8	−0.7	10	0
−0.3	5	−1.7	7	−1	8	−0.7
−1	3	−2.3	10	0	14	1.3
−0.7	5	−1.7	4	−2	8	−0.7
2	8	−0.7	13	1	14	1.3
−1	6	−1.3	9	−0.3	12	0.7
0	7	−1	9	−0.3	8	−0.7
1	10	0	14	1.3	11	0.3
−1.7	4	−2	1	−3	7	−1
1	9	−0.3	14	1.3	15	1.7
1.7	9	−0.3	12	0.7	14	1.3
2	14	1.3	13	1	15	1.7
1.3	7	−1	11	0.3	10	0
0	12	0.7	12	0.7	15	1.7
0.7	8	−0.7	12	0.7	10	0
1.7	9	−0.3	11	0.3	3	−2.3
−0.3	5	−1.7	6	−1.3	4	−2
1.3	12	0.7	17	2.3	14	1.3
0.7	6	−1.3	12	0.7	13	1
−1	11	0.3	9	−0.3	7	−1
0.7	6	−1.3	8	−0.7	6	−1.3
−2.3	8	−0.7	8	−0.7	9	−0.3
0.3	9	−0.3	10	0	14	1.3
0.3	5	−1.7	7	−1	6	−1.3
0	5	−1.7	8	−0.7	12	0.7
−1.3	5	−1.7	2	−2.7	7	−1
1.3	9	−0.3	12	0.7	12	0.7
1	6	−1.3	13	1	10	0
−0.7	6	−1.3	8	−0.7	3	−2.3
1.7	10	0	15	1.7	11	0.3
−2.7	2	−2.7	9	−0.3	3	−2.3
0	7	−1	9	−0.3	10	0
1	9	−0.3	14	1.3	12	0.7
−1	7	−1	7	−1	8	−0.7

DSPAN_R	DSPAN_Z	PICOMP_R	PICOMP_Z	PICARR_R	PICARR_Z	BLKDES_R
10	0	10	0	9	−0.3	7
6	−1.3	12	0.7	15	1.7	9
9	−0.3	8	−0.7	13	1	9
7	−1	9	−0.3	14	1.3	9
11	0.3	14	1.3	12	0.7	10
13	1	8	−0.7	8	−0.7	14
14	1.3	9	−0.3	4	−2	8
7	−1	10	0	17	2.3	10
10	0	10	0	8	−0.7	9
7	−1	7	−1	7	−1	8
12	0.7	4	−2	6	−1.3	7
7	−1	16	2	14	1.3	15
7	−1	13	1	9	−0.3	11
8	−0.7	14	1.3	12	0.7	15
5	−1.7	11	0.3	8	−0.7	12
5	−1.7	13	1	9	−0.3	7
3	−2.3	12	0.7	13	1	9
8	−0.7	7	−1	9	−0.3	12
7	−1	9	−0.3	10	0	6
9	−0.3	13	1	11	0.3	13
7	−1	13	1	12	0.7	12
6	−1.3	4	−2	8	−0.7	2
10	0	9	−0.3	8	−0.7	5
8	−0.7	12	0.7	14	1.3	13
15	1.7	9	−0.3	13	1	13
11	0.3	12	0.7	16	2	13
7	−1	11	0.3	12	0.7	10
12	0.7	13	1	10	0	11
9	−0.3	15	1.7	12	0.7	11
6	−1.3	8	−0.7	9	−0.3	12
12	0.7	13	1	14	1.3	12
6	−1.3	14	1.3	16	2	18
11	0.3	12	0.7	11	0.3	11
9	−0.3	6	−1.3	7	−1	9
11	0.3	5	−1.7	9	−0.3	5
10	0	7	−1	12	0.7	7
6	−1.3	12	0.7	12	0.7	8
9	−0.3	9	−0.3	10	0	5
6	−1.3	5	−1.7	7	−1	4
10	0	11	0.3	10	0	11
8	−0.7	15	1.7	11	0.3	14
5	−1.7	9	−0.3	12	0.7	10
10	0	15	1.7	14	1.3	11
2	−2.7	1	−3	5	−1.7	1
6	−1.3	12	0.7	8	−0.7	6
9	−0.3	13	1	15	1.7	11
5	−1.7	12	0.7	12	0.7	11

BLKDES_Z	OBJASS_R	OBJASS_Z	CODING_R	CODING_Z	MAZES_R	MAZES_Z
-1	8	-0.7	6	-1.3	10	0
-0.3	13	1	11	0.3		
-0.3	8	-0.7	5	-1.7		
-0.3	7	-1	6	-1.3	9	-0.3
0	10	0	11	0.3	12	0.7
1.3	10	0	4	-2		
-0.7	5	-1.7	4	-2		
0	8	0.7	4	-2	10	0
-0.3	7	-1	3	-2.3	8	-0.7
-0.7	10	0	10	0	13	1
-1	7	-1	1	-3		
1.7	10	0	12	0.7	11	0.3
0.3	11	0.3	9	-0.3	8	-0.7
1.7	13	1	7	-1	10	0
0.7	11	0.3	3	-2.3	13	1
-1	11	0.3	5	-1.7	12	0.7
-0.3	9	-0.3	11	0.3	10	0
0.7	10	0	7	-1	8	-0.7
-1.3	8	-0.7	3	-2.3	7	-1
1	10	0	5	-1.7	11	0.3
0.7	11	0.3	8	-0.7	9	-0.3
-2.7	4	-2	3	-2.3	5	-1.7
-1.7	7	-1	7	-1	6	-1.3
1	12	0.7	7	-1	12	0.7
1	12	0.7	5	-1.7	13	1
1	12	0.7	6	-1.3		
0	7	-1	7	-1		
0.3	10	0	7	-1		
0.3	10	0	11	0.3	14	1.3
0.7	9	-0.3	4	-2		
0.7	13	1	7	-1		
2.7	15	1.7	6	-1.3	7	-1
0.3	13	1	7	-1		
-0.3	8	-0.7	5	-1.7		
-1.7	8	-0.7	14	1.3		
-1	9	-0.3	15	1.7		
-0.7	12	0.7	6	-1.3		
-1.7	6	-1.3	7	-1	11	0.3
-2	7	-1	7	-1	9	-0.3
0.3	15	1.7	13	1	9	-0.3
1.3	10	0	7	-1	13	1
0	11	0.3	7	-1	16	2
0.3	14	1.3	15	1.7	14	1.3
-3	2	-2.7	6	-1.3	2	-2.7
-1.3	8	-0.7	9	-0.3	12	0.7
0.3	12	0.7	11	0.3	13	1
0.3	9	-0.3	4	-2	8	-0.7

WJREAD_G	WJR_G_Z	WJREAD_A	WJR_A_Z	WRATSP	WRATSP_Z	WRATAR
				103	0.2	92
				31	−0.7	19
3	−0.6	1	−2.3	54	−3.1	76
1	−1.8	1	−2.1			69
	−1.2		−1	83	−1.2	62
				121	1.4	88
				51	−3.3	62
5	0.7	5	0.9	105	0.3	72
2	−1.2	2	−0.9	72	−1.9	94
				117	1.1	98
				75	−1.7	85
3	−0.4	2	−0.7	86	−0.9	99
7		1	−1.5	75	−1.7	78
				62	−2.5	74
				64	−2.4	50
				57	−2.9	82
4	−0.3	3	−0.7	89	−0.7	68
						56
4	−0.2	2	−0.8	83	−1.2	92
4	−0.3	3	−0.5	84	−1.1	85
1		1		63	−2.5	65
				86	−0.9	83
1	−1.2	1	−1.2	59	−2.8	83
5	0.4	4	−0.1	72	−1.9	94
1	−1.8	1	−1.8	73	−1.8	75
4	0.2	5	0.3	84	−1.1	112
6	1.4	6	1.6	87	−0.9	91
1	−1.9	2	−1.1	89	−0.8	90
2	−1	2	−1	82	−1.2	51
3	−0.4	4	−0.1	97	−0.2	93
1	−1.3	2	−1.2	78	−1.5	68
				64	−2.4	86
				79	−1.4	91
				77	−1.6	92
				73	−1.8	93
				89	−0.8	71
				68	−2.1	82
7	2.1	1	−1.4	73	−1.8	73
2	−0.9	2	−0.8	76	−1.6	81
				81	−1.3	78
1	−2.3	1	−1.6	61	−2.6	78
2	−0.9	3	−0.6	84	−1.1	93
2	−1	2	−0.9	78	−1.5	66
				68	−2.1	82
4	−0.1	4	0	98	−0.2	97
6	1	2	−0.7	70	−2	65

