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by

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Abstract

The purpose of this study is to examine how concurrently valid a questionnaire of everyday memory is with several formal tests of memory. Memory questionnaire development was at an all time high in the late 1970's and early 1980's. During the mid 1980's there was an absence of interest in memory questionnaires as is evidenced by an absence of the topic in the literature. The questionnaires developed in the late 1970's and early 1980's yielded such varying results that it calls into question the reliability of both the memory questionnaires and the results of the studies that utilized them. A need for a reliable questionnaire with good psychometric properties that can be normed and shown to be valid is present in the literature. Of twelve existing questionnaires of everyday memory, the Everyday Memory Survey (EMS) has yielded better psychometric results than the others. In order to further study the psychometric properties of the EMS, this examiner administered the EMS, the Rivermead Behavioral Test of Memory-2nd Ed. (RBMT-2) and the Wide Range Achievement Test (WRAT-3), and the Wide Range Assessment of Memory and Learning 2nd Edition (WRAML-2*)* to 73 subjects, 51 who completed the entire battery and 22 who completed portions of the test battery. It was hypothesized that the EMS would be found to be concurrently valid with the RBMT-2 and the WRAML-2. This hypothesis was not fully supported. Specifically, only the EMS-observer form correlated with the RBMT-II however, both the EMS self and the EMS observer correlated with the WRAML-2 scores. Interestingly, the EMS-self and the EMS-observer forms did not correlate. For the EMS observer to correlate as well as it did with the WRAML-2 and the RBMT-2 is impressive. The EMS has potential as an assessment tool when used in the right setting and with the right population.

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Chapter 1

Introduction

The use of large-scale psychometric tests to assess memory, whether everyday memory or long-term memory, is an effective assessment strategy. However, they can be a burden on the administrator in terms of the costs of time and materials and these costs ultimately are passed on to the test subject. In efforts to find less expensive memory assessments, some psychologists have turned to the use of questionnaires. The use of questionnaires seems at first glance to have its own set of problems. For example, responses to questionnaires are effected by subject variables such as depression, bias and a lack of standardization. However, some apparent weaknesses can also be strengths. While the relative paucity of items on a questionnaire may cause them to appear lacking in psychometric integrity, their relatively brief nature can also be a strength. Questionnaires tend to be shorter than formal task-bound tests purporting to measure the same construct or constructs, which places less strain on those who may find a lengthy assessment burdensome. The need for efficient instruments at a reasonable cost is reflected in the literature as evidenced by the numerous attempts to generate memory questionnaires.

There have been numerous studies evaluating the accuracy of questionnaires designed to assess memory. Early concerns with the accuracy of memory questionnaires were based on findings that showed inconsistent correlations between ratings provided by the individual and actual performance on formal tests of memory (Kahn, Zarit, Hilbert, & Niederehe, 1975). It has been hypothesized that the inconsistent ratings might be due to depression, or "negative affect"

(Kahn et al., 1975). Studies have been done in an effort to better understand the relationship between memory and depression. The information gathered from these studies has given researchers a firmer grasp on the nature of the interaction and hence an understanding of how to craft instruments that measure actual memory.

In order to assess the effect of depression on memory Burt, Zembar and Niederehe (1995) conducted a meta-analysis of 48 recognition and 99 recall studies on both depressed (clinically significant), and non-depressed subjects and found depression and memory impairment to be significantly related, but that the nature of the relationship is complex and is inconsistent across studies. The complexity seems to be related, at least in part, to the nature of the stimuli to which subjects are asked to respond. Specifically, depressed subjects are able to recall just as well as non-depressed subjects on negatively and neutrally valanced stimuli, but they perform considerably worse than non-depressed subjects on positively valanced stimuli (Breslow, Kocsis, & Belkin, 1981). It may be that depressed subjects are simply attending more to the negative stimuli, and therefore they remember negative stimuli more easily. This type of relationship does not mean that depression will impact all memory tests equally; however, it does suggest that when developing a questionnaire, one should consider avoiding negative wording of the questions and also include an evaluation of the degree of depression in the client to minimize confounding variables such as mood fluctuations.

Depression has additional effects on memory. For example, results of several studies suggest that for depressed subjects there is a positive correlation between retention interval and memory impairment and also between the amount of cognitive effort and memory impairment (Cohen, Weingartner, Smallberg, Pickar, & Murphy, 1982; Weingartner, Cohen, Murphy, Martello, & Gerdt, 1981). These findings suggest that the developer of a memory questionnaire should also pay attention to the length of a questionnaire and the amount of concentration required to complete it if depressed persons are to be administered the instrument.

An additional consideration when developing a memory questionnaire is the impact meta-memory can have on an individual's ability to self-rate on questionnaires of memory. Questionnaires assume an individual's accuracy in assessing her/his own memory abilities. There is some evidence to suggest one's ability to accurately estimate one's own memory capacity is related to developmental trends. Specifically, Yussen and Levy (1993) demonstrated that preschoolers overestimate their memory abilities, and that their actual and predicted abilities converge around third grade. By college, most person's judgments were very accurate. Anooshian, Mammarella and Hertel (1989) found that compared to young participants, older adults performed worse in tasks for which they were asked to make a judgment about a specific item in their memory. Their judgments were used to assess their ability to accurately estimate meta-memory. Bruce, Coyne and Botwinick (1989) found that there was no difference between young and old subjects in the accuracy of their predictions even though older subjects recalled less than did younger subjects. According to these studies it appears that both older subjects and young children tend to overrate their abilities. A study by Rebok and Blacerak (1989) showed that older adults tended to over-estimate their memory abilities while younger adults tended to under-estimate their memory abilities. Some investigators suggest that an individual's implicit theories about memory capacity as one ages may be responsible for at least some decline in older subject scores on memory self-accuracy tasks (McDonald-Miszczak, Hertzog & Hultsch, 1995). Hertzog, Dixon and Hultsch (1990) conducted a study in which they provided support for the idea that memory-monitoring processes are partially founded on individual's memory self-accuracy beliefs. Their study revealed that the level of memory self-accuracy was correlated with the individuals' predictions of their level of recall on list items. Lachman and Leff (1989) conducted a study analyzing data from a five-year longitudinal study and concluded that performance has a significantly greater effect on self-accuracy than self-accuracy does on performance. Berry, West and Dennehey (1989) found evidence that self-accuracy both influences and is influenced by performance. This is pertinent because when developing a memory questionnaire one must be careful not to rely entirely upon the judgment of the individual who is completing the questionnaire.

Studies differ considerably in their claims about how well individuals are able to estimate their own memory abilities. One begins to question why the literature is so varied. One reason for such inconsistency is the psychometric quality of the questionnaires being used. Berry et al. (1989) attribute such erratic findings to absent or low instrument reliability. Similarly, McDonald-Miszczak et al. (1995) suggest that the weak validity of memory questionnaires is likely the major reason studies yield such differing results when attempting to estimate memory abilities. Here are twelve questionnaires designed to tap into everyday memory: The Inventory of Memory Experiences (IME) (Herrmann & Neisser, 1986), the Short Inventory of Memory Experiences (SIME) (Herrmann, 1986), the Metamemory Questionnaire (MQ) (Zelinski, Gilewski & Thomas, 1986), the Memory Functioning Questionnaire (MFQ) (Gilewski, Zelinski, Schaie & Thompson, 1986), the Wadsworth Memory Questionnaire (WMQ) (Goldberg, Syndulko, Lemon, Montan, Ulmer & Tourellotte, 1986) and the Memory Self Report (MSR) (Riege, 1982). Others include the Everyday Memory Questionnaire (EMQ) (Sunderland, Harris & Baddeley, 1986), Metamemory in Adulthood (MIA) (Dixon & Hultsch, 1986), the Memory Questionnaire (MQ) (Perlmutter, 1986), the Memory Complaints Questionnaire (MCQ) (Zarit, Cole, & Guider, 1986), the Metamemory Questionnaire (MQ) (Niederehe, Nielsen-Collins, Volpendesta & Woods, 1986) and the Self-Assessment of Memory Questionnaire (SMQ) (Hulicka, 1986). Psychometric data related to these questionnaires can be reviewed in Table 1. With such a great deal of unreliability in the vast majority of questionnaires and a lack of new questionnaires, it seems that a new generation of memory questionnaires is needed.

The development of a new generation of memory questionnaires should be conducted with careful consideration as to their psychometric properties. The Everyday Memory Survey (EMS) is a questionnaire of everyday memory that has shown promising results in its development thus far. The EMS has a self-report form (Adult Self-Report) and an observer form (Adult Observer) and both are designed for persons between the ages of 20 to 89. The self-report is filled out by the individual being rated, while the observer report is filled out by someone who knows the person being rated. A score is then calculated for both versions of the questionnaire. The two forms of the EMS were designed to offset possible problems with self-rating discussed earlier, and it should help make the EMS more reliable when testing subjects who may overrate or underrate their memory abilities. The EMS also has a 3-item depression scale designed to alert the examiner to the possible confounding effects of depression upon the survey outcome.

The preliminary reliability for the EMS is impressive with an adult self-report reliability alpha coefficient of .94 and an adult observer reliability alpha coefficient of .96. The depression scale in the Adult Self-Report form yielded a reliability alpha coefficient of .60, while the Adult Observer form yielded a correlation coefficient of .52 (Hall & Adams, 2004). Split half reliability for the adult self-report form was .90 while the split half reliability for the adult observer form was .93 (Hall & Adams, 2004).

The EMS appears to be sensitive to the possible confounding effects of depression and age-related cognitive decline, just as a formal test of memory would be. The norming of the EMS revealed that those who were depressed scored significantly worse than non-depressed subjects, and at the .001 level of confidence revealed a significant difference between younger and older test subjects showing that the EMS is capable of detecting well-known developmental trends in memory (Hall & Adams, 2004).

Test-retest and inter-rater reliability are two important forms of reliability to be established, but another more ambitious goal would be to assess concurrent validity with a formal test of memory such as the Rivermead Behavioral Test of Memory 2nd Ed (RBMT-2).

