

Introduction

- Personal goals are future-oriented representations of a desired state towards which one is striving (Cochran & Tesser, 1996).
- Mental simulation enables planning and preparation for goal pursuit; simulation ability affects beliefs and motivation to take goal-oriented action (Ernst & D'Argembeau, 2017; Gaesser & Schacter, 2014).
- Anticipated (i.e., predicted) and anticipatory (i.e., present moment) emotions are also implicated in goal pursuit (Baumgartner et al., 2008), and are sensitive to the presence of depressive symptoms (Anderson et al., 2023; Gamble et al., 2021).
- **We examined goal characteristics (e.g., achievement likelihood, simulation vividness) and anticipated / anticipatory emotions (happiness, satisfaction, disappointment, frustration) relating to goal outcomes in a sample of 120 students varying in depressive symptom level. Pre-registered hypotheses predicted that more depressed individuals would A) view their goals as less likely to succeed; B) imagine goal success less vividly; and C) report diminished future-oriented emotions (Anderson et al., 2023).**

Method

- Online survey via Qualtrics recruited 134 psychology UGs, with 14 exclusions due to extreme survey duration or extreme/over-consistent responses. Final sample of $n = 120$ (99 female), mean age = 22.1 ± 6.7 years (range 18-48).
- Participants reported six personal goals, three approach-motivated (e.g., finish my degree) and three avoidance-motivated (e.g., avoid drinking too much).
- In two counterbalanced blocks, Ps rated anticipated (predicted) and anticipatory (right now) emotions for each goal. Emotion items were happiness and satisfaction relating to goal success (positive); and disappointment and frustration relating to failure (negative), each measured on a 0-100 slider.
- Goals were then rated on seven cognitive and motivational characteristics, in randomised order (temporal distance, simulation vividness, achievement likelihood, importance, controllability, motivation and effort required; Anderson et al., 2023).
- Finally, participants completed the 20-item CESD-R measure of depressive symptoms (Eaton et al., 2004). Each item receives a score of 0-4, summed to give a total score of 0-80. Mean CESD-R score was 24.4 (SD = 18.4). Scores were square root transformed to correct for positive skew.

Results

- Multilevel linear models (with random intercepts by participant) were computed for key outcome variables likelihood, vividness, and anticipated/anticipatory emotions.
- **As predicted, more depressed individuals viewed their goals as less likely to succeed ($b = -1.76$, $t_{(235.9)} = -2.93$, $p = .004$) and imagined success less vividly ($b = -2.00$, $t_{(211.0)} = -3.14$, $p = .002$).** They also expected their goals to be accomplished further into the future ($b = 0.09$, $t_{(173.3)} = 1.99$, $p = .048$).
- **Contrary to hypotheses, there were no main effects of CESD-R on emotion variables ($ps > .5$).** However, there was a **CESD-R \times Emotion Type interaction for ratings of satisfaction ($b = -1.37$, $t_{(1314)} = -2.83$, $p = .005$).** As shown in **Figure 1**, anticipatory satisfaction declined with increasing depression level, whereas anticipated satisfaction remained constant.

