The Feedback related negativity in ADHD: A meta-analytic review

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Objective
To review current findings of the feedback related negativity component (FRN) in the ADHD population.

Methods
A systematic search in PubMed, PsycINFO, and Science Direct databases (up to December 15, 2014) identified 33 published articles of EEG studies with ADHD patients that were tested within a reward paradigm, that reported FRN component on a FCZ location, 250 ms following feedback onset. Six studies measured the FRN within a reward context met all inclusion criteria, while five studies measured the FRN within loss context.

Results
ADHD population showed altered FRN in a reward context relative to typical control groups while FRN in a loss context did not differ between groups. This neuronal alteration showed enlarged amplitudes in the FRN waveform for the ADHD groups in a reward context.

Conclusions
Results are consistent with previous work that reported a greater sensitivity to gain than loss context (e.g. Sambrook et al. 2012) Clearly, this meta-analysis brings evidence that this effect is also observable in clinical population. Moreover, our results are compatible with previous ADHD models that suggest abnormalities in the midbrain dopamine system (e.g. Dopamine Transfer Deficit Model).