

CONTEXTUAL BEHAVIORAL  
ASSESSMENT OF  
PSYCHOLOGICAL FLEXIBILITY  
USING WEARABLE SENSORS

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SELF-REPORTS OF  
PSYCHOLOGICAL FLEXIBILITY  
ARE ROBUST PREDICTORS OF  
CLINICALLY RELEVANT  
OUTCOMES

LITTLE IS KNOWN ABOUT  
BEHAVIORAL INDICATORS OF  
PSYCHOLOGICAL FLEXIBILITY  
IN CONTEXTS THAT MATTER

MOBILE  
TECHNOLOGIES and  
ECOLOGICAL  
MOMENTARY  
ASSESSMENT

- Discover behavioral indicators of psychological flexibility
- Identify contexts that matter
- Monitor clinically relevant behaviors in the wild
- Deliver interventions when and where they are most needed

STUDY AIMS

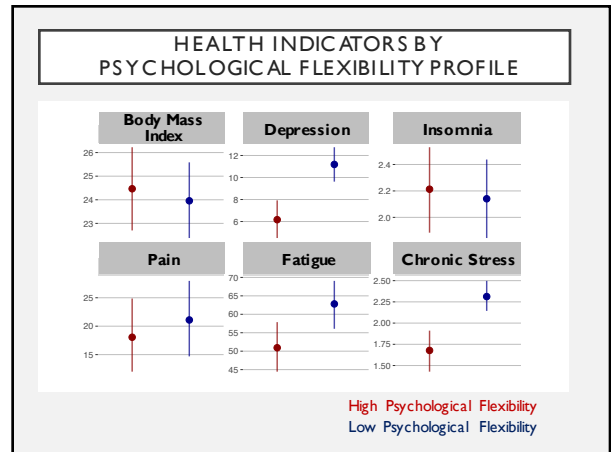
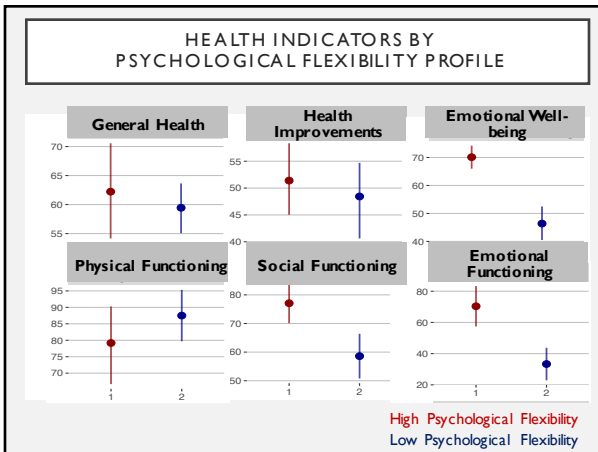
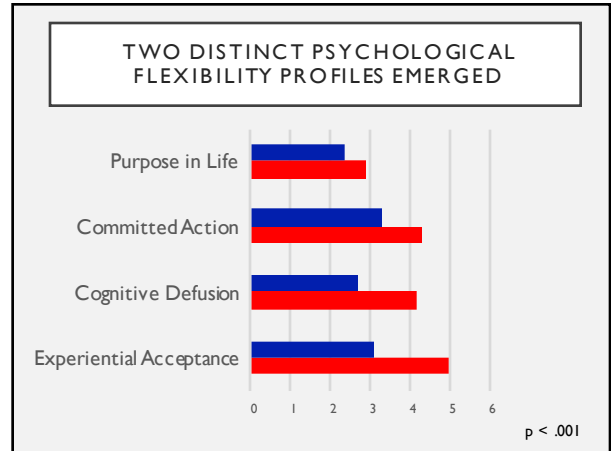
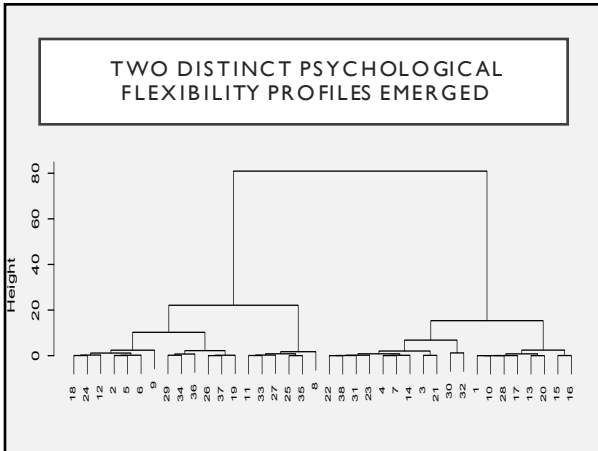
- ▶ Examine correlations between self-report measures of PF and EMA of stress, activity, and sleep
- ▶ Explore the utility of real-time PF markers to predict health and quality of life
- ▶ Collect pilot data for development of automated detection of PF via wearable sensors

