Religious Coping as an Adaptive Emotion Regulation Strategy in Older Adults

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Introduction

- The hypothalamic-pituitary-adrenal (HPA) stress axis is a hormone cascade that results in the release of adrenocorticotrophic hormone (ACTH) and cortisol.

- Negative feedback is the self-regulating mechanism of the HPA axis that terminates cortisol secretion by suppressing ACTH production.

- Adaptive emotion regulation strategies that minimize stress' negative emotional impact encourage the optimal regulation of the HPA axis necessary for health and wellbeing (Urry et al., 2006).

- Religious coping is known to positively influence health (Paloutzian & Park, 2014), but it is unknown whether emotion regulation offers a pathway to explain *how* religious coping affects health.

- The aims of this study were thus to examine: 1) whether religious coping buffers the effects of perceived stress on negative affect, and 2) if this interaction effect is associated with negative feedback functioning.

Method

- Participants (N = 72, M_{age} = 57.11, SD = 15.45) were recruited from the Notre Dame Study of Health and Wellbeing, and screened for medication use or a medical history that alters HPA functioning.

- To collect negative feedback data (collected November 2013 - June 2016), participants completed two 4-hour sessions scheduled 3 – 7 days apart beginning between 1500h to 1700h to control for diurnal cortisol fluctuations.

- During both sessions, a RN placed intravenous infusion sites in the forearms; one site was used for blood collection, and the other to administer .1mg/kg of hydrocortisone (i.e., synthetic cortisol) in one session and placebo saline in the other.

- Nine 10mL blood samples were collected at evenly spaced intervals; ACTH levels in each sample were quantified via radioimmunoassay (DiaSorin, Stillwater, MN).

- Wave 7 (collected April 2013 – 2014) daily diary data from the Notre Dame Study of Health and Wellbeing was used to assess the effects of perceived stress, religious coping, and their interaction effect on negative affect.

- For 56 consecutive days, participants completed the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983), the Religious Coping scale of the Brief Multidimensional Measure of Religion/Spirituality (Fetzer Institute, 1999), and the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988).

Results

- ACTH data quantified via radioimmunoassay with DiaSorin is available on a subset (N = 65) of the dataset given product discontinuation. Three participants were excluded from analyses due to missing data, yielding a final sample size of N = 62. Area under the curve with respect to increase (AUCi, Pruessner et al., 2003) is a data transformation that captures hormone level changes across time. Negative feedback was determined by calculating placebo (PL) day ACTH AUCi and hydrocortisone (CORT) day ACTH AUCi using ACTH samples 4 – 8, and subtracting CORT AUCi from PL AUCi. As expected, negative feedback was observed across the study sample as indicated by blunted plasma ACTH levels on CORT administration day.

Average plasma ACTH

ACTH AUCi
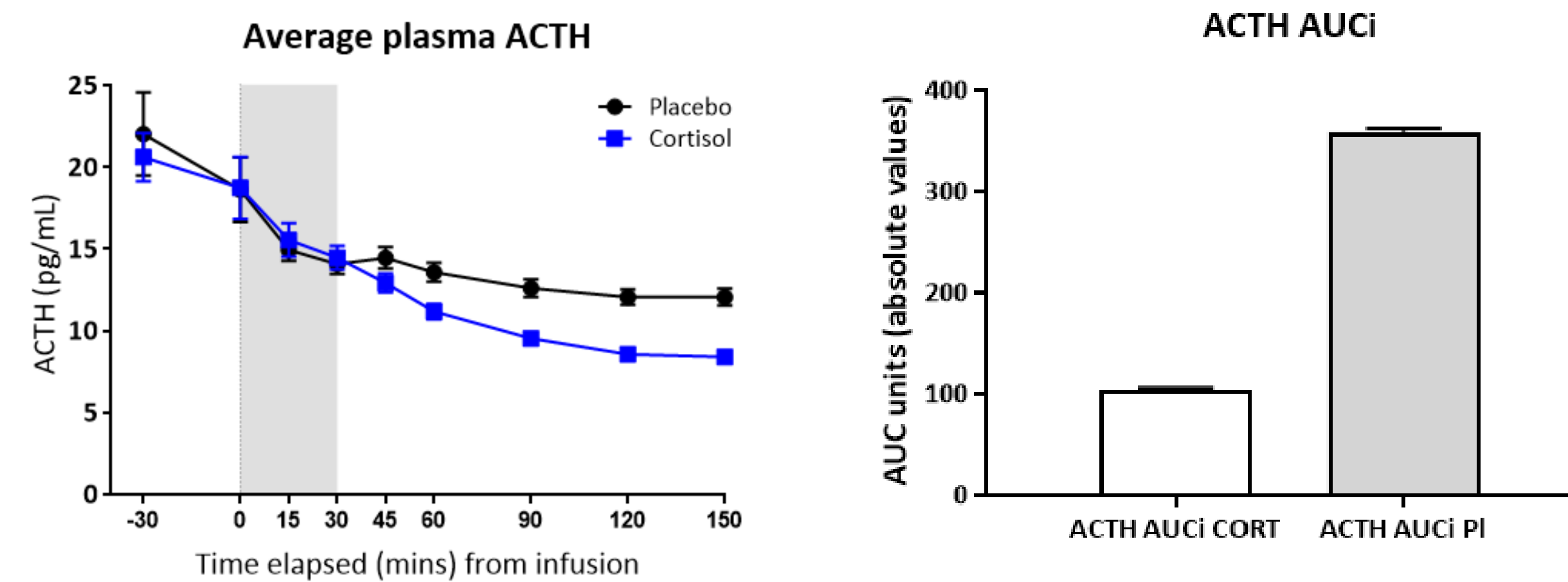
- Multi-level modeling (MLM) was used to examine daily diary data to assess the effects of religious coping on the stress-affect relationship within the mid-life (n = 240, 40 – 59 yrs) and later-life cohorts (n = 242 , 60+). Day level negative affect was estimated via:

