Individual and organizational dynamics of boundaryless work and employee wellbeing

Esther Palm, Severin Hornung & Jürgen Glaser

University of Innsbruck, Institute of Psychology

ABSTRACT

Societal and technological dynamics constantly change the interface between work and nonwork domains. Currently, developments in information and communication technologies are drivers of increased integration of work into private life. The notion of "boundaryless work" implies both new opportunities for reconciliation of work and nonwork responsibilities as well as risks for employee wellbeing due to lack of detachment and recovery. The aim here was to gain a better understanding of how individuals and organizations can successfully manage the interfaces between work and private lives. This overarching theme was approached in seven study projects, five of which document original empirical research.¹ Taken together, these investigate the influence of individual, organizational, and cultural factors on the nature of boundaryless work, including their potential interplay and implications for employee wellbeing. Results largely confirm the relevance of examined factors. Limitations with regard to causal inferences and generalizability due to reliance on cross-sectional self-report data and convenience sampling apply. Practical implications include deliberate and open communication between employer and employees to ensure that individual and organizational needs and interests in workplace flexibility are balanced, supporting both worker wellbeing and organizational effectiveness. Considering individual, organizational, and cultural factors in the complex dynamics between work and private life elucidates important psychological processes at the intersection of work and non-work domains as well as determinants of employee wellbeing in an increasingly flexible and boundaryless world of work.

Keywords

Work and private life domains – boundaryless work behavior – segmentation and integration – organizational norms – personal preferences – conflict and enrichment – worker health

Over the past decades, sustained change in working conditions, particularly, working times and locations, has led to a "boundarylessness" of employed work compared to preceding phases (Allvin, Aronsson, Hagström, Johansson & Lundberg, 2011; Nippert-Eng, 1996). Widespread non-standard, temporary, and often precarious work arrangements are byproducts of internationalization and compounding dynamics of accelerated sectoral, demographic, technological, and organizational change. The notion of "boundaryless work" promises emergence of new opportunities for reconciliation of work and nonwork responsibilities as well as risks for employee wellbeing due to lack of detachment and recovery (Matusik & Mickel, 2011; Park, Fritz & Jex, 2011). Information and communication technologies (ICT), including global internet connectivity, remotely accessible computer systems, and personal devices, such as laptops, tablets, and smartphones, facilitate working anytime and anywhere (Towers, Duxbury, Higgins & Thomas, 2006). Increasingly pertinent in this new digitalized, virtualized, and flexibilized workplace, are issues of extended availability outside working hours and growing overlap and integration of work and private domains (Dettmers, Vahle-Hinz, Bamberg, Friedrich & Keller, 2016; Korunka & Hoonakker, 2014). Official statistics and representative surveys illustrate this (sources in Palm, 2018). In Austria, the percentage of employees

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equipped by their company with portable internet devices rose from 15 % in 2012 to 28 % in 2017. In 2013, around 34 % worked during off-hours, 17 % worked on holidays, and 14 % reported daily varying working time patterns. In 2016, 22 % were "often" or "very often" expected to be available outside regular hours - corresponding with other European countries (e.g., 23 % in Germany). Qualitative changes in the nature of work are less readily captured in workplace statistics. An observed acceleration and intensification of work is partly triggered by new ICT, but certainly enabled and reinforced by it (Golden & Geisler, 2007; Korunka & Hoonakker, 2014). The observed progressing dynamization and dissolution of boundaries between gainful work and other life domains (family, hobbies, leisure) has given rise to intensive research in multiple fields, such as psychology, sociology, management, and computer science. From a psychological perspective, particularly relevant are implications of changing working and living conditions for individuals, organizations, and society, respectively the complex interdependencies between these (Kreiner, 2006). The perspective of this article is narrower, focused on psychological processes, behavior, and implications for personal wellbeing and health on the individual level. Our working concept of boundaryless work converges with the integration of work into the private domain (Bulger, Matthews & Hoffman, 2007; Ohly & Latour, 2014). This is one meaning of the more encompassing sociological concept of boundaryless work, which assumes that gainful employment has inherent expan-

sive tendencies, manifesting in multiple ways of work intensification and extensification (temporal, psychological, social; Allvin et al., 2011; Höge & Hornung, 2015). Our aim here was to gain a better understanding of how individuals can successfully manage the interfaces between their work and private lives (Kossek & Lautsch, 2012). This topic was approached in seven study projects, investigating, from the perspective of the working subjects, the influence of individual, organizational, and cultural factors in boundaryless work, including their potential interplay and implications for personal wellbeing. Considering complex dynamics between work and private life, our research seeks to shed light on psychological processes at the intersection of work and non-work domains as well as determinants of employee wellbeing in an increasingly flexible and boundaryless world of work.

Boundaryless work: A research framework

Our framework model to study boundaryless work is shown in Figure 1. Individual preferences, organizational requirements, and perceived opportunity are included as influencing factors. Outcomes integrate the perspective of enrichment and conflict between work and private life, including mental health as a secondorder consequence. Prior to discussing model components in more detail, some core assumptions on work boundaries are outlined.



Figure 1: Research model of boundaryless work and allocation of constructs investigated in SP-2 to SP-6.

