Self-reference Effect on Metacognition: Does Deep Processing Help Us Know What We Know?

According to the Levels of Processing framework proposed by Craik and Lockhart (1972), how information is processed directly impacts how well it will be remembered later. Specifically, "deep" processing leads to more effective encoding than does shallow processing. Rogers, Kuiper, and Kirker (1977) extended this idea by proposing that one of the deepest forms of processing is relating information to one's self. Over the last 40 years, several studies have found that self-referential processing leads to improvements in the organization and retrievability of information (e.g., Klein & Loftus, 1986). However, the impact of self-referential processing on metacognition is not well understood. Research on metacognition suggests that by strengthening memory encoding, self-referential processing might improve individuals' abilities to identify what information they are likely to be able to remember later (Jang & Nelson, 2005). However, it is also possible that this might lead to an illusion of confidence, thereby impairing metacognitive accuracy (e.g., Rhodes & Castel, 2008). The purpose of this study was to test whether the use of self-referential learning influences college students' judgments of learning (JOLs) and what effect, if any, this has on their ability to retrieve information later and their confidence during retrieval. Additionally, we examined whether effects of self-referential processing on memory and metamemory are moderated by individual differences in need for cognition.

Participants (184) were recruited from the undergraduate psychology research pool at our university. Each participant answered eighteen questions from the Need for Cognition Scale (Cacioppo, Petty, & Kao, 1984) before being randomly assigned in blocks of one of two groups. The control group received instruction on how to do an analogical reasoning task and performed 8 minutes of these tasks. Analogical reasoning tasks allow people to solve problems in a novel situation using reasoning from a prior situation. Analogical reasoning tasks are unrelated to the cognition required during the experiment itself. The experimental group received instruction on how to use self-referential learning and 8 minutes of practice using this technique. Participants were then presented with 60 trivia facts to study. During study, they made a JOL for each item. After the study phase participants were given a cued recall test over the same trivia questions. After each individual question, participants were asked to give a confidence rating of how confident they are that the answer they provided is correct. Finally, after the test, participants were given a short questionnaire to identify the study strategies they used.

There was not a significant difference in the accuracy, confidence, or judgments of learning of people who received self-referential training and those who did not. Even though there was not a significant effect of self-reference on memory or metacognition, we found a positive correlation between participants training scores in the experimental group and accuracy. This suggests that overall people were not more accurate in the experimental group, but those who exhibited high levels of understanding of the use of self-reference were more accurate than those who showed less of an understanding. As anticipated, the NFC scores from both groups taken prior to training were about the same. However, NFC positively correlated with accuracy as well as confidence in the experimental group. Therefore, we concluded that NFC acts as a moderator between self-reference and accuracy as well as between self-reference and confidence levels. A second experiment is underway which is aimed at making sense of the discrepancies in our findings.