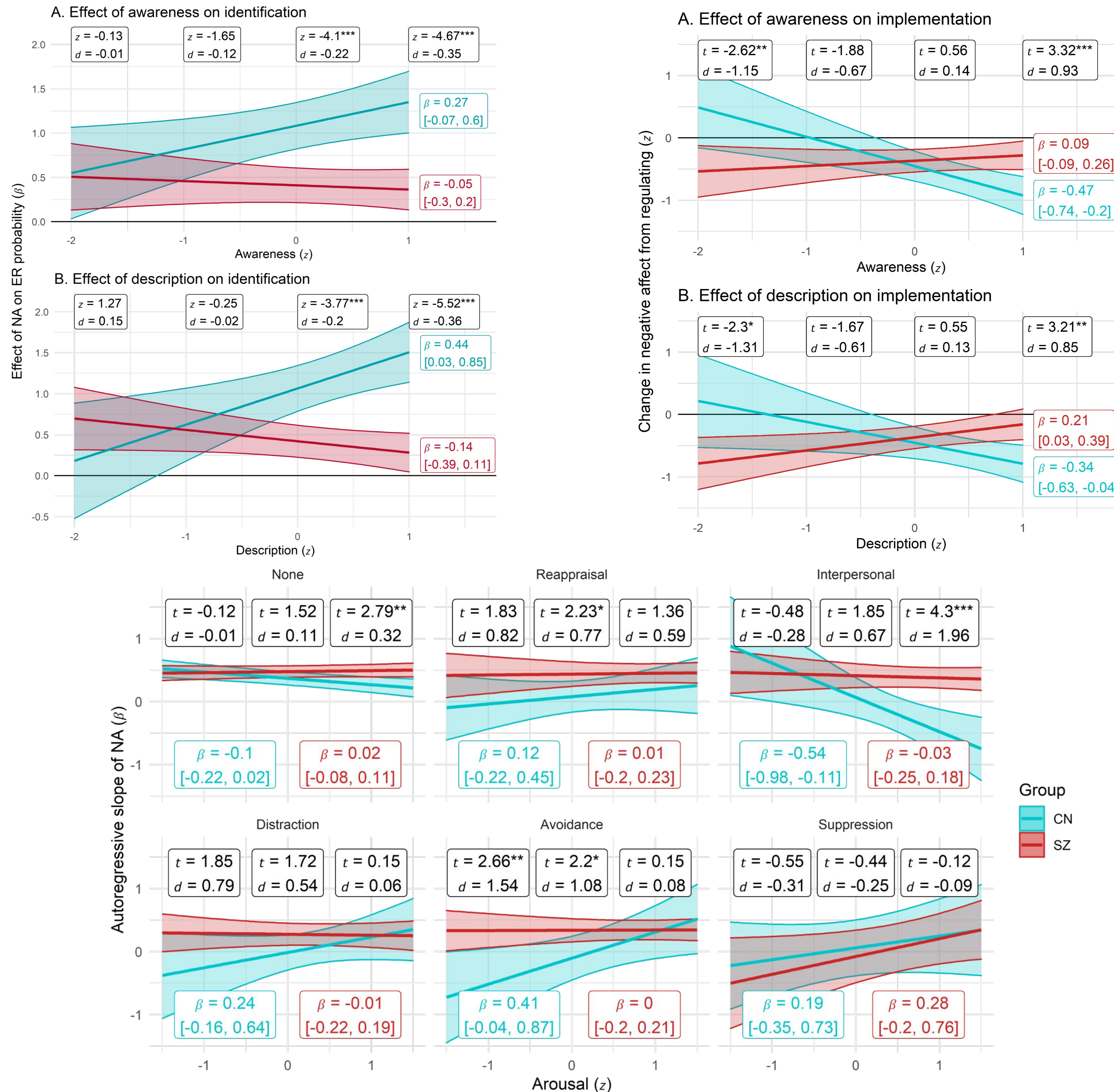# Deconstructing Emotion Regulation In Schizophrenia: Evaluation Of Moderators Across Identification, Selection, And Implementation Stages

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Context moderates emotion regulation in CN but not SZ

A. Effect of awareness on identification

z = -0.13, d = -0.01	z = -1.65, d = -0.12	z = -4.1***, d = -0.22	z = -4.67***, d = -0.35

β = 0.27 [-0.07, 0.6]
β = -0.05 [-0.3, 0.2]

Awareness (z)

B. Effect of description on identification

z = 1.27, d = 0.15	z = -0.25, d = -0.02	z = -3.77***, d = -0.2	z = -5.52***, d = -0.36

β = 0.44 [0.03, 0.85]
β = -0.14 [-0.39, 0.11]

Effect of NA on ER probability (β)

Description (z)

A. Effect of awareness on implementation

t = -2.62**, d = -1.15	t = -1.88, d = -0.67	t = 0.56, d = 0.14	t = 3.32***, d = 0.93

β = 0.09 [-0.09, 0.26]
β = -0.47 [-0.74, -0.2]

Awareness (z)

B. Effect of description on implementation

t = -2.3*, d = -1.31	t = -1.67, d = -0.61	t = 0.55, d = 0.13	t = 3.21**, d = 0.85

β = 0.21 [0.03, 0.39]
β = -0.34 [-0.63, -0.04]

Change in negative affect from regulating (z)

Description (z)