$$y_{ij}(NA) = \beta_{0j} + \beta_{1j}(Day) + \beta_{2j}(Stress) + \beta_{3j}(RelCop) + \beta_{4j}(Stress \times RelCop) + e_{ij}$$

- Results of the MLM in the later life cohort indicate a significant effect of day (β = .005, p < .01), suggesting a decrease in negative affect across the 56 days. The direct effects of stress on negative affect (β = .305, p < .0001) and the stress-religious coping interaction (β = .0196, p < .01) were also significant. In the mid-life cohort, only the direct effects of stress (β = .411, p < .001) and religious coping (β = .086, p < .01) were significant.

Parameter estimates from multi-level models for daily negative affect using daily perceived stress, religious coping, and their interaction effects in mid and later-life adults	Estimate	Std. Error	t-Ratio
Later life			
Day[L]	.00	0.00	3.01*
Daily Stress[L]	0.31	0.02	14.28*
Daily Religious Coping[L]	0.06	0.02	3.15*
Daily Stress x Religious Coping[L]	.02	0.00	2.77*
Mid-life			
Day[M]	-0.00	0.00	-0.99
Daily Stress[M]	0.41	0.02	17.46*
Daily Religious Coping[M]	.086	0.03	2.61*
Daily Stress x Religious Coping[M]	.00	0.00	.48

- MLMs specified random effects for each individual to derive respective parameter estimates (Ram & Gerstorf, 2009) that represent intraindividual variability. These coefficients were used to examine whether the interaction effects of stress and religious coping influence negative feedback. Results (N = 33) of the analyses were NS.

Discussion

- One aim of this study was to examine whether religious coping functions as an emotion regulation resource. Results of the MLMs reveal religious coping modified the effects of perceived stress on negative affect only in later-life adults, replicating the Bergeman & Whitehead (2011) findings. These results suggest that older adults may more readily engage in religious coping as an effective emotion regulation resource.

- This study also sought to examine whether the stress-religious coping interaction influenced negative feedback. In particular, random coefficients were generated from the MLM to explore whether this interaction effect captured intraindividual variability in the way it effects negative feedback. Although the stress-religious coping interaction was anticipated to influence negative feedback, results were not significant.

- Due to limitations in sample size, analyses examining the interactions effects of stress and religious coping on negative feedback included mid-life adults. It is possible that if analyses were limited to the later-life adults, an effect of the stress-religious coping interaction on negative feedback may emerge.

Future Directions

- Further research is needed to better understand observed cohort differences in the buffering effects of religious coping on the stress-affect relation.

- Future research should continue to examine the interaction effects of stress and religious coping on negative feedback given this study's limited sample size (N = 33).

- Research should also examine whether the stress-religious coping interaction effects other aspects of the HPA axis, such as the cortisol awakening response.

- Future research should also examine what additional factors (e.g., mood disorders) more generally affect negative feedback functioning.

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