Work boundaries: Flexibility, permeability, dissolution

Building on earlier work in ecology and sociology, ", boundary theory" and ", border theory" conceptualize the interfaces between work and private life as idiosyncratically constructed demarcation lines enclosing and separating these two life domains (Ashforth, Kreiner & Fugate, 2000; Clark, 2000; Nippert-Eng, 1996). Work boundaries are understood as "mental fences", created and maintained by individuals to structure and simplify their environment, making it more controllable and less stressful. Work-life boundaries are socially constructed, that is, people share a general understanding of these interfaces and perceive them similarly. According to widely held assumptions, boundaries between work and private spheres are currently weakening - becoming more flexible and permeable. In this context, flexibility means the extent to which temporal and spatial work-home boundaries are "elastic" or changeable, supporting variabilities in work schedule and location. Permeability describes the ease with which information, energy or objects can "pass through" or "cross" the boundary, allowing a person to physically reside in one domain, while being mentally and / or behaviorally engaged in the other; e.g., replying to work-related phone calls or email at home (psychological occupation with work while remaining in a nonwork environment; Clark, 2000). Switching between work and private activities requires "micro role transitions" (Ashforth et al., 2000), suggesting that such "border crossings" incur specific psychological efforts and costs (exiting one domain and entering the other). Technological progress has led to a weakening of boundaries, such that flexibility and permeability compound each other towards the "dissolution" or "deconstruction" of the respective demarcation lines (Duxbury, Higgins, Smart & Stevenson, 2014; Golden & Geisler, 2007). This "disintegration", in turn, necessitates strategies for a "re-integration" of the work and private sphere. The extent of cross-domain integration reflects a continuum, in which strict separation marks one end and complete congruence of life spheres the other. Work boundary properties of flexibility and permeability are direction-specific, such that the extent to which work spills over into private life and the opposite tendency of integrating personal matters into one's professional life, tend to be asymmetric. Cases in point, employees typically face less resistance to working longer hours than to leaving early, to take work home, rather than pursue private activities at work. While the exact configuration of directional boundary properties tends to be idiosyncratic, research has identified prototypical boundary management styles and profiles, partly depending on the experienced degree of controllability of boundary dynamics (Kossek,

Ruderman, Braddy & Hannum, 2012). The present study focuses on integration of work into private life. This narrower unidirectional perspective corresponds with our focus on the work domain and the objective to analyze, evaluate, and design working conditions to support occupational health, wellbeing and productivity. Use of ICT is often portrayed as instrumental to reconcile professional and private activities and obligations. However, research suggests that ICT use by itself does not necessarily lead to successful (positively experienced) integration, but that the resulting permeability between work and private domains can be experienced as negative and burdensome (Fenner & Renn, 2010; Matusik & Mickel, 2011; Ohly & Latour, 2014). Paradoxically, ICT use appears to be both a potential resource and a challenge or stressor in shaping the boundaries of work, making the conditions for an employee-oriented use of ICT a particularly relevant topic of current academic and practitioner interest.

Influencing factors: Preferences, requirements, capability

Stated objective of the reported research was to investigate factors that facilitate or constrain the successful integration of work and private life. Such influences can emanate on the individual level (Powell & Greenhaus, 2010), the work activity, the organizational structure, policies, and processes (Kossek, Lautsch & Eaton, 2006), as well as the broader work environment, such as the institutional, societal, and socio-cultural context (Ollier-Malaterre & Foucreault, 2017; Shockley, Douek, Smith, Yu, Dumani & French, 2017). Drawing on theories of planned behavior and reasoned action from social psychology (Armitage & Conner, 2001; Fishbein & Ajzen, 2010; McEachan, Taylor, Harrison, Lawton, Gardner & Conner, 2016), in conjunction with interactionist conceptions of person-environment interdependence (reciprocal determination or mutual adaptation; Kreiner, 2006; Semmer & Schallberger, 1996), we suggest a tripartite taxonomy of individual, organizational, and interactive factors to explain behavioral manifestations of boundaryless work. In popular terms, these reflect the motivational dimensions of "Want to do", "Should do", and "Can do". Below they are more precisely described as: a) Individual (personal and professional circumstances and preferences); b) Organizational (performance requirements and behavioral norms; and c) Interactive factors (perceived opportunity and subjective capability). Additionally, ideological influences on the national and transnational socio-cultural level are taken into account (Nordenmark, 2004; Shockley et al., 2017).

Personal and professional circumstances and preferences. The first dimension refers to the needs, aspirations, and predispositions of the focal individual with regard to shaping and customizing work boundaries to support the fulfillment of private and professional responsibilities, depending on personal and occupational circumstances, orientations, and goals (Methot & LePine, 2016). This includes the relative importance attributed to work and private life (e.g., work and family centrality), responsibilities and involvement in these two domains, as well as structural conditions, such as marital status, number of children, and living arrangements (Bulger et al., 2007; Powell & Greenhaus, 2010). Put differently, this dimension describes properties of the work-home boundary that the focal person "wants" or "desires" to support his or her personal circumstances, wellbeing, and ability to perform. Individual segmentation or integration preferences pertain to questions such as: "Do I want my work and private life to mix with each other? Is it acceptable for me to tend to work issues during leisure time? Am I willing to constantly switch between work and private roles?" Personal preferences may be characterized as emphasizing segregation or integration of work and personal life domains - or some more complex configuration of these approaches, constituting a person's individual boundary management style (Kossek & Lautsch, 2012).