WRATAR_Z	WRATRD	WRATRD_Z	DYNA_R	DYNA_R_Z	DYNA_L	DYNA_L_Z
−0.5			11	1.2	10	1.2
−0.5			8.5	0.7	5.5	0.4
−1.6	60	−2.5				
−2.1	53	−3.1	10.75	0.9	6	0
−2.5	72	−1.9	11.25	1	10.5	1.1
−0.8	109	0.6	11.5	1.1	12	1.5
−2.5	53	−3.1	13	1.5	13.5	1.8
−1.9			11.5	1.1	10	1
			13	1.5	12	1.5
−0.4			12.75	1.2	12	1.2
−0.2						
−1			19.5	2.6	19.5	2.7
−0.1			14.5	2	13.5	2.1
−1.5			20	2.4	19.5	2.3
−1.7	53	−3.1	9	0	9	0.1
−3.3	57	−2.9	18.75	2.6	15.75	2.1
−1.2	46	−3.6	7.5	−0.1	6.5	−0.1
−2.1			18.5	2	20	2.4
−2.9			18	2.4	19	2.9
−0.5	70	−2	12	1.4	9.5	1.1
−1			14	1.5	12.5	1.3
−2.3			13	1.5	12.5	1.6
−1.1			13.75	1.7	12.5	1.59
−1.2			10	0.7	9.5	0.9
−0.4			18.5	2.6	17.5	2.6
−3.4			20.5	2.5	20	2.4
0.8			8.5	0.4	9	0.7
−0.6			22	2.9	18	2
−0.7			10.5	1.2	9.5	1.3
−3.3			10.5	0.4	10.5	0.5
−0.5			15.5	2.1	16.5	2.6
−2.1			14.5	1	13.5	0.9
−0.9			17.5	2.3	13.5	1.6
−0.6			16.5	2.1	10.75	0.9
−0.5	79	−1.4	10	0.9	8	0.7
−0.5	77	−1.5	9.75	0.7	9	0.7
−2	74	−1.7	14.5	1.4	5.75	−0.7
−1.2			14.5	2	12.25	1.8
−1.8			13	1	12	0.8
−1.3			17	2	13.5	1.2
−1.5			17	2.2	17.5	2.6
−1.5			12.5	1.3	11	1.2
−0.5			9.5	1	10.5	1.6
−2.3			12.5	0.9	13.5	1.2
−1.2			12.5	1.5	9.5	1.1
−0.2			11	1.2	10.5	1.3
−2.4			8	0.2	9.5	0.9

NAME_D	NAME_D_Z	NAME_N	NAME_N_Z	TAP_D	TAP_D_Z	TAP_N
29	−0.4	38	−0.5	36	2.7	33.33
35	−0.5	47	−0.7	30.3	1.1	24.3
14	0.8	19	0.6	24.33	−0.7	28
24.1	−0.4	31.4	−0.2	25.67	−1	23.33
4.99	1.4	9.14	1.2	32.33	0.8	25
23.6	−0.3	47.4	−1.2	31.3	0.6	28
42	−2	47	−1.2	26.66	−0.7	23
8.78	1	30.68	−0.2	33	1	33.7
15.54	0.4	66.09	−2.4	25.7	−1	24.7
13.36	0.3	31.21	−0.3	25.7	−1.4	26.3
32	−2.5	93	−5.3	33	−1.2	24
14	−0.1	18	0.5	42	1.6	30.67
21.3	0.2	32.49	−0.1	22.7	−1.1	24
17	−0.6	32	−0.6	40.75	0.5	48.5
26	−1.4	40	−1.1	29.3	−1.2	31
8	0.8	10	1.1	35.33	0.8	35.33
20	−0.4	36	−0.7	27.33	−1	20.67
5	0.9	12	0.9	36.3	−0.5	33.7
23.29	−0.7	34.93	−0.6	35	0.7	34
8	1.3	12	1.1	27	0.1	24.7
9	0.7	21	0.3	28	−0.9	26.7
23	−0.3	38	−0.6	24.67	−1.3	28.3
33	−1.2	37	−0.6	39	2.7	38.3
27.12	−0.6	27.25	0	27	−0.6	22
12.65	0.3	28.65	−0.2	39.33	1.7	33
5	0.9	9	1.2	35.33	−0.7	29.6
10.33	0.9	23.41	0.3	18.7	−2.9	22
9.93	0.3	29.68	−0.4	48.3	2.2	44.7
12.88	1.2	24.61	0.5	38.3	3.7	33.7
15.76	−0.3	36.5	−0.8	26.7	−1.8	29.3
27.8	−0.7	61.05	−2.1	34	1.3	34
28.76	−2.1	40.96	−1.3	33	−1.2	33
20	−0.4	31	−0.3	35.33	0.8	30.37
30	−1.4	54	−1.9	29.33	−0.6	36.67
13	0.9	22	0.5	28.33	0.5	30.67
8	1.1	23	0.3	28	−0.4	26.67
8	0.6	34	−0.6	39.99	1	19.67
25	−0.1	17	0.8	24	−0.7	19.67
19.03	−0.7	29.75	−0.3	23.67	−2.5	23.67
23	−1.1	21	0.3	25.6	−2	29.7
18	0.2	39	−0.9	36.6	1.1	39.6
30	−0.9	38	−0.6	28.67	−0.2	25.67
7	1.6	7	1.5	29.33	1.1	27.33
9	0.4	14	0.8	34.3	−0.1	36.3
9	1.3	16	0.8	32.67	1.7	27
19	0.4	32	−0.1	35.67	2.6	28.67
19	0.1	53	−1.6	22	−2	26.67

TAP_N_Z	MAZE_DT	MAZEDT_Z	MAZE_DC	MAZEDC_Z	MAZE_DS	MAZEDS_Z
3	1.16	1.2	12	1.6	96	−0.3
0.6	1.52	1	10	1.9	52	1.8
1.2	1.93	1	11	1.7	145	−2.5
−1.3	3	0.7	22	0.7	85.55	0.1
−0.8	0.3	1.4	2	1.9	87	0
0.2	2.47	0.8	19	0.9	70.9	0.8
−1.4	2.1	0.9	18	0.9	176	−4.1
2.1	4.8	0.2	28	0.3	57.01	1.4
−0.9	4.8	0.2	38	−0.3	105.08	−0.8
−0.8	0.18	1.3	3	1.7	113.15	−1.4
−2.1	12.55	−7.4	67	−4.4	105	−1.3
−0.4	0.3	1.3	5	1.4	61	1.1
−0.1	3.44	0.7	23	1.1	88.54	0.1
2.4	0	1.6	0	1.7	57	1.2
−0.3	0.35	1.2	7	1.2	66	0.8
1.7	0.82	1	8	1.3	104	−0.9
−2.3	151	−74.1	11	1.1	67	0.9
−0.3	1.18	0.7	14	0.4	69	0.6
1.3	2.87	0	18	0.7	86.11	−0.1
−0.1	0.69	1.3	5	2	113	−1.1
−0.7	1.18	0.8	15	0.9	77	0.4
0.3	7.46	−0.5	30	0.2	71	0.8
3.6	0.4	1.3	4	1.7	118	−1.4
−1.8	3.26	0.6	19	0.9	107.16	−0.9
1	0.32	1.2	7	1.4	97	−0.6
−1.1	1.23	0.7	12	0.6	65	0.8
−1.8	0.62	1.3	8	1.5	67.22	0.9
1.7	0.39	1.3	2	1.5	85.11	−0.3
3.7	4.29	0.9	30	0.9	69.97	1
−0.7	10.24	−4.6	75	−4	52.04	1.6
2.2	3.96	0.4	45	−0.7	73.79	0.6
−0.5	1.99	0.1	19	0	64.94	0.8
0.3	0.55	1.1	7	1.4	76	0.4
2	0.71	1.1	9	1.3	105	−1
2.1	8.76	−0.3	46	−0.1	66	1.1
−0.2	0.23	1.4	4	1.7	72	0.7
−2.6	1.77	0.4	17	0.5	64	0.9
−1.6	0.53	1.3	6	2	78	0.5
−1.8	0.57	1.1	7	1.2	79.94	0.1
−0.6	2.12	0.2	17	0.5	51	1.6
2.8	0.4	1.2	3	1.7	44	2
−0.5	0.27	1.4	2	1.9	100	−0.6
1.6	4.52	0.9	24	1.2	99	−0.3
0.7	4.92	−1.4	30	−0.5	61	1.1
0.9	0.87	1.3	9	1.8	97	−0.3
1.4	0.38	1.4	3	2.1	85	0.2
−0.2	2.3	0.8	12	1.3	91	−0.2

