

# Social Psychological Bulletin

Psychologia Społeczna

## Capturing Life and Its Fluctuations: Experience Sampling and Daily Diary Studies in Studying Within-Person Variability

Marta Roczniowska<sup>ab</sup>, Ewelina Smoktunowicz<sup>cd</sup>, Ewa Gruszczyńska<sup>e</sup>

[a] Center of Research on Cognition and Behaviour, Department of Psychology, Sopot Campus, SWPS University of Social Sciences and Humanities, Sopot, Poland. [b] Procome Research Group, Medical Management Centre, Department of Learning, Informatics, Management and Ethics, Karolinska Institutet, Stockholm, Sweden. [c] StressLab: Stress Research Center, Department of Psychology, Warsaw Campus, SWPS University of Social Sciences and Humanities, Warsaw, Poland. [d] Department of Psychology, Stockholm University, Stockholm, Sweden. [e] Department of Psychology, Warsaw Campus, SWPS University of Social Sciences and Humanities, Warsaw, Poland.

Social Psychological Bulletin, 2020, Vol. 15(2), Article e3643, <https://doi.org/10.32872/spb.3643>

Published (VoR): 2020-07-31



**Handling Editor:** Michal Parzuchowski, SWPS University of Social Science and Humanities, Sopot, Poland

**Corresponding Author:** Marta Roczniowska, Center of Research on Cognition and Behaviour, Department of Psychology, Sopot Campus, SWPS University of Social Sciences and Humanities, ul. Polna 16/20, 81-744 Sopot, Poland. E-mail: [marta.roczniowska@swps.edu.pl](mailto:marta.roczniowska@swps.edu.pl)

In 1942, Gordon Allport pointed out that “Psychology needs to concern itself with life as it is lived” (as cited in Bolger, Davis, & Rafaeli, 2003). Following this recommendation requires studying people’s thoughts, feelings, and behaviors *in situ*: when and where they actually take place. Is this even possible? Around 30 years after Allport’s call, Csikszentmihalyi, Larson, and Prescott (1977) conducted a study regarded to be the first to use this approach (Iida, Shrout, Laurenceau, & Bolger, 2012). In the course of one week, researchers assessed daily activities of twenty-five adolescents put forward in response to 753 random beeps produced by their pagers. The authors called this novel methodology the *experiential sampling method*. Since then, ecological validity and reduced recall bias have been listed among the main strengths of intensive longitudinal designs, where data are collected from one to several times a day for at least a few days. Moreover, recent technological advances, such as smartphones or fitness trackers, have provided new possibilities for studying experiential, physiological, and behavioral processes in



This is an open access article distributed under the terms of the [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/), CC BY 4.0, which permits unrestricted use, distribution, and reproduction, provided the original work is properly cited.

their natural settings. As a result, the number of such studies has grown exponentially (see: Hamaker & Wichers, 2017). The aim of this Special Issue is to point towards the opportunities that these methods provide and to showcase examples of diary studies conducted across distinct subdisciplines of social psychology.

Often, theories propose fluctuations in within-person processes, while in fact what researchers examine are between-person variations achieved by, e.g., experimental manipulation. Studying between-person effects in cross-sectional or classical longitudinal research is crucial to understand how people differ from each other in terms of cognitions, emotions and behaviors. However, many phenomena fluctuate from day to day or from one moment to another, e.g., affective states (Nawijn, Mitas, Lin, & Kerstetter, 2013), social support (Simbula, 2010), and even job performance (Binnewies, Sonnentag, & Mojza, 2009). Therefore, it seems equally important to take into account that situations and—consequently—reactions to them may vary for an individual person as well. These changes are not a direct function of time but fluctuations of what is *typical* for a given person: they are changes *over* time rather than changes *with* time (Hamaker & Grasman, 2015). As a result, with many repeated measures over a short period of time for the same person, the observed variance can be decomposed into a between-person stable (“trait-like”) component and a within-person changing (“state-like”) component (Kenny & Zautra, 2001). From this perspective, different research questions can be addressed; more focused on detecting *patterns of within-person covariation* than on overall time trends for the whole sample (Nezlek, 2020, in this issue, for a gentle introduction).