Performance requirements and behavioral norms. The second dimension refers to the prescribed standards and normative pressures conveyed by the organization and the broader work environment regarding the type of work boundary behavior required, expected or desirable in a given context and position. Such work role requirements can be explicit or implied, mandatory or discretionary (at least to a certain extent), conveyed directly or indirectly, through persons or (organizational members) or rules and regulations, policies and practices, etc. (Koch & Binnewies, 2015; Piszczek & Berg, 2014). Decoding and integrating these environmental cues gives employees a blueprint of how they "should" or "ought to" behave to perform respective aspects of their work role in a socially acceptable manner. Associated key questions are: "To what extent is it expected in my company that I integrate work into my private life? To what extent do my colleagues or managers take work home with them? What expectations does my professional environment have towards me with regard to accessibility and availability for work matters during my personal time?" One of the most important sources for interpreting social norms are observations of the behavior of other members (colleagues, supervisors, management), which, on aggregate conveys the working culture in an organization. Standards inferred from visible behaviors of other members are referred to as descriptive norms, whereas expectations conveyed directly by the employing organization are referred to as injunctive norms (Fishbein & Ajzen, 2010; Barber

& Santuzzi, 2015; Derks, van Duin, Tims & Bakker, 2015). Although social norms regarding work behavior are to some extent specific to the respective organizational culture, they are strongly influenced by broader cultural, societal, and professional norms, such as the national and occupational work ethic (e.g., long hour work culture in Japan; time pressure as a "status symbol" in managerial and medical professions; Hornung, Weigl, Glaser & Angerer, 2016; Nordenmark, 2004; Ollier-Malaterre & Foucreault, 2017). Another source of normative beliefs regarding appropriate workhome boundary behavior are the individual standards and aspirations of the focal individual. However, these do not reflect genuinely personal predispositions but rather internalized norms of the environment, adopted through processes of occupational and organizational socialization. Accordingly, Leslie, King and Clair (2019) argue that individual beliefs and values regarding the relationship between work and private sphere are influenced by work-life ideologies on different levels. Following their arguments, individual and organizational segmentation or integration preferences are not independent but mutually influence each other.

Perceived opportunity and subjective capability. Closely related to notions of self-efficacy and locus of control, another central set of determinants of behavior relate to the extent to which a person experiences self-determination, as a combination of subjective autonomy and competence to perform the respective actions in a given situation (Kossek et al., 2006; Nijp, Beckers, Geurts, Tucker & Kompier, 2012). Here, this dimension of "can do" refers to perceived opportunity and ability to influence, shape or manage the workhome boundary with regard to personal and/or organizational requirements and goals. Applied to our purpose, this pertains to questions such as: "To what extent can I decide for myself whether to integrate work into my private life? Do I have the necessary personal and structural resources to integrate work into my private life? Will I be able to successfully integrate my work and private life?" Positive appraisals of these questions imply a combination of perceived control over one's own behavior and the ability to affect change in the work environment. As such, it can be conceived as an interaction between individual and organizational antecedents, such that subjective abilities (e.g., selfmanagement competencies, self-efficacy in ICT use) are met with matching situational opportunity or "degrees of freedom" to engage in the respective behavior (e.g., autonomy-oriented work organization, working time systems). Another way to describe this complex of self-determination (discretion, authority, or latitude) is the concept of boundary control. Aspects of autonomy or control at work show consistent positive effects for personal wellbeing and occupational health (Nijp et al., 2012). Based on long-standing theorizing and results on the importance of personal agency, expected controllability is central to behavioral attempts to regulate work-nonwork interactions through flexible, reciprocal (case-by-case; bi-directional) integration of work and personal activities.

Outcomes: Conflict, enrichment, wellbeing

An applied objective of this research is to help employees to better manage the boundaries between work and private life (Bulger et al., 2007; Kossek & Lautsch, 2012; Kreiner, 2006). Success can be evaluated from three perspectives, emphasizing different outcomes, namely, conflict, enrichment, and balance. From the traditional focus on conflict, minimizing or reducing stressful interferences between professional and private obligations is the main criterion for successful coordination (Kasearu, 2009). Enrichment additionally evaluates the self-management of work borders at the basis of fit and synergies, that is, positive interactions and "gain spirals" between life domains (Greenhaus & Powell, 2006). Going beyond negative or positive exchanges, the third and "latest" perspective emphasizes balance between work and private life, a dynamic state of optimal functioning, effectiveness, and experienced fulfillment in both areas of life, evaluated in a comprehensive or holistic fashion (Casper, Vaziri, Wayne, DeHauw & Greenhaus, 2018). While these related perspectives share the goal of a successful design of work boundaries, meta-analytic results confirm their conceptual differences. Work-life balance reflects an integrated and dynamic higher-level configuration arising from a fluid positive state of low conflict and high enrichment. Balance most closely corresponds with the salutogenic "meta-goals" of protecting, restoring, and improving work-related psycho-social wellbeing (Casper et al., 2018; Grzywacz & Carlson, 2007). Included here are the perspectives of work-nonwork conflict and enrichment as well as work-related impairment of psychological health.