The RBMT-2 was chosen because it is a formal memory test designed to test everyday memory by asking the subject to employ behavioral memory skills. Test items reflect everyday memory scenarios such as remembering an appointment or the location of an item. It is the purpose of this study to assess concurrent validity of the Everyday Memory Survey (EMS) (Hall & Adams, 2004), and the RBMT-2. It is hypothesized that the EMS will show significant concurrent validity with the Rivermead Behavioral Test of Memory 2nd Edition.

Chapter 2

Methods

Participants

Participants were recruited from George Fox University, Pacific University and the general public in Oregon. Of those who were approached, 73 persons agreed to participate. The number of subjects who participated in the study was 73. Of these 73 participants, 51 participants completed the entire test battery. This resulted in a final sample of 73 subjects, 51 who completed the entire battery and 22 who completed portions of the test battery. There was general non-uniformity among the 22 participants who completed partial test batteries. Some completed all tests yet failed to return the EMS observer form. Some either did not have the time or chose not to complete the WRAML-2. The results section will cover in more detail which tests are missing what data and why.

Most participants were EuroAmerican (91.5%), women (61%), and all spoke English (100%). Demographic variables for the sample are summarized in table 1. Subjects ranged in age from 18 to 85 years old. The exclusionary criteria for this study were based on the demands of the EMS and the Rivermead Behavioral Test of Memory 2nd Edition (RBMT-2), thus no one who was blind, or who had significant brain damage or hearing impairment was allowed to take part in the study. Of the 73 participants, 17 reported having some sort of head injury. Of those 17, 8 reported loss of consciousness due to the head injury. All head injuries were historical and sequelae were subjectively reported by the participant to be non-existent. Finally, anyone who read at a level lower than grade 6.8, as determined by the Wide Range Achievement Test, 3rd Edition, was excluded from the study. No participants were excluded for these reasons. Of the 73 participants 14 were age 65 or older while 59 participants were under age 65. Of the participants who were age 65 or older 13 had education through the 12th grade while one had an education through the 10th grade. Of the participants who were under age 65 only 6 had and education that was up to the 12th grade or less, while 53 participants under age 65 had some amount of college education. The most frequently occurring ages were mid twenties to early thirties. This group of participants also included the most highly educated people, most of whom attained a graduate level education.

Materials

Demographic Questionnaire. The demographics questionnaire includes age, gender, preferred language, and ethnicity. Also included is the question of what current medications participants are taking, if the participant has had a head injury that caused loss of consciousness and whether the participant subjectively feels their injury has had any impact on their ability to function. The demographics questionnaire is designed not only to provide correlative grist for the mill, but also to help identify individuals who might not be appropriate for the study. For example, anyone who had a head injury was not immediately excluded from the study unless there was significant damage that had a lasting effect on their ability to function. Anyone who spoke English as a second language was not immediately excluded from the study, but had the chance to take the WRAT-3 reading sub-test, as everyone who participated did, in order to determine if they met the minimal reading ability of grade level 6.8.

Wide Range Achievement Test (WRAT-3). In order to determine whether a participant's reading ability functioned at the minimal required grade level of 6.8, the WRAT-3 reading subtest was administered. Anyone who did not meet this minimal requirement was disqualified from participation. The WRAT-3 test-retest reliability is .91. Reading and Spelling sub-scores correlate .65 to .72 with WISC-III Verbal IQs. The WRAT-3 was always administered before the memory battery.

Rivermead Behavioral Memory Test 2nd Edition (RBMT-2). The development of the RBMT-2 did not follow classical memory theory but instead was designed to mimic the everyday memory challenges faced by people (Paolo, 1991). The RBMT-2 was designed to test subjects ranging in age from 11 to "elderly adult" and requires approximately 30 minutes to complete (Wilson, Cockburn, & Baddely, 1991). The RBMT-2 is designed to test poor memory and as such the performance ranges reflect this. The performance ranges are as follows. From 0-9 is considered severely impaired, from 10-16 is considered moderately impaired, from 17-21 is considered poor memory, and from 22-24 is considered normal (Wilson, Cockburn, Baddely, Hiorns, & Smith, 1991). The standard score yielded by the RBMT-2 is not age corrected therefore individuals of different age groups will be compared against the entire normative sample, not against age matched peers. The RBMT-2 has subtests of memory that include remembering a name, recalling a new route (immediate and delayed), remembering a newspaper article (immediate and delayed), remembering to ask about the next appointment at a predetermined point during the test, being required to remember to deliver a message, face and picture recognition, and orientation to date questions (Sbordone & Long, 1996). The RBMT-2 has test-retest reliability of .78-.85 and has no validity reported other than that face validity, based on observations made by family and therapist (Paolo, 2001). Additionally, the RBMT-2 was found to correlate moderately from 0.20 to 0.63 with the following tests: the Warrington Recognition Memory Test, digit span, Paired Associate Learning Test and the Corsi Block Span

(Paolo, 2001). More specifically, the RBMT-2 was found to correlate with the Warrington Recognition Memory Test for Words (r =0.63), the Warrington Recognition Memory Test for Faces (r =0.43), digits forward (r =0.30), digits backward (r =0.27), the paired-associate learning subtest of Randt, Brown and Osborne (r =0.62), and the Corsi Block Span (r =0.28) (Wilson, Cockburn, Baddely, Hiorns, & Smith, 1991). The RBMT-2 has been labeled a "good choice" for evaluating persons with known brain dysfunction. It is utilized in this study because it is the only formal test of memory designed and purported to measure everyday memory (Paolo, 2001).

Wide Range Assessment of Memory and Learning 2nd Edition (WRAML-2). The EMS was co-normed with the WRAML-2 for 100 participants. The WRAML-2 has excellent psychometric properties. Due to the excellent psychometric properties of the WRAML-2, it was chosen as a comparison for the RBMT-2 and the EMS. Chronbach's coefficient alpha was used to determine the internal consistency reliability, which ranges from .86 to .93 for the screening memory and the general memory indexes (Adams & Sheslow, 2003). Intercorrelation of the screening memory index with the general memory index is impressive at .91 (Adams & Sheslow, 2003). In the interest of time management and maintaining the interest of the participants, only the screening memory index sub-tests will be used. The sub-tests which comprise the screening memory index are story memory, design memory, verbal memory and picture memory.

Everyday Memory Survey (EMS). The EMS was designed for subjects ranging in age from 18 years to 89 years. The preliminary reliability statistics for the EMS were impressive with an adult self-report reliability alpha coefficient of .94 and an adult observer reliability alpha coefficient of .96. The depression scale (of only 3 items) in the adult self-report form yielded a reliability alpha coefficient of .60, while the adult observer form yielded a correlation coefficient of .52 (Hall & Adams, 2004). Split half reliability for the adult self-report form was .90 while the split half reliability for the adult observer form was .93 (Hall & Adams, 2004). The EMS consists of 40 questions, reads at an approximate grade level of 6.8, was co-normed with the WRAML2 and requires no further administrator/subject interaction once the initial instructions have been given and testing has begun (Hall & Adams, 2004). Validity for the EMS is also impressive. Face validity was determined through the use of focus groups. The end result was a 100% agreement between panel members as to the final survey questions to be included (Hall & Adams, 2004). Concurrent validity was established by demonstrating a correlation between EMS and WRAML-2 index scores. When high scores on the WRAML-2 were included (index scores of 126 and above) the correlation between the EMS self and the general memory index for the WRAML-2 was ($r = 0.13$) and for the EMS observer it was ($r = 0.062$) (Hall & Adams, 2004). When high scores on the WRAML-2 were excluded the correlation between the EMS self and the general memory index of the WRAML-2 was ($r = 0.51$) and for the EMS observer it was ($r = 0.61$) (Hall & Adams, 2004). Significantly large effect sizes were demonstrated for the EMS when comparing individuals with head injury to those without a head injury (Hall & Adams, 2004).

Procedure

Subjects from the university sample were contacted through psychology graduate students about the possibility of being included in a study and the chance to enter into a raffle to win money. Subjects from the general community were also contacted through psychology graduate students. The subjects from the general community sample were tested in their homes or offices. Elderly participants from the community were tested in their own place of residence, if they were living independently, or in a private room somewhere within the facility if they were not living alone. All subjects were tested at a time they identified as being convenient for them. All assessments were conducted by graduate students who were trained in the administration of these measures. Each subject was given a consent form at the first meeting with the test administrator, and it was read and explained to him or her. Following the explanation of the consent form and ethical rights, a basic explanation of the tests was provided.

Testing began by having each subject respond to the demographics questionnaire and WRAT-3 as they were needed. While the subject was responding to the demographics questionnaire, the administrator set up the appropriate test materials and waited for the subject to finish. The order of the WRAML-2, the EMS-self, and the RBMT-2 was counterbalanced across participants. Upon completion of each test, subjects were offered the opportunity to take a break or to ask questions about the next test. After the break, the next test was administered. After the WRAML-2, the EMS-self, and the RBMT-2 were completed, participants were provided with the EMS-observer form and asked to have someone who knew them well answer the questions. Total testing time was approximately 40-50 minutes per person. Subjects were contacted in the following week to arrange a time to collect the completed EMS-observer form. After all testing was completed, the participants in the study were entered into a drawing for $300, winners were identified and contacted, and the prizes distributed.