Accordingly, intensive longitudinal methods offer new ways to source information and create variables. Instead of asking study participants to report directly on the general level of a given variable, we can obtain it through aggregating multiple responses provided over time. Such a procedure is particularly useful when we measure transient phenomena such as mood, emotions and affect, but want to assess general dispositions rather than momentary reports. For example, Weiss, Nicholas, and Daus, in their study from 1999, analyzed the relationship between affect and satisfaction. They operationalized affect by calculating the average mood of each participant from a total of 64 data points: four times a day for 16 days. Each time, participants evaluated their mood as it was “right now”. Arguably, results obtained this way provide a more accurate reflection of participants’ average mood than through asking them to recall how they generally felt in the past two weeks. The process of creating new variables using intensive longitudinal methods can be even more ingenious. De Longis and Alessandri (2020, this issue) presented a concept of emotional inertia and to operationalize it they created autoregressive parameters from multiple measurements of both positive and negative emotions. These parameters reflect a prediction of a current emotional state by a former one. Such a procedure enabled a variable to be constructed that was a person-level one from measurements obtained on the day level.

Moreover, intensive longitudinal methods provide an opportunity to examine whether relationships observed in the traditional between-person approach (e.g., people who feel more stress, consume more sweets) are mirrored at the day level (e.g., on days when one experiences elevated stress, they consume more sweets), and vice versa. Such a replication or a lack thereof has consequences for theory. For example, Zygar-Hoffmann, Pusch, Hagemeyer, and Schönbrodt (2020, this issue) compared different types of motivational variables (implicit and explicit motive dispositions, motivation as states and as aggregated person-level variables) in their ability to predict communal and agentic behavior reports in intimate relationships. Their analyses revealed that—while state and aggregated variables were linked with outcomes in the same direction—the aggregated motivational states had the strongest effects in the majority of cases. These findings may point to potential situational factors modifying daily links between motives and behaviors. Sometimes, the findings of diary studies do not completely overlap with those obtained using a between-person approach, which provides an opportunity to refine knowledge: the same construct might have different functions on different levels of analysis. For example, the Job Demands-Resources model (Bakker & Demerouti, 2007) poses that workload—as a job demand—is harmful to employee well-being. At the same time, Bakker, van Emmerik, Geurts, and Demerouti (2010) found that day-level workload was *positively* related to day-level state work engagement on days that employees felt recovered, suggesting that workload acts as a challenge stressor when people have the capacity to deal with it. The difference between day- and person-level relationships means that while under some circumstances daily workload may have a positive effect on work engagement, in the longer run this effect tends to be damaging. Future studies are necessary to clarify such differences in proximal and distal processes, and a diary design appears to be an ideal framework for investigating both levels of analysis.

Interestingly, the setup of the intensive longitudinal research methods allows the examination of cross-level processes, i.e., the way a more stable person's or environment's characteristics affect the daily processes captured by multiple measurements. These stable characteristics may enhance the daily processes, but also—inhibit them. A good illustration for this is a study by De Longis and Alessandri (2020, this issue), where the authors investigated whether the positive link between emotional states and job performance depends on one's emotional inertia, i.e., the extent to which emotional states are retained over time. This sort of resistance to change is considered a psychological maladjustment. The results demonstrated that workers who show high levels of inertia in positive emotions rate their performance as lower compared to those workers with low levels of inertia, even on occasions when state positive emotions were high. This finding suggests that emotional inertia may reduce the benefits of state positive emotions.

Within-individual designs are not the only ones that can benefit from applying intensive longitudinal methods. The most common between-persons design is perhaps a dyadic one. As Kenny, Kashy, and Cook (2006) famously put in their seminal book

“Many of the phenomena studied by social and behavioral scientists are interpersonal by definition, and as a result, observations do not refer to a single person but rather to multiple persons embedded within a social context” (p. 1).

