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LAI, Chuk Ling Julian; LEUNG, On Yee Monique; LAM, Yun Wah; BERNING, Karsten

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Loneliness and Diurnal Salivary Cortisol in Chinese Undergraduates

International Convention of
Psychological Science
Vienna, Austria
23 -25 March 2017

Julian C. L. Lai & Monique Leung

*Psychophysiology Laboratory, Department of Applied Social Sciences, City University of Hong Kong,
Hong Kong*

Yun Wah Lam & Karsten Berning

Department of Biology & Chemistry, City University of Hong Kong, Hong Kong

Background

Research on trait loneliness and cortisol has been focusing on older age groups. Due attention has not been drawn to the neuroendocrine effect of loneliness in younger populations such as college students. This motivated us to design the present study to fill the gap

Participants

Thirty-eight Chinese undergraduates took part in the study. Thirty were females. The mean age was 21.4 years. Course credits and cinema vouchers were given in return for their participation.

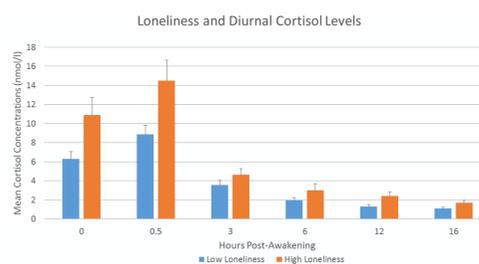
Procedure

Participants were required to provide 6 saliva samples per day for 3 consecutive weekdays at: immediately after waking, 0.5 hours, 3 hours, 6 hours, 12 hours thereafter, and at bedtime. Sampling times were monitored using electronic devices (MEMS TrackCaps, WestRock). Participants were also asked to fill out the 8-item UCLA Loneliness Scale and a measure of daily stress: the Inventory of College Students' Recent Life Experiences



Results

Data were analyzed using **multilevel modelling** with day and times of saliva collection being treated as repeated measures, and gender and year of study as covariates. Scores of loneliness and daily stress were centered. Cortisol concentrations were analyzed using an enzyme-linked immunosorbent assay. Cortisol data were winsorized and normalized using log transformation for subsequent analyses.

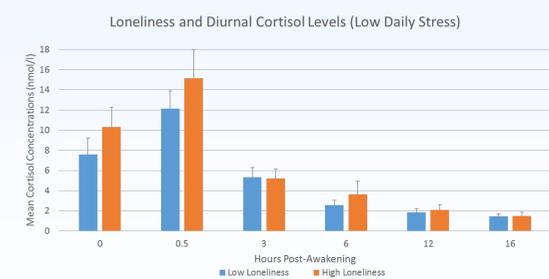
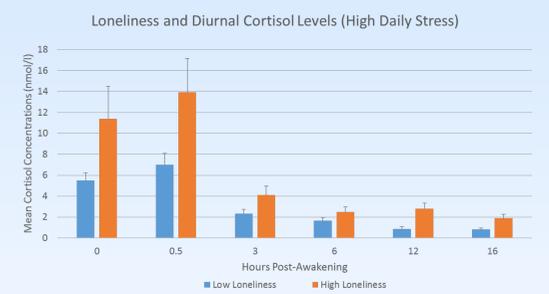


Main findings:

- (1) A significant decline in cortisol level from immediately after waking to bedtime; this decline slowed down over time
- (2) Higher loneliness was associated with a higher level of diurnal cortisol. High vs. low in loneliness was created by a median split

As the average bedtime was 16 hours after waking for the sample, 16 hours was used to represent bedtime in all figures.

(3) The effect of loneliness on diurnal cortisol was accentuated in participants experiencing a high level of daily stress (high vs. low daily stress was created by a median split)



Estimates of Fixed Effects

Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval
Intercept	.753897	.081187	158.586	9.294	.000	.593351 .914044
Day	-.006310	.033555	167.712	-.188	.851	-.099934 .072554
Time (linear)	-.140794	.012797	591.784	-11.002	.000	-.169917 -.115652
Time (nonlinear)	-.005338	.000790	583.188	-6.759	.000	-.007877 -.002800
Daily Hassles	-.001742	.002383	107.853	-.728	.468	-.006486 .003002
Loneliness	.016167	.006384	108.701	2.532	.013	.003513 .028821
Daily Hassles * Loneliness	.001351	.000500	108.120	2.704	.008	.000361 .002341

Conclusions

1. Our findings show that loneliness scores were positively associated with levels of diurnal cortisol in Chinese undergraduates. Moreover, the effect of loneliness on cortisol was moderated by levels of daily stress: high daily stress accentuated the effect of loneliness on cortisol levels. This finding has not been reported in prior research.
2. Due to the small sample size and dominance of female participants, further research is warranted to provide stronger support to these preliminary findings.