Compilation of study projects: Summary of results

Presented are seven collaborative study projects, conducted under the umbrella of a larger research program on flexibility at work. Each is linked to a conceptual or empirical contribution output (journal article, conference proceedings, working paper), documenting core research activities of the first author's PhD studies (Palm, 2018). Table 1 provides an overview. Short summaries are reported below, prior to an integrated discussion of findings, limitations, and implications. The first study project (SP-1) offers a review and integration of the literature, documenting initial efforts to gain an overview of the current state of research on flexible work and the erosion of boundaries between private and professional life domains. Of special interest were influencing factors in successfully managing the work-nonwork interface and implications for occupational health. The second study project (SP-2) empirically tests a model of organizational (social norms) and individual (personal preferences) factors and their joint (interactive) influences on boundaryless work behavior (work-to-nonwork integration), including stressful and health-impairing consequences of work-life conflict and psychological irritation. The third (SP-3) is a replication, affirming core parts of the model in SP-2. The fourth (SP-4) uses an alternative conceptualization of boundaryless work in terms of work-related ICT use during nonwork hours, differentiating between active and passive use and work-life conflict and enrichment. Revisiting organizational and individual antecedents of boundaryless work, the fifth (SP-5) presents an extended model of motivating factors, based on theories of planned behavior and reasoned action. The sixth (SP-6) adopts a broader view of boundaryless working by investigating cross-cultural influences (gender equality norms) on negative workrelated consequences (reduced job scope) associated with multiple role occupancy (private elderly care responsibilities). The last study project (SP-7) closes the feedback loop to the field by developing practitioner guidelines for the health-promoting design of boundaryless work.

Study Project 1: Review of research on boundaryless work and its implications for occupational health.

The aim of this first study project was to gain an overview on the current state of research regarding the forms and trends of the flexibilization of work and its effects on the mental health of employees. The main focus here was on temporal (work schedule) and spatial (location of work) variabilities, rather than numerical (contractual work arrangement) or functional (work tasks) aspects. Theoretically, these were approached from the perspective of "boundarylessness" (Allvin et al., 2011), that is, the progressing erosion or dissolution of the boundaries between work and private life, attributable to structurally inherent expansive tendencies in employed work, simultaneously driving and being driven by technological and social change. Overall, there seems to be a wide consensus in the literature that the prototypical standard employment relationship of the industrial era is increasingly replaced by new forms of employment that are more variable and changeable, particularly, with regard to aspects of space and time. Changes in work organization are associated with positive effects for occupational health only if the employees are provided Table 1: Overview of study projects on boundaryless work.

	Description	Authors	Original Title	Documentation	Date	Туре
SP-1	Review of research on boundaryless work and its impli- cations for occupa- tional health.	Glaser J., Palm E.	Flexible und entgrenz- te Arbeit – Segen oder Fluch für die psychische Gesundheit?	Wirtschafts- psychologie 18 (3), 82-99.	2016	Narrative litera- ture review (journal article)
SP-2	Organizational, indi- vidual, and interac- tive antecedents and negative occupation- al health outcomes of boundaryless work.	Palm E., Hornung S., Heiden B., Herbig B., Kolb S., Nowak D., Herr C., Glaser J.	Entgrenzung von Arbeit: Auswirkungen organi- sationaler Segmentie- rungsnormen auf Ent- grenzungsverhalten, Rollenkonflikt und Irritation.	In S. Hildenbrand & M. A. Rieger (Hrsg.), Dok. 55. DGAUM Jahres- tagung (pp. 464- 467).	2015	Survey research (conference pro- ceedings)
SP-3	Additional evidence on the antecedents and negative oc- cupational health outcomes of bound- aryless work.	Palm E., Glaser J., Heiden B., Herbig B., Kolb S., Nowak D., Herr, C.	Zusammenspiel von or- ganisationalen Normen, individuellen Präferen- zen und arbeitsbezoge- nem Entgrenzungsver- halten mit Konflikten zwischen Arbeits- und Privatleben.	Wirtschafts- psychologie 18 (2), 44-54.	2016	Survey research (journal article)
SP-4	Conflict and enrich- ment as negative and positive pathways for ICT use in boundary- less work.	Höge T., Palm E., Strecker C.	Anforderungen an selb- storganisierte Arbeit und das Verhältnis von Arbeit und Privatleben. Zur Rolle von passiver und aktiver IuK-Technologie- Nutzung in der Freizeit.	Wirtschafts- psychologie 18 (2), 35-43.	2016	Survey research (journal article)
SP-5	Testing a theory- based extended mod- el on the psychologi- cal antecedents of boundaryless work.	Palm E., Seubert C., Glaser, J.	Understanding employee motivation for work- to-nonwork integration behavior: A reasoned action approach.	Journal of Busi- ness and Psy- chology (online first, 16.08.2019).	2019	Survey research (journal article)
SP-6	Cultural influences on the downsides of boundaryless work for women with mul- tiple role occupancy.	Bainbridge H.T.J., Palm E.	A cross-cultural study of employee non-work eldercare responsibili- ties and changes in job scope.	Working Paper, UNSW Business School, Sydney Australia.	2018	Secondary data analysis (unpublished manuscript)
SP-7	Developing practi- tioner guidelines for cultivating health- promoting boundary- less work in SMEs.	Weilnhammer V., Heinze S., Heiden B., Palm E., Herbig B., Lüke G., Nowak D., Glaser J., Herr C.	Erstellung eines Hand- lungsleitfadens für einen gesundheitsförderlichen Umgang mit Informa- tions- und Kommuni- kationstechnologien, Flexibilisierung und Erreichbarkeit in kleinen und mittleren Unter- nehmen.	Gesundheits- wesen 81 (2), 113-119	2019	Practitioner guidelines (journal article)

