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Predicting college student classroom performance with a simple metacomprehension scale

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PREDICTING COLLEGE STUDENT CLASSROOM PERFORMANCE WITH A SIMPLE METACOMPREHENSION SCALE

A Thesis

by

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ABSTRACT

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The present study investigated the relationship between college student metacomprehension and the error of predicted classroom performance. College student metacomprehension was evaluated using the Metacomprehension Scale (MCS) designed by Moore, Zabrucky, and Commander (1997a). Prior to an examination administered by a course instructor, covering course content, students predicted the percentage score he/she expected to achieve. The predicted score was subtracted from the obtained score generating an error score. It was hypothesized that error of predicted classroom performance is a function of student metacomprehension, as measured by the MCS. Results indicate the MCS was not a reliable indicator of student predicted performance. Factor structure of the MCS was examined to consider why the MCS was not a significant predictor of college student error scores.

DEDICATION

The completion of my Master of Arts degree in Experimental Psychology has been possible with the love and support of my family. My mother and father, Jan and Richard Evans, and my husband, Trevor Klein, wholeheartedly inspired, motivated and supported me by all means to accomplish this degree. Thank you for your love and encouragement.

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CHAPTER I

INTRODUCTION

Reading and learning from text material is a primary task for college students. Maki and McGuire (2002) explain that a student's academic welfare is dependent on how well he or she retains information from reading. Students' ability to assess or monitor their understanding of text requires assessment of metacognition. Metacognition is a person's knowledge, awareness, and control of his/her own cognitive processes (Matlin, 2005). For the most part, past research on metacognition has been focused on metamemory, or self-assessments of beliefs and knowledge about memory performance (Moore, Zabrucky & Commander, 1997). Metacomprehension refers to the ability a person has to judge his or her own learning and/or comprehension (Dunlosky & Lipko, 2007). If people can judge whether they have learned new material or if they have not, they can focus on the material that has not been learned. With students for example, if a student has been studying for an upcoming exam the student must judge if the required material has been learned or if he/she should spend more time preparing for the exam. If accurate metacomprehension is important for control of effective studying and learning, then students with strong metacomprehension abilities should make more accurate predictions of their future classroom performance (Maki & McGuire, 2002).

Many people relate to the experience of reading a book and becoming aware that the last few pages have not been understood. At the point of knowing that what has just been read was not processed metacomprehension is very high. On the other hand, not paying attention while reading and being unaware of the lack of understanding illustrates metacomprehension being very low. Regardless of whether students are doing well, students may or may not be aware of their degree of understanding. Metacognitive judgments require subjects to access the awareness of their level of knowing. Students must assess their current state of knowledge as they prepare for upcoming examinations. Determining what information is satisfactorily known and what material needs further study is an important concept for students. Self-assessment of metacognition includes knowledge about cognitive strategies, confidence in one's abilities, anxiety about performance and control over performance (Hacker, Bol, Horgan, & Rakow, 2000).

Only a few studies regarding test performance prediction error have used actual classroom tests as the measure of metacognitive judgments. Shaughnessy (1979) found a positive relationship between confidence-judgment error and test performance. Leal (1987) found that successful students rated the importance of intellectual ability higher than other students. Hacker et al. (2000) concluded that lowest performing students showed over confidence in test performance predictions while high-performing students were accurate. Following this research track, the ability to measure metacomprehension is an important consideration. Moore *et al*. (1997) explain that a valid and reliable measurement tool to evaluate metacomprehension would be useful to metacomprehension research as well as to practitioners as an aspect of the assessment of comprehension skills. Such an instrument could also be useful to educators in the evaluation of student learning.

CHAPTER II

REVIEW OF LITERATURE

J. T. Hart (1965) introduced the concept of feeling of knowing judgments. In his early experiments participants were asked to answer questions of fact. Participants were not expected to answer all questions correctly and were asked not to make wild guesses. Participants were then asked to review the questions and answers and designate any question he/she may know the answer to if it was presented to them among false answers. Hart (1965) found that memory scores were higher for recognition than for recall. While coining the term "memory monitoring" Hart opened the door to metacognitive research. More than 10 years later the word "metacognition" was first used by J. H. Flavell (1979). Flavell used the term metacognition to describe knowledge, regulation, and learning.