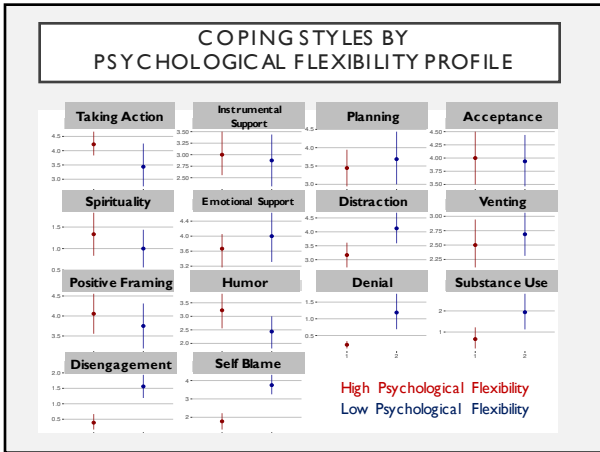
### STUDY DESIGN

- ▶ Pilot study - rapid, iterative development and evaluation of stress interventions delivered via wristband and mobile app
- ▶ 34 adults interested in improving stress and health
  - 53% Women, 19-57 years old (M = 31)
  - 13% chronic illness
- ▶ 24-hour wristband usage for 5 weeks
  - 2 weeks - baseline assessment only
  - 2-3 weeks - stress intervention prototypes

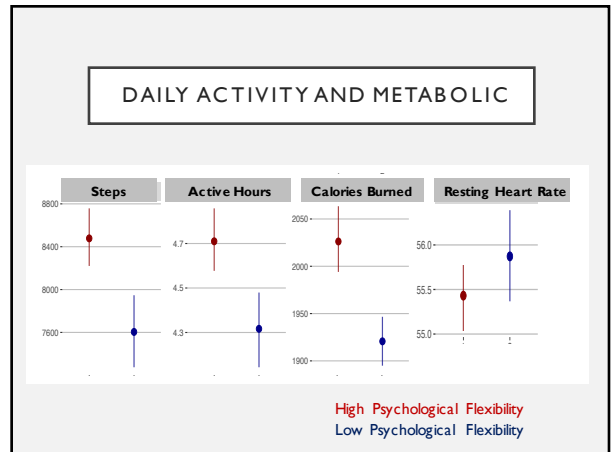
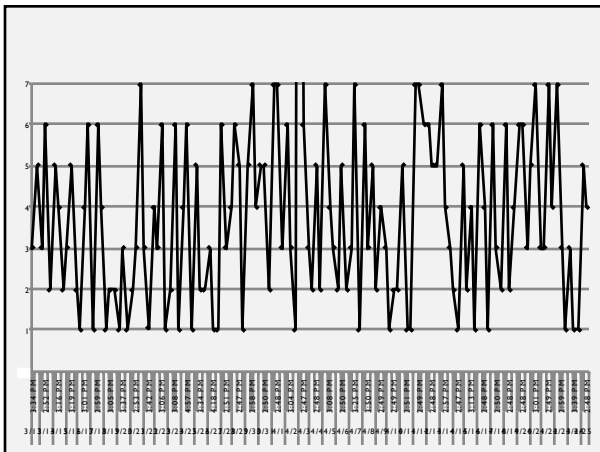
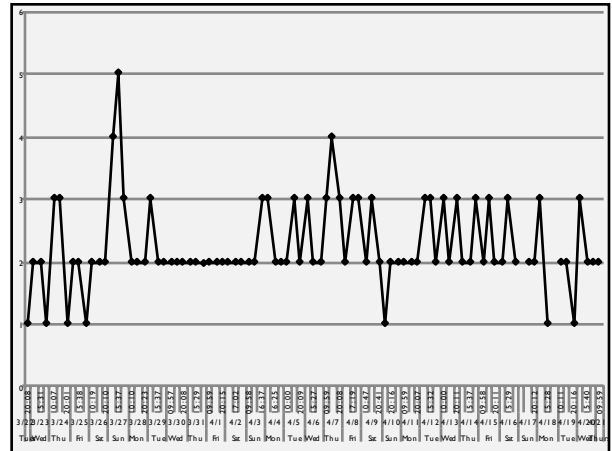
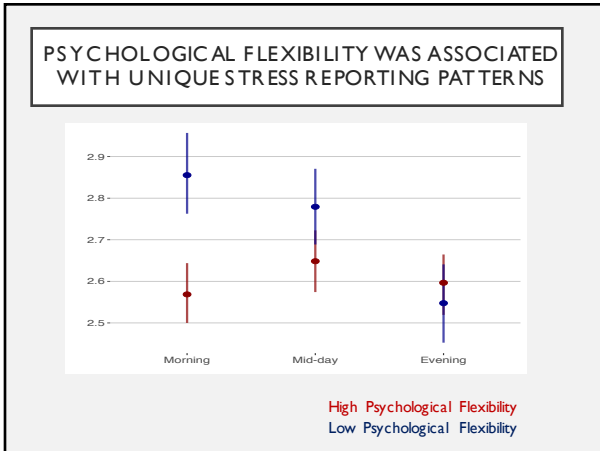
### DATA COLLECTION

