

The Duration and Emotional Concomitants of Minor Daily Illnesses

Randy J. Larsen, Ph.D



Washington University in St. Louis

Questions

- Does personality predict who becomes ill?
- Does personality predict who becomes well, or who recovers from illness faster?
- Do some people suffer more, or have more emotional consequences, from minor illnesses

Why conduct an Intensive Time Sampling Study?

Duration of Symptoms: Once symptoms start, how long do they last? Involves change over time, requires intensive repeated observation to 'catch' natural illnesses and chart their duration for each person.

Emotional Concomitants: When symptoms occur, do they tend to be accompanied by strong negative emotions? Involves covariation over time, requires intensive repeated observation of two variables.

Method

- N = 43 college students, with training in how to interpret questions and use the report.
- O = three times a day for eight consecutive weeks, for a potential of 168 observations per subject (for a total sample size of over 7000).
- Recorded at semi-fixed intervals, on paper report forms (example on next slide).
- Sampling frequency and compliance.

Daily Health and Mood Report

Pseudonym _____ ID# _____ Report # (circle one) 1 2 3 Date _____ Time _____ am pm

Use a number from this scale to indicate how much of each mood you experienced during the time period.

NOT AT ALL 0	VERY SLIGHTLY 1	SOME-WHAT 2	MODERATE AMOUNT 3	MUCH 4	VERY MUCH 5	EXTREMELY MUCH 6
<input type="checkbox"/> drowsy		<input type="checkbox"/> stimulated		<input type="checkbox"/> relaxed		<input type="checkbox"/> sad
<input type="checkbox"/> excited		<input type="checkbox"/> distressed		<input type="checkbox"/> lonely		<input type="checkbox"/> angry
<input type="checkbox"/> unhappy		<input type="checkbox"/> enthusiastic		<input type="checkbox"/> calm		<input type="checkbox"/> anxious
<input type="checkbox"/> pleased		<input type="checkbox"/> happy		<input type="checkbox"/> frustrated		<input type="checkbox"/> full of energy
<input type="checkbox"/> nervous		<input type="checkbox"/> quiet		<input type="checkbox"/> dull		<input type="checkbox"/> bored
<input type="checkbox"/> irritable		<input type="checkbox"/> hostile		<input type="checkbox"/> guilty		<input type="checkbox"/> ashamed
<input type="checkbox"/> active		<input type="checkbox"/> idle		<input type="checkbox"/> jittery		<input type="checkbox"/> proud
<input type="checkbox"/> determined		<input type="checkbox"/> inspired		<input type="checkbox"/> alert		<input type="checkbox"/> strong
<input type="checkbox"/> afraid		<input type="checkbox"/> scared		<input type="checkbox"/> attentive		<input type="checkbox"/> upset

Check any of the following that you experienced during this time period:

- | | | | |
|--|--|---|--|
| <input type="checkbox"/> Upset Stomach | <input type="checkbox"/> Vomiting | <input type="checkbox"/> Took Medications | <input type="checkbox"/> Fever/chills |
| <input type="checkbox"/> Back pain | <input type="checkbox"/> Muscle Cramps | <input type="checkbox"/> Headache | <input type="checkbox"/> Blurred vision |
| <input type="checkbox"/> Dizziness | <input type="checkbox"/> Runny nose | <input type="checkbox"/> Run down, exhausted | <input type="checkbox"/> Trouble concentrating |
| <input type="checkbox"/> Poor appetite | <input type="checkbox"/> Skin Rash | <input type="checkbox"/> Ringing in ears | <input type="checkbox"/> Cough/sore throat |
| <input type="checkbox"/> Sinus pain | <input type="checkbox"/> Nervous/sweaty | <input type="checkbox"/> Constipation | <input type="checkbox"/> Diarrhea |
| <input type="checkbox"/> Short of breath | <input type="checkbox"/> Muscle or joint aches | <input type="checkbox"/> Racing or pounding heart | |
| <input type="checkbox"/> Sore feet | <input type="checkbox"/> Eye Strain | <input type="checkbox"/> Other _____ | |

Symptoms Factored into Four Clusters:

- *Distress* (loss of interest, trouble concentrating, urge to cry, low energy)
- *Aches* (headache, backache, muscle soreness)
- *Gastrointestinal* (poor appetite, nausea/upset stomach, constipation/diarrhea, trembling, dizziness)
- *Upper Respiratory* (sore throat, runny nose, congestion).