with authority, autonomy, and opportunity to use resulting flexibility potentials to align their work with personal and professional needs, preferences, and goals (Kossek et al., 2006; Nijp et al., 2012). In contrast, the external determination of time and place of work typically manifests in additional flexibility demands, respectively, stressors and strain (Joyce, Pabayo, Critchley & Bambra, 2010). The reality of workplace flexibility resides between these poles and involves multiple dimensions, resulting in complex trade-offs and emergent processes that defy generalized predictions. While some findings are relatively robust (e.g., working time autonomy, self-scheduling, and locational choices vs. shift work, standby, external determination and limited predictability of work hours and sites), how ICT use affects the underlying trade-offs and dynamics is less clear (Mazmanian, Orlikowski & Yates, 2013). Boundary theory is useful to analyze and explain dynamic interactions between work and private life. A broad spectrum of constructs has been suggested to operationalize properties of the work home interface, e.g., time-, energy-, and behavior-based conflict and enrichment, levels and episodes, spillover and cross-over, directed effects and interactions, boundary strength, boundary management styles, etc. (Bulger et al., 2007; Höge, 2009; Kossek et al., 2012). These are reviewed and integrated into a multi-level model of determinants and implications of flexibility for individuals, organizations, and societal institutions. Based on this conceptual work, central constructs for subsequent empirical studies are identified.

Study Project 2: Organizational, individual, and interactive antecedents and negative occupational health outcomes of boundaryless work.

The second study project examines independent and joint effects of identified organizational and individual antecedents on boundaryless work, operationalized as integrating work into the private sphere (taking work home, being available during nonwork hours, working on holidays). Hypotheses specified a "chain of effects" from organizational segmentation-integration norms to work-to-nonwork integration behavior, conflict between work and family roles, and work-related psychological health, operationalized as cognitive irritation (Mohr, Müller, Rigotti, Aycan & Tschan, 2006). Personal segmentation-integration preferences were suggested to moderate the relationships between organizational norms and boundaryless work behavior as well as between the latter and the extent of work-family role conflict. Hypotheses are tested in a sample of N = 319 employees from 10 small or medium sized enterprises (SMEs) from different branches of the German industry (e.g., manufacturing, logistics, healthcare, technology), participating in an intervention study on

flexibility at work ("FlexA" project; for an overview see Herr et al., 2016 a). Analyses were conducted using hierarchical regression and the PROCESS macro in SPSS 20.0. Results confirm a chain of mediated relationships from organizational segmentation standards to boundaryless work behavior to resulting role conflict and cognitive irritation as first- and second-order outcomes. High preference for segmentation (integration) strengthens (weakens) the negative implications of boundaryless work-to-home integration behavior for role conflict and subsequent irritation. However, no moderating role (interaction) of organizational norms and personal preferences was found.

Study Project 3: Additional evidence on the antecedents and negative occupational health outcomes of boundaryless work.

The third study project consists of a recalculation of core parts of the model presented in SP-2, using refined statistical methods and data. Analyses were conducted with PROCESS in SPSS 20.0, based on N = 299employees from 10 SMEs participating in the previously mentioned flexibility project. Note that this study uses an alternative configuration of data overlapping with the sample in SP-2 and, thus, is not an independent validation. As reported above, organizational norms predict unbounded work behavior, which, in turn, is associated with increased role conflict between work and private life. The negative relationship between organizational segmentation norms and role conflict is completely mediated by work-related dissolution of boundaries. Depending on the direction of their coding, individual preferences strengthen / boost / accentuate (segmentation) or weaken / buffer / attenuate (integration) the positive relationship between work-boundary behavior and role conflict. Overall, additional analyses confirmed results from SP-2, which proved stable and plausible.

Study Project 4: Conflict and enrichment as negative and positive pathways for ICT use in boundaryless work.

Contributing to research on organizational flexibility requirements (Höge & Hornung, 2015), this study examines a specific aspect of boundaryless work, the work-related use of ICT technology outside working hours (Ohly & Latour, 2014; Park et al., 2011). Off-hour ICT use is represented as a consequence of increased requirements for self-organization and an antecedent to both negative and positive interactions between work and personal life (work-family conflict and enrichment). A distinction is made between passive, other-initiated or received, and active, self-initiated or outgoing ICT use. These two forms were assumed to play opposite mediating roles between requirement for self-organization and the experience of conflict and enrichment between work and private life (Matusik & Mickel, 2011). Analyses are based on an occupationally heterogeneous convenience sample of N =252 working individuals, employed in different sectors and industries in Germany and Austria (e.g., administration, production, services), gathered by students in the course of a research seminar in work psychology. Study constructs were measured with multi-item scales, psychometrically assessed in preliminary analyses. Hypotheses were tested in an integrated structural equation model (AMOS 21.0). Results corroborated a positive relationship between requirements for self-organization at work and both types of ICT use in leisure time. As hypothesized, passive (other-initiated) ICT use was associated with elevated work-life conflict, whereas active (self-initiated) ICT use related to experienced enrichment of private life through the work activity.