Linda Leal (1987) distributed a metamemory questionnaire to examine how well students prepared for class examinations and their performance on the examinations. Responses from this questionnaire were also compared with recall readiness by having students predict their performance prior to class examinations. She correlated each participant's estimate with their actual performance and found that these between subjects estimates were significantly greater than zero on each examination. Leal (1987) found that college student knowledge about memory process related to classroom examination performance and scores on a metamemory questionnaire related positively to examination scores. Additionally, successful students rated the importance of intellectual ability higher than other students.

Frank Sinkavich (1995) examined the error of student metamemory by accessing the degree of confidence in their answers to test items and its relationship to their actual test item performance. Data was collected on three occasions in effort to understand how metamemory might be involved in test taking. The examinations used for data collection were created by the instructor based on content covered in class and textbook reading assignments. On each exam students were asked to select a multiple choice answer and then rate the confidence they have in the answer. Confidence rating was measured on a Likert scale with -2 = not-correct, 0 = maybe it is correct, to +2 = correct. This study found that students demonstrating a high mean degree of confidence in their answers have higher examination scores than participants who expressed a low mean degree of confidence in their answers (Skinavich, 1994).

Delayed judgments of learning are more accurate for word pair memory tests than are immediate judgments of learning (Maki, 1998). In a similar model, Maki (1998) investigated delayed versus immediate prediction of performance on text. Participants read one of twelve 400-word texts and then answered questions on the text either immediately or following a delay. Participants predicted their performance on the text questions. Participants answering questions immediately after reading the text predicted performance more accurately than participants with delayed responses. Results for immediate judgments for text were more accurate than delayed judgments, whereas delayed judgment for word pair memory tests were more accurate than immediate judgments (Maki, 1998).

Hacker *et al.* (2000) investigated the process of optimizing performance on an upcoming exam for college students. Error prediction of examination performance can help students by avoiding premature termination or prolonged duration of study while preparing for the exam. Accurate prediction of test preparedness can play a critical role in student learning and performance. Ninety-nine undergraduate students participated in the study. The duration of the study was one semester. Students were notified that the purpose of the study was to investigate the relationship between self-assessment and examination performance.

The researchers (Hacker *et* al., 2000) wanted to determine if students could accurately predict test performance; if error decreases over multiple exams; and if prior performance predictions influence future predictions. Results indicate low-performing students showed moderate prediction error while lowest-performing students showed major overconfidence in their predictions. Judgments of performance were influenced by prior judgments but not prior performance.

Recent studies investigating student learning and metacognitive aspects show similar results. Isaacson and Fujita (2006) found high achieving students were more accurate at predicting test results; more realistic in their goals; and more effective at choosing questions to which they knew the answer. Students experiencing high levels of text anxiety had poorer test performance and reported lower confidence predictions than students with less text anxiety (Miesner & Maki, 2007).   Maki and McGuire (2002) found that college students are motivated to perform well on classroom examinations. Maki and McGuire (2002) encourage and emphasize the importance of metacomprehension research in a naturally occurring environment. As these research trends suggest, improvement of metacomprehension might be relevant to improving student learning (Maki and McGuire, 2002).

The Metacomprehension Scale

The Metacomprehension Scale (MCS) was developed to assess multiple dimensions of metacomprehension (Moore *et al.,* 1997a). Following metamemory research the scale is designed to assess anxiety, or feelings of stress related to academic performance; locus, or perceived control over cognitive abilities; capacity, or perception of comprehensive abilities compared to how most people perform; achievement, importance of performing well on cognitive tasks; and task, or the knowledge of basic comprehension process. Following discourse comprehension theories the scale includes assessment of preparation, or knowledge and use of strategies to comprehend difficult material; and regulation, or resolution to comprehension failures.