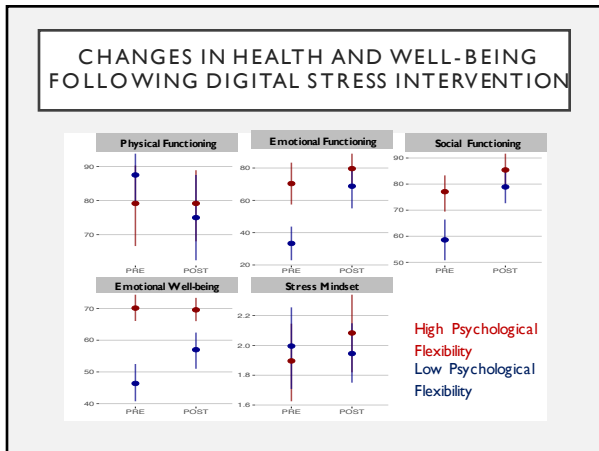
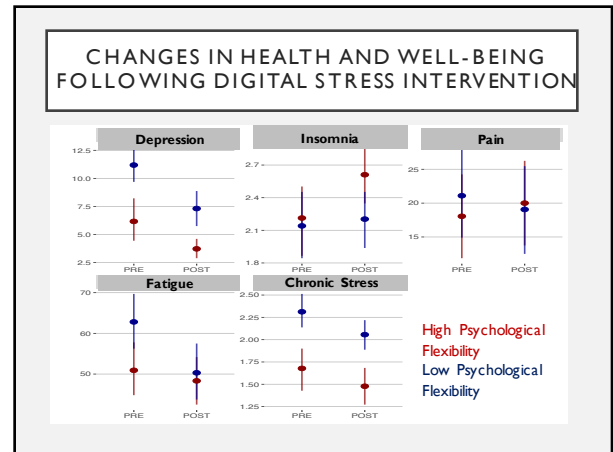
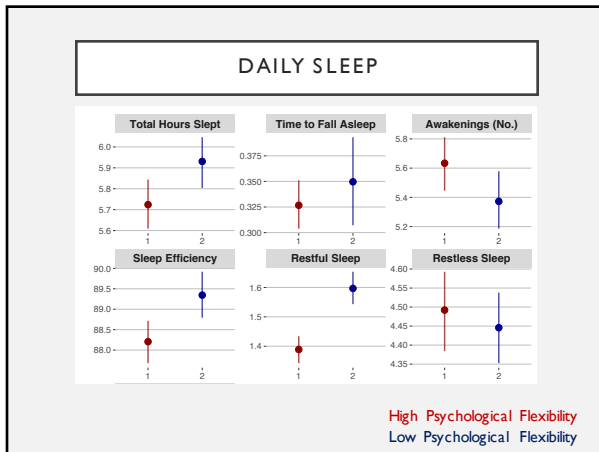
- ▶ Pre-post self report surveys of health, coping, and psychological flexibility
- ▶ 3X daily SMS perceived stress (0-6)
- ▶ Continuous activity monitoring via wristband sensors
  - GPS location
  - Optical heart rate monitor
  - Accelerometer and pedometer
- ▶ Pre-mid-post qualitative assessment
  - Qualitative
  - Annotated stress events
  - User experience with wristband and stress interventions





DO PSYCHOLOGICAL FLEXIBILITY PROFILES PREDICT ECOLOGICAL MOMENTARY ASSESSMENT OF HEALTH BEHAVIORS?





### DISCUSSION

- Psychometrically valid psychological flexibility scales can be used to classify participants into distinct PF profiles
- Correlations support PF model
- Psychological coping
- Health and well-being
- Response to brief behavioral interventions
- These profiles may be used as "ground truth" for developing automated assessment of PF via wearable sensors

### NEXT STEPS

- Analyze additional sensor variables
  - heart rate variability, galvanic skin conductance and temperature
  - GPS movement
  - Calendar events
- Recruit new sample to develop algorithms for detecting PF (adaptive responses to real time events)
- Test machine learning algorithms in large independent sample