Study Project 5: Testing a theory-based extended model on the psychological antecedents of boundaryless work.

This study project (SP-6) revisits the topic of the psychological drivers of boundaryless work behavior, testing an extended set of predictors based on the theory of reasoned action and the (conceptually close) reasoned action approach (Armitage & Conner, 2001; Fishbein & Ajzen, 2010; McEachan et al., 2016). Drawing on a rich theoretical and empirical basis in social and health psychology, this refined conceptualization also lends itself to the broader categories of our research framework. In addition to personal segmentation-integration preferences, two types of organizational segmentation-integration norms were included - namely, injunctive (directly conveyed organizational requirements or expectations) and descriptive (indirectly inferred from the observed behavior of other members; Barber & Santuzzi, 2015; Derks et al., 2015; Fenner & Renn, 2010). Further, the level of experienced personal control over work boundary behavior as an indicator at the intersection of individual and organizational processes (subjective and objective autonomy and authority over segmentation, respectively, integration; Nijp et al., 2012; Kossek et al., 2006; Kreiner, 2006). This refined model of antecedents was tested using data gathered in a collaborative project, involving recruitment of respondents through personal contacts and networks of students participating in several research seminars in applied psychology (purposive sampling, snowball method). To increase methodological rigor, a temporal separation of one month between the measurement of antecedents and self-reported work boundary behavior was part of the improved study

design. Altogether, N = 748 employees from different organizations and sectors of the economy in Austria and Germany filled out online questionnaires. Hypotheses were tested in AMOS 23.0 using structural equation modeling (SEM) with full maximum likelihood estimation. Results confirm that all factors contribute independently to explaining variance in self-reported work-to-nonwork integration behavior. The largest effect size was obtained for personal preferences, followed by injunctive (directly communicated) organizational norms. Descriptive norms (observed behavior) and behavioral control showed weaker, yet statistically significant time-lagged relationships with work boundary behavior; notably, the effect of behavioral control was negative, suggesting a tendency among respondents to avoid integrating work into one's private life, if possible.

Study Project 6: Cultural influences on the downsides of boundaryless work for women with multiple role occupancy.

The objective of SP-6 was to examine the extent to which private care obligations for elderly family members have an impact on the quality of work assigned to female workers (job breadth, scope of responsibilities), thus possibly disadvantaging this group and constraining their integration into the labor market (Bainbridge & Broady, 2017; Zacher & Winter, 2011). Notably, this study uses a broader conceptualization of boundaryless work in terms of multiple role occupancy. Further included are influences emanating from beyond the organization in the broader societal environment, in terms of cultural norms or social values regarding gender equality on a national level. It was assumed that national gender equality norms would affect both the job scope itself as well as the strength of the relationship between private elderly care activities and the breadth of involvement at work. The study is based on a secondary data analysis of a subsample of the sixth European Survey on Working Conditions by the European Foundation for the Improvement of Living and Working Conditions, freely available for scientific research, using the national cultural dimensions identified in the GLOBE project. A suitable data set was extracted, comprising 1,046 female employees with private care obligations aged 50-64 from 19 European countries. Hypotheses were tested in multiple moderated regression analyses (SPSS 23.0). The frequency of care responsibilities for elderly relatives (daily, weekly, monthly) relates negatively to the scope of assigned tasks and professional responsibilities. National social values on gender equality had a positive direct main effect and moderated the relationship between private responsibilities and reduced job scope, such that this detrimental, punitive or discriminatory

effect was weaker (stronger), respectively disappeared altogether, when cultural beliefs emphasized equality (disparity) between sexes. Results affirm the importance of higher-level normative influences in boundaryless work and its consequences.

Study Project 7: Developing practitioner guidelines for cultivating health-promoting boundaryless work in SMEs.

The final study project consisted of involvement in developing guidelines for practitioners, offering concrete and actionable recommendations regarding the design of health-promoting conditions for ICT use and flexible work practices. This undertaking was positioned to meet widespread needs for extended accessibility, specifically in small- and medium-sized enterprises (SMEs). Basis of the guidelines were the results and experiences obtained in the FlexA project. These were supplemented by an additional literature review on relevant intervention and implementation studies as well as practitioner-oriented publications. Applying systematic literature search procedures in major databases (MEDLINE, PsycINFO, etc.) revealed that there currently are no scientifically sound intervention studies on the effects of ICT use on employee wellbeing and health. Additional relevant material was retrieved and integrated with reference to recommended procedures (McDonald, Brown & Bradley, 2005; Sheeran & Silverman, 2003). Subsequently, own research findings and supplementary materials were synthesized into practical recommendations for the design of flexible work, paying special attention to generalizability across companies and industries, practical relevance and applicability, and the particular conditions in SMEs (Herr et al., 2016 b).