Moore *et al* (1997a) found the MCS to be a significant predictor of comprehension performance (Moore *et al.*, 1997a). Comprehension performance was measured by participants reading one of fifteen short expository texts about a single topic and answering four inference questions. Higher comprehension scores were associated with the use of regulation strategies, confidence in comprehension abilities (Capacity), knowledge of comprehension processes (Task) and lower levels of performance anxiety (Moore *et al*., 1997a).

In a subsequent study, Moore, Zabrucky, and Commander (1997) examined the MCS in relation to the measure of comprehension performance and a measure of verbal ability in the form of a vocabulary test. An additional measure of verbal ability was generated by summing the z-scores of the comprehension performance measure and the vocabulary test. Subscales of the MCS were found to be significant predictors of performance in all three measures. The subscales regulation and locus significantly predicted comprehension performance and the composite measure of verbal ability; whereas regulation, anxiety, and capacity were significant predictors of vocabulary scores. Furthermore, Lin, Moore, and Zabrucky (2000) found the MCS to be a significant predictor of metacomprehension knowledge and self-perceptions of comprehension ability.

The purpose of this study was to investigate the relationship between student metacomprehension, as measured by the MCS, and the error of predicted classroom performance. It is hypothesized that error of predicted classroom performance is a function of student metacomprehension.

CHAPTER III

METHODS

Participants

Participants were 126 undergraduate students (91 females, 35 males) from University of Texas- Pan American psychology courses. Students ranged in age from 18 to 46 years (*M* = 22.54, *SD* = 4.46). Average year in college was 3.25 (*SD* = .74) on a 4-point scale ranging from *freshman* (1) to *senior* (4). Average GPA was 3.25 (*SD* = .43). Students self-reported ethnicity as predominantly Hispanic (N=119). Participating students were enrolled in abnormal psychology (N=99) or in research design (N=27).

Materials

The Metacomprehension Scale (MCS)

The MCS has 22 statements about seven components of reading comprehension abilities and strategies. Agreement with each statement is indicated on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). The seven subscales are anxiety (feelings of stress related to academic performance, e.g., "feel nervous if I have to explain something that I have just read"), locus (perceived control over cognitive abilities, e.g., "hard work improves reading comprehension"), capacity (perception of comprehensive abilities, e.g., "good at understanding news articles"), achievement (importance of performing well on cognitive tasks, e.g., "good reading skills are something of which to be proud", task (knowledge of basic comprehension process, e.g., “it is easier to understand interesting material”, regulation (methods of resolving comprehension failures, e.g., “look up words not understood”, strategy (techniques to improve comprehension, e.g., “scan before reading”.

Predicted performance

Prior to an examination administered by the class instructor, covering class content, students predicted the percentage score he/she expected to achieve. Students also reported an estimation of the total number of hours they spent studying for the examination.

Classroom performance

Classroom performance was measured by the error of a predicted score on a classroom examination. The predicted performance score was compared with the actual score achieved to determine the difference between the scores. This derived score is the error score.

Procedure

Participating students filled out surveys on two separate occasions. The first survey, the MCS (see Appendix A), was administered to students during a regularly scheduled class approximately one week prior to the administration of the second survey. Immediately following completion of the first survey students were reminded of the second survey they needed to complete prior to taking their next class exam. The second survey, the predicted performance form (see Appendix B), was administered using two separate formats. Students enrolled in abnormal psychology were to take their upcoming examination online using a computer outside of the classroom. Therefore, the predicted performance form was made available online.

Abnormal psychology students accessed and completed the predicted performance form at Surveygizmo.com prior to taking their examination. Students enrolled in research design completed the predicted performance form at the beginning of a regular scheduled class on the day of the examination. After the examinations were scored, the instructor of the class forwarded examination scores of participating students to the researcher.

CHAPTER IV

RESULTS

Regression analysis was used to test if the MCS predicted participating students' error of predicted performance scores. The regression coefficient of 0.26 was not significant, $F(1,120) = .078$, $MSE = 64.978$, n.s.

