

**Understanding the social and emergent dynamics of work design: An observational ecological assessment approach**

Florian E. Klonek and Sharon Parker

Work design is defined as ‘the content and organization of one’s work tasks, activities, relationships, and responsibilities’ (Parker, 2014, p. 662). Since many jobs are carried out in interdependence with others, relational aspects of work design have gained increased attention (Grant & Parker, 2009). Relational work design constitutes the “social context of work, [that is,] interpersonal interactions and relationships that are embedded in and influenced by the jobs, roles, and tasks that employees perform and enact” (Grant & Parker, 2009, p. 322). Relational work design theory recognizes that “work is inextricably intertwined with interpersonal interactions and relationships” (Grant & Parker, 2009, p. 322). A core characteristic of these social processes is that they are dynamic, unfold over time, and can sometimes change quickly. For example, if we want to understand what drives innovative processes, we need to investigate the bottom-up emergent process of idea exploration and exploitation. From a multi-level theoretical perspective, dynamic and interactive processes shape higher-order emergent constructs (Kozlowski, 2013). Unfortunately, these micro-meso social dynamics are still under-investigated (Cronin et al., 2011) since the extent literature treats emergent phenomena “as an assumed and unobserved process responsible for the manifestation of a collective construct that has originated from the lower level (Kozlowski et al., 2016, p. 5). The current paper introduces an innovative methodological quantitative and prospective approach to better understand how work design shapes interactive and emergent processes (top-down effects) and — more importantly — to better understand bottom-up team emergent phenomena themselves.

**What are emergent phenomena?**

Kozlowski et al (2013) noted that emergent phenomena are characterized by three core conceptual foci: First, emergent phenomena are multi-level as they *originate* at lower levels (e.g., individual behaviours, affective states, or cognitions) and “manifest as a higher-level, collective phenomenon” (Kozlowski & Klein, p. 55). Second, emergent phenomena are *process-oriented*. Third,

emergent phenomena require *time*. In a similar vein, Cronin et al. (2011, p. 574) defined emergence as “a process where a higher level phenomena comes into existence based on interaction among the lower level elements”. Most team processes can be considered as emergent phenomena, for example, team collective behaviours such as cooperation (Bedwell et al., 2012), team interaction patterns (Stachowski et al., 2009), but also team cognitions such as shared team mental models or transactive memory (Kozlowski et al., 2013).

In the conceptualisation of emergence, we built on Kozlowski’s (2015) multi-level framework to distinguish between two types of emergence: *Higher-order emergent constructs* versus *bottom-up emergent phenomena*. Using the example of team cognitive emergent phenomena, a shared team mental model is considered emergent when there is a manifestation of a higher-order collective shared knowledge structure of a team task. However, this emergent construct itself is “created through an *emergence process [i.e., emergent phenomenon]* that begins at the individual level (...) through repeated interactions” (Kozlowski et al., 2013, p. 593). Building on this distinction, Kozlowski et al (2013) criticized that “most ‘team processes’ are not researched as emergent phenomena” (Kozlowski et al., 2013, p. 591). Given the multi-level nature of emergent phenomena, emergent processes and constructs can be studied in two ways. One is by focusing on the top-down cross-level effects of higher-order team emergent constructs on lower level variables. Another way is to study the bottom-up process of the emergent phenomena itself. While the first approach is well established in organisational research, the second approach of studying “emergence as a bottom-up process is largely neglected by quantitative investigators” (Kozlowski et al, 2013, p. 582).

The main reason for this dearth of research on *emergent phenomena* is that the predominant measurement approach of our discipline (i.e., survey-based measures) cannot capture emergent processes (Kozwloski et al., 2013). Survey-based studies of team emergent phenomena have only used *indirect* quantitative approaches to study emergent processes. In indirect quantitative approaches emergent processes are assumed but never directly observed (Kozlowski, 2013). In the current paper, we want to introduce a methodological innovative approach that allows to capture emergent processes directly by using a prospective and quantitative approach.

### **Uncovering dynamic processes and emergent phenomena at work**

Ecological momentary assessments (EMA) are organisational research methods that “capture momentary behaviours and psychological states in context, and they track those behaviours and states over time” (Beal & Weiss, 2003, p. 440). EMA has gained increased attention in OB research (e.g., Ohly, Sonnentag, Niessen, & Zapf, 2010; Uy, Foo, & Aguinis, 2010) as it allows dynamic measurements, enhance ecological validity, examine psychological processes over time, and mitigates retrospective biases (Beal & Weiss, 2003). The vast majority of EMA research has focused on within-person variations of psychological constructs or studied cross-level interactions between stable between-person characteristics (e.g., personality) and more variable within-person variables (e.g., daily demands) on health- and/or work-related outcomes (e.g., daily stress or daily performance).