Mood Scored for Global Pleasant-Unpleasant:

(happy+joyful+enjoyment/fun+pleased) -

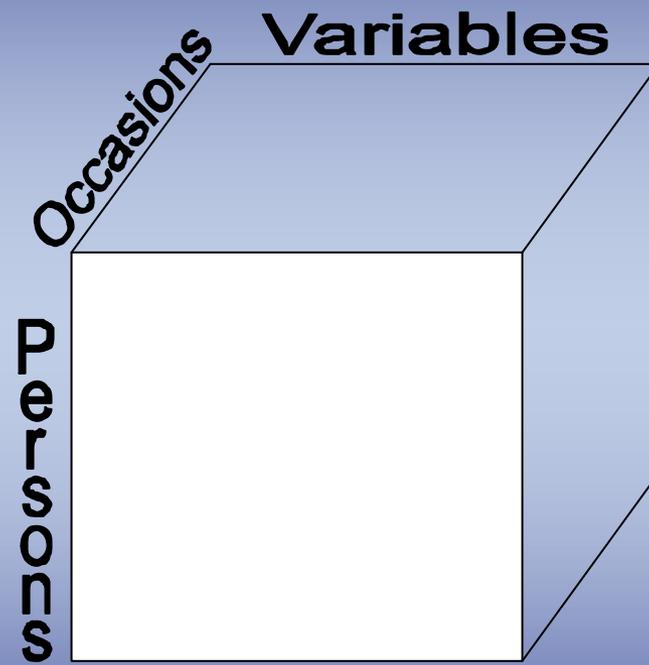
*(depressed/blue+frustrated+worried/anxious
+angry/hostile)*

Personality Variables of Interest

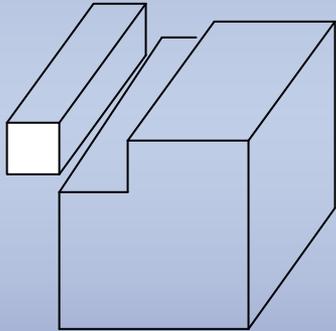
- *Neuroticism*
- *Anger/Hostility*
- *Type A Behavior Pattern*

Variables

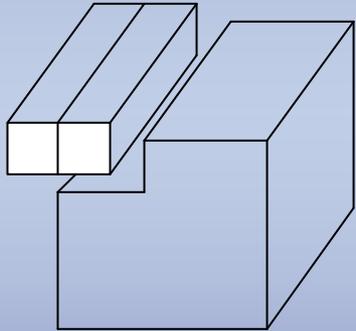
DESIGN



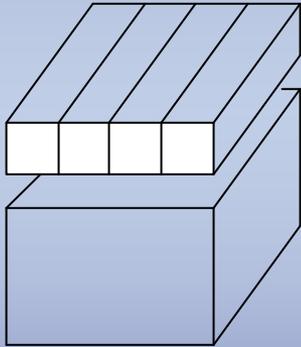
A. Univariate



B. Bivariate



C. Multivariate

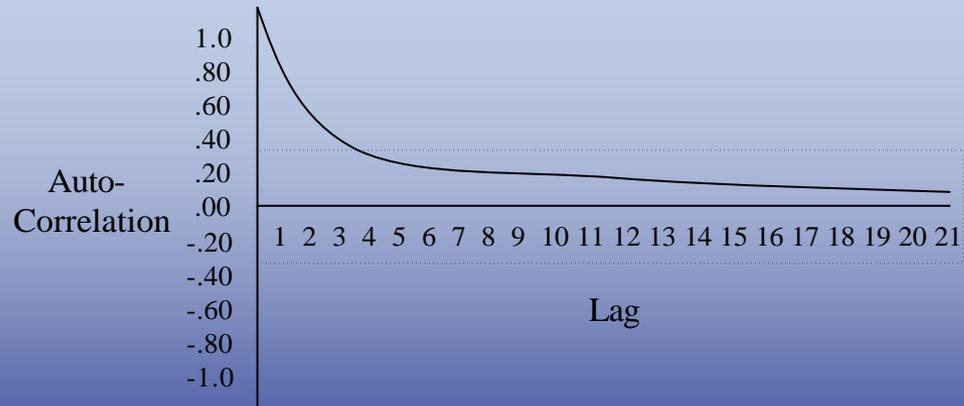
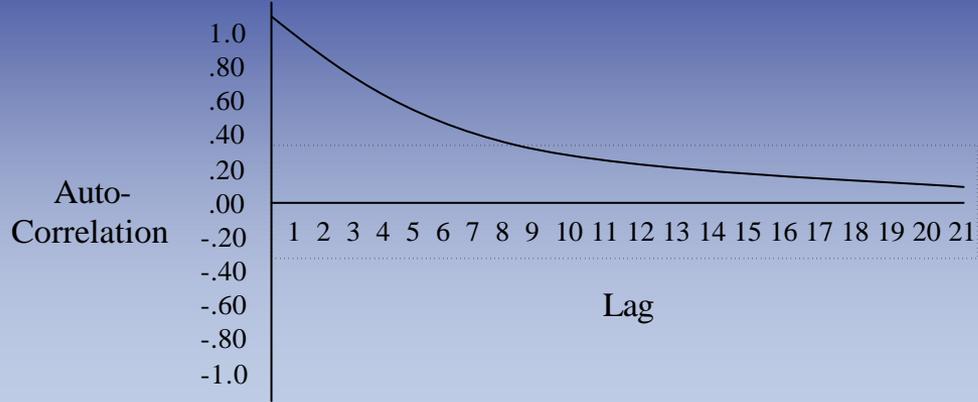


