WWU MÜNSTER

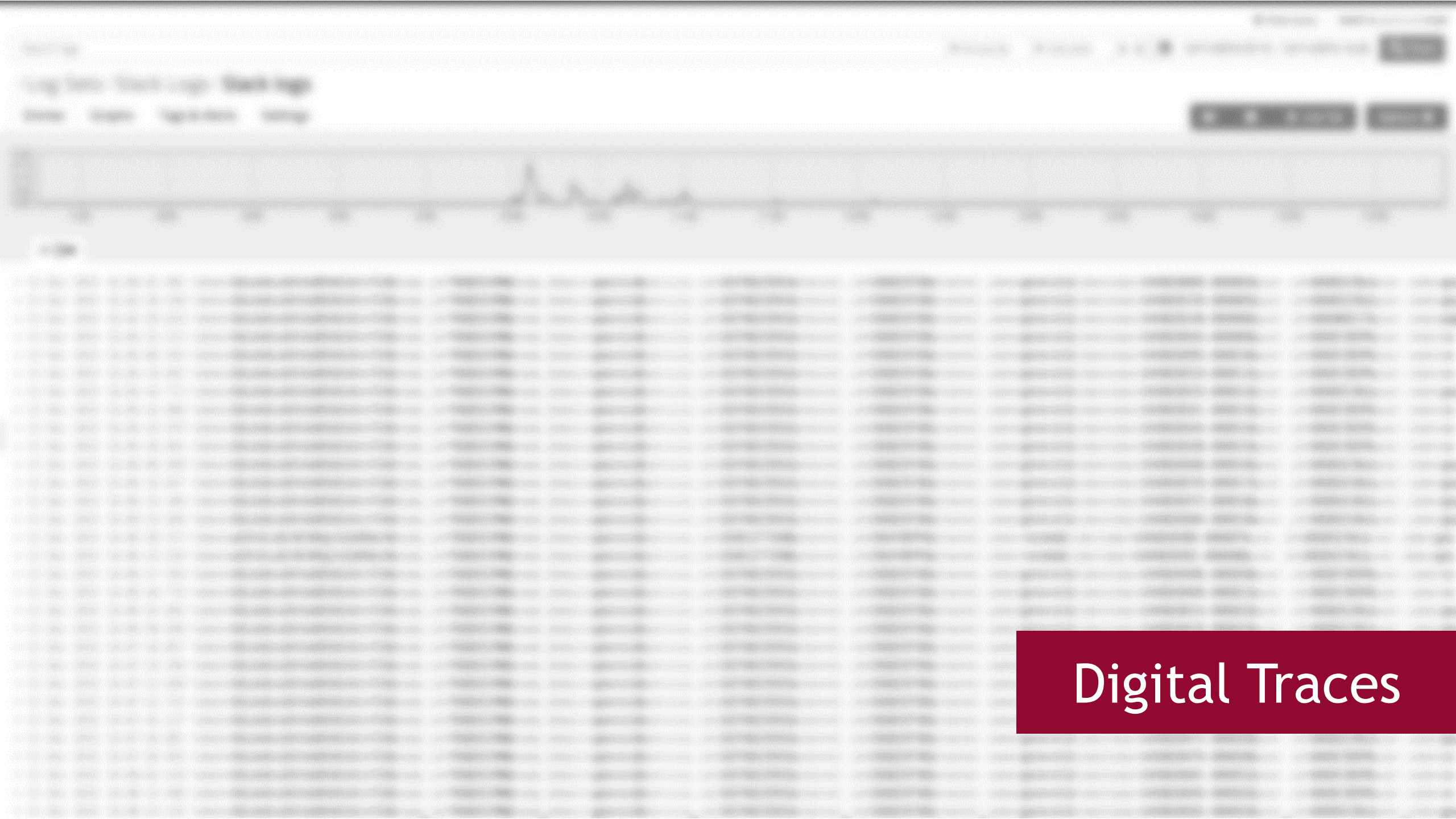
ERCIS

Identifying Temporal Rhythms using Email Traces

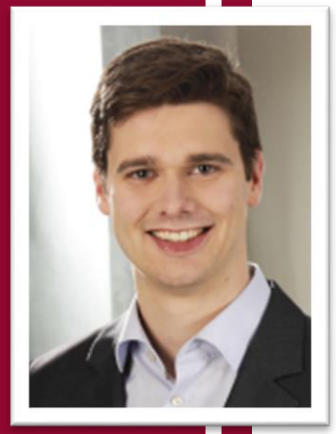
AMCIS Virtual Session 2020

COMPETENCE CENTER SMARTER WORK

TEMPORAL RHYTHMS



Digital Traces



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ERCIS

Motivation

Changes in Work

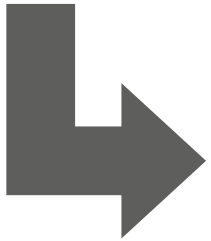
- Liquid organizations
- Project-based forms of organizing
- Corona: Homeoffice, parttime work

(e.g. Kalleberg & Epstein, 2001)

Changes in Research

- Dispersed collaboration is difficult to observe
- Increasing interest in using digital traces (also by vendors)

(e.g. Hüllmann 2019)



More complex schedules with less management control

