Boundary Management as a Crucial Success Factor for Flexible-Mobile Work, Demonstrated in the Case of Home Office

Boundary-Types, Boundary-Management and Boundary-Tactics Used in Home Office

Leila Gisin, Hartmut Schulze, and Barbara Degenhardt

Abstract

The compatibility of work life and family life is a key factor in today's modern work arrangements, particularly with regard to the increase of transition to flexible working hours and places. The herein presented research study considers the question, whether the boundary-types proposed by the boundary-theory [cf. Ashforth et al. Acad Manag Rev 25(3):472–491, 2000; Nippert-Eng, Home and work: negotiating boundaries through everyday life. University of Chicago Press, Chicago 1996]. can be ascertained within flexible-mobile working, notably upon working in home office. Furthermore which difficulties the distinct boundary-types have with these new work styles and which boundary-tactics are promising in regard to those difficulties. Based on a mixed method approach consisting of an online survey (N = 395) and subsequent semi standardised interviews (N = 9) the boundary-types segmentor and integrator could be confirmed. In addition an intermediate mix type was found and empirically proven. Moreover, there is evidence that this newly described mix type has the most difficulties with his boundary-management within flexible-mobile work styles. Based on these findings the article concludes in guidance suitable for each boundary-type in favour of working in home office.

L. Gisin (✉) • H. Schulze • B. Degenhardt
Institute for Research and Development of Collaborative Processes, School of Applied Psychology, University of Applied Sciences and Arts Northwestern Switzerland, Olten, Switzerland
e-mail: leila.gisin@fhnw.ch; hartmut.schulze@fhnw.ch; barbara.degenhardt@fhnw.ch

1   Introduction and Central Questions

The present-day changes related to the so called knowledge society is accompanied by an increasing flexibilization of work hours and places, as knowledge work is neither temporally nor locally tied in principle [cf. 10, 19]. This so called "autonomization of work" [9] poses great challenges to employees as well as organizations. On individual level the boundaries between private and work life, which have been arisen by the industrial revolution and culturally handed down over generations, are dissolving. Significant areas of tension are constituted by means of permanent availability [2], working during ones spare time as well as the relationship between work and family in general [1]. In worst case, these areas of tension can lead to an excessive increase of sleep and health problems, thoughts circling constantly around work and therefor leading to a lasting sense of overstraining, negligence of the social environment, and conflicts in relationships with partner/family [cf. 8, 15]. Individuals which work flexible in regard of time and space are facing the challenges of boundary management in terms of having to re-examine the relationship between work and private time and adjust it suitably.

Within this context Kreiner et al. [12] identified several so called "Boundary-Work-Tactics" based on the "Boundary Theory" presented by Ashforth et al. [4] as well as the "Boundary-Types" sketched out by Nippert-Eng [14]. These "Boundary-Work-Tactics" include all strategies which help individuals to draw, defend and maintain boundaries in daily routine. Moreover, whichever "Boundary Work Tactic" is applied in which situation depends in no small part on the individual "Boundary-Type". According to the individual positioning on the role segmentation-role integration-continuum (see Fig. 1), differing "Boundary-Types" can be distinguished. They vary from "stark segmentors", which separate maximally between work and private life and are known for setting rather impermeable boundaries, to "stark integrators" which in contrary integrate work and private life up to a maximum and are known for setting permeable boundaries. Between these two extremes at least one "Mix Type" is assumed, but has not been further explored in previous research.

Previous research on flexible-mobile work and the therewith related home office work only touched upon the issue of "Boundary-Types", "Boundary-Management" and "Boundary-Work-Tactics". Notably there hasn't been any in-depth exploration
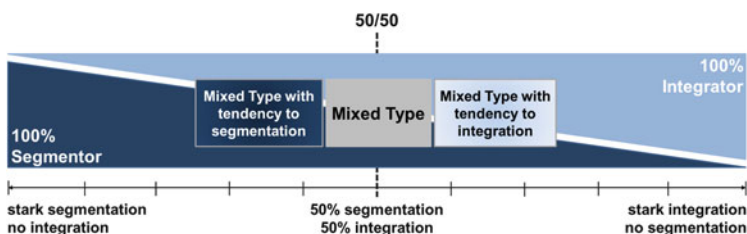
Fig. 1 Division of the role segmentation-role integration-continuum into boundary-types

in this regard; neither concerning the examination of potential boundary-types [cf. 12, 14] within the population of home office workers, nor in view of the individual challenges posed by this new work style, and the thereupon matching strategies in use to establish personal boundary congruence. Thereby boundary congruence signifies a good fit between individual needs for boundaries and the according boundary needs of the corresponding environment, and constitutes a crucial requirement for professional success and a healthy work-life balance within flexible-mobile work arrangements, in particular of the home office situation. The latter distinguishing itself specifically through blurring boundaries between job and private life. As already indicated above, previous research has focused on the archetypal poles of "stark segmentors" and "stark integrators". The mixed types lying in-between these poles are only mentioned in passing, eventhough they represent a not neglecting amount of individuals. The scientific relevance of the here presented study is located in the investigation of this research gap.

