

Unraveling Temporal Dependencies in Stress: Insights from Self-Reported Stress Data

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Motivation and Goal

- **Motivation**
 - Stress detection studies mainly consider self-reported stress as the ground truth for detecting stress in daily life
 - When building such stress detection models, some studies assume that **self-reported stress is independent** over time, using short-term data (e.g., data from 2–3 hours earlier) as predictors
 - In contrast, other studies assume **self-reported stress is interdependent**, using longer-term data (e.g., data from 24 hours earlier) or even previous self-reported stress data as predictors
- **Goal**
 - **Identify the temporal dependencies** between self-reported stress data utilizing autocorrelation function (ACF)
 - **Discuss insights into how to consider temporal dependencies** in self-reported stress

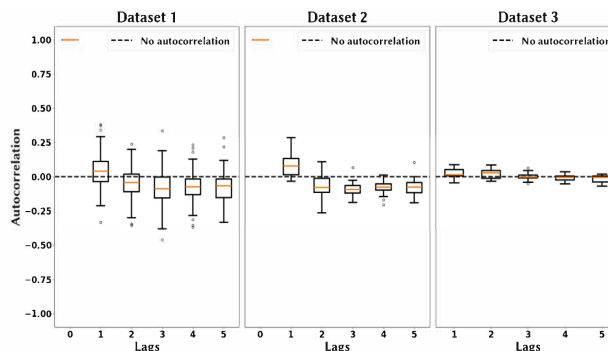
Data

Analyzed three self-reported stress datasets collected in daily life, with different data collection contexts such as place, participants, and self-reporting questions

	Dataset 1	Dataset 2	Dataset 3
Contexts	Daily lives	Daily lives	Call center
Participants	77 students (F:24, M: 53)	24 students (F:9, M:15)	18 call agents (F:17, M: 1)
Self-reporting question	Stress at ESM point	Stress at ESM point	Stress of each call
Data Amount*	10.4	12.8	37.2
Data Interval*	70.5 min	93.5 min	13.2 min

Result

Identified that the correlation (i.e., ACF value) between past self-reported stress and current self-reported stress varied across different datasets and participants



Discussion

Insight 1: ACF values can be utilized when determining the optimal duration of past data to be used as predictors

Insight 2: Researchers should recognize that temporal dependency can vary depending on the data collection context

Discussion Questions

Question 1: Share your experience with the temporal dependency of self-reported stress data and discuss the potential applicability of insights

Question 2: Discuss the impact of data collection context (especially, self-reporting questions) on temporal dependency