The MCS consisted of 22 items, valued at a maximum of 5 points each. Possible MCS scores range from 0 – 110. Participants in the present study obtained MCS scores between 60 – 110. Error score range was 0 – 42. See Figure 1 for Scatter Plot of MCS scores and error scores.

Since previous research has found the MCS to significantly predict comprehension performance (Moore *et.al,* 1997, 1997a; Lin *et. al* 2000) the factor structure from previous research (see Appendix C) was compared with the factor structure of the current study.

Initially, factor analysis of all 22 items of the MCS was examined. Principle components analysis and factor analysis using varimax rotation with an eigenvalue of one was used to determine the separate factors of the MCS. During the analysis two items were eliminated because they did not contribute to the simple factor structure. Item "deteriorate" loaded as a single item factor, and was therefore eliminated due to lack of correlation. Item "dictionary" was eliminated since it failed to meet minimum criteria of having a primary factor loading of .4 or above. The remaining items reduce to six factors and account for 60.45% of the variance. The internal consistency (Cronbach's alpha) for factor 1 = .87, factor 2 = .71, factor 3 = .70, factor

4 = .80, factor 5 = .30, and factor 6 = .48. The final loading matrix for this solution is presented in Table 1.

The MCS is a valid predictor of comprehension performance (Moore *et al.*, 1997); yet, the present study demonstrates the MCS is not a valid predictor of student knowledge of their comprehension performance.

Upon further statistical review, exploratory correlational analysis revealed a significant correlational relationship between MCS scores and self-predicted scores, $r = .22$, $p < .05$. Additionally, there was a significant correlational relationship between self-predicted scores and obtained scores, $r = .40$, $p < .01$. But, there was a nonsignificant correlation of .07 (p = n.s.) between MCS scores and obtained scores. The results of correlations among MCS, self-predicted scores, and obtained scores are presented in Table 2. To determine if MCS correlation with self-predicted score was independent of obtained score correlation with self-predicted score multiple regression analysis was performed. The results of the regression indicated $R^2 = .21$, $F(2,119) = 15.74$, $p < .01$. It was found that obtained scores significantly predicted self-predicted scores ($\beta = .40$, $p < .01$), as did MCS scores ($\beta = .20$, $p < .05$). Multiple regression analysis was then used to determine which of the six factors contributed to the variance of self-predicted scores. Multiple regression results are available in Table 3.

Figure 1

Scatter Plot of Metacomprehension Scale Scores and Error Scores

(Predicted Score – Obtained Score). An error score of 0 represents lack of error, with 50 representing maximum error.