Awareness and alignment of temporal rhythms crucial for effective collaboration

(e.g. Reddy et al. 2006; Fenwick & Tausig 2001)

Research Question

How useful are email traces to inquire temporal rhythms?

We explore this question by triangulating quantitative results with findings from interviews.

Temporal Rhythms

We follow subjective concept of time that depicts time as temporal (social) structures.
(Orlikowski & Yates, 2002)

Humans shape and are governed by temporal structures.

Structures are manifested in Temporal Rhythms: “Recurring Patterns of Activity in Time”

Multilevel phenomenon.

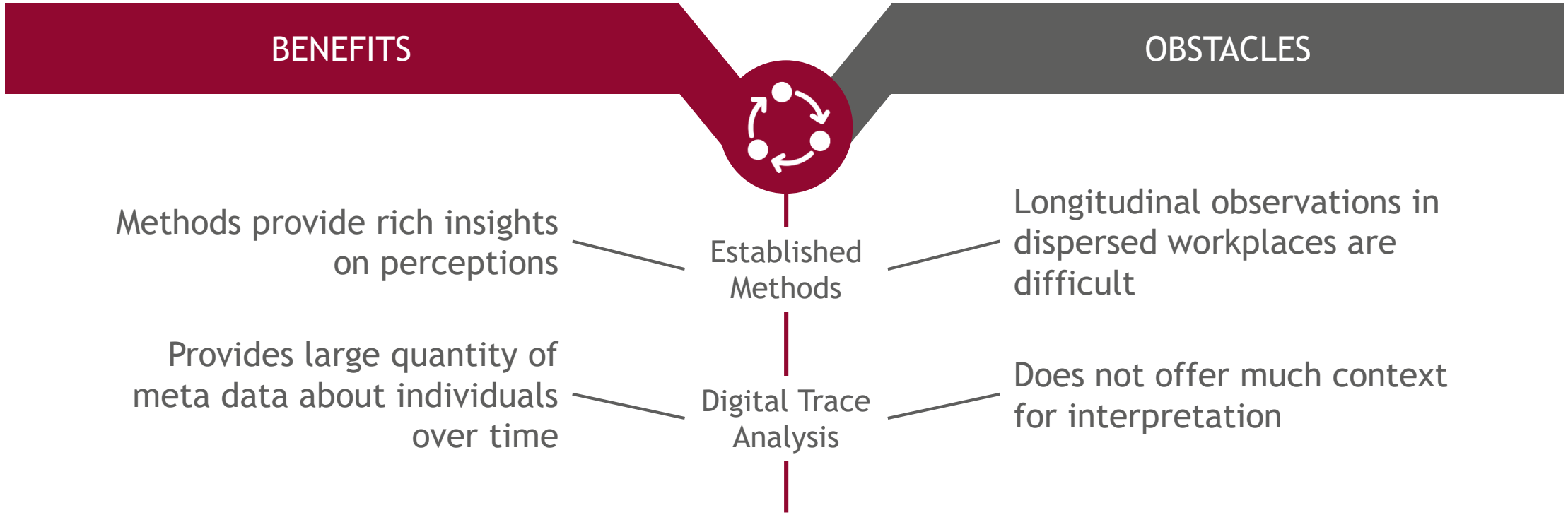
Dynamic and vary over time.

