Negative Self-Referential Information Processing is Consistently Predictive of Depressive Symptoms

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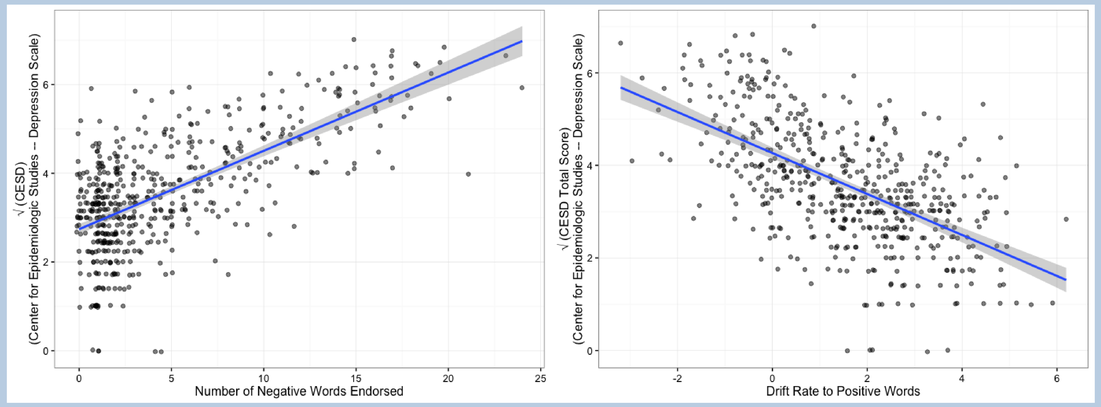
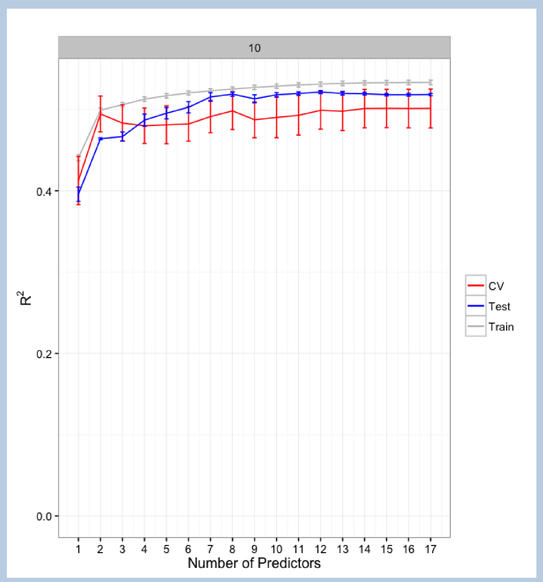
Background

- The cognitive model of depression posits that depressive symptoms are affected by maladaptive cognition, and by dysregulation in the way that individuals process emotions.[1]
- Schema is the underlying way that we understand the world around us. Positive schema makes it easier to incorporate positive information; negative schema makes it easier to incorporate negative or self-critical information.
- Latent negative schemas may be activated by negative life events, such as criticism or loss.[2] People who are depressed may prioritize incoming negative information when it fits in with a negative self-schema.
- We process information in ways congruent to our current mood or symptom level; someone with depressive symptoms will have a more negative information-processing bias—and a more negative biased self-schema.
- One line of research has operationalized the notion of self-schemas by utilizing the endorsement of positive and negative adjectives. Past work has demonstrated the connection between self-schema and depression symptoms using this task, measuring the self-referentiality of positive and negative stimuli. (See Methods)
- We want to have a better understanding on the best predictors from this task, and on how best to model the relationship between schema and depression.
- Does a computational model that incorporates response, reaction time, and their distributions (see Methods) do a better job than traditional methods at predicting depression?

1. Beck, A. T. (1967). Depression: Clinical, experimental, and theoretical aspects. University of Pennsylvania Press.
2. Beck, A. T., & Bredemeier, K. (2016). A unified model of depression integrating clin- ical, cognitive, biological, and evolutionary perspectives. Clinical Psychological Science, 2167702616628523.

Results & Discussion





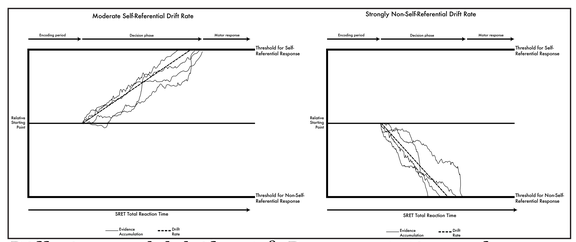
- Above left: Endorsements of Negative words, a corollary of negative self-schema, predict depression severity on the CESD in a sample of 527 students. $R = .72$, $p < .001$
- Above right: Positive schema, as defined by the drift rate to positive words, predicts depression severity in a sample of 527 students. $R = -.58$, $p < .001$
- Left: Best subsets selection graph showing R^2 for models as a function of number of predictors. Red line shows the model fit for cross-validation sample; gray line shows the original training data set (students); blue line shows a test dataset (Mturk sample). Procedure indicated the best model was fit with the two variables shown above, but not memory bias.

Findings support the use of the SRET as an instrument for measuring self-schema.

The SRET is a good measure for understanding how people view themselves.

Method

- Participants were recruited online from university subject pools at UT-Austin (527) and Amazon Mechanical Turk (293). They completed two primary measurements: CESD[1] a measure of depression symptoms); SRET[2] (a measure of self-schema).
- The self-referent encoding task (SRET) has participants respond quickly to positive and negative adjectives by answering whether those adjectives are self referential. After the task, participants have a free recall of words from the task, a measure of memory bias.
- The diffusion model, below, was also used to model responses on the SRET.



Diffusion model drift rate[3]. Representations of a subset of trials from hypothetical results. The time taken to reach the threshold across all trials is used to determine drift rate. Each individual generated two drift rates, one pertaining to decision making for positive adjectives and one for negative adjectives.

- Left: a moderate, self-referential drift rate.
- Right: a strong, non-self-referential drift rate.

1. Radloff, L. S. (1977). The ces-d scale: A self-report depression scale for research in the general population. Applied Psychological Measurement, 1(3), 385–401. doi: doi:10.1177/014662167700100306
2. Derry, P. A., & Kuiper, N. A. (1981). Schematic processing and self-reference in clinical depression. Journal of abnormal psychology, 90(4), 286.
3. White, C. N., Ratcliff, R., Vasey, M. W., & McKoon, G. (2010). Using diffusion models to understand clinical disorders. Journal of Mathematical Psychology, 54, 39–52. doi: 10.1016/j.jmp.2010.01.004