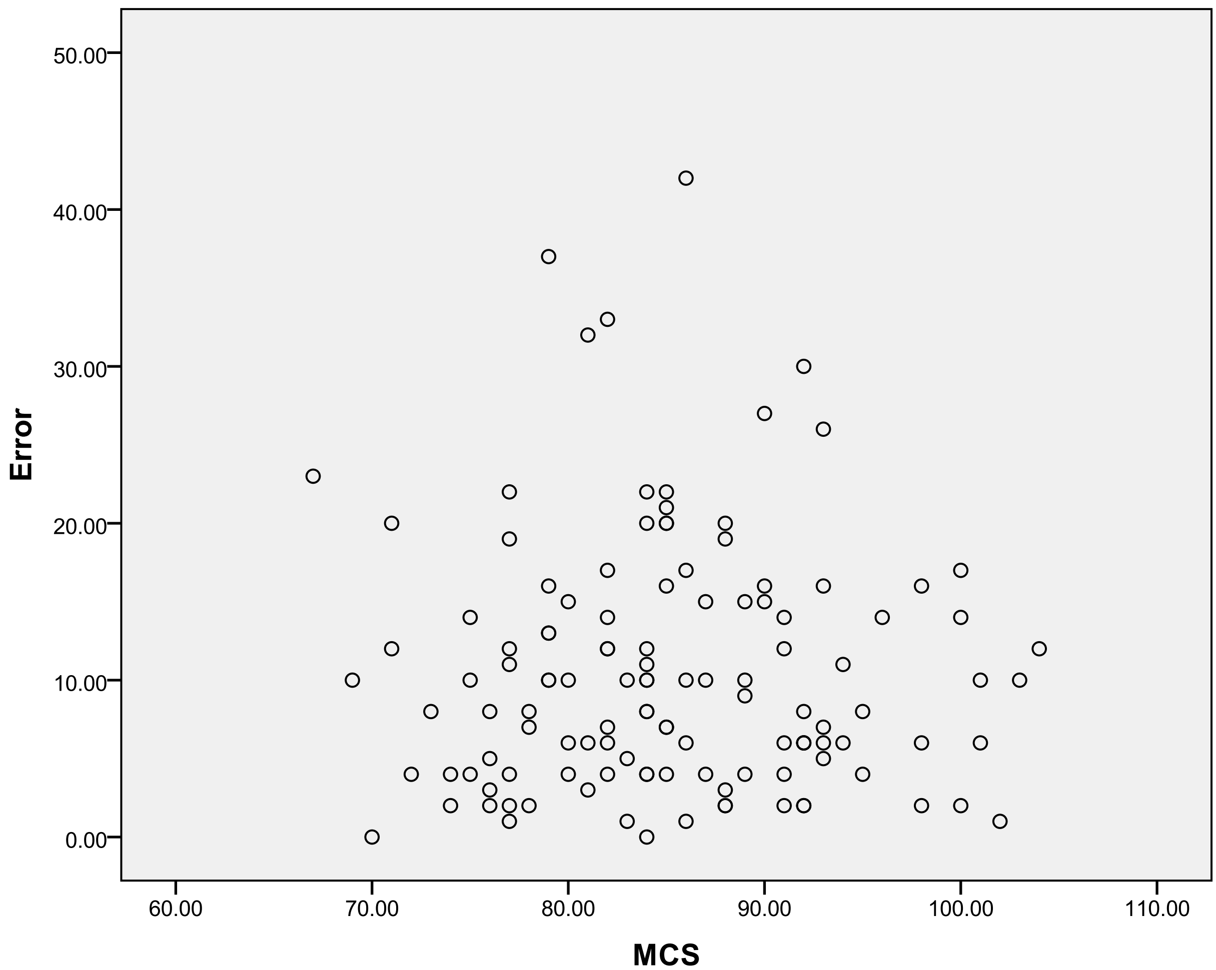

Table 1

Factor Loadings for Exploratory Factor Analysis With Varimax Rotation of Metacomprehension Scale Subscales

	Factor					
Item	1	2	3	4	5	6
nervous	**.83**	-.08	.05	.21	-.02	-.03
anxious	**.85**	.01	.07	.18	-,05	-.05
answer	**.80**	-.06	.16	.08	-.07	.23
fluster	**.81**	.02	.02	.10	.74	-.03
difficult	-.15	**.57**	.36	-.03	.30	.00
scan	-.15	**.82**	.06	-.03	.05	-.14
keyword	.12	**.68**	-.07	.01	-.19	.09
formulate	-.01	**.76**	-.25	-.05	.03	-.03
reread	-.06	**.50**	-.11	.40	.13	.22
hard work	.31	-.12	**.63**	.12	.16	-.05
interest	-.01	-.06	**.74**	-.01	.17	-.07
familiar	.11	-.01	**.80**	-.14	-.07	.11
abstract	-.00	-.04	**.57**	-17	-.30	.465
read news	.19	-.06	.05	**.87**	-.09	.06
good news	.23	-.06	.05	**.86**	.13	-.14
newsweek	.30	.08	-.14	**.64**	.22	.25
admire	-.07	-.08	.08	.09	**.72**	.19
ability	.04	.12	.03	.05	**.63**	.07
good read	.07	.05	-.23	-.02	.27	**.78**
proud	-.05	-.07	.20	.13	.30	**.52**
Reliabilities	.87	.71	.70	.80	.30	.48

Note. Bold values indicate subscale items. Factor 1 = Anxiety, Factor 2 = Strategy/Regulation, Factor 3 = Task, Factor 4 = Capacity, Factor 5 = Locus, Factor 6 = Achievement. Reliabilities are based on Cronbach's alpha.