Chapter 3

Results

The number of subjects who participated in the study was 73. Of these 73 participants, 51 participants completed the entire test battery. Among the remaining 22 participants, there was very little uniformity in terms of portions of tests completed. Of these 22 participants with some missing data, 9 were missing the picture memory subtest of the WRAML-2. Therefore, of the 73 participants who took the WRAML-2 only 64 will have standard scores for the memory screening index. There will be some apparent inconsistencies in the data for the EMS forms, but these can be easily explained. Four participants will have a raw score but no standard score for the EMS self. Two participants were able to receive a raw score but no standard score for the EMS self because the normative data for the EMS simply did not accommodate for their age. Two other participants who were old enough to receive a standard score for the EMS self did not because their raw score was high enough that it could not receive a standard score. The gaps in the EMS standardization made some high raw scores impossible to convert to standard scores because the normative data have not yet undergone a statistical smoothing process (Hall & Adams, 2004). Therefore, there will be 73 participants included in data analysis for EMS self raw scores but only 69 participants for the EMS self standard score. Due to the gaps in the EMS standardization there will be 2 participants who were unable to receive a standard score for the EMS observer form as well. Out of the 73 total participants, 20 did not return the EMS observer forms and 2 were unable to receive a standard score but were able to receive a raw score. Therefore, there will be 53 participants raw scores included for data analysis for the EMS observer and 51 participants for EMS observer standard scores. Data collected for the 51 participants who completed the entire battery included both raw and standard scores for the Wide Range Assessment of Memory and Learning Second Edition (WRAML-2), the Rivermead Behavioral Memory Test Second Edition (RBMT-2), the Everyday Memory Survey self-rating form (EMS-self), and the Everyday Memory Survey observer-rating form (EMS-observer). The remaining 22 participants' data yielded a non-uniform collection of both raw and standard scores for the various tests used in the battery. In summary, there is data for 51 subjects who completed all tests in their entirety and data for 22 remaining subjects who completed portions of various tests. Additional demographic information was gathered for the entire sample population including age, gender, ethnicity, whether the subject had ever incurred a head injury, loss of consciousness due to head injury, years of education and medications.

Descriptive Statistics

The descriptive statistics for the demographic variables of the 73 subjects are shown in Table 1 listed as "Entire Sample." The descriptive statistics for the 67 subjects who scored below 126 on the WRAML-2 are also listed in Table 1 as "Ss with WRAML-2 < 126" The reason for excluding WRAML-2 scores of 126 and above will be discussed later in this chapter. The means and standard deviations (raw scores) of the entire sample and participants who scored below 126 on the WRAML-2 can be found in Table 2a, while the means and standard deviations (standard scores) of the entire sample and for participants who scored below 126 on the WRAML-2 may be found in Table 2b.

Table 1

Demographic data for the study sample.

	For Entire Sample			For Ss with WRAML-2 < 126		
	Mean	*SD*	*n*	Mean	*SD*	*n*
Age	40.00	20.60	73	40.96	20.90	67
Yrs Ed.	15.05	2.58	73	15.00	2.63	67
EMS.self depression	6.37	1.74	73	6.52	1.71	67
EMS.observer depression	6.21	2.04	53	6.40	2.04	47
	% Yes	% No	*n*	% Yes	% No	*n*
Female	57.5	42.5	73	44.8	55.2	67
TBI	23.3	76.7	73	25.4	74.6	67
Unconscious	12.3	87.7	73	13.3	86.6	67
English	100	0	73	100	0	67
EuroAmerican	90.4	9.6	73	91	9	67

Correlation Matrices

The correlation matrix showing the relationships among the standard scores for the following tests WRAML-2, RBMT-2, EMS self, EMS observer & WRAT-3 can be found in Table 4a. The

Table 2a

Descriptive statistics for raw scores on all instruments and sub-scales.

	For Entire Sample			For Ss with WRAML2 < 126		
	Mean	*SD*	*n*	Mean	*SD*	*n*
WRAML2 story	42.70	16.48	70	40.36	15.02	64
WRAML2 design	33.49	12.47	73	31.90	11.68	67
WRAML2 verbal	39.26	10.31	73	38.40	10.12	67
WRAML2 picture	30.38	9.60	64	28.95	8.93	58
S subscales WRAML2	144.20	42.34	64	137.19	37.92	58
RBMT	77.56	12.52	73	75.72	11.04	67
EMS-self	74.16	17.35	73	75.61	17.30	67
EMS-self depression	6.37	1.74	73	6.52	1.71	67
EMS-observer	68.87	22.62	53	70.53	23.37	47
EMS-observer depression	6.21	2.04	53	6.40	2.04	47
WRAT3	52.68	4.31	73	52.40	4.38	67

Table 2b

Descriptive statistics for standard scores on all instruments.

	For Entire Sample			For Ss with WRAML-2 < 126		
	Mean	*SD*	*n*	Mean	*SD*	*n*
WRAML2	104.23	16.99	64	100.57	13.08	58
RBMT	21.05	2.83	73	20.82	2.83	67
EMS-self	103.39	11.52	69	102.22	11.27	63
EMS-observer	105.16	11.77	51	104.31	12.11	45
WRAT3	112.21	7.61	73	111.61	7.65	67

WRAML-2 correlated significantly at the 0.01 level with the RBMT-2 ($r = 0.56$) and the WRAT-3 ($r = 0.34$). The WRAML-2 also correlated at the 0.05 level with the EMS self ($r = 0.31$) and with the EMS observer ($r = 0.31$). In addition to correlating with the WRAML-2, the RBMT-2 correlated at the 0.01 level with the EMS observer ($r = 0.38$) but not with the EMS self. The RBMT-2 also correlated with the WRAT-3 ($r = 0.42$). Additionally, the WRAT-3 correlated at the 0.05 level with the EMS self ($r = 0.29$) but not with the EMS observer. It is also interesting to note that the EMS-self and EMS-observer are not significantly correlated for this sample.

The correlation matrix showing the relationships among the variables of age and raw scores for the EMS-self, EMS-observer, and RBMT-2 and WRAML-2 memory screening index and its sub-tests is shown in Table 4b. There was a significant negative correlation between the WRAML-2 screening memory raw index scores and the EMS self raw scores ($r = -0.32$), the

Table 3

Characteristic standard score cut-off scores and their frequencies for the WRAT3, WRAML2, EMS-self, EMS-observer, and RBMT2.

	Performance Classifications				
	Borderline	Low Average	Average	High Average	Superior
Range of scores	70-79	80-89	90-109	110-119	120-129
n = WRAT3	0	2	20	39	0
n = WRAML2	4	6	32	12	0
n = EMS-self	0	9	38	15	0
n = EMS-observer	0	5	25	14	0
	Severely Impaired	Moderately Impaired	Poor Memory	Normal	
Range of scores	0-9	10-16	17-21	22-24	
n = RBMT2	0	7	27	39	

EMS observer raw scores (r = -0.55) and age (r = -0.72). There was a significant positive correlation between the WRAML-2 screening memory raw index scores and the RBMT-2 (r = 0.73) as well as the WRAT-3 (r = 0.44). The general correlation trend for the subscales of the

WRAML-2 were as follows. The RBMT-2 and the WRAT-3 correlated positively with all subscales of the WRAML-2 screening memory index. Age, the EMS self and the EMS observer correlated negatively with all subscales of the WRAML-2 screening memory index. An interesting finding was that age was negatively correlated with all tests and subscales except for the two forms of the EMS. Age correlated positively with the raw scores for the EMS self (r = 0.31) and with the EMS observer (r = 0.60) suggesting that as people got older their raw scores increased. Higher raw scores on the EMS mean poorer performance because they are scored on a Likert scale where higher numbers are mean the participant is rating themselves worse. Only upon conversion to a standard score does an increase in score mean better performance. The WRAT-3 correlated negatively with the EMS self (r = -0.42) and the EMS observer (r = -0.46). An interesting difference between Tables 3a and 3b is that the two forms of the EMS correlate (r = 0.56) when comparing raw scores (Table 3b) but do not correlate when standard scores are compared (Table 3a).

Additional Analyses

Formal tests of memory traditionally employ cut off scores, which provide ranges of classification for performance such as average and above or below average. The classification ranges created by the cut off scores for the tests used in this study may be found in Table 3. When looking at Table 3, the RBMT-2 scores are strongly skewed with 39 of the 73 participants scoring in the average range. The RBMT-2 skew may be a function of the design of the RBMT-2 and the participant population. The RBMT-2 was designed to be sensitive to severe memory impairment up to and including normal memory abilities, while the population tested were predominantly within normal limits. In an attempt to counteract any ceiling effects created by the skew of the RBMT-2 sample, an additional correlation matrix was run with all participants who scored in the 22-24 range on the RBMT-2 excluded. This correlation matrix can be found in Table 5. Unconsciousness correlated positively with head injury (r = 0.64) and the WRAML-2 correlated positively with education (r = 0.52). There were negative correlations between age and education (r = -0.78), WRAML-2 (r = -0.59), EMS observer (-0.45), and the RBMT-2 (-0.60). It is surprising that age correlated negatively with the WRAML-2, the RBMT-2, and the EMS observer. The RBMT-2 correlated negatively with unconsciousness (r = -0.35), and positively with education (r = 0.62), the WRAML-2 (r = 0.42) and the EMS observer (r = 0.45). Interestingly the trend of negative correlations between age and the tests occurred in Table 3b as well. Again, as with Table 3a, comparison of standard scores yielded no correlation between the EMS self and the EMS observer. There was also no correlation between head injury and the RBMT-2, which is interesting since this test has been validated as a tool to identify head injury and it is frequently used in settings with people who have suffered a head injury (Wilson, Cockburn, Baddely, 1991).

There are times when an individual's ability to rate his or her own memory is poor relative to those around them, as with Alzheimer's Disease for instance. The individual will fail to recognize the symptoms as a problem while those close to the person do. In an effort to demonstrate this with the current study the amount of discrepancy between the two forms of the EMS was calculated for each participant and was run in the correlation matrix with the other demographic variables. Of particular interest are the correlations between the amount of EMS disparity and performance on the measures of memory used in this study. If the amount of disparity correlates negatively with the tests this could indicate that the disagreement between the EMS forms is as rich a source of information as agreement between them. Table 6 was created with the demographic data and standard scores for tests and also included the difference or disparity between the EMS self standard score and the EMS observer standard score. Once again age correlated negatively with education ($r = -0.49$), WRAML-2 ($r = -0.48$), EMS observer ($r = -0.47$), RBMT-2 ($r = -0.55$) and the WRAT-3 ($r = -0.48$). Head injury correlated positively with unconsciousness ($r = 0.58$), EMS observer ($r = 0.36$) and WRAT-3 ($r = 0.30$). Education correlated positively with the WRAML-2 ($r = 0.33$), EMS observer ($r = 0.35$), RBMT-2 ($r = 0.30$) and WRAT-3 ($r = 0.52$). The WRAML-2 correlated positively with the EMS self ($r = 0.31$), EMS observer ($r = 0.31$), the RBMT-2 ($r = 0.55$) and the WRAT-3 ($r = 0.34$). The EMS self correlated positively with the WRAT-3 ($r = 0.29$) and the RBMT-2 correlated positively with the EMS observer ($r = 0.38$) and with the WRAT-3 ($r = 0.42$). The amount of disparity between the EMS self and the EMS observer correlated negatively with gender ($r = -0.31$) and the EMS observer ($r = -0.62$), but correlated positively with the EMS self ($r = 0.60$). Among some of the interesting results is the lack of correlation between the EMS self and observer forms. Also interesting is the lack of correlation between EMS disparity, the two demographic variables of head injury and unconsciousness and all memory measures used in the current study.