Although a dyadic design by no means determines the use of intensive longitudinal methods, many researchers have been drawn to apply these because of the unique opportunity to analyze the *processes between two people* as they unfold. Dyads can take all sorts of shapes and forms—teacher and student, spouses, parent and child, supervisor and employee—therefore it is no wonder that this design has become ubiquitous across various fields in psychology including social cognition, family and relationships, and health. For example, researchers use dyads to examine how daily proactivity can be transmitted between colleagues (Demerouti & Peeters, 2017), how working to change one’s relationship influences its quality (Young, Curran, & Totenhagen, 2013), and how providing support affects caregivers’ and patients’ affect (Kroemeke, Knoll, & Sobczyk-Kruszelnicka, 2019). In this Special Issue an example of dyadic design can be found in the paper by Zygar-Hoffmann et al. (2020) where participants reported on their own and their partner’s behaviors.

Finally, apart from quantitative data, Zygar-Hoffmann et al. (2020, this issue) present how coding procedures can be used for evaluation of daily behaviors between partners as being oriented towards communal and agentic goals. The different forms of classification have often been used in intensive longitudinal designs, especially in experience sampling methods, where open questions about current activity are the major tool to capture behavior as it has been elicited (Csikszentmihalyi & Larson, 2014). However, the coding is usually very sample- and study-specific, as is the case for the example described earlier. Thus, a universal hierarchical categorization of behaviors proposed by Skimina et al. (2020, this issue) is an important proposal showing the potential of such designs to effectively cover a very broad range of daily activities in a more standardized and systematic manner, which may lead to a more accurate comparison of results from various studies.

Intensive longitudinal methods allow us to observe whether and how certain processes actually occur in everyday life. They are certainly not an answer to every research question and they do come with challenges. Intensive longitudinal studies can be costly from the researcher’s point of view; for example, one may be required to pay for services that send out a survey link automatically and at random time intervals. Such intensive designs may also be costly for participants as they are time-consuming. To make these studies more feasible, researchers shorten scales or use single-item questions. These treatments, however, may have repercussions for validity and reliability that need to be considered. These and other challenges in applying intensive longitudinal methods have been summarized by Nezlak (2020, this issue). However, the opportunities that intensive longitudinal methods provide, and some of which we attempted to briefly present in this Editorial, make them a uniquely useful tool to have in one’s research method toolbox. We

present four articles that may come as an inspiration for the reader's future attempt to apply intensive longitudinal research in their projects.

---

**Funding:** The authors have no funding to report.

---

**Competing Interests:** The authors have declared that no competing interests exist.

---

**Acknowledgments:** The authors have no support to report.

---

## References

- Bakker, A. B., & Demerouti, E. (2007). The Job Demands-Resources model: State of the art. *Journal of Managerial Psychology*, 22(3), 309-328. <https://doi.org/10.1108/02683940710733115>
- Bakker, A. B., van Emmerik, I. J. H., Geurts, S. A. E., & Demerouti, E. (2010). *Recovery turns job demands into challenges: A diary study on work engagement and performance* (Working paper). Rotterdam, The Netherlands: Erasmus University Rotterdam.
- Binnewies, C., Sonnentag, S., & Mojza, E. J. (2009). Daily performance at work: Feeling recovered in the morning as a predictor of day-level job performance. *Journal of Organizational Behavior*, 30(1), 67-93. <https://doi.org/10.1002/job.541>
- Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology*, 54(1), 579-616. <https://doi.org/10.1146/annurev.psych.54.101601.145030>
- Csikszentmihalyi, M., & Larson, R. (2014). Validity and reliability of the experience-sampling method. In *Flow and the foundations of Positive Psychology: The collected works of Mihaly Csikszentmihalyi* (pp. 35-54). [https://doi.org/10.1007/978-94-017-9088-8\\_3](https://doi.org/10.1007/978-94-017-9088-8_3)
- Csikszentmihalyi, M., Larson, R., & Prescott, S. (1977). The ecology of adolescent activity and experience. *Journal of Youth and Adolescence*, 6, 281-294. <https://doi.org/10.1007/BF02138940>
- De Longis, E., & Alessandri, G. (2020). Temporal dependency of emotional states at work and its relationship with dynamic performance. *Social Psychological Bulletin*, 15(2), Article e2975. <https://doi.org/10.32872/spb.2975>
- Demerouti, E., & Peeters, M. C. W. (2017). Transmission of reduction-oriented crafting among colleagues: A diary study on the moderating role of working conditions. *Journal of Occupational and Organizational Psychology*, 91(2), 209-234. <https://doi.org/10.1111/joop.12196>
- Hamaker, E. L., & Grasman, R. P. P. (2015). To center or not to center? Investigating inertia with a multilevel autoregressive model. *Frontiers in Psychology*, 5, Article 1492. <https://doi.org/10.3389/fpsyg.2014.01492>
- Hamaker, E. L., & Wichers, M. (2017). No time like the present: Discovering the hidden dynamics in intensive longitudinal data. *Current Directions in Psychological Science*, 26(1), 10-15. <https://doi.org/10.1177/0963721416666518>
- Iida, M., Shrout, P., Laurenceau, J. P., & Bolger, N. (2012). Using diary methods in psychological research. In H. Cooper (Ed.), *APA handbook of research methods in psychology: Foundations*,