Table 2

Correlational Analysis: MCS, Obtained score, and Predicted score

		MCS	Obtained score	Predicted score
MCS	Pearson Correlation	1	.065	.222*
	Sig. (2-tailed)		.480	.014
	N	122	122	122
Obtained score	Pearson Correlation	.065	1	.402**
	Sig. (2-tailed)	.480		.000
	N	122	126	126
Predicted score	Pearson Correlation	.222*	.402**	1
	Sig. (2-tailed)	.014	.000	
	N	122	126	126

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3

Multiple Regression Analysis: MCS Factors Regressing on Self-Predicted Scores

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Anxiety Mean	.380	.193	.187	1.967	.052
Strategy/Regulation Mean	.728	.214	.293	3.403	.001
Task Mean	-.408	.265	-.136	-1.538	.127
Capacity Mean	-.060	.533	-.011	-.112	.911
Locus Mean	.467	.800	.054	.583	.561
Achievement Mean	1.503	.942	.149	1.595	.113

a. Dependent Variable: predicted score

CHAPTER V

DISCUSSION

Previous studies examining relations between the MCS and comprehension abilities have shown the MCS to be a significant predictor of comprehension performance (Moore *et.* al, 1997, 1997a; Lin *et.* al, 2000). Comprehension abilities in relation to the MCS have mainly been measured by reading of expository texts and answering inference questions (Moore *et.* al, 1997a). The expository texts were selected by the researchers and administered in a controlled environment. Few studies looking at student knowledge of comprehension have been conducted in a natural classroom environment. One study that was conducted in an actual classroom found a positive relationship between confidence-judgment accuracy and test performance (Shaughnessy, 1979). Another study concluded that successful students rated the importance of intellectual ability higher than less successful students (Leal, 1987). The purpose of the present study was to examine the predictive validity of the MCS in relation to student learning awareness as it occurs in natural classroom environments. Based on the results of previous research, it was hypothesized that the MCS would predict student metacomprehension as measured by the error of individual predictions of performance. This was not the case. It was found that the MCS and error predictions of performance scores have practically no relationship.

The question remains as to why the MCS scale has displayed predictive validity in past research studies but failed to predict error predictions in the present study. There are two possible explanations of the difference in findings. First, it is possible that the MCS simply does not predict metacomprehension in an uncontrolled environment. Subjects of research studies may have different reactions to comprehension questions when they are evaluated in a controlled environment versus an uncontrolled environment. Perhaps the MCS is only predictive in specific organized comprehension evaluation situations.

Secondly, it is possible that the difference in populations between past studies and the present study have influenced the outcome of the predictive validity of the MCS. Yet, the factor structure of Moore *et. al* (1997) and the factor structure of the present study have similarities and differences. Therefore, an assumption regarding the two populations is inconclusive.

Similarities and differences between the factor structure of Moore *et. al (1997)* and the present study are presented in Table 4. Interestingly, the majority of the 22 items loaded as the same factors in both studies with only minor differences. Moore *et. al* (1997) found that strategy and regulation were two factors; whereas data from the present study shows strategy and regulation as one factor. Item "admire" loaded on achievement factor (Moore *et. al*, 1997) but on locus factor in the present study. However, items "proud" and "good read" loaded on achievement factor in both studies. Items that clustered as a single factor for Moore *et.* al (1997) namely "ability", "deteriorate", and "hardwork" all loaded on the same factor. All three items loaded on separate factors in the present study. Notably, the rankings of the factor prominence of the two studies are different. For practical purposes, the MCS measured different constructs among the two populations.