Discussion: Implications, limitations, outlook

Reported study projects have yielded results that are relevant to identifying factors in the successful integration of work and private life and associated effects on well-being. Examined were influences of organizational norms and personal preferences regarding segmentation or integration of work and private life on self-reported boundaryless work behavior as well as the impact of the latter on experienced work-nonwork conflict, enrichment, and psychological strain. The conceptual basis was laid in a literature review in SP-1. In terms of methods, this subproject included the application and evaluation of systematic literature review and meta-analysis procedures. Based on a-priori specified protocols, systematic searches were carried out in major databases (MEDLINE, PsycINFO, SocIN-DEX, EconLit, Business Source Complete) and results

retrieved, evaluated, and documented. Overall, systematic review methods were found limitedly useful to synthesize the heterogeneous, fragmentary, and interdisciplinary literature with regard to a rather broad and open research question such as ours. Moreover, studies that satisfy the rigorous criteria of systematic reviews (random trial-control studies) are extremely rare (Joyce et al., 2010; Nijp et al., 2012). Therefore, a narrative review and qualitative model-building approach was used. In Figure 1, constructs in the empirical studies are allocated to components of our research framework. Notably, for constructs in SP-6, this allocation is approximate only; for instance, multiple role occupancy through private care responsibilities does not fully align with our focus on work-nonwork integration but corresponds with broader notions of boundaryless work (Bainbridge & Broady, 2017; Nordenmark, 2004). Similarly, as job breadth is established as a core determinant of occupational health (e.g., Karasek's job demand-control model; Häusser, Mojzisch, Niesel & Schulz-Hardt, 2010), reduced job scope was included here as a health-relevant outcome of quality of work (see figure 1). A more direct indicator of job strain was found in the concept of irritation at work.

Based on our framework model, results on the influences on boundaryless work can be summarized with reference to the tripartite taxonomy of individual, organizational, and interactive factors. Successful integration of life spheres, achieved by designing, shaping, and negotiating boundaries between work and private life, is a complex and dynamic phenomenon, in which inter- and intra-individual differences play important roles (Hornung, Weigl, Glaser & Angerer, 2016; Piszczek & Berg, 2014; Powell & Greenhaus, 2010). In addition to directly predicting behavior, individual attitudes regarding the separation or fusion of work and private domains (segmentation-integration preferences) influenced the connection between work-related dissolution of boundaries and experienced role conflict between work and private life (Kreiner, 2006; Methot & LePine, 2016). Results largely corresponded with our conjectures, yet, a moderating role of segmentation preferences on the relationship between organizational segmentation norms and boundaryless work behavior was not supported (a finding discussed below). However, the more segmentation (integration) is personally desired, the more (less) stressful conflict arises from work-to-nonwork integration behavior mandated by the environment. Therefore, employees are well advised to pay attention to and heed their personal preferences in managing work boundaries - or be mindful of aggravated stress and strain when this is not possible.

Results of SP-2, SP-3, and SP-5 confirm a central role of organizational norms in either stimulating and reinforcing or discouraging and containing personally harmful or "self-endangering" boundaryless work behavior (Barber & Santuzzi, 2015; Dettmers, Deci, Baeriswyl, Berset & Krause, 2016). Employers can directly and indirectly contribute to or prevent work-family conflict and facilitate enrichment via the demands and expectations they direct at their employees and the type of working culture they cultivate. SP-5 confirmed that each of these aspects, injunctive (conveyed) and descriptive (observed) norms, contribute independently to explaining variance in boundaryless work behavior and, thus, complementary pathways for occupational health management. Based on person-environment fit theory, personal preferences for integration (segmentation) were assumed to strengthen the effects of organizational integration (segmentation) norms on boundaryless work behavior through processes of activation, reinforcement, and mutual adaptation (Kreiner, 2006; Semmer & Schallberger, 1996). The absence of such an interaction (SP-2, SP-3) could be attributable to this very interdependence, such that personal preferences already account for requirements and expectations conveyed in organizational norms. However, this finding may also suggest that work-home integration behavior is more strongly socially sanctioned and only limitedly discretionary. The relatively small negative effect of behavioral control on work-home integration in SP-5 underscores that when employees feel that such behavior is discretionary, they tend not to engage in it. This converges with the perspective of organizational flexibility requirements in SP-4. Drawing on critical concepts from industrial sociology, flexibility requirements are interpreted as consequences of efficiency-oriented rationalization strategies associated with subjectified forms of work intensification and work extensification (Höge & Hornung, 2015). This concept introduces a critical dimension according to which work-home integration behavior reflects self-enacted (subjectified) work extensification, a "colonialization" of the private sphere by an inherently expansive work domain (Allvin et al., 2011). Thus, the recommendation to maximize employee authority over their work boundary behavior may collide with organizational flexibility interests. Described in the flexibility discourse in terms of flexibility-autonomy and performance-health paradoxes, these are recurring manifestations of the structurally antagonistic interests in employment (Putnam, Fairhurst & Banghart, 2016). Paradoxically, research from a work boundary perspective, which tends to downplay (or has abandoned) structural factors and the "cold" realities of industrial relations, rediscovers these enduring themes under changing conditions in new phenomena, concepts, and terminology.