(Ancona & Chong 1992; Jackson et al 2011; Tyler & Tang 2003)

Literature Review

Study	Who?	What?	Method
Poels, Tucker & Kielema 2017	Medical staff	Temporal rhythms	Videotapes, diaries, semi-structured interviews
Reddy, Dourish & Pratt 2006	Medical staff	Temporality	Interviews, observations, policies, meeting notes, procedures
Nandhakumar & Jones 2001	Project team	Understand the temporal structure	Participant observation, meeting minutes
Tyler and Tang 2003	Sun & HP employees	Email rhythms and responsiveness	Interviews and observations
Begole et al. 2002	20 users	Daily rhythms	Activity logs from computers
Wang et al. 2012	Academics	Test 9-5 hypothesis	Timestamps of downloads
Claes et al. 2018	Software developers	Estimate working time of programmers	Timestamps of commits
Perer et al. 2006	Ben Shneiderman's emails	Rhythms of relationships and collaboration	Visualizations and clustering

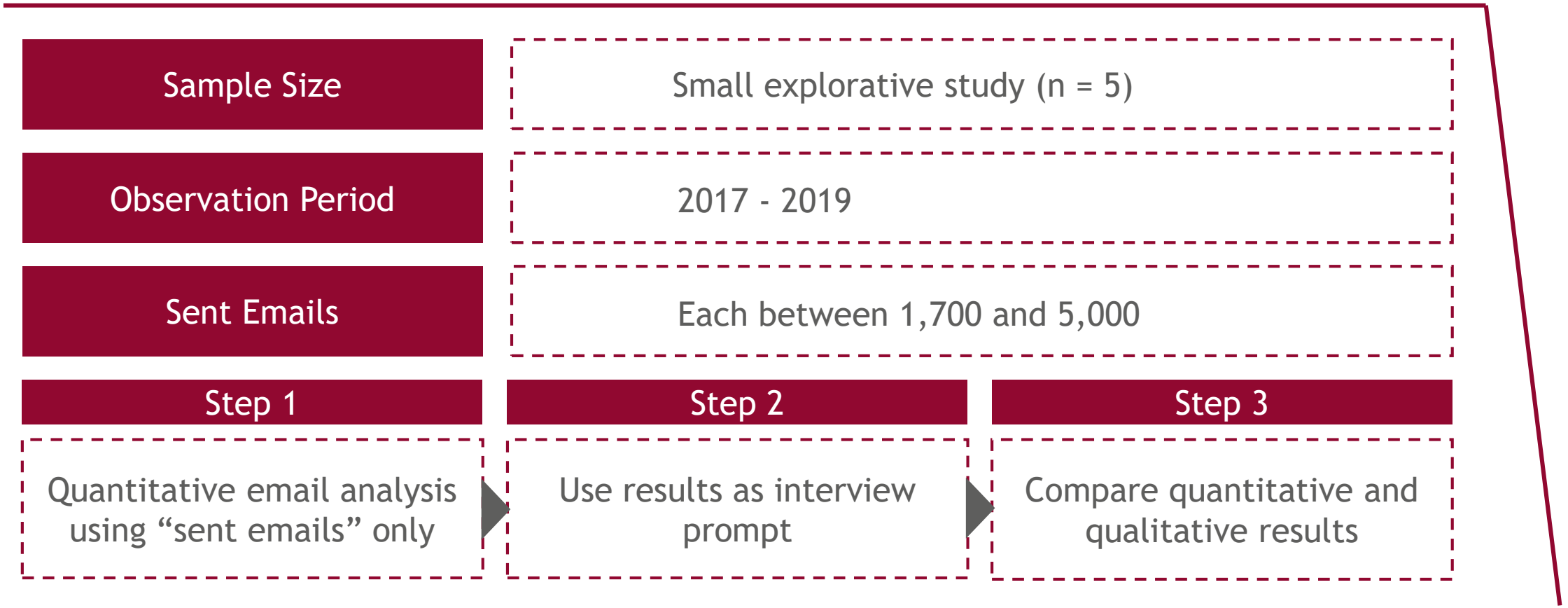
Literature Review



→ **Triangulation** of established methods and digital traces may produce novel insights on temporal rhythms, and enhance validity of findings. (Barley & Kunda 2001; Østerlund et al. 2020)