Being that the factor structures have differences and similarities, population may or may not be regarded as a contributing factor of the MCS unpredictability of college student error score prediction. Therefore, it may be that the MCS predicts comprehension and it does not predict knowledge of comprehension or prediction of classroom performance. In other words, if the authors of the MCS had used the MCS to measure student prediction of classroom performance rather than simple performance it would not have produced significant results.

Upon further analysis a significant correlational relationship was discovered between MCS and self-predicted scores. Additionally, an even stronger relationship between self-predicted scores and obtained scores was found. Interestingly, a correlational relationship between MCS and obtained scores was not found. Through multiple regression it was determined that MCS and obtained scores have independent relationships with self-predicted scores.

Logic suggests that the relationship between self-predicted scores and obtained scores is due to metacomprehension. If the MCS relationship with self-predicted scores is independent of the obtained score relationship with predicted scores, then MCS is measuring something other than metacomprehension. To investigate what the MCS is measuring in the present study, multiple regression was employed using the six factors derived from the factor analysis used in examining factor structure. Results indicate that strategy/regulation factor account for the greatest amount of variance in self-predicted score. The anxiety factor marginally accounts for variance in the self-predicted score. Referring to the specific items contributing to the factors strategy/regulation and anxiety, the present study suggests the MCS is measuring concepts of study tactics and perceptions of stress rather than metacomprehension.

These findings are interesting and deserve further review. However, given the limitations of this study further review is suggested for future research. Understanding metacomprehension and the influence metacomprehension has on student learning is important to achieving optimal instruction methods as well as maximizing student cognitive potential. Scales such as the MCS could be a useful tool in developing methods of learning and successful instruction, if in fact the tool measured metacomprehension. Future studies conducted in naturally occurring environments are encouraged to maximize the potential of achieving optimal student learning.

Table 4

Factor Loading Comparison of Metacomprehension Scale Subscales
Background colors of variables in the left column are retained in the right column for ease of identification.

Moore *et. al*, 1997	Present Study
Factor 1. Anxiety	**Factor 1. Anxiety**
fluster	anxious
nervous	nervous
anxious	fluster
answer	answer
Factor 2. Achievement	**Factor 2. Strategy/Regulation**
admire	scan
proud	formulate
good read	keyword
Factor 3. Strategy	difficult
scan	reread
formulate	**Factor 3. Task**
keyword	familiar
Factor 4. Capacity	interest
good news	hard work
read news	abstract
newsweek	**Factor 4. Capacity**
Factor 5. Task	read news
familiar	good news
abstract	newsweek
interest	**Factor 5. Locus**
Factor 6. Locus	admire
ability	ability
deteriorate	**Factor 6. Achievement**
hard work	good read
Factor 7. Regulation	proud
reread	**Eliminated items**
difficult	deteriorate
dictionary	dictionary

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APPENDIX A

APPENDIX A

THE METACOMPREHENSION SCALE

Item Name	Item
read news	1. Whenever I read a news article, I understand most of it.
good news	2. I am good at understanding news articles.
nervous	3. I feel nervous if I have to explain something that I have just read.
admire	4. I admire people with good reading comprehension abilities.
anxious	5. I would get very anxious if I had to read something new and explain it.
hard work	6. No matter how hard a person works on their reading comprehension ability, it cannot be improved much.
good read	7. It is important to have good reading comprehension skills.
answer	8. I get anxious when I am asked to read something and answer questions.
fluster	9. I do get flustered when I am put on the spot to read and understand something new.
newsweek	10. I am good at understanding news articles like those found in *Time* or *Newsweek* or their website.
ability	11. I know that if I keep reading I will never lose my reading comprehension ability.
interest	12. For most people, reading materials that is not interesting is easier to understand than reading material that is interesting.
proud	13. I think good reading skills are something of which to be proud.
familiar	14. For most people, it is easier to understand topics they know nothing about than topics they are familiar with.
abstract	15. Most people find it easier to understand abstract information rather than concrete information.
deteriorate	16. It is up to me to keep my reading skills from deteriorating.
difficult	17. Do you read difficult to understand material slowly and carefully to make sure that you fully understand it?
scan	18. I usually scan difficult material before trying to read it.
key word	19. When reading, do you search for key words or information that you think are essential for understanding?
formulate	20. Before reading difficult material, I usually formulate in my mind the questions that I hope to answer from reading.
dictionary	21. When reading, I usually look up words that I don't understand in the dictionary.
reread	22. When you are reading something that is difficult to understand, do you reread passages that were particularly difficult to get a better understanding of them?

