



# METACOGNITIVE STRATEGIES AND EPISTEMOLOGICAL BELIEFS SURVEYED AMONG COLLEGE STUDENTS

## INTRODUCTION

This project investigated the potential relationship between University of Wisconsin-Eau Claire students' metacognitive awareness (i.e., awareness of their own thought processes) and their epistemological development (i.e., beliefs about the nature of knowledge). Additionally, it explored possible links between certain demographic variables (e.g., age, class status, GPA, etc.) and metacognitive and epistemological development. Participants currently enrolled in psychology courses completed Schommer's Epistemological Questionnaire (EQ) and the Metacognitive Awareness Inventory (MAI). We hypothesized that students with more academic experience and higher achievement will show more advanced metacognitive awareness and epistemological development than will students who have less academic experience and report lower achievement. Such results may implicate that metacognitive awareness and epistemological development are related to study habits and academic achievement.

## METHOD

### PARTICIPANTS

One hundred and four undergraduates (75 females, 28 males) participated in this study. Most students were currently enrolled in Educational Psychology courses at a predominately White medium-sized midwestern university. Students ranged in ages from 18 to 25+ years old and consisted of 50 sophomores, 33 juniors, and 19 seniors.

### INSTRUMENTS

The MAI (Schraw and Dennison, 1994) measures adults' ability to reflect upon, understand, and control one's learning by targeting two factors, knowledge about cognition and regulation of cognition. The inventory is composed of 52 items. Participants rated themselves on a five-point Likert scale addressing questions such as these:

- I ask myself questions about the material before I begin.
- I slow down when I encounter important information.
- I focus on overall meaning than specifics.

If a participant strongly disagreed with the statement, they earned zero points; if a participant strongly agreed with the statement, they earned four points. Therefore, a greater sum implies more developed metacognitive skills.

Coefficient  $\alpha$  for the entire instrument is .93. The MAI possesses two factors that are highly intercorrelated ( $r = .45$ ) and account for 58% of the sample variance.

The EQ (Schommer, 1989) assesses college students' beliefs about the structure and stability of knowledge, and the speed and control of learning. This instrument is composed of 63 items and participants rated themselves in the same manner as they did with the MAI. A greater sum implies more advanced epistemological beliefs. A sample of questions includes:

- Successful students understand things quickly.
- Scientists can ultimately get to the truth.
- Most words have one clear meaning.

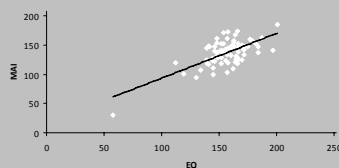
The EQ identifies four factors that account for 55.2% of the sample variance and test-retest reliability is .74. Interitem reliabilities for items that compose each factor range from .63 to .85.

### PROCEDURE

Individuals were given a packet containing a cover letter and informed consent, the MAI and EQ, a demographics survey, and a Scantron. Furthermore, half the students received the MAI first and the other half received the EQ first to eliminate order effect. The packet took approximately 25 minutes to complete and most participants were able complete it during class. Students were compensated with extra credit for their time.

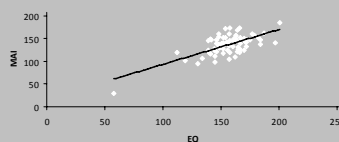
## RESULTS

A series of bivariate Pearson correlations were used for analysis to explore potential relationships between variables.



Analysis suggest that items on the MAI and EQ are correlated, implying that metacognitive awareness is related to epistemological development ( $r = .540, p < .001$ ).

### FEMALES



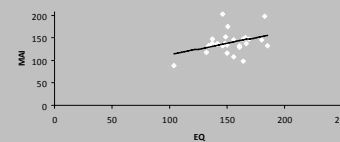
Among female participants ( $n = 75$ ), scores between MAI and EQ suggest participants with more developed metacognitive awareness are likely to have advanced epistemological beliefs ( $r = .647, p < .001$ ).

## CONCLUSION

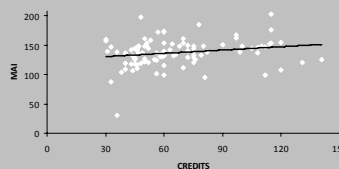
Overall results indicate a strong correlation between the EQ and MAI. This suggests that beliefs about the nature of knowledge are related to metacognitive awareness. This relationship was stronger in females than in males. The difference could be explained by the small sample size among men ( $n = 28$ ) compared to women ( $n = 75$ ); which may be affecting further analyses.

When either the MAI or EQ were examined in relation to demographic variables, small correlations did appear. Results revealed that a higher GPA is correlated with more metacognitive awareness. That is, if an individual is aware of his/her ability to reflect upon, understand, and control his/her learning, we would expect him/her to be a higher achieving student, as indicated by GPA. Additionally, the more credits the student has completed, the more probable it is to expect the individual has maximized the effectiveness of his/her studying strategies throughout the semesters. This could also be related to the explanation of the correlation between epistemological development and age. That is, the older an individual is, the more experiences he/she has accumulated, resulting in the possible realization that the nature of knowledge is complex.

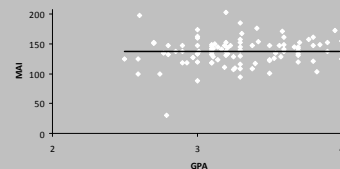
### MALES



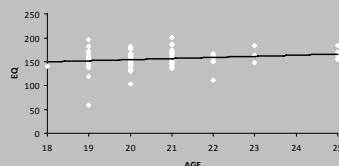
Among male participants ( $n = 28$ ), marginally significant results between MAI and EQ may suggest participants with more developed metacognitive awareness have advanced epistemological beliefs ( $r = .362, p = .058$ ).



The number of credits completed and the students' MAI score ( $n = 102$ ) were also related. This suggests the more credits a person has taken, the more developed his/her metacognitive awareness ( $r = .207, p < .05$ ).



Analysis of students' MAI scores and their GPA ( $n = 103$ ) suggest that the higher an individual's GPA, the more likely he/she possesses more developed metacognitive awareness ( $r = -.181, p < .05$ ).



Analysis of students' EQ scores and their age ( $n = 103$ ) suggest that the older an individual is, the more advanced his/her epistemological beliefs ( $r = .177, p < .05$ ).

## REFERENCES

- Schommer, M. (1998). The influence of age and education on epistemological beliefs. *British Journal of Educational Psychology, 68*, 551-562.
- Schraw, G., Dennison, R. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology, 19*, 460-475.

## ACKNOWLEDGMENTS

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