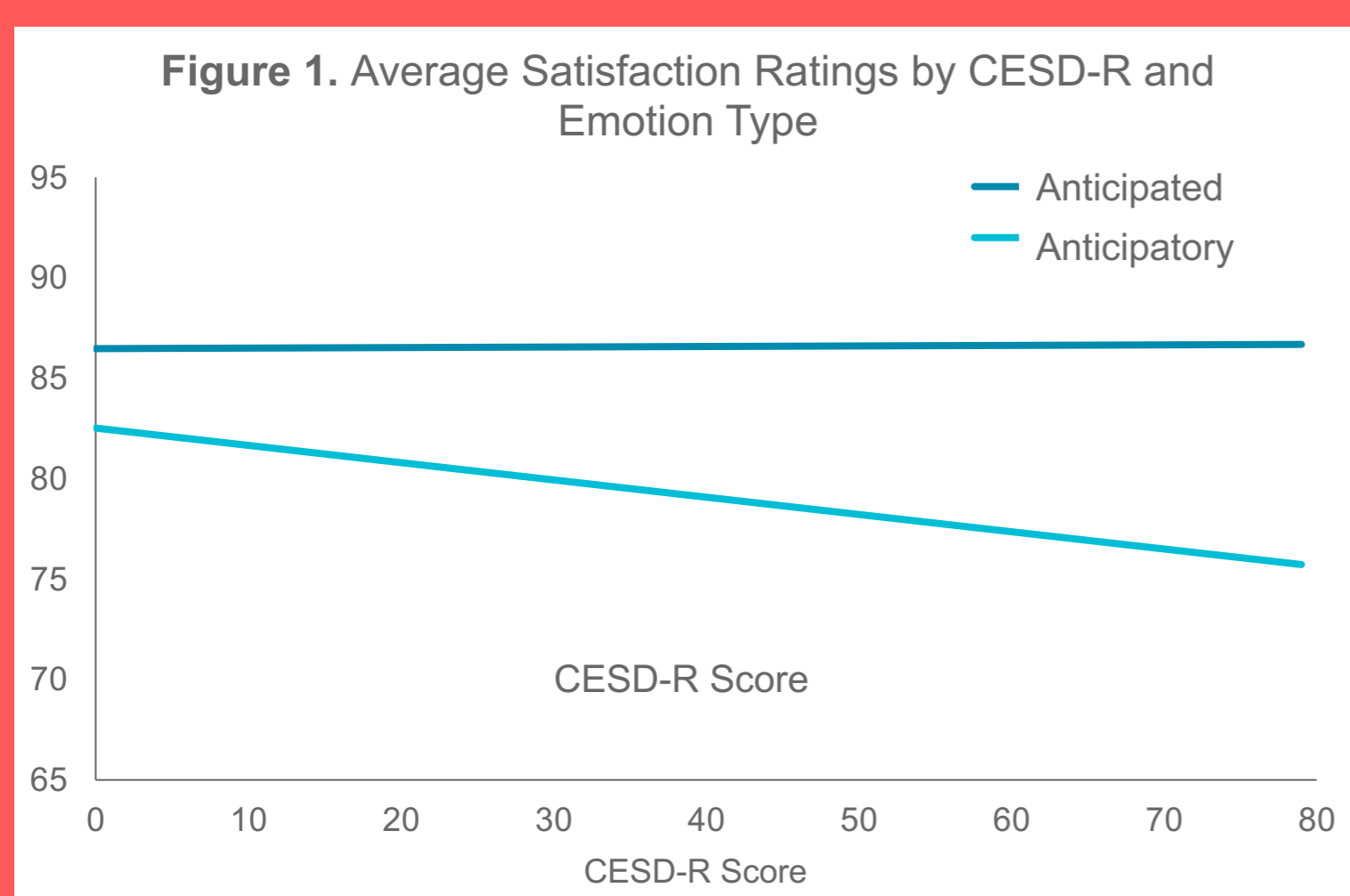
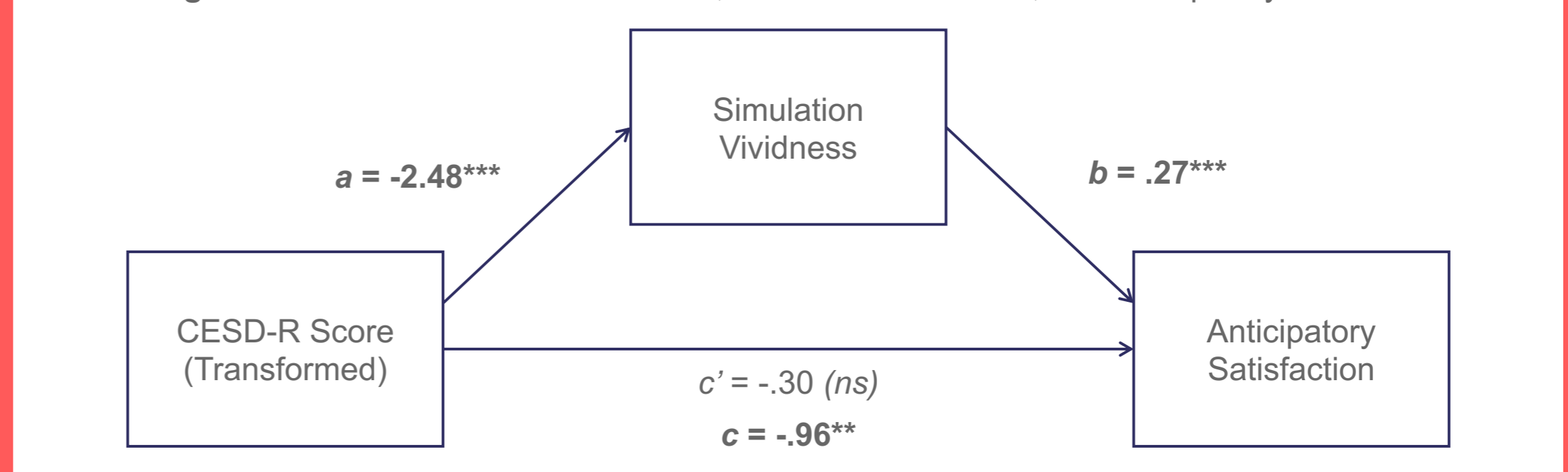


Figure 2. Mediation Model for CESD-R, Simulation Vividness, and Anticipatory Satisfaction



- Mediation analysis was conducted in Jamovi (running *psych* for R; Revelle, 2019) to further explore relationships between depressive symptoms, simulation vividness and anticipatory satisfaction.
- As shown in **Figure 2**, vividness fully mediated the effect of CESD-R on anticipatory satisfaction.

Discussion

- This study sought to test three hypotheses concerning the effects of depressive symptoms on goal-related expectations, simulation and emotions. Specifically, more depressed individuals were expected to rate their goals as less likely to succeed; to imagine goal achievement less vividly; and to experience diminished levels of future-oriented emotion (Anderson et al., 2023; Dickson et al., 2011; Gamble et al., 2021).
- We found support for the first two hypotheses, with CESD-R depression score emerging as a significant negative predictor of likelihood of success and simulation vividness when imagining goal success. The third hypothesis, regarding future-oriented emotion, was not wholly supported in this data set (cf. Anderson et al., 2023, between-subjects design). Instead, we found specific evidence of a negative impact of depression severity on *anticipatory* satisfaction – the sense of satisfaction one feels *in the present moment* while imagining a successful goal outcome. This divergence between anticipated and anticipatory emotions is consistent with the proposal that the two forms of future-oriented emotion be treated as distinct constructs (Baumgartner et al., 2008).
- Mediation analysis demonstrated that the effect of depression level was fully mediated by simulation vividness: Highly depressed individuals only felt lower anticipatory satisfaction to the extent that they struggled to imagine a successful outcome in vivid detail. This represents a synthesis of evidence on depressive deficits in episodic simulation (Hallford et al., 2018) and anticipatory positive emotion (Hallford & Sharma, & 2019), highlighting a potential causal pathway between the two. Furthermore, it reinforces the value of developing simulation- and imagery-based interventions to improve affect and motivation in depression (Boland et al., 2018; Hallford et al., 2020).

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