In an attempt to obtain a correlation between the two versions of the EMS, four more correlation matrices were created. Both raw scores and standard scores were used in order to compare the difference in correlations for raw versus standard scores with age. Another data manipulation employed was to exclude participants who either scored moderate to high on the depression scales of the EMS forms. The depression scales were designed to help identify depression as a confounding variable when measuring memory. The purpose of eliminating those who scored moderate to high on the EMS depression scales was to investigate whether doing so would have an effect on the correlation of the two EMS forms with each other. Additionally, it was suggested that participants age 25 and younger be eliminated from the correlation matrix as it was postulated that they may not have taken the task as seriously as older participants. Table 7a contains the correlations for participant demographics and standard test scores excluding participants who are 25 years of age and under and those who rated themselves moderate to high on the EMS self depression scale. For Table 7a there were significant positive correlations between head injury and unconsciousness (r = 0.52), WRAML-2 and years education (r = 0.32), RBMT-2 and years education (r = 0.48), RBMT-2 and WRAML-2 (r = 0.59), EMS observer and head injury (r = 0.44), and RBMT-2 and EMS observer (r = 0.40). There was a significant negative correlation between the EMS self and gender (r = -0.35). Age correlated negatively with years education (r = -0.78), WRAML-2 (r = -0.43), EMS observer (r = -045) and the RBMT-2 (r = -0.53). Interesting results from this correlation matrix include the lack of correlation between the EMS self and observer forms, the negative correlation between EMS self and gender and the positive correlation between head injury and EMS observer.

Table 7b contains the correlations between the participant demographics and raw test scores excluding participants who are 25 years of age and under and those who rated themselves moderate to high on the EMS self depression scale. A primary difference from other correlation matrices using standard scores is that age only correlates negatively with years education (r = -0.78), the WRAML-2 (r = -0.71) and the RBMT-2 (r = -0.45), but correlates positively with the EMS self (r = 0.41) and the EMS observer (r = 0.68). Gender correlated positively with the EMS self (r = 0.30). Head injury correlated negatively with the EMS observer (r = -0.42) and positively with unconsciousness (r = 0.52). Years education correlated negatively with the EMS self (r = -0.43) and the EMS observer (r = -0.51) but correlated positively with the WRAML-2 (r = 0.57) and the RBMT-2 (r = 0.34). The WRAML-2 correlated positively with the RBMT-2 (*r* = 0.69) and negatively with the EMS observer (*r* = -0.54). Finally, the EMS self and observer forms correlated positively with each other (*r* = 0.51).

Table 8a contains the correlations between the participant demographics and standard test scores excluding participants who are 25 years of age and under and those who were rated by an observer as moderate to high on the EMS observer depression scale. Age correlated negatively with years education (*r* = -0.84), the WRAML-2 (*r* = -0.46), the EMS observer (*r* = -0.36), and the RBMT-2 (*r* = -0.54). Again, as with Table 7a, gender correlated negatively with the EMS self (*r* = -0.37). Head injury correlated positively with unconsciousness (*r* = 0.56). Years education correlated positively with the WRAML-2 (*r* = 0.38) and the RBMT-2 (*r* = 0.49). The WRAML-2 correlated positively with the RBMT-2 (*r* = 0.56). Again, as in other correlation matrices employing standard scores, the two EMS forms did not correlate with each other.

Table 8b contains the correlations between the participant demographics and raw test scores excluding participants who are 25 years of age and under and those who were rated by an observer as moderate to high on the EMS observer depression scale. The two forms of the EMS correlate positively with each other (*r* = 0.37). This is similar to the results in Table 7b and 4b where raw scores were employed. Age correlated negatively with years education (*r* = -0.84), the WRAML-2 (*r* = -0.77) and with the RBMT-2 (*r* = -0.49). Age correlated positively with the EMS self (*r* = 0.51) and the EMS observer (*r* = 0.68). Head injury correlated positively with unconsciousness (*r* = 0.56). Years education correlated positively with the WRAML-2 (*r* = 0.66) and the RBMT-2 (*r* = 0.43), but correlated negatively with the EMS self (*r* = -0.44) and the EMS observer (*r* = -0.49). The WRAML-2 correlated positively with the RBMT-2 (*r* = 0.76), but correlated negatively with the EMS observer (*r* = -0.54) and the EMS self (*r* = -0.33).

In the interest of further analysis, numerous Anova tables were generated and effect sizes were calculated for the mean differences in EMS-self standard scores for participants with and without some college and history of head injury. Effect sizes were also calculated for mean differences in EMS-self raw scores for participants with and without geriatric status. Table 9a reflects the means and standard deviations for these populations. Additional analysis from the abovementioned Anova tables includes effect sizes for the mean differences in EMS-observer standard scores for participants with and without some college and history of head injury. Effect sizes were also calculated for the mean differences in EMS-observer raw scores for participants with and without geriatric status. Table 9b reflects these populations.

The results of the effect size calculations are as follows. The mean EMS-self raw scores did differ significantly for the <65/>65 years old groups $F\,(1,71) = 12.82$, $p = 0.00$, $\text{eta}^2 = 0.15$ (large effect). The mean EMS-self standard scores did not differ significantly for the head injury/no-head injury groups $F\,(1,67) = 0.14$, $p = 0.71$, $\text{eta}^2 = 0.00$ (no effect) or for the college/no college groups $F\,(1,67) = 1.23$, $p = 0.27$, $\text{eta}^2 = 0.02$ (small effect). The mean EMS-observer raw scores did differ significantly for the < 65 / > 65 years old groups $F\,(1,51) = 29.47$, $p = 0.00$, $\text{eta}^2 = 0.37$ (large effect), the head injury/no head injury groups $F\,(1,49) = 7.06$, $p = 0.01$, $\text{eta}^2 = 0.13$ (moderate effect), and for the college/no college groups $F\,(1,49) = 16.53$, $p = 0.00$, $\text{eta}^2 = 0.25$ (large effect).

Table 4a

Correlations among WRAML-2, EMS self, EMS observer, RBMT-2, and WRAT-3 standard scores for the entire sample.

	WRAML2	RBMT2	EMSself	EMSobs
RBMT2	0.56** *n* = 64			
EMSself	0.31* *n* = 61	0.23 *n* = 69		
EMSobs	0.31* *n* = 51	0.38** *n* = 51	0.25 *n* = 51	
WRAT3	0.34** *n* = 64	0.42** *n* = 73	0.29* *n* = 69	0.25 *n* = 51

Note. **correlation significant at the 0.01 level, *correlation significant at the 0.05 level.

Table 4b

Correlations among WRAML-2, EMS self, EMS observer, RBMT-2, WRAT-3, and age raw scores for the entire sample.

	wraml2 screening total & subtests					remaining four tests			
	Σ raw	S.mem	D.mem	V.mem	P.mem	rbmt2	ems.slf	ems.obs	wrat3
S.mem	0.90** *n* = 70								
D.mem	0.75** *n* = 73	0.65** *n* = 70							
V.mem	0.71** *n* = 73	0.62** *n* = 70	0.54** *n* = 73						
P.mem	0.91** *n* = 64	0.75** *n* = 64	0.70** *n* = 64	0.74** *n* = 64					
rbmt2	0.73** *n* = 73	0.71** *n* = 70	0.60** *n* = 73	0.46** *n* = 73	0.70** *n* = 64				
ems.slf	-0.32** *n* = 73	-0.26* *n* = 70	-0.32** *n* = 73	-0.31** *n* = 73	-0.29* *n* = 64	-0.22 n- *n* = 73			
ems.obs	-0.55** *n* = 53	-0.46** *n* = 53	-0.52** *n* = 53	-0.54** *n* = 53	-0.44** *n* = 53	-0.25 *n* = 53	0.56** *n* = 53		
wrat3	0.44** *n* = 73	0.32** *n* = 70	0.45** *n* = 73	0.37** *n* = 73	0.45** *n* = 64	0.21 *n* = 73	-0.42** *n* = 73	-0.46** *n* = 53	
age	-0.72** *n* = 73	-0.57** *n* = 70	-0.73** *n* = 73	-0.68** *n* = 73	-0.72** *n* = 64	-0.51** *n* = 73	0.31** *n* = 73	0.60** *n* = 53	-0.47** *n* = 73

Note. ** correlation significant at the 0.01 level, * correlation significant at the 0.05 level.

Table 5

Correlations between age, gender, history of head injury, unconsciousness associated with a head injury, education and standard scores for the WRAML-2, EMS self, EMS observer and RBMT-2 when participants who scored in the normal range (22-24) on the RBMT-2 are excluded.