MAZE_NT	MAZENT_Z	MAZE_NC	MAZENC_Z	MAZE_NS	MAZENS_Z	HOLES_DT
4	1.3	29	1.6	80	0.5	0.47
6.48	1.3	38	1.6	70	1	1.62
13.33	−0.2	81	−0.7	82	0.4	18.57
4.08	1.2	20	1.8	110.03	−0.7	5.16
0.45	1.9	6	2.6	85	0.3	0.1
3.2	1.4	22	1.7	88	0.1	2.62
31.59	−4.3	93	−2	188	−3.8	0.7
3.74	1.3	30	1.3	53.4	1.5	1.9
14.72	−0.9	98	−2.3	111.08	−0.8	5.62
4.66	0.7	32	0.8	79.89	0.3	40.08
20.99	−6.7	84	−4.2	81	0.1	45
1.54	1.5	11	1.6	67	0.8	33.37
9.23	0.5	49	0.7	89.39	0.1	3.4
2.8	0.6	9	1.6	69	0.6	20.51
1.54	1.5	13	1.5	91	0.2	26.76
1.09	1.6	7	2.2	106	−0.7	36.18
513	−126.3	37	0.5	77	0.5	28.65
1.78	1	16	1.1	80	0.1	40.72
6.88	0.2	43	0.1	72.38	0.6	44.23
1.04	1.8	11	2.5	118	−1	1.87
3.97	0.9	35	0.6	63	1	31.95
13.38	−0.7	61	−0.3	88	0.1	4.12
2.31	1.5	18	2	110	−0.7	0.96
8.08	0.4	36	1	100.31	−0.3	4.86
1.51	1.5	20	1.5	102	−0.6	22.97
1.49	1.1	16	1.1	71	0.5	30.7
7.83	0.4	53	0.1	69.89	0.8	0.43
0.98	1.3	12	1.4	92.25	−0.4	27.74
9.36	0.9	69	0.3	114.2	−0.7	2.71
11.73	−1.9	63	−1.9	74.7	0.5	42.68
11.13	−0.2	75	−1.1	67.94	0.9	10.88
3.66	0.3	39	−0.7	58.04	1.1	31.73
7.66	0	47	−0.1	79	0.4	26.3
3.26	1.1	31	0.8	103	−0.6	26.03
6.48	0.9	47	0.8	64	1.1	4.63
2.61	1.5	18	1.9	90	0.1	0.2
3.55	0.8	37	−0.1	67	0.8	30.31
2.71	1.5	21	2	113	−0.8	2.09
3.6	0.8	26	0.6	62.87	1	18.23
1.4	1.5	17	1.2	56	1.3	22.19
2.47	1.3	22	1.4	50	1.4	21.59
0.97	1.8	7	2.5	108	−0.6	0.47
4.41	1.6	32	1.8			7.33
6.13	−0.1	37	−0.1	63	1	26.81
5.7	1.1	46	0.9	52	1.6	4.35
4.26	1.3	33	1.5	80	0.5	2.05
5.56	0.9	44	0.6	96	−0.2	3.73

HOLEDT_Z	HOLES_DC	HOLEDC_Z	HOLES_NT	HOLENT_Z	HOLES_NC	HOLENC_Z
0.8	5	1.7	2.68	0.4	21	0.8
0.8	9	1.6	1.42	0.9	14	2.2
−5.2	69	−5.1	13.1	−2.5	82	−5
−1.5	39	−2.8	7.63	−1.5	48	−2.9
1.1	2	1.4	5.1	−0.5	38	−1.9
−0.2	19	−0.5	4.97	−0.5	42	−2.3
0.8	4	1.2	4.55	−0.3	34	−1.5
0.2	18	−0.4	2.12	0.7	15	0.3
−1.7	33	−2.2	10.76	−2.8	63	−4.4
−2.4	101	0.5	57.79	−3.4	138	0
−3.3	84	0.8	63.2	−4.4	119	0.3
−1.7	125	−0.1	32.04	−0.7	133	0
−0.2	28	−0.7	9.86	−1.6	43	−1.3
−0.2	133	−0.4	37.53	−1.6	121	0.2
−0.9	154	−0.8	26.61	−0.1	140	−0.2
−1.9	117	0.1	47.95	−2.3	155	−0.5
−1	122	0	38.08	−1.2	123	0.3
−2.8	140	−0.5	40.89	−1.9	142	−0.3
−3	146	−0.6	48.3	−2.4	143	−0.2
0.3	20	0.1	1.16	0.9	18	1.1
−1.4	158	−0.9	36.72	−1.1	90	−1.1
−1	30	−1.8	7.84	−1.6	39	−2
0.6	19	−0.5	3.59	0.1	30	−1.2
−1.3	38	−2.7	6.98	−1.3	26	−0.8
−0.3	81	1	27.71	−0.1	122	0.3
−1.5	128	−0.2	44.42	−2.3	170	−1
0.9	8	0.7	2.51	0.5	23	−0.5
−1.1	122	−0.1	34.1	−1.2	129	0
0.4	28	0.2	4.39	0.3	53	−1.3
−2.9	180	−1.4	53.35	−3	156	−0.5
−4.3	53	−4.5	15.15	−4.5	62	−4.3
−1.6	137	−0.5	43.34	−2.2	139	−0.2
−0.7	131	−0.2	36.74	−1.1	115	0.5
−0.6	103	0.5	33.15	−0.7	80	1.3
−0.6	34	−1.4	6.68	−0.7	38	−0.8
1	3	1.3	0	1.5	0	1.8
−1.3	92	0.7	45.77	−2.2	78	1.3
0.3	22	−0.1	0.47	1.1	6	2.3
0.2	121	0	32.36	−0.7	139	−0.1
−0.3	116	0.1	36.3	−1.1	105	0.7
−0.1	126	−0.1	35.6	−1	76	−1.4
0.9	8	0.7	0.46	1.3	7	1.1
−0.6	44	−1.1	7.76	−0.3	49	−1
−0.9	86	0.8	36.58	−1.2	79	1.3
−0.5	64	−4.6	4.44	−0.1	50	−1.9
0.3	23	−0.2	6.58	−0.7	46	−1.5
−0.8	22	−0.9	2.99	0.3	16	0.2

PEGS_DT	PEG_DT_Z	PEGS_DD	PEG_DD_Z	PEGS_NT	PEG_NT_Z	PEGS_ND
28	1.5	0	0.3	35	0.6	0
29	1.2	0	0.7	45	0.3	0
32	1.1	0	0.3	31	0.8	0
51	−1.9	1	−3.3	52.9	−1.4	2
29	0.9	0	0	34	0.5	2
41.4	0.7	0	0	43	0.4	0
59	−2.9	2	−6.7	71	−3.2	1
30.6	0.7	0	0	48.97	−1	4
51.29	−1.9	3	−10	81.94	−4.3	3
83.84	−0.7	1	−1.9	107.08	−1.8	1
64	0.8	0	0.5	75	0.3	1
39.81	0.3	0	0.3	57.24	−0.7	5
64	0.8	0	0.5	71	0.6	0
78	−0.6	0	0.5	72	0.5	1
94	−1.3	2	−4.5	82	−0.1	0
79	−0.3	1	−2	103	−1.5	4
75	−0.6	3	−8.6	158	−9.9	12
99.35	−1.7	1	−1.9	125.37	−3	3
38	0.5	0	0.3	47	−0.1	0
85	−0.7	1	−2	81	−0.1	0
51	−1.9	0	0	51	−1.2	0
44	0.3	0	0	34	0.5	0
41.39	−0.7	1	−3.3	43.92	−0.5	1
101	−1.8	3	−6.9	97	−1.1	0
74	−0.5	0	0.5	78	−0.2	0
45.25	−1.2	0	0	54.68	−1.6	0
108	−4.8	1	−2.6	108.58	−3.9	0
41	0.6	0	0.7	51.46	0	0
111.78	−4	0	0.5	127.45	−4.5	1
33.93	0.3	0	0	62.12	−2.3	3
117.7	−6	0	0.5	98.2	−2.7	5
74	0	1	−1.9	88	−0.5	0
91	−1.1	0	0.5	161	−5.4	4
48	−0.5	0	0.3	41	0.2	0
67	−3.9	0	0	95	−5.6	3
61	1.1	0	0.5	98	−1.8	7
33	1	0	0.3	36	0.5	0
153	−8.1	0	0.5	126	−4.4	0
62	1	0	0.5	81	−0.3	0
70	0.3	2	−4.5	83	−0.2	0
26	1.3	0	0	34	0.5	1
40	0.6	1	−2.7	40	0.6	0
189	−11.7	1	−2.4	182	−9.5	1
35	0.8	1	−3.1	50	−0.3	3
26	1.7	0	0.3	34	0.6	0
24	1.5	0	0	38	0.1	0

PEG_ND_Z	BEERY	BEERY_Z	REYCOPY	REYCOP_Z	VF_RT	VF_RT_Z
0	15	0.3	18.5	−0.3	0	0.4
0.4	8	−0.7	26.5	0.7	3	−5.4
0	4		7.5	−1.9	1	−1.6
−13.3	5	−1.8	10.5	−1.6	0	0.4
−13.3	4	−1.8	22	−0.2		
0	9	0	16.5	−0.9	0	0.4
−6.7	3		5.5	−2.2	1	−1.6
−26.7	6	−1			1	−1.6
−20	6	−1.2			0	0.4
−1.5	8	−0.4	19	−1	0	0.4
	6	−1	21	−0.9	0	1
−2	7	−0.8	29	0.3	0	1
−17.2	8	−0.3			0	0.4
0.3	10	0.1	32	0.5	0	1
−2	9	−0.6	28	0.2	0	1
0.5	4	−2.1	22	−0.6	0	0.4
−7.5	4	−1.5	26	−0.1	1	−1.6
−36	6	−1.2	33	0.6	2	−9
−5.5	6	−1	13.5	−1.8	0	0.4
0	7	−0.9	24	0.3	0	0.4
0.5	10	0.1	12	−2	0	0.4
0	4	−1.9	13	−1.3	1	−1.6
0	7	−0.7	18.5	−0.7	0	0.4
−6.7	5	−1.6			1	−1.6
0.5	10	0.2	24	−0.3	0	0.4
0.3	8	−0.6	27	−0.1	0	1
0	7	−0.6			1	−1.6
0.3	8	−0.6	11	−2.2	0	1
0.4	8	−0.5			0	0.6
0.2	2	−2.1	7.5	−2.4	0	1
−20	7	−0.7			0	0.4
−14.8	3	−1.9	31.5	0.4	2	−9
0.5	12	0.8	29.5	0.5		
−7.5	7	−0.7	25	−0.2	0	0.4
0	5	−2.3	18.5	−0.4		
−20			22	−0.2	0	0.4
−17.1	7.5	−0.7	31	0.4	0	1
0	7	−1	25	0.5	2	−3.6
0.4	2	−2.1	20	−1.1	0	1
0.4		0.9	33	0.8		
0.5	11	0.5	34	1.1	0	0.4
−6.7	13	−0.7	14	−1.2	0	0.4
0.4	7	−0.7	15.5	−0.1	0	0.6
−2	9	−2	4	−3.4	0	1
−10.3	6	−1.6			0	0.4
0	7	−0.8	32	1.4	0	0.4
0	5	−1.5	26	0.3	1	−1.6