However, EMA approaches are also well suited to study emergent team processes, that is, to understand how interactive, temporally dynamic lower-level individual behaviours or cognitions manifest as higher-order emergent constructs. Furthermore, the “traditional” EMA approach relies on surveys. This constitutes a major problem for studying team emergent phenomena at work since social processes are often fast and cannot be interrupted, that is, participants cannot be repeatedly asked during social interactions to report their behaviors. In essence, survey approaches “are obtrusive, entail a variety of response biases, are potentially distorted by more frequent assessments, and are not necessarily accurate” (Kozlowski, p. 278). To overcome the inherent limitations of survey-based EMA approaches, we propose the use of observation-based EMA which enable to investigate dynamic processes unobtrusively, continuously, prospectively, and from a micro-perspective. Since the use of observational methods is often associated as a qualitative approach (e.g., action research, Kozlowski et al., 2013), the analytical possibilities and methodological advantages of observational research are often underestimated. However, we introduce observational methods as a special case of EMA methods. This approach combines the strength of traditional EMA methods (e.g., Beal & Weiss, 2003) but does not entail the aforementioned limitations of survey-based methods.

We have developed a customisable, multi-function mobile application that allows to capture dynamic interactive emergent processes in organisations using systematic observational time-stamped data and higher level team constructs.

## AOM Synopsis: Understanding the social and emergent dynamics of work design

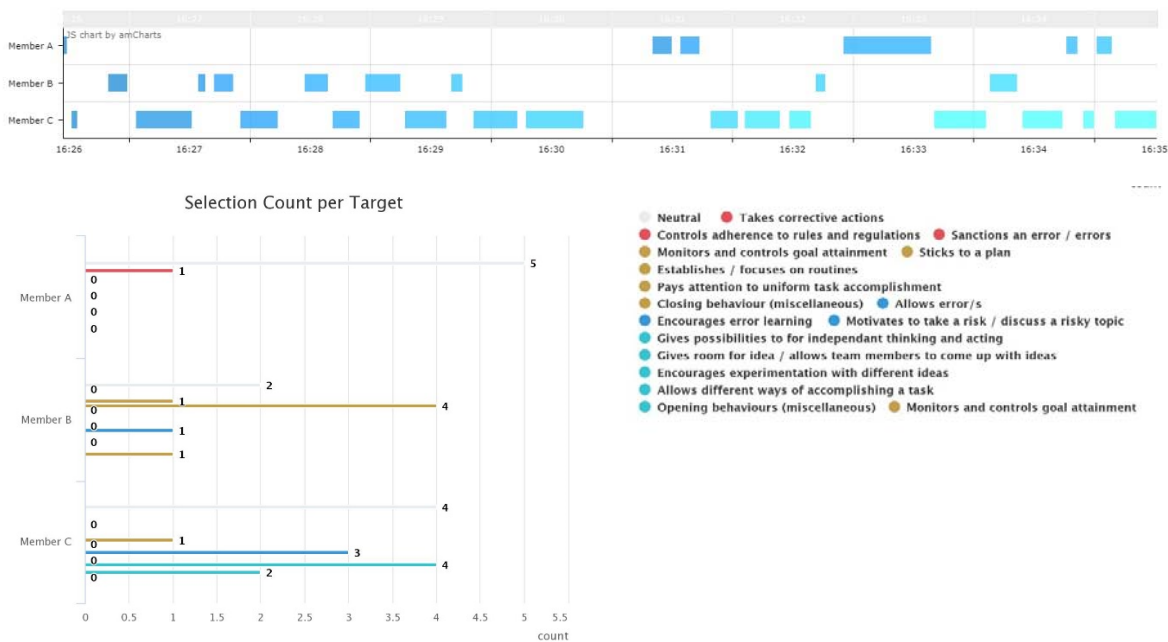
*Bottom-up Emergent Processes (Lower Level Unit):* The application has a customised digital coding scheme which allows to define behavioural process measures. For illustrative purposes, we implemented a behavioural process measure of ambidexterity (Jorgenson et al., 2017; Rosing, Frese, & Bausch, 2011; Figure 1). Data can be collected by an external observer using a handheld device (e.g. tablet) to record behaviours as they unfold over time.