	Age	Gend	HeadInj	Uncon	Edu	W2	EMSself	EMSobs
Gend	-0.01 *n* = 34							
Head Inj	0.12 *n* = 34	0.17 *n* = 34						
Uncon	0.19 *n* = 34	-0.06 *n* = 34	0.64** *n* = 34					
Edu	-0.78** *n* = 34	0.12 *n* = 34	-0.14 *n* = 34	-0.34 *n* = 34				
W2	-0.59** *n* = 27	0.15 *n* = 27	-0.15 *n* = 27	-0.28 *n* = 27	0.52** *n* = 27			
EMS self	0.002 *n* = 33	-0.25 *n* = 33	0.01 *n* = 33	-0.17 *n* = 33	0.04 *n* = 33	0.03 *n* = 27		
EMS obs	-0.45* *n* = 22	0.02 *n* = 22	0.18 *n* = 22	-0.32 *n* = 22	0.28 *n* = 22	0.29 *n* = 22	0.26 *n* = 22	
R2	-0.60** *n* = 34	-0.02 *n* = 34	-0.04 *n* = 34	-0.35* *n* = 34	0.62** *n* = 34	0.41* *n* = 27	0.04 *n* = 33	0.45* *n* = 22

Note. **correlation significant at the 0.01 level, *correlation significant at the 0.05 level.

Table 6

Correlations between age, gender, history of head injury, unconsciousness associated with a head injury, education and standard scores for the WRAML-2, EMS self, EMS observer, RBMT-2, WRAT-3 and EMS standard score disparity.

	Age	Gend	HeadInj	Uncon	Edu	W2	EMSself	EMSobs	R2	WRAT3
Gend	-0.001 *n* = 73									
Head Inj	-0.15 *n* = 73	0.12 *n* = 73								
Uncon	0.03 *n* = 73	0.10 *n* = 73	0.58** *n* = 73							
Edu	-0.49** *n* = 73	0.14 *n* = 73	0.02 *n* = 73	-0.14 *n* = 73						
W2	-0.48** *n* = 64	0.17 *n* = 64	0.10 *n* = 64	-0.02 *n* = 64	0.33** *n* = 64					
EMS self	-0.17 *n* = 69	-0.20 *n* = 69	0.50 *n* = 69	-0.09 *n* = 69	0.20 *n* = 69	0.31* *n* = 61				
EMS obs	-0.47** *n* = 51	0.16 *n* = 51	0.36* *n* = 51	-0.16 *n* = 51	0.35* *n* = 51	0.31* *n* = 51	0.25 *n* = 51			
R2	-0.55** *n* = 73	0.06 *n* = 73	0.11 *n* = 73	-0.08 *n* = 73	0.30** *n* = 73	0.55** *n* = 64	0.23 *n* = 69	0.38** *n* = 51		
WRAT3	-0.48** *n* = 73	0.20 *n* = 73	0.30* *n* = 73	0.10 *n* = 73	0.52** *n* = 73	0.34** *n* = 64	0.29* *n* = 69	0.25 *n* = 51	0.42** *n* = 73	
EMS Disparity	0.15 *n* = 51	-0.31* *n* = 51	-0.25 *n* = 51	0.10 *n* = 51	-0.08 *n* = 51	-0.03 *n* = 51	0.61** *n* = 51	-0.62** *n* = 51	-0.08 *n* = 51	0.08 *n* = 51

Note. **correlation significant at the 0.01 level, *correlation significant at the 0.05 level.

Table 7a

Correlations among age, gender, head injury, history of unconsciousness, years of education, and **standard** *scores for the WRAML-2, EMS self, EMS observer, and RBMT-2 when excluding subjects <25 yrs. old and subjects who scored moderate to high on the EMS self depression scale.*

	Age	Gender	Head-inj	Uncon	Yrs-Ed	W2	EMS-Self	EMS-Obs
Gender	0.01 *n* = 52							
Head-inj	-0.01 *n* = 52	0.22 *n* = 52						
Uncon	0.11 *n* = 52	0.20 *n* = 52	0.52** *n* = 52					
Yrs-Ed	-0.78** *n* = 52	-0.01 *n* = 52	0.10 *n* = 52	-0.08 *n* = 52				
W2	-0.43** *n* = 47	0.14 *n* = 47	-0.08 *n* = 47	-0.20 *n* = 47	0.32* *n* = 47			
EMS-Self	-0.06 *n* = 52	-0.35** *n* = 52	0.03 *n* = 52	-0.09 *n* = 52	0.18 *n* = 52	0.09 *n* = 47		
EMS-Obs	-0.45** *n* = 37	-0.00 *n* = 37	0.44** *n* = 37	-0.22 *n* = 37	0.30 *n* = 37	0.13 *n* = 37	0.20 *n* = 37	
R2	-0.53** *n* = 52	0.02 *n* = 52	0.06 *n* = 52	-0.20 *n* = 52	0.48** *n* = 52	0.59** *n* = 47	0.18 *n* = 52	0.40* *n* = 37

Note. ** significant at the 0.01 level (2-tailed).* significant at the 0.05 level (2-tailed).

Table 7b

Correlations among age, gender, head injury, history of unconsciousness, years of education, and **raw** *scores for the WRAML-2, EMS self, EMS observer, and RBMT-2 when excluding subjects <25 yrs. old and subjects who scored moderate to high on the EMS self depression scale.*

	Age	Gender	Head-inj	Uncon	Yrs-Ed	W2	EMS-Self	EMS-Obs
Gender	0.01 *n* = 52							
Head-inj	-0.01 *n* = 52	0.22 *n* = 52						
Uncon	0.11 *n* = 52	0.20 *n* = 52	0.52** *n* = 52					
Yrs-Ed	-0.78** *n* = 52	-0.01 *n* = 52	0.08 *n* = 52	-0.08 *n* = 52				
W2	-0.71** *n* = 52	0.17 *n* = 52	-0.03 *n* = 52	-0.18 *n* = 52	0.57** *n* = 52			
EMS-Self	0.41** *n* = 52	0.30* *n* = 52	-0.07 *n* = 52	0.10 *n* = 52	-0.43** *n* = 52	-0.25 *n* = 52		
EMS-Obs	0.68** *n* = 37	0.01 *n* = 37	-0.42* *n* = 37	0.19 *n* = 37	-0.51** *n* = 37	-0.54** *n* = 37	0.51** *n* = 37	
R2	-0.45** *n* = 52	0.09 *n* = 52	-0.12 *n* = 52	-0.05 *n* = 52	0.34* *n* = 52	0.69** *n* = 52	-0.16 *n* = 52	-0.23 *n* = 37

Note. ** significant at the 0.01 level, * significant at the 0.05 level.

Table 8a

Correlations among age, gender, head injury, history of unconsciousness, years of education, and ***standard*** *scores for the WRAML-2, EMS self, EMS observer, and RBMT-2 when excluding subjects <25 yrs. old and subjects who scored moderate to high on the EMS Observer depression scale.*

	Age	Gender	Head-inj	Uncon	Yrs-Ed	W2	EMS-Self	EMS-Obs.
Gender	0.04							
Head-inj	-0.02	0.09						
Uncon.	0.11	0.15	0.56**					
Yrs-Ed	-0.84**	-0.10	0.02	-0.06				
W2	-0.46**	0.13	0.08	-0.05	0.38*			
EMS-Self	-0.20	-0.37*	-0.05	-0.01	0.17	0.04		
EMS-Obs.	-0.36*	0.01	0.28	-0.16	0.19	0.10	0.10	
R2	-0.54**	0.05	0.02	-0.13	0.49**	0.56**	0.11	0.30

Note. n = 36, ** significant at the 0.01 level, * significant at the 0.05 level.

Table 8b

Correlations among age, gender, head injury, history of unconsciousness, years of education, and **raw** *scores for the WRAML-2, EMS self, EMS observer, and RBMT-2 when excluding subjects <25 yrs. old and subjects who scored moderate to high on the EMS Observer depression scale.*

	Age	Gender	Head-inj	Uncon	Yrs-Ed	W2	EMS-Self	EMS-Obs.
Gender	0.04							
Head-inj	-0.02	0.09						
Uncon.	0.11	0.15	0.56**					
Yrs-Ed	-0.84**	-0.10	0.02	-0.06				
W2	-0.77**	0.09	0.06	-0.10	0.66**			
EMS-Self	0.51**	0.27	0.02	0.07	-0.44**	-0.33*		
EMS-Obs.	0.68**	-0.03	-0.21	0.17	-0.49**	-0.54**	0.37*	
R2	-0.49**	0.15	0.04	-0.03	0.43**	0.76**	-0.63	-0.29

Note. n = 36, ** significant at the 0.01 level, * significant at the 0.05 level.

Table 9a

Mean differences in EMS-self standard scores for participants with and without some college and history of head injury. Mean differences in EMS-self raw scores for participants with and without geriatric status.

Group	Mean- standard	*SD*- standard	*n*
HS only	100.71	10.69	17
College and beyond	104.27	11.74	52
Head injury Hx.	102.47	9.09	17
No head injury Hx.	103.69	12.27	52
Group	Mean- raw	*SD*- raw	*n*
Less than 65 yrs. old	70.88	15.05	59
65 yrs or older	88.00	20.05	14

Table 9b

Mean differences in EMS-observer standard scores for participants with and without some college and history of head injury. Mean differences in EMS-observer raw scores for participants with and without geriatric status.

Group	Mean- standard	*SD*- standard	*n*
HS only	96.88	11.37	17
College and beyond	109.29	9.71	34
Head injury Hx.	97.27	14.63	11
No head injury Hx.	107.33	10.01	40
Group	Mean- raw	*SD*- raw	*n*
Less than 65 yrs. old	60.74	15.57	39
65 yrs or older	91.50	24.26	14

Chapter 4

Discussion

The original hypothesis of the current study predicted that the EMS would be found concurrently valid with the RBMT-II. This hypothesis was not fully supported. Specifically, only the EMS observer correlated with the RBMT-II. This finding was found to be a general trend that was fairly consistent across correlation matrices. The EMS self did not correlate with the RBMT-II for any correlation matrices. From these results it is surmised that overall, the EMS as a unit consisting of two equivalent forms is not concurrently valid with the RBMT-II. It may be the case that the EMS observer is concurrently valid with the RBMT-II while the EMS self is not.