VF_LT	VF_LT_Z	MATF_T	MATF_T_Z	MATF_E	MATF_E_Z	MATV_T
0	0.4	24	0.7	0	0.2	34
2	−2	15	1.3	0	0.2	22
1	−0.9	28	0.5	0	0.2	51
1	−1.6	13	1.2	0	0.2	34
		15	1.1	0	0.2	23
1	−1.6	33.5	−0.1	0	0.2	50.6
4	−7.6	29	0.2	0	0.2	49
0	0.4	12.2	1.3	0	0.2	27.07
0	0.4	19.5	0.8	3	−6.8	29.39
0	0.5					
0	0.5					
0	0.5					
0	0.4	20.07	0.9	0	0.2	27.76
0	0.5					
1	−4.5					
1	−4.5					
0	0.5					
1	−4.5					
1	−4.5					
0	0.4	20	0.9	0	0.2	38
0	0.5					
1	−1.6	24	0.52	0	0.2	14
1	−1.6	18	0.9	0	0.2	20
0	0.4	19.14	0.8	0	0.2	26.86
0	0.5					
0	0.5					
0	0.4	13.79	1.2	0	0.2	18.59
0	0.5					
0	0.5	26.59	0.7	0	0.2	32.69
0	0.5					
0	0.4	18.24	0.9	0	0.2	25.15
1	−4.5					
0	0.5					
		18	1	0	0.2	25
0	0.4	12	1.3	0	0.2	21
0	0.5					
0	0.4	33	0.2	0	0.2	42
0	0.5					
0	0.4					
0	0.4	15	1.1	0	0.2	20
1	−0.7	21	1	0	0.2	64
1	−4.5					
0	0.4	23	0.7	0	0.2	30
0	0.4	14	1.2	0	0.2	24
1	−1.6	20	0.8	0	0.2	31

MATV_T_Z	MATV_E	MATV_E_Z	GESTALT	GSTALT_Z	TACT_D	TACT_D_Z
0.4	2	−0.5	11	0.3	1	0
1.2	0	1	17	2.3	0	0.8
−0.5	0	1	7	−1	1	0
0.1	0	0.5	12	0.7	0	0.9
0.8	0	0.5	9	−0.3	1	0
−1	2	−1.3	9	−0.3	0	0.9
−0.9	4	−3.1	1	−3	0	0.9
0.6	2	−1.3	17	2.3	0	0.9
0.4	4	−3.1	10	0	0	0.9
					0	0.7
			9	−0.3	1	−0.9
			16	2	0	0.7
0.8	4	−2.1	9	−0.3	0	0.8
					0	0.7
					0	0.7
					3	−2.7
			7	−1	2	−1.6
			11	0.3	0	0.7
					1	−0.4
0.2	2	−0.5	7	−1	4	−2.31
			8	−0.7	0	0.7
3.5	6	−13.7	4	−2	0	0.9
1	2	−1.3	6	−1.3	0	0.9
0.6	0	0.5	9	−0.3	0	0.9
			8	−0.7	0	0.7
			10	0	0	0.7
1.1	2	−1.3	7	−1	0	0.9
					0	0.7
0.7	2	−0.3	11	0.3	0	0.8
					1	−0.6
0.7	3	−2.2	14	1.3	0	0.9
					0	0.7
			11	0.3	0	0.7
			5	−1.7	0	0.7
0.9	5	−2.8	12	0.7	0	0.8
0.9	2	−1.3	12	0.7	0	0.9
			11	0.3	0	0.7
0	0	1	11	0.3	4	−2.3
					6	−6.8
					0	0.7
					0	0.7
1	2	−1.3	8	−0.7	0	0.9
−0.7	4	−1.6	8	−0.7	1	0.1
			5	−1.6	2	−1.8
0.7	7	−4.4	6	−1.3	0	0.8
1	2	−0.5	11	0.3	1	0
0.3	2	−1.3	8	−0.7	1	0

TACT_N	TACT_N_Z	FAGN_D	FAGN_D_Z	FAGN_N	FAGN_N_Z	RL_NO
0	0.7	1	0.5	0	1.3	
3	1.6	5	−1.2	7	−2.25	9
0	0.7	0	1	3	−0.3	
0	0.7	3	−2	1	0	19
1	−0.4	3	−2	3	−1.3	25
0	0.7	1	0	2	−0.7	27
0	0.7	5	−4	8	−4.7	12
1	−0.4	1	0	2	−1	
0	0.7	0	1	2	−0.7	24
0	0.7	2	−2	0	1	14
0	0.6	2	−3	0	0.6	31
0	0.8	1	−1.4	2	−1	13
0	0.7	0	1	0	1.3	
0	0.8	1	−1.6	1	−1.4	30
0	0.8	0	0.6	2	−1	31
0	0.7	2	−2	0	1	
1	−0.5	4	−6	2	−1	27
1	−0.9	0	0.4	0	0.6	32
1	−0.5	0	2	0	1	19
0	0.7	0	1	1	0.8	11
0	0.8	6	−10	8	−8	31
0	0.7	4	−2	9	−8	9
0	0.7	0	1	1	0	14
0	0.7	2	−1	1	0	
0	0.7	1	0	0	1	30
1	−0.9	0	0.4	0	0.6	31
0	0.7	2	−1	1	0	
0	0.8	0	0.4	0	0.6	32
0	0.7	1	0.4	0	1.3	
1	−0.7	6	−11.4	3	−1.7	26
0	0.7	0	1	0	0.7	
0	0.8	0	0.4	0	0.6	11
0	0.7	3	−4	0	1	
0	0.7	1	0	2	−1	
1	−0.2	4	−1	4	−0.8	
0	0.7	3	−2	2	−0.7	
0	0.8	0	0.6	11	−7	
0	0.7	2	0	2	0.3	
1	−0.7	0	0.6	0	0.3	17
0	0.8	0	0.6	0	0.3	32
0	0.8	0	2	0	1	28
1	−0.4	10	−9	6	−3.3	19
0	0.7	3	−0.4	1	0.8	
3	−3.5	12	−23.4	11	−7	8
1	−0.2	1	0.5	2	0.3	
0	0.7	3	−0.5	5	−1.3	
1	−0.4	6	−5	2	−0.7	11

RL_NO_Z	RL_TOT	RL_TOT_Z	STER_CD	STERCD_Z	STER_TD	STERTD_Z
			9		84	
−1.4	16	−0.7	9	0.9	202	−1.9
			7		176	
−1	19	−0.2	6	−1.4	120	0.1
−0.1	25	0.6	9	0.7	155.14	−0.9
0.1	27	0.9	8	0	111.5	0.4
−2	16	−0.7	10	1.4	138	−0.4
			8	0	173.5	−1.4
−0.3	24	0.5	8	0	118.4	0.2
−1.7	14	−1.2	10	1.4	252.1	−3.2
0.6	31	0.7	1	−7.1	317	−7.2
−4.8	15	−2	8	−0.6	110	0
			8		62.8	
0.3	30	0.6	10	1.1	64	0.6
0.6	31	0.7	10	1.1	59	1.2
			10	1.4	130	−0.2
0.2	27	0.5	5	−3.1	127	0
0.9	32	0.9	10	0.8	69	0.5
−1	19	−0.6	10	1.4	129.7	−0.2
−2.1	19	−0.3	10	1.3	139	−0.8
1	31	1.2	10	1.4	64	1.3
−2.4	9	−1.7	4	−3.7	146	−1
−1.7	14	−1	10	1.3	139	−0.8
			9	0.7	75.6	1.4
0.7	30	0.9	9	0.6	173	−1.3
0.6	31	0.7	10	1.1	49	1.1
			8	0	83.8	1.2
0.9	32	0.9	10	1.1	69.7	0.4
			10		143.5	
−0.9	26	−0.1	10	1.1	150.6	−1
			8	0	91.9	0.9
−4.7	18	−1.5	10	1.1	61.8	0.7
			10	1.4	115	0.1
			6	−1.7	169	−1.2
			8	0	131	−0.2
			8	−0.6	128	−0.5
−3.6	17	−1.7	9	0.3	108	0
0.9	32	0.9	9	0.3	33	1.9
0.4	4	−2.6	10	1.1	106	0.5
−1	19	−0.2	6	−1.4	206	−2.4
−6.3	16	−1.8	5	−3.1	112	−0.1
			7		90	
			8		100	
−2.1	19	−0.2	7	−0.7	194	−2