In terms of outcomes, results largely confirmed our a-priori assumptions. A manifestation of the classic "performance-health paradox", the "default mode" of boundaryless work behavior are negative implications for personal life and impaired occupational wellbeing and health (Dettmers, Vahle-Hinz et al., 2016; Höge, 2009). These negative effects can be partly compensated (buffered or reduced) by being responsive to employee segmentation-integration preferences and increasing controllability. This, however, may result in the organizationally desired behavior being withheld or limited, illustrating what can be framed as the flexibility-autonomy paradox (Mazmanian et al., 2013). Further, boundaryless work embodies a recurring paradox of "new" work design, in terms of the amalgamation of self-directed behavior and work stressors as self-endangering work behavior, resulting from indirect control and subjectification of performance requirements (Hornung, Höge, Glaser & Weigl, 2017; Dettmers, Deci et al., 2016). Our focus here was on negative occupational health implications, exemplified by the construct of cognitive irritation - a psychological extensification of work through increased (and suspended) need for recovery (Barber & Santuzzi, 2015; Mohr et al., 2006). Positive occupational wellbeing and health was explicitly not included here, partly because the satisfaction of "higher-order needs" more strongly depends on the (intrinsic) content rather than the temporal and spatial (extrinsic) dimensions of work (Glaser, Hornung, Höge & Seubert, 2018). Future research should seek to further reconcile positive and negative perspectives on occupational health, in particular, with reference to theories of personality development, meaning, and self-actualization under the transformed and constantly changing conditions in the "new" flexible world of work.

In making research results usable for practitioners, SP-7 closes the feedback loop, completing a full cycle of the applied research process. Employers are reminded of their legal responsibilities and the importance of normative social influences at the organizational level. Consciousness is raised for the demands and strains that increased flexibility and accessibility requirements impose on employees. Direct and open two-way communication and responsiveness to employee requests are recommended to clarify, align, and respond to changing organizational and individual flexibility interests (Herr et al., 2016 b). Specific recommendations include ways to monitor, control, and contain health-impairing tendencies of boundarylessness, take into account individual circumstances and needs of employees regarding the integration or segmentation of work and private life, and increasing personal autonomy and authority of employees to modify and self-design their work-nonwork boundaries to restore, maintain or improve balance between life domains (Grzywacz & Carlson, 2007; Kossek et al., 2006). Corresponding with sociotechnical systems design, recommendations are discussed with regard to their human (e.g., self-management and interpersonal skills), organizational (e.g., working time systems and policies), and technological (e.g., devices, functionalities, and support) implications.

As with most research, this work has its limitations. With some exceptions (SP-5), empirical investigations were based on cross-sectional, single-source, self-report data. Issues raised by this design include common method variance, lacking causal inferences, perceptive biases, and response tendencies. Further, our convenience samples are not representative, limiting generalizability. Analyses reported in SP-2 and SP-3 use overlapping samples; SP-3, thus, does not provide an independent validation, only additional arguments for the robustness of SP-2 results. Minor constraints arise from the use of adapted, abbreviated or not previously validated translations of survey instruments. A desideratum for future studies would be to include objective data (e.g., logfiles of ICT use), multiple measurement points (panel design, diary studies), external assessments by additional respondents (e.g., managers, colleagues, spouses), and systematic triangulation of results through qualitative data.

The present research set out to study inherently complex and dynamic phenomena, raising the bar for theoretical arguments and empirical methods. The very idea of work-life balance can be conceived as improved dynamic allocation of time and mental resources between coexisting work and personal life domains. Due to the mostly cross-sectional design, our investigations do not allow inferences on feedback processes and reciprocal determination (mutual causality), but suggest research opportunities in this regard. Personal preferences for and subjective evaluations of the extent of work-life integration as well as their effects on one's private life and well-being likely are related and interdependent. Persons with strong preferences for segregat-ing domains may assess cross-border transgressions of work into the private sphere more negatively than those with highly integrated professional and personal lives - and vice versa. To reduce complexity, we focused on integration of work into private life. However, including the opposite direction of integrating private life into work is vital to understanding the complex interactions between work and nonwork domains in their entirety. Conflicts between professional and private obligations can possibly be avoided or reduced, depending on the possibility to pursue private matters during working hours (e.g., visits to authorities) using organizational infrastructure, services, or other resources (e.g., ICT, sports facilities, childcare). The analysis of the interplay of professional and private obligations over time and the inclusion of other professional or private stakeholders would be valuable to extend our findings. Particularly, changing needs and preferences across stages of life (e.g., early

career development, parenthood, care for elderly relatives) should be investigated to find out more about age-related and generational dynamics.

As shown in SP-6, the integration of life domains does not happen in a "social vacuum", but is influenced by organizational norms and policies as well as broader factors in the organizational and sociocultural environment. Future research should extend the perspective of cross-cultural context-dependence by including additional cultural norms and values (collectivism, uncertainty avoidance), national regulations (labor laws), and demographic developments (ageing societies). The recently suggested perspective of worklife ideologies (Leslie et al., 2019) offers a promising approach to study the contextual basis and consequences of individual and collective beliefs about the relationships between life domains. The reconciliation of work and private life remains a current topic at the intersection of social and psychological processes affecting individuals, organizations, and society, presenting researchers, employers and employees with new - and some still unknown - challenges.

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Zacher, H. & Winter, G. (2011). Eldercare demands, strain, and work engagement: The moderating role of perceived organizational support. *Journal of Vocational Behavior*, 79, 667-680. Correspondence to: Priv.-Doz. Dr. Severin Hornung, MSc University of Innsbruck Institute of Psychology Maximilianstraße 2 A-6020 Innsbruck Severin.Hornung@uibk.ac.at