The results of the current study found that the two versions of the EMS correlate differently with formal tests of memory. Specifically, the EMS self and observer forms only correlated with each other when raw scores were employed. In all correlation matrices where standard scores were employed, the two forms of the EMS failed to correlate. The lack of correlation between the EMS forms for standard scores may be due to gaps in the normative samples used to standardize the survey. The normative gaps in standardization created by the relatively small normative sample (compared to other formal tests of memory) may be part of the reason for the lack of correlation between the two forms of the EMS when using standard scores derived from those norms.

The WRAML-2 was found to correlate with both the EMS self and the EMS observer while the RBMT-2 only correlates with the EMS observer. The WRAML-2 was designed to measure the span of memory ability from poor to superior, while the RBMT-2 was designed to measure memory primarily in the range that involves extreme deficits up to and including the average range. The WRAML-2 and the RBMT-2 likely correlate at $r = 0.56$ because there is overlap in the ranges of memory they are sensitive to. The fact that they do not correlate at $r = 0.80$ or $r = 0.90$ may be seen as evidence that while there is some overlap, they are generally sensitive to different strata of memory performance. The reason the WRAML-2 correlates with the EMS self but the RBMT-2 does not may be because the favorable EMS self rating falls in the range which is outside of the sensitivity of the RBMT-2 but falls inside the range the WRAML-2 is sensitive to. The fact the RBMT-2 correlates with the EMS observer and not the EMS self suggests that the EMS observer may be sensitive to its own unique strata of memory performance, which accounts for both the RBMT-2 and the WRAML-2 overlap.

Since the RBMT-2 was designed to test the everyday memory of people experiencing memory difficulties rather than testing the full range of memory performance it is surprising that it did not correlate with head injury. This may be due to the fact that none of the people who reported a head injury or unconsciousness reported any serious consequences as a result of their injury. It may be the case that if participants with a head injury are experiencing some memory impairment it is mild enough that the RBMT-2 will not be sensitive to it while the EMS observer may be.

Another interesting finding was that the RBMT-2 did not correlate with head injury in any of the correlative matrices. The EMS observer standard scores correlated with head injury when all participants were included. The RBMT-2 is designed to be used with normal to severely impaired individuals, but failed to correlate with the head injury category. One reason for this may be that the people who had head injuries in the current study typically reported no significant changes in functioning as a result of the injury, implying that they may not have sustained enough trauma to have shown up on the RBMT-2. The RBMT-2 may not have correlated with the head injury category because the subjects comprising it were not impaired enough for it to detect their memory impairment. This suggests that the EMS observer may be more sensitive than the RBMT-2 at detecting memory difficulties associated with mild to moderate head injuries.

There was a large effect size for the mean differences in EMS self raw scores when participants < 65 years of age and participants ≥ 65 years of age were compared. This suggests a significant difference in the way the two populations rated themselves on the EMS self form. Similarly, a moderate effect size was demonstrated when comparing the EMS self and observer ratings for those persons with a history of head injury to those with no such history, and a large effect when comparing those with some college education to those with no college education. These results suggest that an outside observer will rate someone's memory ability differently based on the participant's age, whether or not they had a head injury and whether or not they had any college experience. Together, these results suggest that the EMS self may be more reliable with older populations, while the EMS observer may be relatively reliable not only at detecting age differences in memory ability, but also memory problems arising from head injury. The large effect size for college versus no-college may mean that either people who went to college tended to have better memories, or possibly that attending college forced them to use their memory ability in a more efficient manner.

Age frequently correlated negatively with standardized test scores, which is somewhat puzzling since age is already accounted for in a standardized score. The negative correlation between age and the standardized test scores suggests that as age increased from participant to participant, their relative standard scores decreased. That would make sense if all ages were being compared against a common set of norms. These negative correlations are curious because the norms were developed in such a manner that the overall age range is broken into smaller age ranges and norms are then generated for these unique age ranges. This means that as age increases from participant to participant there should be no corresponding significant drop in performance because the participants of that age group are being compared to each other not younger participants. Currently, this correlative anomaly is unexplained.

Regarding the correlation matrix for the amount of disparity between the EMS self and observer, what was expected was a negative correlation between the formal tests of memory (the WRAML-2 and the RBMT-2) and the amount of disparity. While a general trend of negative correlations was demonstrated between these variables, the correlations were not significant. While the reasoning behind using the EMS disparity as a screener for memory impairment is sound, it may not be applicable to the participants in this study. There were no participants who were on medications indicating Alzheimer's Disease and although they were not specifically asked if they had Alzheimer's Disease, they all lived independently and functioned reasonably well on their own. Without any participants with Alzheimer's Disease it is difficult to test the idea that the amount of disparity should be predictive of serious deficits. Also, there may not have been enough participants in the current study's sample size to demonstrate these differences. It is conceivable that if the sample size were expanded to a much greater magnitude the disparity might be more predictive of memory impairment.

In an effort to get the two forms of the EMS to correlate with one another, four additional correlation matrices were created reflecting the following data manipulations. Subjects < 25 years of age were eliminated from the correlation data on the assumption that they may not have taken the study as seriously as older subjects. Also subjects who rated themselves moderate to high on the EMS depression scale and those rated by the observer as moderate to high on the EMS depression scale were eliminated from the correlation matrix. Finally both raw and standard scores were run in the correlation matrices. In all resulting correlation matrices 7a, 7b, 8a, & 8b the two EMS forms only correlated when raw scores were employed. For the standard score correlation matrices, removing participants < 25 years of age and those who were rated as moderate to severe by either self or observer on the depression scale made no difference. Another result of interest in these four correlation matrices is that gender correlates negatively with the EMS self for standard scores on Tables 7a and 8a but these two variables correlate positively for raw scores on Table 7b. The only difference between Table 7a and Table 6 is that Table 7a excludes participants under 25 years of age and those who rated themselves as moderate to highly depressed on the EMS. It appears from these results that when these restrictions on the data are employed, gender and the EMS self correlate negatively for standard scores and positively for raw scores. These results suggest that females rated themselves lower than men did on the EMS self. It may be the case that when depressed participants are included in the correlation matrix, they keep gender from correlating with the EMS self. It is not known why gender did not correlate with the EMS self raw scores for Table 8b.

The difficulty in getting the two versions of the EMS to correlate with each other was unexpected, especially given a previous study in which both forms of the EMS were found to be concurrently valid with correlation coefficients ranging from 0.43 to 0.77 across the age groups from 18 to 85+ years (Hall & Adams, 2004). One possible reason for better correlation in the

Hall and Adams study may be the fact that the portion of their subjects who came from the Pacific Northwest sample were living in nursing homes whereas the subjects in the current study were all living independently. It is conceivable that people who are not able to live independently may be more likely to be in agreement with an observer on their declining memory and the EMS self and EMS observer correlation for this group would be high.

Limitations of the Current Study

One limitation of the current study is the attrition rate. Although the number of subjects was within the projected 60 to 80, the final count was 73 due to failure by subjects to return the observer portion of the battery. Another limitation is the high number of participants who have a graduate education. The unusually high number of individuals with higher education may have affected the results. Another possible limitation of the current study may be the number of participants. The EMS was co-normed with the WRAML-2 for 100 people, and had a much higher number of overall participants. If the current study had utilized as many participants as the EMS had, it is conceivable that better correlations may have been attained. Another limitation is that the RBMT-2 works best with those who are experiencing sequelae of a traumatic brain injury.

Although the null hypothesis was not confirmed in the current study, there were some interesting results, which have implications for both the use and further study of the EMS. Further study regarding the amount of disparity between the two forms may prove the EMS useful to those who are conducting a neuropsychological assessment on individuals with head injuries or those with a neurovascular disease. Furthermore, the difficulty in getting the two forms of the EMS to correlate should not be viewed in a negative light given that the amount of disparity could be valuable in the evaluation process. Individuals who perform poorly on a battery of tests and who rate themselves in a favorable manner as compared to their spouse may be in denial of their decline in abilities or may actually be unaware of it. The null hypothesis of the current study did not take into consideration the amount of disparity and so the study is limited in its ability to test this idea. Given more participants with more diversity in their education and ages, the disparity may prove a good indicator of significant memory impairment.

The current study has shown that both forms of the EMS did not correlate with the RBMT-2. That the EMS did not fully correlate with a formal test of memory might be disappointing if it were not a questionnaire. For the EMS observer to correlate as well as it did with the WRAML-2 and the RBMT-2 is impressive. The EMS has potential as an assessment tool when used in the right setting. Additional testing should be done to help elucidate the reasons for differing results from the Hall and Adams study (2004). Further investigation of the role of the EMS with different populations such as the head injured, those with the beginning stages of dementia or Alzheimer's Disease patients may be helpful in finding a niche for the EMS. It may also be the case that the EMS is a better fit for those who are not able to live independently versus those who are capable of taking care of themselves.

Another important consideration is that the RBMT-2 was designed to test for severe memory impairment and statistical analysis suggests that the EMS may be better at detecting more mild or moderate impairment. An additional consideration is that the RBMT-2 has no observer reporting, which can be a crucial factor in the memory evaluation process. The EMS not only has a self and an observer report form, but the two can be compared side by side to identify discrepancies which is often as important as when two items are in agreement. The degree of disagreement between the EMS self and observer could be a useful tool in the assessment process rather than a concern.

References

Adams, W., & Sheslow, D. (2003). Wide Range Assessment of Memory and Learning. Lutz, FL: Psychological Assessment Resources Inc.

Anooshian, L. J., Mammarella, S. L., & Hertel, P. T. (1993). Adult age differences in knowledge of retrieval processes. In A. J. Parkin (ed.), *Memory: Phenomena, experiment, and theory* (p. 183). Oxford, UK: Blackwell Publishers.

Berry, J. M., West, R. L., & Dennehey, D. M. (1989). Reliability and validity of the memory self-efficacy questionnaire. *Developmental Psychology*, *25* (5), 701-713.

Breslow, R., Kocsis, J. & Belkin, B. (1981). Contribution of the depressive perspective to memory function in depression. *American Journal of Psychiatry*, 138 (*2*), 227-230.