STER_CN	STERCN_Z	STER_TN	STERTN_Z	FING_D	FING_D_Z	FING_N
8		91		2	0.4	1
5	−2.5	178	−0.8	2	0.6	3
7		203		1	0.9	8
1	−5.5	109	0.4	0	1.4	2
10	1.4	193.83	−1.5	4	−1.3	3
8	−0.2	136.3	−0.2	2	0	3
8	−0.2	169	−0.9	7	−3.3	12
7	−0.9	161.1	−0.7	2	0	0
4	−3.2	118.8	0.2	1	0.7	4
6	−1.4	246.2	−2.6	14	−2.6	13
2	−4.6	181	−2.2	12	−4	3
6	−1.3	130	−0.2	1	0.7	3
8		129.4		0	1.4	1
10	1.1	114	−0.3	2	0.4	3
10	1.6	77	1	5	0.6	5
7	−0.6	185	−1.2	13	−2.3	9
8	0	98	0.9	11	−1.8	13
10	0.8	54	1.3	6	−1.6	10
9	0.8	116	0.4	2	0.6	4
8	−0.1	166	−1.4	5	−1.2	3
10	1.5	109	0.6	1	0.9	5
5	−2.1	127	−0.3	7	−2.2	3
10	1.3	41	2	1	0.7	0
8	−0.2	132	−0.1	2	0	1
8	0.1	312	−4.1	0	1.2	3
9	0.4	84	0.5	3	−0.1	0
7	−0.9	108.9	0.4	0	1.4	0
10	1.1	94	0.2	4	−0.6	3
6		247.8		0	1.4	1
6	−1.3	199.4	−1.6	13	−3.2	13
10	1.4	52.9	1.7	0	1.4	1
10	1.1	114.4	−0.4	2	0.4	5
9	0.8	192	−1.4	9	−1.2	2
3	−3.5	123	0.3	6	−0.4	6
				0	1.2	1
8	−0.2	89	0.9	1	0.7	0
2	−4.1	153	−0.7	9	−1.9	2
				10	−3.6	14
8	0.1	151	−0.6	6	−0.9	5
10	1.6	37	1.8	2	0.4	4
10	1.3	120	0.4	5	−0.2	5
5	−2.5	307	−4	7	−3.3	13
				4	−0.2	5
1	−4.9	122	0	16	−4.2	16
5		65		5	−1.1	2
8		125		4	−0.6	5
6	−1.7	187	−1.3	5	−2	6

FING_N_Z	TPT_DOM	TPTDOM_Z	TPT_ND	TPT_ND_Z	TPT_BOTH	TPT_B_Z
0.8	4.13	0.5	1.42	0.8	0.98	0.6
0.4	4.15	0.7	2.52	0.8	1.37	0.5
−2	4.95	0.4	2.08	0.7	1.2	0.4
0.3	7.32	−0.3	4.97	−0.2	1.53	0
−0.2	1.75	0.7	1.73	0.6	1.02	0.4
−0.2	2.05	3.7	2.8	0.3	2.53	−0.9
−4.7						
1.3	4.32	0.2	1.87	0.5	0.97	0.5
−0.7	4.7	0.2	4.68	−0.2	4.93	−3.1
−2.6	10.05	−2	5.3	−0.9	1.87	−0.5
−0.3	6.5	−1.3	8.28	−3	8.1	−15.8
−0.1	4.2	0.1	1	0.9	1.1	0.5
0.8	9.07	−0.3	4.78	0	1.02	0.5
−0.2	3.42	0.3	1.38	0.5	1.68	−1.5
0.8	3.08	0.6	1.53	0.7	0.4	1.7
−1.3	5.32	−0.1	3.27	0	1.65	−0.3
−2.6	1.93	1.3	3.03	0.1	0.72	0.8
−3.7	4.13	−0.1	2.07	0.2	0.92	0.2
0.2	6.12	−0.4	2.07	0.5	0.7	0.8
0						
−0.1	3.27	0.7	2	0.5	0.75	0.8
−0.6	6.58	−0.2	1.3	0.7	1.83	−0.3
1.3	10.3	−0.8	4.87	−0.2	6.88	−4.9
0.8	2.4	0.6	2.48	0.4	1.23	0.2
0.5	8.75	−1.5	2.03	0.5	1.13	0.3
1.3	2.55	0.7	1	0.7	0.45	1.2
1.3	3.69	0.3	6.15	−0.5	3.58	−1.9
−0.2	1.93	1	0.72	0.9	1.68	−1.5
1.1	5.8	0.5	8.03	−0.6	2.3	0
−3.4	8.62	−1.9	6	−1.6		
0.8	2.4	0.6	3.15	0.2	1.48	0
−1.2	3.7	0.1	1.97	0.2	0.65	0.8
0.8	4.78	0.1	1.1	0.9	0.4	1.2
−0.4	8.57	−1.4	9.98	−2.9	2.93	−1.8
0.9	8.98	−0.3	10	−1.3	3.95	−1.3
1.3	4.15	0.3	1.93	0.5	1	0.5
0.3	1.95	1.2	4.98	−1	1.42	0
−4.4	8.4	−0.2	9.42	−1.2	5.42	−2.2
−0.8	7	−1.1	4.28	−0.7	2.25	−1.4
−0.4	2.73	0.8	0.58	1.2	0.47	1.5
−0.1	4.62	0.2	3.05	0.1	1.2	0.3
−5.2	4.7	0.2	0.95	0.8	1.17	0.3
−0.3	1.9	1	1.22	1.1	1.55	0.4
−4.4						
0.4						
−0.8	3.58	0.6	2.72	0.5	1.18	0.4
−1.7	3.32	0.4	2.13	0.5	4.03	−2.3

TPT_TIME	TPT_T_Z	AUD_R	AUD_R_Z	AUD_L	AUD_L_Z	SSPERC
6.53	0.6	0	0.3	0	0.4	
8.04	0.8	0	0.4	2	−2.7	
8.23	0.5	1	−2.3	0	0.4	
13.82	−0.2	0	0.3	0	0.5	
4.5	0.7	0	0.3	1	−2	
7.38	0.4	0	0.3	0	0.5	
		0	0.3	0	0.5	
7.15	0.5	0	0.3	0	0.5	
14.32	−0.2					
17.22	−1.7	0	1	0	0.4	
22.88	−4.5	0	1	0	0.5	24
6.3	0.5	0	0	0	0.4	25
14.87	−0.1	0	0.3	0	0.4	
6.48	0.1	0	0	0	0.4	21
5.01	0.8	0	0	1	−2.1	18
10.23	−0.2	0	1	0	0.4	19
5.68	0.9	1	−9	1	−2	
7.12	−0.1	0	0	0	0.4	24
8.88	0.2	0	1	0	0.4	
		0	0.3	0	0.4	
6	0.8	0	1	0	0.5	24
7.11	0.5	0	0.3	3	−7	
22.05	−1	0	0.3	0	0.5	
6.12	0.6	1	−3	0	0.5	
11.92	−0.5	0	1	0	0.4	23
4	0.7	0	0	0	0.4	24
13.43	−0.1	0	0.3	0	0.5	
4.33	0.7	0	0	1	−2	
16.13	0.1	0	0.4	0	0.7	
		0	0	0	0.4	
7.03	0.5	0	0.3	0	0.5	
6.32	0.1	0	0	0	0.4	
6.28	0.7	0	1	1	−2	20
21.48	−2.7	0	1	0	0.4	23
22.93	−0.8	0	0.3	0	0.4	
7.08	0.5	0	0.3	0	0.5	
8.35	−0.1	0	0	0	0.4	23
23.23	−0.9	0	0.3	0	0.4	
13.53	−1.4	0	0	0	0.4	25
3.78	1.1	0	0	0	0.4	22
8.87	0.2	0	1	0	0.5	24
6.82	0.5	0	0.3	0	0.5	
4.67	1	0	0.4	0	0.7	
		0	0	0	0.4	16
		0	0.3	0	0.4	
7.48	0.6	1	−2.3	0	0.4	
9.48	0.2	0	0.3	1	−2	