*Contextual, Cumulative, and Emergent Constructs (Higher Level Unit).* Based on distinctions from multi-level theory (Cronin et al., 2011; Kozwloski & Klein, 2000), higher-level team measures are either *contextual/global variables* (i.e., group properties that are easily observable characteristics of the team and have no lower level underpinning, e.g., team function, reward, or work design characteristics), *cumulative variables* (i.e., collection of individual properties that are fixed or very stable, e.g., gender composition), and *emergent team variables* (shared perceptions of behaviours, cognitions, and affective reactions). While contextual and cumulative variables can be assessed by an external observer, emergent team-level variables can be assessed by the members of the team being observed (e.g., after the observation) in two ways: First, via using single holistic measures (cf., Costa, Passos, & Bakker, 2014). This approach does not require aggregation of individual responses and may be suitable in applied field research. Second, observers can give team members access to an external survey (using a QR code) that links team member perceptions to observable lower level behaviours.

We provide examples of the data structure based on the systematic quantitative observations of team processes using the app. For our example on team ambidexterity, we have three levels of data. The first level is the coded timed-behavioural event data, which include occurrences of coded behaviours nested in individuals. The second level consists of between-level data, that is, which participant in a team exhibited the behaviour. The third level are the higher-order team-level variables (contextual, cumulative, or shared constructs). We present analytical procedures that allow to test cross-level moderation between team-level constructs (e.g., team work design) and lower-level variables (e.g., individual behaviours) and ways to advance our understanding of how team emergent processes (e.g., self-enhancing exploration cycles) may manifest into team emergent constructs (e.g., shared team ambidexterity).

## AOM Synopsis: Understanding the social and emergent dynamics of work design

Research on team process dynamics is increasingly interested in team emergent phenomena that unfold on multiple levels of analysis and involve a micro-meso perspective. While extant literature has studied cross-level effects of team emergent constructs, the bottom-up processes of emergence are only poorly understood. The current study introduced an innovative measurement approach that combines EMA with systematic observational measures. This approach solves methodological problems in studying emergent phenomena quantitatively and prospectively. Using this approach, we will advance relational aspect of work design theory building on micro-meso multi-level theory in teams.



**Figure 1: Measuring the process and social dynamics in a three-member team during the discussion of business ideas**

## REFERENCES

- Beal, D. J., & Weiss, H. M. (2003). Methods of ecological momentary assessment in organizational research. *Organizational Research Methods*, 6(4), 440-464.
- Costa, P., Passos, A. M., & Bakker, A. (2014). Empirical validation of the team work engagement construct. *Journal of Personnel Psychology*, 13(1), 34-45.
- Cronin, M. A., Weingart, L. R., & Todorova, G. (2011). Dynamics in groups: Are we there yet? *Academy of Management Annals*, 5(1), 571-612.
- Grant, A. M., & Parker, S. K. (2009). Redesigning work design theories: the rise of relational and proactive perspectives. *Academy of Management Annals*, 3(1), 317-375.
- Jørgensen, F., & Becker, K. (2017). The role of HRM in facilitating team ambidexterity. *Human Resource Management Journal*, 27: 264-280.
- Klein, K. J., & Kozlowski, S. W. (2000). From micro to meso: Critical steps in conceptualizing and conducting multilevel research. *Organizational Research Methods*, 3: 211-236.
- Kozlowski, S. W. (2015). Advancing research on team process dynamics: Theoretical, methodological, and measurement considerations. *Organizational Psychology Review*, 5(4), 270-299.
- Kozlowski, S. W., Chao, G. T., Grand, J. A., Braun, M. T., & Kuljanin, G. (2013). Advancing multilevel research design: Capturing the dynamics of emergence. *Organizational Research Methods*, 16(4), 581-615.
- Kozlowski, S. W., Chao, G. T., Grand, J. A., Braun, M. T., & Kuljanin, G. (2016). Capturing the multilevel dynamics of emergence: Computational modeling, simulation, and virtual experimentation. *Organizational Psychology Review*, 6(1), 3-33.
- Parker, S. K. (2014). Beyond motivation: Job and work design for development, health, ambidexterity, and more. *Annual Review of Psychology*, 65: 661-691.
- Ohly, S., Sonnentag, S., Niessen, C., & Zapf, D. (2010). Diary studies in organizational research. *Journal of Personnel Psychology*.
- Rosing, K., Frese, M., & Bausch, A. 2011. Explaining the heterogeneity of the leadership-innovation relationship: Ambidextrous leadership. *The Leadership Quarterly*, 22, 956-974.
- Uy, M. A., Foo, M. D., & Aguinis, H. (2010). Using experience sampling methodology to advance entrepreneurship theory and research. *Organizational Research Methods*, 13(1), 31-54.