Bruce, P. R., Coyne, A. C., & Botwinick, J. (1993). Adult age differences in metamemory. In A. J. Parkin (ed.), *Memory: Phenomena, experiment, and theory* (p. 183). Oxford, UK: Blackwell Publishers.

Burt, D. B., Zembar, M. J., & Niederehe, G. (1995). Depression and memory impairment: A meta-analysis of the association, its pattern, and specificity. *Psychological Bulletin, 117* (2), 285-305.

Cohen, R. M., Weingartner, H., Smallberg, S. A., Pickar, D., & Murphy, D. L. (1982). Effort and cognition in depression. *Archives of General Psychiatry*, *39* (5), 593-597.

Dixon, R. A. & Hultsch, D. F. (1986). Structure and development of metamemory in adulthood. In L. W. Poon, T. Crook, K. L. Davis, C. Eisdorfer, B. J. Gurland, A. W. Kaszaniak, & L. W. Thompson (eds.), *Handbook for clinical memory assessment of older adults* (pp. 93-106). Washington, DC: American Psychological Association.

Gilewski, M. J., Zelinski, E. M., Schaie, K. W., & Thompson, L. W. (1986). Abbreviating the metamemory questionnaire: Factor structure and norms for adults. In L. W. Poon, T. Crook, K. L. Davis, C. Eisdorfer, B. J. Gurland, A. W. Kaszaniak, and L. W. Thompson (eds.), *Handbook for clinical memory assessment of older adults* (pp. 93-106). Washington, DC: American Psychological Association.

Goldberg, Z., Syndulko, K., Lemon, J., Montan, B., Ulmer, R., & Tourtellotte, W. W. (1986). Everyday memory problems in older adults. In L. W. Poon, T. Crook, K. L. Davis, C. Eisdorfer, B. J. Gurland, A. W. Kaszaniak, & L. W. Thompson (eds.), *Handbook for clinical memory assessment of older adults* (pp. 93-106). Washington, DC: American Psychological Association.

Hall, T. & Adams, W. (2004). *The everyday memory survey.* Wilmington, DE: Wide Range Inc.

Herrmann, D. J. (1986). The validity of memory questionnaires as related to a theory of memory introspection. In L. W. Poon, T. Crook, K. L. Davis, C. Eisdorfer, B. J. Gurland, A. W. Kaszaniak, & L. W. Thompson (eds.), *Handbook for clinical memory assessment of older adults* (pp. 93-106). Washington, DC: American Psychological Association.

Herrmann, D. J. & Neisser, U. (1986). An inventory of everyday memory experiences. In L. W. Poon, T. Crook, K. L. Davis, C. Eisdorfer, B. J. Gurland, A. W. Kaszaniak, & L. W. Thompson (eds.), *Handbook for clinical memory assessment of older adults* (pp. 93-106). Washington, DC: American Psychological Association.

Hertzog, C., Dixon, R. A., & Hultsch, D. F. (2000). Metamemory in adulthood: Differentiating knowledge, belief, and behavior. *Psychology and Aging, 15* (3), 451-461.

Hulicka, I. M. (1986). Memory functioning in late adulthood. In L. W. Poon, T. Crook, K. L. Davis, C. Eisdorfer, B. J. Gurland, A. W. Kaszaniak, & L. W. Thompson (eds.), *Handbook for clinical memory assessment of older adults* (pp. 93-106). Washington, DC: American

Psychological Association.

Kahn, R. L., Zarit S. H., Hilbert, N. H., Niederehe, G. (1975). Memory complaint and impairment in the aged: The effect of depression and altered brain function. *Archives of General Psychiatry*, *32* (12), 1569-1573.

Lachman, M. E. & Leff, R. (1989). Beliefs about intellectual efficacy and control in the elderly: A 5-year longitudinal study. *Developmental Psychology*, *25*, 722-728.

McDonald-Miszczak, L., Hertzog, C., & Hultsch, D. F. (1995). Stability and accuracy of metamemory in adulthood and aging: A longitudinal analysis. *Psychology and Aging*, *10* (4), 553-564.

Niederehe, G., Nielsen-Collins, K. E., Volpendesta, D., & Woods, A. M. (1986). Metamemory processes and perceptions: Depression and age effects. In L. W. Poon, T. Crook, K. L. Davis, C. Eisdorfer, B. J. Gurland, A. W. Kaszaniak, & L. W. Thompson (eds.), *Handbook for clinical memory assessment of older adults* (pp. 93-106). Washington, DC: American Psychological Association.

Paolo, A. M., (2001). The Rivermead Behavioural Memory Test, *2nd ed.* In B. S. Plake & J. C. Impara (eds.), *The Fourteenth Mental Measurements Yearbook* (pp. 321-322). Lincoln, Nebraska: The University of Nebraska Press.

Perlmutter, M. (1986). What is memory aging the aging of? In L. W. Poon, T. Crook, K. L. Davis, C. Eisdorfer, B. J. Gurland, A. W. Kaszaniak, & L. W. Thompson (eds.), *Handbook for clinical memory assessment of older adults* (pp. 93-106). Washington, DC: American Psychological Association.

Rebok, G. W. & Balcerak, L. J. (1989). Memory self-efficacy and performance differences in young and old adults: The effect of mnemonic training. *Developmental Psychology*, *25* (5), 714-721.

Riege, W. H. (1986). Self report and tests of memory aging. In L. W. Poon, T. Crook, K. L. Davis, C. Eisdorfer, B. J. Gurland, A. W. Kaszaniak, & L. W. Thompson (eds.), *Handbook for clinical memory assessment of older adults* (pp. 93-106). Washington, DC: American Psychological Association.

Sbordone, R. J. & Long C. J. (1996). *Ecological validity of neuropsychological testing*. Delray Beach, FL: St. Lucie Press, Inc.

Sunderland, A., Harris, J. E., & Baddeley, A. D. (1986). Do laboratory tests predict everyday memory? A neuropsychological study. In L. W. Poon, T. Crook, K. L. Davis, C. Eisdorfer, B. J. Gurland, A. W. Kaszaniak, & L. W. Thompson (eds.), *Handbook for clinical memory assessment of older adults* (pp. 93-106). Washington, DC: American Psychological Association.

Weingartner, H., Cohen, R. M., Murphy, D. L., Martello, J. E., & Gerdt, C. (1981). Cognitive processes in depression. *Archives of General Psychiatry*, *38* (1), 42-47.

Wilson, B. A., Cockburn, J., & Baddely, A. (1991). The Rivermead Behavioural Memory Test, *2nd ed.* In B. S. Plake & J. C. Impara (eds.), *The fourteenth mental measurements yearbook* (pp. 321-322). Lincoln, NE: The University of Nebraska Press.

Yussen, S. R. & Levy, V. M. (1993). Developmental changes in predicting one's own span of short-term memory. In A. J. Parkin, *Memory: Phenomena, experiment, and theory* (pp. 156-157). Oxford, UK: Blackwell Publishers.

Zarit, S. H., Cole, K. D., & Guider, R. L. (1986). Memory training strategies and subjective complaints of memory in the aged. In L. W. Poon, T. Crook, K. L. Davis, C. Eisdorfer, B. J. Gurland, A. W. Kaszaniak, & L. W. Thompson (eds.), *Handbook for clinical memory* *assessment of older adults* (pp. 93-106). Washington, DC: American Psychological Association.

Zelinski, E. M., Gilewski, M. J., & Thompson, L. W. (1986). Do laboratory tests relate to self assessment of memory ability in the young and old? In L. W. Poon, T. Crook, K. L. Davis, C. Eisdorfer, B. J. Gurland, A. W. Kaszaniak, & L. W. Thompson (eds.), *Handbook for clinical memory assessment of older adults* (pp. 93-106). Washington, DC: American Psychological Association.

Appendix A

Available Psychometric Data on the Questionnaires Discussed in this Study

Table 10

Available Psychometric Data

Measure	Developer	Reliability	Validity
Everyday Memory Questionnaire	Sunderland, Harris & Baddeley (1986)	None Available	
Everyday Memory Survey	Hall (In Press)	Self Report Alpha= 0.94 split half= 0.90 Observer Alpha= 0.96 Split half= 0.93	
Inventory of Memory Experiences	Herrmann & Neisser (1986)	Test Retest = .15-.74	
Memory Complaints Questionnaire	Zarit, Cole & Guider (1986)	None Available	
Memory Functioning Questionnaire	Gilewski, Zelinski, Schaie & Thompson (1986)	Internal Consistency= .82-.93 Test Retest= .22-.64	
MetaMemory in Adulthood	Dixon & Hultsch (1986)	Internal Consistency= .61-.91	
Metamemory Questionnaire	Niederehe, Nielsen-Collins, Volpendesta & Woods (1986)	None Available	
Memory Questionnaire	Perlmutter (1986)	None Available	
Metamemory Questionnaire	Zelinski, Gilewski & Thomas (1986)	Internal Consistency= .82-.93 Test Retest= .22-.64	
Memory Self Report	Riege (1982)	Inter-rater Reliability=.80	
Short Inventory of Memory Experiences	Herrmann (1986)	Test Retest = .15-.74	
Self-Assessment of Memory Questionnaire	Hulicka (1986)	None Available	
Wadsworth Memory Questionnaire	Goldberg, Syndulko, Lemon, Montan, Ulmer & Tourellotte (1986)	None Available	

Note. No available validity for questionnaires other than the EMS.

Appendix B

Curriculum Vita

CURRICULUM VITA

May 25, 2007

Benjamin G. Kessler

1401 N. Springbrook Rd. #228 Newberg, Oregon 97132
(971)-409-0037 Home Phone/Cell Phone
Email: benkessler72@comcast.net

Education and Honors

Anticipated: August 2007 — Doctor of Clinical Psychology (Psy.D.) Graduate School of Clinical Psychology, **APA Accredited**, George Fox University, Newberg, OR.

Spring 2003 — Master of Arts, Clinical Psychology, **APA Accredited**, George Fox University, Newberg, OR.

Spring 1999 — Bachelor of Arts, Psychology, Portland State University, Portland, OR.