SSPERC_Z	GFW	GFW_Z	PPVT	PPVT_Z	EOW	EOW_Z
	3	−0.9	97	−0.2	75	0.3
	2	−0.1	108	0.5	77	0.5
	5	−1.8	116	1.1	81	0.9
	0	0.9	102	0.1	85	0.7
	1	−0.1	103	0.2	80	0.2
	2	−0.7	86	−0.9	85	0.7
	1	−0.1	88	−0.8	72	−0.6
	0	0.9	110	0.7	86	0.9
	1	−0.1	91	−0.6	85	0.7
	0	0.8	82	−1.2	76	−0.7
−0.7			121	1.4	99	0.7
0.1	3	−1.3	90	−0.7	98	1.2
	1	0.1	101	0.1	78	0.5
−2.2	2	−1	89	−0.7	85	−0.9
−3.4	1	−0.2	88	−0.8	88	−0.1
−2.8	0	0.8	93	−0.5	88	0.5
	3	−1.2	74	−1.7	74	−0.9
−0.7	0	0.6	118	1.2	104	1.9
	1	−0.2	103	0.2	81	−0.2
	2	−0.4	114	0.9	87	1.4
−0.3			120	1.3	97	1.7
	1	0.1	70	−2	61	−1.5
	0	0.9	116	1.1	83	0.5
	1	−0.1	110	0.7	92	1.5
−0.8	2	−0.7	107	0.5	92	0.9
−0.7	0	0.6	107	0.5	101	1.1
	1	−0.1	115	1	91	1.3
	1	−0.4	105	0.3		
	1	0.4	92	−0.5	74	1.1
	2	−0.9	60	−2.7	75	−1.3
	0	0.9	106	0.4	81	0.3
	0	0.6	97	−0.2	99	0.7
−2.3	2	−0.7	88	−0.8	87	0.4
−0.8	3	−1.2	76	−1.6	67	−1.5
	7	−2.3	69	−2.1	70	−0.2
	2	−0.7	106	0.4	88	1
−0.9	1	−0.3	78	−1.5	85	−0.4
	3	−0.9	101	0.1	61	−1.1
0.1	0	0.7	90	−0.7	78	−1
−1.4	1	−0.3	106	0.4		
−0.3	1	0.2	107	0.5	98	1.9
	2	−0.7	96	−0.3	79	0.1
	1	0.3	48	−3.5	85	2.4
−4.4	2	−0.9	77	−1.5	83	−0.7
	4	−1.2	43	−3.8	71	−0.1
	1	0.1	116	1.1	93	2.2
	1	−0.1	101	0.1	93	1.5

FLUENCY	FLUEN_Z	TOKEN	TOKEN_Z	SE_MEM	SE_MEM_Z	BVRT_M
7	−0.1	149	−0.5	9	−1.6	14
4.5	−0.8	149	−0.5	8	−2.1	12
3	−1.5	157	0.5	10	−1.2	8
6.5	−0.7	157	−0.3	10	−1.8	9
12.5	1.5	151	−1.7	13	−0.5	7
7.5	−0.3	156	−0.6	10	−1.8	
3.5	−1.7	156	−0.6	12	−0.9	7
8.5	0.1	148	−2.4	10	−1.8	13
5.5	−1	161	0.6	14	−0.1	10
6.5	−1	151	−1.4	10	−2.1	10
5	−2.1	161	0.3	14	−1.2	13
9.5	−0.2	156	−0.9	13	−1.1	9
6.5	−0.3	153	0	10	−1.2	8
4.5	−2.3	154	−2	12	−2	12
9	−0.4	159	−0.1	14	−0.7	8
5.5	−1.3	155	−0.5	11	−1.7	10
4.5	−1.7	152	−1.2	8	−3	7
7	−1.4	159	−0.4	13	−1.6	12
5.5	−1.3	157	−0.1	14	−0.3	6
7	−0.1	156	0.3	8	−2.1	12
7	−0.8	155	−0.5	12	−1.2	13
7	−0.5	125	−8	8	−2.7	10
12.5	1.5	143	−3.6	14	−0.1	9
7.5	−0.3	162	0.8	10	−1.8	12
8	−0.4	163	1.2	13	−0.8	11
10	−0.4	162	0.6	13	−1.6	14
2.5	−2.1	163	1	11	−1.4	7
16	1.8	161	0.3	12	−2	13
5.5	−0.4	147	0.1	11	0.4	10
7	−1.1	147	−3.4	11	−2	12
8.5	0.1	160	0.3	13	−0.5	11
7.5	−1.3	159	−0.4	12	−2	12
7	−0.8	157	−0.1	12	−1.2	10
7	−0.8	146	−2.5	10	−2.1	10
3.5	−1.3	151	−0.3	11	−0.8	8
8	−0.1	162	0.8	11	−1.4	12
7	−1.1	157	−0.7	10	−2.4	12
1	−2.2	65	−10.6	10	−1.2	11
4.5	−2	135	−6.8	11	−2	14
8.5	−0.5	163	1	14	−0.7	9
7	−0.8	157	0.1	14	−0.4	13
4.5	−1.4	155	−0.8	10	−1.8	11
5	−0.6	158	0.9	12	0.9	9
5	−1.8	143	−4.6	10	−2.4	13
4	−1.2	137	−1.9	9	−1.6	7
9	0.6	161	1	12	−0.3	11
7	−0.5	156	−0.6	12	−0.9	10

BVRT_M_Z	REYREC	REYREC_Z	TARGET	TARGET_Z	SP_MEM	SP_MEM_Z
3	13.5	0.1	13	−0.1	9	−0.3
3	13	0	16.5	1.6	7	−1
0	4.5	−1.4	12	−0.4	6	−1.3
0	4.5	−1.7	9.5	−2.2	8	−0.7
−2	8.5	−1.2	13.5	−0.9	7	−1
	14	−0.3	17	0.3	10	0
−2	1.5	−2.1	5	−3.8	8	−0.7
3					12	0.7
1					6	−1.3
0	2	−2.8	16	−0.3		
2	16.5	−0.8	14	−2	8	−0.7
−1	17	−0.4	15	−0.9		
0					9	−0.3
1	15.5	−1	20	1		
−2	23	0.5	16	−0.4		
0	4	−2.5	15	−0.7		
−3	13.5	−0.8	13	−1.5	6	−1.3
1	25	0.4	17	−0.5	10	0
−3	9.5	−1.6	14	−1.1		
3	14.5	0.1	20	2.1	11	0.3
3	7	−1.8	14	−1.1	7	−1
1	3.5	−2	7	−3.1	4	−2
0	10.5	−0.9	4	−4.1	3	−2.3
3					8	−0.7
1	13.5	−0.9	17	0.1		
3	19.5	−0.4	20	1		
−2					10	0
2	8.5	−2	14.5	−1.8		
					11	0.3
1	2.5	−2.5	13	−1.7		
2					9	−0.3
1	13	−1.4	17	−0.5		
0	28	1.5	19	0.8		
0	12	−1	16	−0.3	6	−1.3
0	6.5	−1.1	10.5	−0.9	9	−0.3
3	14	−0.4	14	−0.7	9	−0.3
1	24	0.6	17	0	6	−1.3
3	11	−0.4	14	0.2	4	−2
3	4	−2.4	14	−1.3		
−1	25	0.8	18	0.4		
3	21	0.4	18	0.5		
2	7.5	−1.3	16	0	3	−2.3
	13.5	0.6	14	0.9	10	0
2	2	−2.7	9	−3.5		
−1			7	−2	10	0
3	18.5	0.9	12	−0.4	9	−0.3
1	20	0.5	8	−2.8	6	−1.3

KNOX	KNOX_Z	TPT_MEM	TPTMEM_Z	TPT_LOC	TPTLOC_Z	STROOPW
		4	0	4	0.9	103
		3	-0.8	1	-0.7	97
		3	-0.8	0	-1.5	
		4	-0.2	3	0.1	
		5	0.6	2	-0.5	
		4	-0.2	1	-1.1	91
		5	0.6	2	-0.5	
		3	-1.1	0	-1.7	
		6	1.4	6	2.1	98.5
		0	-4.6	0	-3.3	74.5
8.5	-4	4	-0.3	3	-0.2	89.5
		4	0	0	-1.5	
		5	0.4	5	1.3	83.5
		5	0.5	3	-0.2	60
4	-11	5	0.6	4	0.7	
5	-9	2	-1.9	1	-1.4	73
8.5	-6	5	0.4	3	-0.5	82
		4	-0.2	1	-1.4	
9.5	4					85
		5	0.6	3	0	95
		3	-1.1	2	-0.5	
		3	-1.1	0	-1.7	
		5	0.6	3	0.1	
11	3	6	1.4	3	0	
13	3	5	0.4	6	2.2	89.5
		6	1.5	4	0.7	
		6	1.4	5	1.3	100
		4	-0.1	1	-0.7	
						83.5
		4	-0.2	2	-0.5	
		5	0.4	3	-0.5	76
12.5	6	4	-0.2	1	-1.4	
		3	-1.1	2	-0.7	
11	7	3	-0.8	1	-0.9	
11	5	4	-0.2	1	-1.1	
10	-1	6	1.3	4	0.7	
		3	-0.8	0	-1.5	
		2	-2	1	-1.8	101.5
		6	1.3	5	1.5	89.5
		5	0.6	4	0.7	96
7.5	-2	5	0.6	2	-0.5	
5	-3	2	-1.5	1	-0.7	
5	-11					86.5
5.5	-4					
7	-1	5	0.8	3	0.3	106
4.5	-8	3	-1.1	3	0.1	92.5

