

Effect of eye movement on memory and attention: Preliminary study

Abstract:

Current study is investigating whether eye movement, which is used in EMDR (Eye movement and desensitization and reprocessing) therapy, has disturbing or facilitating function for cognitive task.

We applied memory task to fifteen students with six threatening words and thirty neutral words. We also applied reaction time to discriminate direction of signs. We also measure the depression scale by BDI. There were one between group condition: high and low BDI, and two within group conditions: eye fixation vs. eye movement; threatening vs. neutral words. In eye fixation condition, subjects were asked to focus on the center of screen and words appeared in the same place, and to memorize them. In eye movement condition, words appeared in a small circle which moved back and forth in one second bilaterally, and they were asked memorize them also. Immediately after word disappeared, up- or downward triangle sign appeared, subjects discriminated them and respond different keys according up- or downward.

We analyzed by three factors (BDI: high vs. low) x (movement: eye fixation vs. eye movement) x (affect: threatening vs. neutral word) ANOVA on reaction time and recalling.

On reaction time, EM condition tended to increase more than fixation one ($F(1,13)=4.05, p<.10$). There tend to be interaction effect between BDI, movement and affect ($F(1,13)=4.32, p<.10$). These tendencies supported working memory hypothesis, but high BDI group did not show increased reaction time on neutral words by eye movement.

On recalling, EM decreased amount of recall more than fixation ($F(1,13)=5.53, p<.05$). Low BDI group recalled more neutral words by eye movement ($F(1,13)=5.67, p<.05$), which is not explained by working memory hypothesis.

Most of result supports working memory hypothesis. But, for some part, we may need other hypotheses, which could explain the effects.