Fall 1999 — Inducted into the "Golden Key National Honor Society" for scholastic achievement

CLINICAL EXPERIENCE

August 2005-August 2006 — **Kaiser Permanente: Department of Psychiatry and Addiction Medicine**
Primary Supervisor: Ellen Quick, Ph.D.
Secondary Supervisor: Robert Zapinsky, Ph.D.
3420 Kenyon St. Bldg. B
San Diego, California
92110

Large outpatient department providing individual and group treatment as well as neuropsychological and personality assessment.

Providing:
*short term individual and group therapy for both children and adults
*neuropsychological and personality assessments for children and adults
*cognitive behavioral and strategic solution focused therapy
Receiving:
*group and individual supervision
*multidisciplinary consultation
*weekly trainings and seminars
*chemical dependency and emergency room experience

Sept. 2004-June 2005
Supervisor:
Ron Sandoval, Ph.D.

Kaiser Permanente: East Interstate Office
Interstate Medical Office East
3550 N. Interstate Avenue
Portland, OR. 97227-1197

Mental health treatment center providing short term individual therapy, group therapy and psychological and neuropsychological assessment.

Provided:
*weekly neuropsychological evaluations
*short term individual therapy
*writing comprehensive neuropsychological reports
*supervised feedback to client/referral source on neuropsychological test batteries

Received:
*supervised neuropsychological testing experiences
*monthly training on broad range of topics: CBT/DBT applications, adapting best practices, group therapy, stages of change and transition
*daily consultation with a multi-disciplinarian team

May 2004-Aug. 2004
Supervisor:
Ken Ihli, Ph.D.

***Contracted Work*: Life Works N.W.**
14600 NW Cornell Rd.
Portland, OR. 97229

Provided mental health evaluation, treatment and referrals in adult outpatient setting. Worked as paid employee of TVMH.

Provided:
*short term therapy
*cognitive behavioral and rational emotive interventions
*crisis intervention
*mental health evaluations and treatment
*evaluations for program referrals

Received:
*training in cognitive behavioral & rational emotive intervention strategies
*peer consultation
*individual supervision

Sept. 2003-May. 2004
Supervisor:
Ken Ihli, Ph.D.

Life Works N.W.
14600 NW Cornell Rd.
Portland, OR. 97229

Provided evaluation, treatment and referrals in adult outpatient setting. Also co-facilitated a skills training group.

Provided:
*short term therapy
*cognitive behavioral and rational emotive interventions
*peer consultation
*crisis intervention
*mental health evaluations and treatment
*stress tolerance training
*skills training group
*case presentations

Received:
*training in cognitive behavioral & rational emotive intervention strategies
*1 ½ hours weekly consultation with a multi-disciplinarian team
*1 hour weekly mentoring sessions

Sept. 2002-May 2003
Supervisor:
Gary Kilpela, Psy.D.

Lutheran Community Services
819 N Hwy. 99W, Suite B
McMinnville, OR. 97128

Co-facilitated an anger management & a violence interventionprevention group. Violence Intervention group received referrals from the court system in an attempt to prevent recidivism.

Provided:
*anger management group counseling
*group violence intervention/prevention counseling
*chart auditing
*communication skills training
*de-escalation skills training

Received:
*training in counseling violent offenders
*consultation with psychiatrist
*consultation with multi-discipline treatment team

Sept. 2001-Dec. 2001
Supervisor:
Bill Buhrow, Psy.D.

University Counseling Center
414 N. Meridian
Newberg, OR. 97132-2697

Worked in George Fox University's Health and Counseling Center in an adult outpatient setting. Provided psychotherapy to students.

Provided:
*mental health evaluations and referrals
*testing
*psychotherapy

Received:
*student and staff mentoring
*weekly training meetings

Sept. 2000-May 2001
Supervisor:
Carol DellOliver, Ph.D.

Prepracticum: **University Counseling Center**
George Fox University
414 N. Meridian
Newberg, OR. 97132-2697

Received intensive training from Sept-Dec. Training focused on therapeutic skills and professional development. Began psychotherapy with clients from Jan-May.

Provided:
*adult outpatient psychotherapy
*presentations with written report & case conceptualization
*developed treatment plans

Received:
*intensive supervision through taping of sessions
*group supervision

ADDITIONAL WORK EXPERIENCES

July 2007-Present

Adjunct Faculty: Chemeketa Community College
McMinnville Campus

I am currently working as an adjunct psychology professor for Chemeketa Community College. Classes I currently teach are PSY 201 Psychology with a biological emphasis, PSY 100 Introduction to psychology, PSY 237 Life span development, & PSY 101 Psychology of human relations.

MULTI-CULTURAL TRAINING EXPERIENCE

Dec. 2002 — Seasonal Affective Disorder: Etiology and Treatments

Presentation at George Fox University, Newberg, OR.

Spoke on etiology and treatments:
Cross cultural experience lecturing to Asian students on George Fox campus. Broke into smaller groups and oversaw discussion sessions.

May 2002-Jun. 2002 — Taught English At Wuhan University In China

Taught psychology to MA and Ph.D. level students:
Lectured on practice of psychology in America compared to China. Oversaw discussions of cultural values & barriers associated with psychotherapy in China & America.
Taught English to M.A. and Ph.D. level students:
Developed 3-4 lesson plans per week emphasizing conversational speaking skills & active listening.
Guest lectured on the topic of anxiety:
Spoke to 300 students about anxiety in American society and the school system. Lecture team broke up into groups and oversaw discussion groups about various topics.

Jan. 1998-Jul. 1998 — German Cultural Immersion Program

Intensive German language program:
Studied German language at the University of Tubingen, studied German history, and literature with an emphasis on speaking and writing. Required to produce written and oral work.
German Culture:
Studied German culture through lecture and exposure.
Politics and geography:
Attended lectures on German political dynamics, as well as lectures on geography.

PUBLICATIONS

Hall, T., Janzen, D., Cardoza, S., Kessler, B., & Henry, N. (2002). *Depression packet: Steps of understanding and wellness.* CareMark Behavioral Health, Child and Adolescent Treatment Program at Legacy Emanuel Hospital, Portland, Oregon.

Henry, N., Janzen, D., Hall, T., Cardoza, S., & Kessler, B. (2002). *Anxiety packet: Steps of understanding and wellness.* CareMark Behavioral Health, Child and Adolescent Treatment Program at Legacy Emanuel Hospital, Portland, Oregon.

Kessler, B., Cardoza, S., Hall, T., Henry, N., & Janzen, D. (2002). *Anger packet: Steps of understanding and wellness.* CareMark Behavioral Health, Child and Adolescent Treatment Program at Legacy Emanuel Hospital, Portland, Oregon.

PROFESSIONAL AFFILIATIONS

Dec. 2000 to Present	American Psychological Association, Student Affiliate
Dec. 1999 to Present	Golden Key National Honor Society

ADDITIONAL PROFESSIONAL TRAINING

Substance Abuse Disorders: Diagnosis, Treatment & Related Topics
Shane Haydon, Ph.D.
George Fox University
Mar. 2001

Hypnosis Training: 20 Hrs.
Portland Academy of Hypnosis
J. Henry Clarke, D.M.D., M.S.
Susan Rustvold, D.M.D., M.S.
Oct. 2002

Fundamental understanding of purpose and theory
Hypnosis Labtime
History of Hypnosis
Proper usage of suggestion

Assessment & Treatment of Traumatized Children
Sophie Lovinger, Ph.D.
George Fox University
Oct. 2002

Post-Traumatic Stress Disorder in Native American Culture
Joseph Stone, Ph.D.
George Fox University
Mar.2002

Profitable Behavior: Using Psychological Knowledge and Skills to Address Business Needs
Steven Hunt, Ph.D.
George Fox University
Mar. 2003

Current Guidelines For Working With Gay, Lesbian, & Bisexual Clients
Carol Carver, Ph.D.
George Fox University
May 2003

Dialectical Behavior Therapy: An introduction
Brian Goff, Ph.D.
George Fox University
Oct. 2003

TEST ADMINISTRATION, SCORING AND INTERPRETATION

Adult Measures	#Administered	#Reports Written
16PF	3	3
Aphasia Screening Test	2	0
Booklet Category Test	15	13
Boston Naming Test	29	27
Benton Visual	1	0
California Verbal Learning Test-II	31	29
Category Switching	7	5
Controlled Oral Word Association Test	28	26
Finger Recognition Test	4	1
Finger Tapping Test	3	1
Folstein Mini Mental Status Exam	1	1
Grip Strength	3	1
Grooved Pegboard	25	23
Hooper Visual Organizational	1	0
House Tree Person Drawing	2	1
Mayo-Portland Adaptability Inventory	22	22
Minnesota Multiphasic Personality Inventory-II	23	22
Millon Clinical Multi-Axial Inventory-III	1	1
Personality Assessment Inventory	9	9
Personality Assessment Screener	4	6
Ray-O Complex Figure Test	33	31

Rorschach Inkblot Test	4	3	
Sentence Repetition Test	22		22
Stroop Color/Word Test	2	0	
Symbol Digit Modalities Test	22		22
Tactile Perception Test	3		1
Tactile Recognition Test	2		1
Test of Memory Malingering	2		0
Thematic Apperception Test	2		2
Trail Making Test, A/B	33		31
Wechsler Abbreviated Scale of Intelligence	22		21
Wechsler Adult Intelligence Scale-III	16		14
Wechsler Memory Scale-III	35		31
Wide Range Achievement Test-III	21		21

Wisconsin Card Sorting Test	18	17
Whitaker Index of Schizophrenic Thinking	1	1

Child and Adolescent Measures	**#Administered**	**#Reports Written**
Peabody Picture Vocabulary Test	2	1
Tell Me A Story	1	1
Wechsler Intelligence Scale for Children-III	5	3
Wechsler Individual Achievement Test-III	2	2
Wide Range Achievement Test-III	3	2
Wide Range Assessment of Memory & Learning	2	2

REFERENCES

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3420 Kenyon St. Bldg. #B
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