STROOW_Z	STROOPC	STROOC_Z	STROCW	STROCW_Z	CAT1	CAT1_Z
0.2	89.5	−0.7	106	0.4	0	0.3
−0.2	103	0.2	90	−0.7	0	0.4
					0	0.3
					1	−4.3
					0	0.2
−0.6	83	−1.2	108	0.5	0	0.2
					0	0.2
−0.1	100	0	73	−1.8	1	−1.9
−1.7	70	−2	73	−1.8	0	0.3
−0.7	79	−1.4	89.5	−0.7	1	−1.9
−1.1	85	−1	82	−1.2	0	0.3
−2.5	71	−1.9	73	−1.8	0	0.3
					0	0.3
−1.8	80.5	−1.3	98.5	−0.1	3	−6.1
−1.2	86.5	−0.9	77.5	−1.5	0	0.3
					0	0.3
−1	103	0.2	106	0.4	0	0.3
−0.3	83	−1.1	90	−0.7	0	0.3
					1	−4.3
					0	0.2
					0	0.3
−0.7	91	−0.6	91	−0.6	0	0.3
0	95.5	−0.3	82	−1.2	0	0.3
−1.1	77.5	−1.5	76	−1.6	0	0.3
−1.6	61	−2.6	77.5	−1.5	0	0.3
					0	0.3
					1	−1.9
					1	−3.1
					0	0.2
					1	−1.9
					0	0.3
0.1	104.5	0.3	83.5	−1.1	2	−4.1
−0.7	82	−1.2	80.5	−1.3	0	0.3
−0.3	92	−0.5	85	−1	0	0.3
					0	0.2
	59.5	−2.7	56.5	−2.9	0	0.4
−0.9	89.5	−0.7	74.5	−1.7	5	−10.6
					0	0.3
0.4	100	0	104.5	0.3	1	−3.1
−0.5	83.5	−1.1	85	−1	0	0.2

CAT2	CAT2_Z	CAT3	CAT3_Z	CAT4	CAT4_Z	CAT5
2	1	2	0.4	9	0.2	1
2	1.1	7	−0.7	1	2	1
8	−1.4	3	0.1	2	1.7	1
1	0.8	4	−0.7	13	−0.9	3
3	0	2	0.2	4	1	0
7	−1.7	2	0.2	0	1.9	2
1	0.8	1	0.7	12	−0.7	2
0	0.8	36	−1.2	30	−2.5	21
1	−0.8	30	−0.9	23	−1.6	25
2	−2.2	33	−1	12	−0.1	19
1	−0.8	11	0.7	15	−0.5	12
0	1	31	−0.9	10	0.2	15
1	−0.6	31	−0.8	19	−1	22
0	0.9	16	0.4	25	−1.8	20
0	1.1	7	1	20	−1.2	20
0	0.8	34	−1.1	8	0.4	12
2	1	2	0.4	11	−0.2	1
0	0.8	31	−0.8	10	0.2	22
7	−1.7	5	−1.2	9	0	2
6	−1.3	5	−1.2	8	0.2	2
0	0.8	6	1.2	2	1.2	9
0	1.1	4	1.3	22	−1.4	16
2	−2.6	21	−0.1	18	−0.9	14
0	1	34	−1.1	27	−2.1	31
0	1.1	9	0.9	4	0.9	5
1	−0.6	11	0.8	27	−2.1	26
0	0.8	14	0.6	18	−0.9	15
9	−1.8	2	0.4	19	−1.9	3
2	0.4	3	−0.3	5	0.8	1
0	1	33	−1	13	−0.2	17
4	0.2	7	−1.2	5	1	0
0	1	12	0.7	19	−1	28
0	1	12	0.7	10	0.2	12
0	0.9	33	−1	13	−0.2	16
10	−3	7	−2.1	11	−0.4	3
10	−1.7	1	1	3	1.6	0
3	−3.8	29	−0.7	17	−0.7	17
7	−1	3	0.1	3	1.5	2
6	−0.6	6	−0.8	0	2.1	2
5	−0.9	2	0.2	12	−0.7	3

CAT5_Z	CAT6	CAT6_Z	CATERR	CATERR_Z	MTRIX	MTRIX_Z
0.7			14	0.6	52	0.3
0.8			10	1.2	57	0.9
0.7			14	0.6	52	0.3
−1.4			22	−0.7	46	−0.5
1.1			9	0.7	63	1.6
−0.5			11	0.5	55	0.6
−0.5			16	0	46	−0.5
					48	−0.3
					48	−0.3
−0.7	12	−2.1	100	−2.3	40	−1.3
−1.5	15	−3.5	94	−2.2	42	−1
−0.5	8	−1	75	−1.1	42	−1
					52	0.3
0.4	4	0.2	43	0.3	51	0.1
0.1	5	0	61	−0.4	50	0
−0.8	9	−1.1	82	−1.4	42	−1
−0.6	9	−1.2	73	−1	41	−1.1
−0.8	4	0.2	51	−0.1	52	0.3
0.6	7	−0.5	61	−0.4	44	−0.8
0.7			16	0.4	46	−0.5
−0.8	9	−1.1	74	−1	54	0.5
−0.5			24	−0.9	48	0.3
−0.5			21	−0.6	53	0.4
					50	0
1	1	1.5	18	1.7	48	−0.3
−0.2	2	0.9	44	0.3	46	−0.5
					44	−0.8
0.1	7	−0.8	62	−0.6	52	0.3
					48	−0.3
−2.2	12	−2.4	104	−2.5	37	−1.6
					48	−0.3
1.4	0	1.5	18	1.6	40	−1.3
−1.4	5	0.2	70	−0.8	44	−0.8
0.2	3	0.9	51	0.1	44	−0.8
−0.9			34	−1.6	44	−0.8
0.3			11	0.5	48	−0.3
−0.2	6	−0.4	70	−0.9	37	−1.6
1.4			16	0.4	62	1.5
−1.8	6	−0.4	67	−0.7	41	−1.1
0.5	4	0.3	38	0.7	39	−1.4
0	8	−0.8	70	−0.8	55	0.6
−1.4			31	−1.7	46	−0.5
1.6			14	0.8	52	0.3
−0.2	11	−2	82	−1.4	39	−1.4
−0.1			15	0.5	48	−0.3
−0.1			15	0.5	63	1.6
−1.4			22	−0.7	42	−1

TR_A_T	TR_A_T_Z	TR_A_E	TR_A_E_Z	TR_B_T	TR_B_T_Z	TR_B_E
12.2	1.2	0	0.3	120.5	−4.2	5
25	−1.2	0	0.3	47	−0.8	0
13	0.8	1	−3	29	0.8	0
15	0.3	0	0.3	55	−1.3	0
18	0.1	0	0.3	49	−0.4	0
60	−5.1	1	−3	283	−13.7	6
23	−0.2	1	−3	44	0.33	1
12	0.8	2	−6.4	31	0.3	0
34.6	−1.7	1	−3	79.99	−1.8	0
33	−1.5	0	0.3	90	−2.4	0
29.03	−1	0	0.3	64.62	−0.9	0
28	−1.7	0	0.3	46	−0.7	0
8.36	1.3	0	0.3	28.31	0.5	1
27.94	−1.3	1	−3	68.53	−1.6	2
17.4	−0.1	0	0.3	41.24	−0.4	1
21	0.1	0	0.3	78	−1.7	1
30	−1.1	0	0.3	103	−3.1	0
21	−0.3	2	−6.4	39	0.2	1
40	−3.1	0	0.3	51	−0.5	0
16	0.4	0	0.3	42	0	1
14	1	0	0.3	36	0.8	1
25	−0.9	0	0.3	132	−5.6	6

TR_B_E_Z	PFIG_T	PFIG_T_Z	PFIG_E	PFIG_E_Z	SCATX_H	SCATXH_Z
	32	1.2	0	2.1	83	0
	25	0.8	0	0.8	34	−4.1
	77	0	0	2.1	87	0.3
	26.84	0.7	0	1.5	68	−2.2
	18	1	0	1.5	74	−1.5
	30.7	0.5	0	1.5	61	−3
	152	−4	2	−1.5	76	−1.3
	56.8	−0.4	0	1.5	85	−0.2
	46.92	−0.1	0	1.5	33	−6.3
−4.5					86	−0.7
0.6					54	−19.8
0.6					90	0.2
	34.99	1.1	0	2.1	80	−0.3
0.6					87	−1.4
0.6					82	−4.2
−5.5					86	−0.7
−0.5					83	−1.5
0.6					73	−9.2
0.5					77	−3.2
	23	1.5	0	2.1	87	0.3
0.5					82	−1.8
	152	−4	1	0	54	−3.8
	22	0.9	0	1.5	70	−2
	52.11	−0.3	0	1.5	65	−2.6
0.5					82	−1.8
0.6					90	0.2
	35.88	0.4	0	1.5	84	−0.3
−1.1					90	0.2
	25.41	0.8	0	0.7	87	0.4
−1.9					80	−5.3
	40.72	0.2	0	1.5	81	−0.7
−1.1					79	−5.9
−0.5					88	−0.2
0.5					84	−1.3
	55	0.6	1	0.6	75	−0.7
	31	0.5	0	1.5	86	−0.1
−0.7					86	−2
	70	0.2	3	−2.4	57	−2.2
0.6					87	−1.4
−0.7					80	−5.3
−0.5					84	−1.3
	27	0.7	0	1.5	39	−5.6
	29	0.7	0	0.7	52	−5.6
−6.9					68	−12
	38	1.1	4	−3.8	70	−1.1
	28	1.3	0	2.1	89	0.5
	87	−1.5	0	1.5	88	0.1