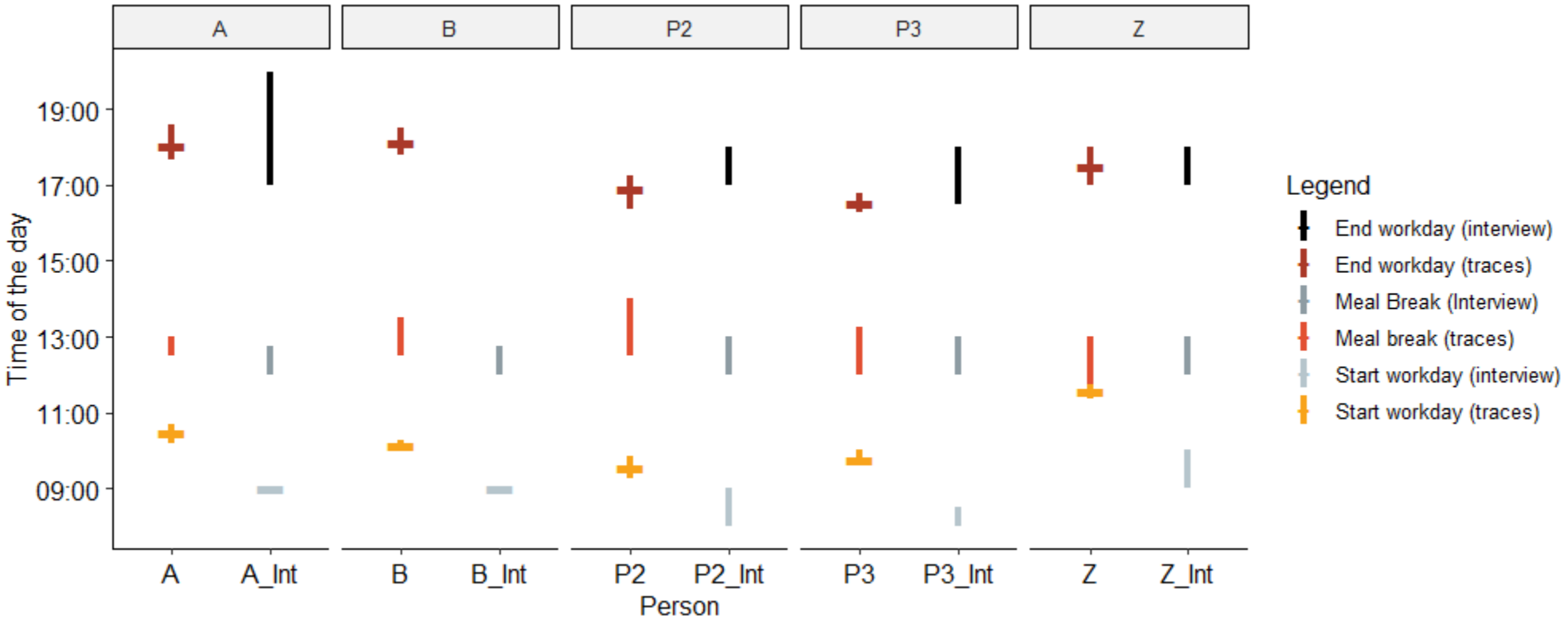
Methods

Triangulating interviews with quantitative data analysis



Findings

Regular Working Times



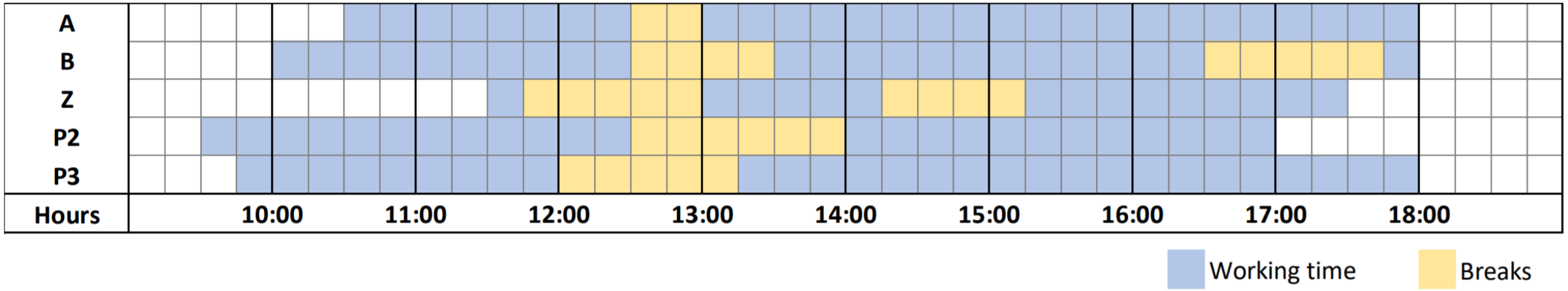
Findings

Identified Time Intervals from Interviews and Data Analysis

Person	Start Data	Start Interview	End Data	End Interview	Meal Break Data	Meal Break Interview	Short Resting Times Data	Weekend Work
A	**10:27 am** [-20 min; +15 min]	~ 09:00 am	**06:04 pm** [-23 min; +32 min]	05:00pm – 08:00 pm	12:30 pm – 01:00 pm	12:00 pm – 12:45 pm	–	3.17 %
B	**10:09 am** [-11 min; +7 min]	~ 09:00 am	**06:08 pm** [-21 min; +23 min]	–	12:30 pm – 01:30 pm	12:00 pm – 12:45 pm	04:30 pm – 05:45 pm	0.93 %
Z	**11:34 pm** [-13 min; +53 min]	09:00 am – 10:00 am	**05:30 pm** [-31min; +35 min]	05:00 pm – 06:00 pm	11:45 am – 01:00 pm	12:00 pm – 01:00 pm	02:15 pm – 03:15 pm	6.12 %
P2	**09:33 am** [-17 min; +18 min]	08:00 am – 09:00 am	**04:55 pm** [-32 min; +20 min]	05:00 pm – 06:00 pm	12:30 pm – 02:00 pm	12:00 pm – 01:00 pm	–	2.11 %
P3	**09:46 am** [-8 min; +16 min]	08:00 am – 08:30 am	**04:31 pm** [-15 min; +15 min]	04:30 pm – 06:00 pm	12:00 pm – 01:15 pm	12:00 pm – 01:00 pm	–	2.68 %

Findings

Regular Workings Times and Breaks Over The Day



Learnings

Sample conforms to dominant regular working hours of the developed countries of the United Nations
(Anttila & Oinas, 2018; Backhaus et al., 2018; Beers, 2000; International Labour Organization, 2011; Wöhrmann et al., 2016)

Consider both, sequence of rhythms and clock time for coordination of schedules.

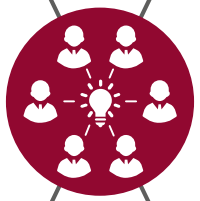
In general, rhythms could be identified: start/end/breaks
But, participants do not start/end work with email, rendering estimation more difficult

Email data alone is difficult to paint rich insights, only works when email is at the very core of work and frequently used. In general, more digital traces needed.

Implications and Future Work

Implications

Analyses may help for coordination & complex scheduling, but caution when trusting the results if based solely on emails (e.g. Microsoft Workplace Analytics)



Future Work

- **Bigger sample**
- **More digital traces** (breadth, e.g. login data)
- **Interpretation of traces** (e.g. impression management, construct validity)

→ **Conclusion:** Triangulation is good, digital traces is good. But only email traces is not good enough.

Thanks for listening

… and your ideas on how to continue our work!