Note. Items 1 – 16 rated on a five-point scale from 1 = strongly disagree to 5 = strongly agree. Items 17 - 22 rated on a five-point scale from 1 = never to 5 = always

APPENDIX B

APPENDIX B

PREDICTED PERFORMANCE FORM

Please take a moment to think about the following questions.

How prepared am I for the exam I am about to take?
How well do I know the material I am going to be tested on?

Now try to accurately and honestly fill in the blanks on the following statements.

1. On the exam I am about to take, out of 100% I think I will get a percentage score of ______.

2. I spent at least ______ hours studying and preparing for the upcoming exam.

APPENDIX C

APPENDIX C

FACTOR LOADINGS OF METACOMPREHENSION SCALE SUBSCALES
from Moore, Zabrucky & Commander, 1997

	Factor						
Item	1	2	3	4	5	6	7
fluster	**-.86**	-.03	.01	-.11	-.09	-.03	.04
nervous	**-.84**	.05	-.07	-.17	.03	-.07	-.05
anxious	**-.82**	-.06	-.09	-.18	.04	-.03	-.11
answer	**-.77**	-.00	.03	-.28	.04	.08	-.23
admire	-.02	**.76**	.12	-.06	-.02	-.03	.04
proud	-.10	**.68**	-.04	.15	.16	.02	.06
good read	.17	**.66**	.06	-.03	.22	.23	.01
scan	.02	-.08	**.76**	.11	-.06	.13	.01
difficult	.16	.06	**.75**	.07	.04	-.02	-.03
keyword	-.08	.15	**.67**	.04	-.02	-.06	.25
good news	.26	.12	.13	**.82**	.07	.01	-.03
read news	.23	.05	.04	**.79**	.03	.13	-.08
newsweek	.20	.00	.10	**.75**	.07	.17	.15
familiar	-.02	.11	-.01	.07	**.81**	-.07	.05
abstract	.01	.15	-.04	.13	**.69**	-.04	.17
interest	.00	.07	.01	-.08	**.66**	.35	.05
ability	.09	.02	.06	.22	-.03	**.75**	-.08
deteriorate	.05	.19	.00	.03	.10	**.70**	.18
hardwork	.03	.57	-.04	.18	.10	**.43**	.14
reread	.16	.01	.01	.04	.15	.01	**.83**
difficult	-.01	.04	.13	-.09	.13	.24	**.63**
dictionary	.27	.36	.10	.16	-.01	-.17	**.54**
Eigenvalues	4.47	2.70	1.67	1.62	1.29	1.74	0.99
Variance	20.30	12.29	7.57	7.35	5.85	5.34	4.50
Reliabilities	.87	.67	.58	.81	.59	.57	.57

Note. Bold values indicate subscale items. Factor 1 = Anxiety, Factor 2 = Achievement, Factor 3 = Strategy, Factor 4 = Capacity, Factor 5 = Task, Factor 6 = Locus, Factor 7 = Regulation. Eigenvalues and variance are for unrotated solution. Reliability estimates are based on Cronbach's alpha (Moore *et. al*, 1997).

BIOGRAPHICAL SKETCH

Amber Lee Klein received a Bachelor of Science degree in Psychology from Boise State University in 2008. Amber received a Master of Arts degree in Experimental Psychology from the University of Texas-Pan American in 2010. Her areas of interest include memory, metacomprehension and student learning.

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