SCATX_F	SCATXF_Z	SCATX_R	SCATXR_Z	SCATX_V	SCATXV_Z	SCATAX_H
53	−6.8	710.78	1.9	129.06	0.8	75
3	0	998.79	−2.6	245.54	−3.2	31
1	0.3	826.47	−0.9	161.94	−0.3	82
31	−7.5	846.69	−2.3	214.13	−3.4	71
68	−17	726.24	0.3	185.92	−2.3	76
50	−12.4	722.7	−0.3	164.4	−1.4	53
4	−0.5	800.66	−1.6	203.51	−3	51
12	−2.5	667.96	0.5	108.87	0.8	77
66	−16.5	775.97	−1.2	279.54	−6	41
0	0.4	714.9	−0.4	157.97	−1.5	72
7	−1.4	764.24	−2.5	170.37	−2.5	73
6	−1.2	613.33	0.1	103.59	−0.1	87
1	0.3	847.54	−1.2	142.14	0.4	51
4	−0.7	575	0.7	83.33	0.6	87
3	−0.4	695.36	−1.2	163.7	−2.3	80
11	−1.9	583.29	1.2	104.3	0.5	83
0	0.4	773.47	−1.8	145.66	−1	39
47	−11.3	693.64	−1.3	183.91	−3	69
24	−4.5	919.35	−2.9	213.83	−3.5	69
1	0.3	718.11	0.4	87.95	2.2	71
4	−0.4	942.86	−4.5	193.17	−2.8	67
150	−38.3	718.51	−0.3	247.28	−4.7	59
32	−7.7	671.97	0.4	148.2	−0.8	75
5	−0.7	831.37	−2	188.38	−2.4	74
13	−2.3	727.57	−0.6	135.48	−0.6	78
2	−0.2	720.33	−1.7	126.89	−0.9	87
7	−1.2	758.14	−0.2	172.86	−1.8	80
1	0.1	568.79	0.8	81.12	0.7	90
9	−1.5	694.16	0.9	143.05	0.4	84
18	−4.1	749.41	−2.2	174.65	−2.7	10
39	−9.5	805.78	−1.6	205.48	−3	77
2	−0.2	807.35	−3.2	201.77	−3.6	81
4	−0.4	680.56	0	135.66	−0.7	87
0	0.4	864.34	−3.3	178.69	−2.2	80
34	−4.2	693.88	0.8	190.95	−1.3	61
3	−0.2	675.59	1	128.98	0	79
0	0.3	771.51	−1.2	180.6	−2.9	77
164	−22	692.89	2.2	212.25	−2	70
18	−4.1	624	0.8	118	−0.6	85
6	−1.2	654.32	−0.6	141.99	−1.5	79
6	−0.9	789.33	−2.1	171.2	−2	61
50	−12.4	839.79	−2.2	184.67	−2.2	28
20	−4.1	718.19	0.7	171.39	−0.8	69
2	−0.2	680.18	0	166.8	−2.4	70
80	−10.5	735.26	0.2	141.28	0.4	23
22	−2.6	686.75	2.2	146.86	0.2	86
3	−0.2	786.1	−1.3	183.88	−2.2	51

SCATAXHZ	SCATAX_F	SCATAXFZ	SCATAX_R	SCATAXRZ	SCATAX_V	SCATAXVZ
−0.2	43	−3.6	401.5	3.5	147	0.9
−2.3	1	0.3	682.7	0.2	162.04	0.5
0.2	7	−0.3	613.73	0.2	186.69	−0.3
−0.7	32	−3.4	607.54	0.1	229.43	−1.7
−0.4	4	−0.1	632.28	0.7	278.82	−3.1
−1.8	23	−2.3	382.8	2.6	107	1.8
−1.9	10	−0.8	600.88	0.2	263.78	−2.7
−0.3	8	−0.6	522.98	1	228.66	−1.7
−2.5	15	−1.4	655.54	−0.4	213.63	−1.3
−1.1	20	−2.3	629.17	−0.6	226.45	−1.7
−2.4	8	−2	458.21	0.9	80.36	1.3
0	7	−1.7	502.86	0.4	213.59	−2.7
−1.3	20	−1.5	513.8	0.9	193.26	−0.5
0	4	−0.8	454	0.9	94.83	0.9
1.2	8	−2	491.85	0.5	124.65	0
−0.1	5	−0.3	497.49	0.8	148.16	0.1
−4	5	−0.3	578.92	0	208.57	−1.3
−3.1	40	−11.5	677.07	−1.3	317.97	−5.9
−1.4	89	−11.8	656.71	−0.9	218.9	−1.6
−0.4	16	−1.1	472.46	1.3	165.5	0.4
−1.6	1	0.2	726.11	−1.4	199.87	−1.1
−1.4	92	−10.6	492.79	1.4	261.85	−2.6
−0.4	22	−2.2	493.74	1.4	174.71	−0.1
−0.5	21	−2.1	691.43	−0.8	242.38	−2.1
−0.6	24	−2.9	457.12	1.3	194.54	−1
0	9	−2.3	482.82	0.6	167.41	−1.3
−0.1	2	0.2	629.75	0.7	223.393	−1.5
0.5	0	0.3	562.91	−0.2	92.57	1
0.5	23	−3.3	579.37	0.6	220.27	−0.8
−13.3	29	−8.2	602.09	−0.6	231.17	−3.2
−0.3	19	−1.9	708.56	−1	227.6	−1.7
−1.1	3	−0.6	689.01	−1.5	188.14	−1.9
0.2	6	−0.4	552.52	0.2	143.27	0.3
−0.4	4	−0.2	802.61	−2.1	230.88	−1.8
−0.8	13	−0.8	568.47	0.5	230.92	−1.6
−0.2	8	−0.6	540	1.9	188.36	−0.5
−1.8	3	−0.6	623.1	−0.3	174.67	−1.5
−0.4	64	−5.5	798.4	−1.2	235.52	−1.7
−0.4	34	−9.7	373	2.5	90	1
−1.4	23	−6.5	606.87	−0.6	225.23	−3.1
−2.1	36	−4.5	790.2	−2.3	349.1	−2
−3.3	2	0.2	764.71	−1.6	243.93	−2.1
−0.3	33	−5.1	469.93	1.9	173.12	0.3
−3	51	−14.8	507.13	1	224.35	−3
−2.6	197	−17.7	627.65	0	291.7	−3.4
0.3	64	−5.5	564.53	1.6	216.36	−1.2
−1.9	21	−2.1	538.14	0.9	194.22	−0.7

SCATC_H	SCATC_HZ	SCATC_F	SCATC_FZ	SCATC_R	SCATC_RZ	SCATC_V
158	−0.1	96	−5.9	556.14	3.2	138.03
65	−3.2	4	0.2	840.75	−1.2	203.79
169	0.2	8	−0.1	719.5	−0.3	
139	−1.3	63	−5.5	727.12	−1.1	221.78
150	−0.8	72	−6.3	679.26	0.5	232.39
114	−2.3	73	−6.4	552.8	1.7	135.7
127	−1.8	14	−0.8	700.89	−0.6	233.64
162	−0.3	20	−1.4	595.48	1	186.77
74	−4	81	−7.2	715.75	−0.9	246.59
158	−1.2	20	−1.5	672.03	−0.6	192.21
127	−8.7	15	−2	613.72	−0.4	125.36
177	0	13	−1.7	558.1	0.3	158.59
131	−1	21	−0.9	680.67	0.1	167.7
174	−0.5	8	−0.9	514.43	0.9	94.57
162	−2.6	11	−1.4	593.6	−0.2	144.18
169	−0.3	16	−1.1	540.36	1.1	126.23
112	−4.6	5	−0.1	676.2	−0.8	117.11
142	−6.1	87	−13.4	685.36	−1.4	250.94
146	−2.1	113	−10.4	788.03	−2.1	216.37
158	−0.1	17	−0.7	595.29	0.9	126.72
149	−1.8	5	−0.1	834.44	−3	196.52
113	−2.4	242	−22.5	605.65	0.8	254.56
145	−1	54	−4.6	582.85	−1.2	161.45
139	−1.3	26	−1.9	761.4	−1.6	215.38
160	−1	37	−3.1	592.35	0.5	165.01
177	0	11	−1.4	601.58	−0.3	147.15
164	−0.2	9	−0.3	693.946	0.3	198.127
180	0.6	1	0.2	565.85	0.2	86.85
171	0.5	32	−3	636.76	0.8	181.66
90	−15.2	47	−7.1	676.16	−1.3	202.91
158	−0.5	58	−5	757.17	−1.5	216.54
160	−2.9	5	−0.4	748.18	−2.3	194.955
175	0.1	10	−0.5	616.54	0.1	139.46
164	−0.7	4	0	833.83	−3	
136	−0.9	47	−2.6	631.17	0.6	210.93
165	−0.2	11	−0.5	608.5	1.5	152.67
163	−2.4	3	−0.1	697.63	−0.7	177.63
127	−1.2	228	−14.6	745.64	0.3	223.88
172	−0.8	52	−7.8	498.94	1.8	104.34
159	−3.1	29	−4.2	630.84	−0.7	183.61
145	−2.1	42	−3.6	789.8	−2.4	260.16
67	−4.3	52	−4.4	802.25	−2.2	214.3
121	−1.8	53	−5.5	594.06	1.3	172.25
138	−6.8	53	−8	593.65	0.6	195.57
93	−2.3	277	−17.9	681.45	0.1	216.49
175	0.4	86	−5.2	625.64	2.2	181.61
139	−1.3	24	−1.8	662.12	0	189.05

SCATC_VZ
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