Quantifying Duration

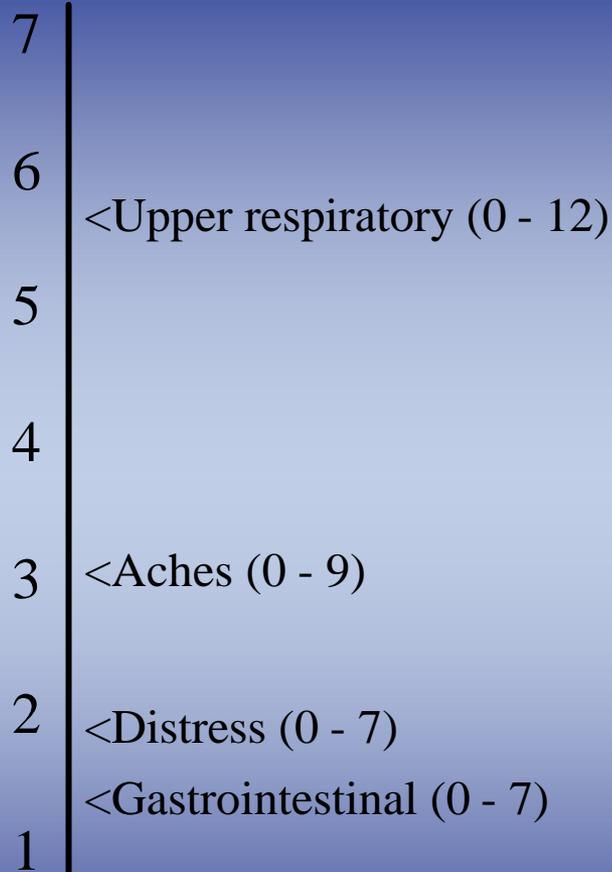
For each subject, and for each symptom,
calculate an autocorrelation series to lag 21

Then simply take, for each subject, the
number of lags into the future the
autocorrelation remains significant.

Correlograms



Mean number
(and range)
of lags at
which the
autocorrelation
remained
significant



CORRELATION BETWEEN OCCURRENCE OF SYMPTOMS (TOTAL COUNT)
AND THE DURATION PARAMETER

	DURATION
OCCURRENCE	
Distress	.16
Aches	.40**
Gastro- Intestinal	.31*
Upper Respiratory	.71**

* $p < .05$

** $p < .01$

Quantifying Emotional Covariation with Symptoms

For each subject, each symptom, regress mood score onto symptom score over all occasions (but control for autocorrelation in mood):

$$\text{Mood}_T = a + B_1 \text{Mood}_{T-1} + B_2 \text{Mood}_{T-2} + B_3 \text{Mood}_{T-3} + B_4 \text{Symptom}_T$$

PEARSON CORRELATIONS BETWEEN PERSONALITY VARIABLES AND
PARAMETERS OF DAILY SYMPTOMS

	Distress	Aches	Gastro- Intestinal	Upper Respiratory
OCCURRENCE OF SYMPTOMS				
Type A	.31*	.05	.16	.06
Anger Control	.05	.12	-.24	.07
Neuroticism	.47**	.15	.44**	.08
DURATION OF SYMPTOMS				
Type A	.37**	.13	-.12	.06
Anger Control	-.40**	-.41**	-.26*	.05
Neuroticism	.15	.21	-.07	.23
COVARIATION WITH MOOD				
Type A	-.34**	-.26*	-.38**	-.52**
Anger Control	-.02	.13	.18	.10
Neuroticism	.01	.06	-.09	.21

* $p < .05$

** $p < .01$

Summary of Findings

- Health fluctuates from day to day, and some patterns of variability are related to personality:
 - Occurrence and duration of illness are separable
 - Neuroticism predicts occurrence (at least for distress and gastrointestinal symptoms)
 - Anger proneness predicts longer duration of common illnesses
 - Type A related to a stronger connection between being ill and feeling negative affect (Type As are distressed by their illnesses)

EMA: Lessons Learned - Part I

- The Difficulties (or why you don't want to do this kind of research)
 - Expensive in terms of effort and time
 - Compliance issues
 - Subject drop-out and missing data issues
 - Intrusiveness
 - Huge data sets create analytic complexity

EMA: Lessons Learned-Part II

- The Strengths (or why you should want to approach your question using intensive time sampling methods)
 - Naturalistic, observe people in their ongoing lives
 - Incorporates time into research and theory
 - Can be applied to any type of measure, e.g., self report, performance, medical assays, etc
 - Allows researcher to conceptualize and address unique questions, which simply cannot be addressed with any other method.

Examples of Unique Questions

- Variability over time
- Covariation, do two variables tend to occur together?
- Lead or lag relationships, does one variable predict the future of another?
- Cycles, rhythms, phase relationships in the timing of events
- Persistence, duration or rate of change
- Temporal structure, what things change together?