None

t = -0.12, d = -0.01	t = 1.52, d = 0.11	t = 2.79**, d = 0.32

β = -0.1 [-0.22, 0.02]
β = 0.02 [-0.08, 0.11]

Reappraisal

t = 1.83, d = 0.82	t = 2.23*, d = 0.77	t = 1.36, d = 0.59

β = 0.12 [-0.22, 0.45]
β = 0.01 [-0.2, 0.23]

Interpersonal

t = -0.48, d = -0.28	t = 1.85, d = 0.67	t = 4.3***, d = 1.96

β = -0.54 [-0.98, -0.11]
β = -0.03 [-0.25, 0.18]

Distraction

t = 1.85, d = 0.79	t = 1.72, d = 0.54	t = 0.15, d = 0.06

β = 0.24 [-0.16, 0.64]
β = -0.01 [-0.22, 0.19]

Avoidance

t = 2.66**, d = 1.54	t = 2.2*, d = 1.08	t = 0.15, d = 0.08

β = 0.41 [-0.04, 0.87]
β = 0 [-0.2, 0.21]

Suppression

t = -0.55, d = -0.31	t = -0.44, d = -0.25	t = -0.12, d = -0.09

β = 0.19 [-0.35, 0.73]
β = 0.28 [-0.2, 0.76]

Autoregressive slope of NA (β)

Arousal (z)

Group
- CN
- SZ

Introduction

- People with schizophrenia-spectrum disorders (**SZ**) regulate emotions more often, at lower levels of negative affect (**NA**), using different strategies, and are less effective compared to controls (**CN**)
- It is important to identify moderators of these difficulties (e.g., difficulties with emotional awareness and description) in order to develop personalized emotion regulation treatments
- The present study aimed to evaluate how arousal, awareness, and description moderate the emotion regulation stages of identification and implementation
- **Hypotheses:**
  - **NA would more strongly influence identification as moderators increase in CN but not SZ**
  - **Effectiveness would decrease with greater arousal in SZ**
  - **Effectiveness would increase with greater awareness and description in CN**

Methods

- 52 SZ and 55 CN completed ecological momentary assessment with 8 surveys per day over 6 days
- Groups did not significantly differ on age, gender, race, or parental education ($ps > .1$)
  - There was a trend of lower adherence among SZ ($F = 3.52$, $p = .06$)
  - Personal education was greater among CN than SZ ($F = 19.33$, $p < .001$)
- Surveys assessed emotional experience, emotion regulation, arousal, awareness, and description
- Mixed-effects models were used to evaluate moderation effects of interest

Results

- No significant group differences in arousal ($t = 1.33$, $p = .186$), awareness ($t = -0.2$, $p = .843$), or description ($t = -1.81$, $p = .073$)
- Significant moderation of identification by awareness and description in CN but not SZ
- Significant moderation of implementation by awareness and description in CN but not SZ
- Arousal showed a significant interaction with strategy choice on the stability of negative emotion ($\chi^2 = 15.74$, $p = .008$)

Table 1. Summary of moderation effects

Moderator (Mod)	Identification (χ^2)				Implementation (F)			
	Mod	Group X Mod	NA X Mod	Group X NA X Mod	Mod	Group X Mod	ER X Mod	Group X ER X Mod
Arousal	2.34	0.82	0.07	0.8	1.69	2.57	0.05	0.05
Awareness	2.55	0.07	5.43*	5.26*	0.87	0.0	12.78***	10.81**
Description	6.75**	0.5	8.51**	11.47***	0.49	0.0	5.26*	8.8**

Conclusion

- Emotion regulation did not vary by context in SZ in the same ways as CN
- **SZ show similar awareness of contextual factors but do not incorporate them as CN**
- Possible reasons:
  - Cognitive impairments make contextual integration more difficult
  - Negative symptoms including lack of motivation to engage in cognitive effort
  - May be capable and motivated but not know how to integrate context
  - Stressors may be experienced as less responsive to context, leading to less flexibility
- Infrequent regulation endorsement may limit power for some analyses
- Participants were chronic phase outpatients with mild to moderate symptoms
- Treatments which target emotion regulation in SZ may emphasize how to adjust emotion regulation based on context
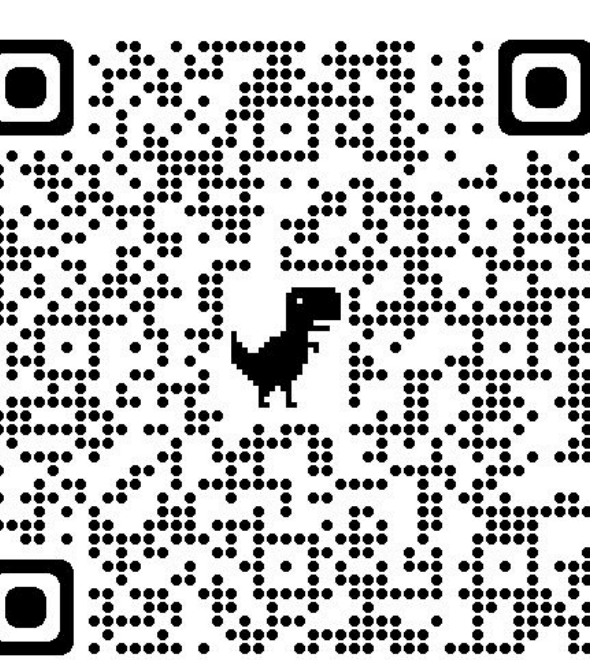
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