- planning, measures and psychometrics* (Vol. 1, pp. 277-305). Washington, DC, USA: American Psychological Association.
- Kenny, D. A., Kashy, D. A., & Cook, W. L. (2006). *Dyadic data analysis*. New York, NY, USA: Guilford Press.
- Kenny, D. A., & Zautra, A. (2001). Trait–state models for longitudinal data. In L. M. Collins & A. G. Sayer (Eds.), *New methods for the analysis of change* (pp. 243–263). Washington, DC, USA: American Psychological Association.
- Kroemeke, A., Knoll, N., & Sobczyk-Kruszelnicka, M. (2019). Dyadic support and affect in patient–caregiver dyads following hematopoietic stem-cell transplantation: A diary study. *Journal of Consulting and Clinical Psychology, 87*(6), 541-550. <https://doi.org/10.1037/ccp0000398>
- Nawijn, J., Mitas, O., Lin, Y., & Kerstetter, D. (2013). How do we feel on vacation? A closer look at how emotions change over the course of a trip. *Journal of Travel Research, 52*(2), 265-274. <https://doi.org/10.1177/0047287512465961>
- Nezlek, J. (2020). Diary studies in social and personality psychology: An introduction with some recommendations and suggestions. *Social Psychological Bulletin, 15*(2), Article e2679. <https://doi.org/10.32872/spb.2679>
- Simbula, S. (2010). Daily fluctuations in teachers' well-being: A diary study using the Job Demands–Resources model. *Anxiety, Stress, and Coping, 23*(5), 563-584. <https://doi.org/10.1080/10615801003728273>
- Skimina, E., Karaś, D., Topolewska-Siedzik, E., Kłym-Guba, M., Ponikiewska, K., Rogoza, R., . . . Ciecuch, J. (2020). A categorization of behaviors reported in experience sampling studies. *Social Psychological Bulletin, 15*(2), Article e3029. <https://doi.org/10.32872/spb.3029>
- Weiss, H. M., Nicholas, J. P., & Daus, C. S. (1999). An examination of the joint effects of affective experiences and job beliefs on job satisfaction and variations in affective experiences over time. *Organizational Behavior and Human Decision Processes, 78*(1), 1-24. <https://doi.org/10.1006/obhd.1999.2824>
- Young, V., Curran, M., & Totenhagen, C. (2013). A daily diary study: Working to change the relationship and relational uncertainty in understanding positive relationship quality. *Journal of Social and Personal Relationships, 30*(1), 132-148. <https://doi.org/10.1177/0265407512453826>
- Zygar-Hoffmann, C., Pusch, S., Hagemeyer, B., & Schönbrodt, F. D. (2020). Motivated behavior in intimate relationships: Comparing the predictive value of motivational variables. *Social Psychological Bulletin, 15*(2), Article e2873. <https://doi.org/10.32872/spb.2873>



Social Psychological Bulletin is an official journal of the Polish Social Psychological Society (PSPS).



leibniz-psychology.org

PsychOpen GOLD is a publishing service by Leibniz Institute for Psychology Information (ZPID), Germany.