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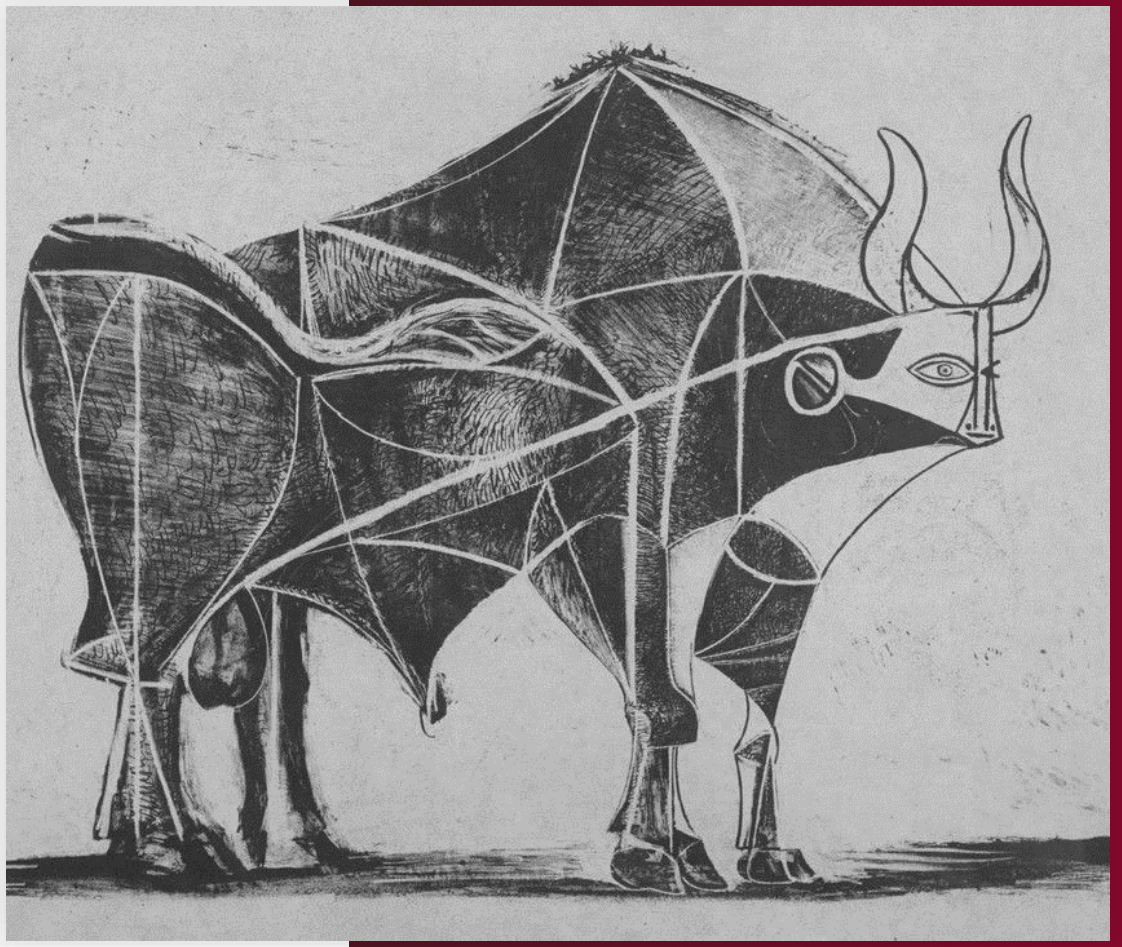
Image Sources

Backup Slides



Sample

	Group academics (n = 2)	Group start-up (n = 2)
Age	21-40	21-40
Gender	Male, female	Male, male
Policies: - daily hours - weekly hours	8 hours Monday-Friday, 40 hours/week	8 hours Monday-Friday, 40 hours/week
Hardware	Laptop, mobile phone	Laptop, mobile phone
Communication technology	Email	Email
Tasks	Research, Teaching, Administration	Product and business development, meetings and management of clients, projects, and staff
Total Emails	1,700 and 5,000	2,000 and 2,400
Observation period in years	2017–2019	2017–2018

Identification of Short Breaks