Basing on the portrayed challenges of flexible-mobile knowledge work and building on the studies of Ashforth et al. [4] and Kreiner et al. [12], following three central questions have been researched empirically in this study:

Central question 1:   Can differing boundary-types be distinguished and characterized within flexible-mobile Work?
Central question 2:   What impact does flexible-mobile Work have on in central question 1 identified boundary-type, with regard to health and performance? Which strains can be scientifically proven with special regard to the assumed Mix Type?
Central question 3:   Which Boundary-Work-Tactics are used by which boundary-type within flexible-mobile working, notably while working in Home Office?

2   Theoretical Principles and Disambiguation

In order to embed the study and its resultant findings scientifically, the associated theoretical frame of reference is explained and key terms clarified hereafter.

2.1   Flexible-Mobile Work Incl. Home Office as a New Style of Working

With "flexible-mobile work" Schulze et al. [18] denote a new way of working. This new work style is characterized by being independent from place and time, respectively contains work which is yielded in varying places and at different times, and clearly contrasts with the so far common understanding of work being produced at a specific place (e.g. main office) and at certain periods of time (e.g. 8 am to 5 pm); furthermore "flexible-mobile work" is related to an employment relationship and

the existence of a workplace at the parent company. Hence this work style focuses mainly on paid employment. The characterizing features of flexible-mobile work are, that a significant amount of working hours are performed outside the premises of the parent company at other places such as, for example at home, visiting customers or partners, when traveling by train, at the coffee shop or a co-working space. Working within the premises of the parent company is explicitly included. Schulze et al. [18] introduce this concept despite certain overlaps with the concept of telework [16], since emphasising the use of technology like in the case of telework, no longer suffice for differentiation between flexible-mobile forms of work and mere desk work (when on-site at ones company) in consequence of its implicitness nowadays. In the authors' view, the nature of flexible working methods consists of its space-time flexibility, which is expressed more adequately with the term "flexible-mobile work". The present study builds upon this comprehension and in doing so focuses on the aspect of working from home as a central place where flexible-mobile work is rendered. According to a representative survey of the Swiss working population on the issue of flexible-mobile work and working at home [20] 53 % of the 4.3 million Swiss salaried employees could in fact be working mobile due to their work tasks, but it is just under onefourth (23 %) which do so at least several times a month. The potentials on both ends (employee wise and company wise) have not been exploited to date. The situation is similar in respect of Germany, where arrangements of working at home are actually decreasing. As per Brenke [5] only 8 % of Germans working population worked partially at home in 2012. In addition to the reluctance of companies and organisations to establish flexible-mobile work systematically, the partial repatriation of workplace into home surroundings (private life) also plays a vital role in these latest developments. Ultimately it's all about cultural changes, which pose new requirements in view of boundary management of flexible-mobile workers.

2.2 Boundary Theory, Boundary-Types, Boundary-Management and Boundary-Work-Tactics

The boundary theory [4] focuses on the way in which individuals create, maintain or change boundaries, in order to simplify and classify the world around them. As a general rule, these boundaries determine the extent and scope of application of life domains such as work life and private life. The quality of these boundaries can be located on a continuum from "thin/weak", which makes them permeable and open for the integration of other life domains, to "thick/strong", which renders them impermeable and in doing so lead to the segmentation of life domains [14]. Hence segmentation and integration represent two opposing poles and lead to certain mind-sets, which differ in their overall approach to work-life-balance [14].

Nippert-Eng [14] records, that all social boundaries drawn, be that mentally or physically, are social constructs which originate from humanly classification processes. These classification processes being the essential element of culture in turn. The biggest controversies and predicaments of our times deal with boundaries and

how we draw them, for they implicate when and how we interact with each other [14]. Viewed in this context, the process of socialization is nothing else than a lifelong process of learning, applying, rejecting and defying of classificatory boundaries and schemes. The boundary between work life and private life thereby being one of the most omnipresent and commonplace demarcation, where the individual is constantly called upon to draw, adjust, defend or if need be abolish boundaries with help of so-called boundary-work-tactics [cf. 12, 14]. This constant editing of cultural boundaries is thereupon named boundary management and includes all strategies, principles and practices we apply to create, maintain and modify cultural categories [14]. It is by means of this individual boundary management that the extent of personal need for integration and/or segmentation with regard to the work and private life domains is determined. In fact it establishes congruencies and distinctions between these two life domains. None the less it should be noted, that although the degree of individual need for delimitation is strongly related to personal preferences and cultural nurture, it isn't steady over time. This fact is not least related to the ever-changing environmental conditions to which individuals have to adapt, what in turn can cause changes in individual preferences with regard to delimitation needs. However, these adjustment performances ought to cause just small changes in the personal allocation on the role segmentation-role integration-continuum [3].

It is through a qualitative study conducted with laboratory employees that Nippert-Eng [14] discovered differences in the manner of how individuals create congruency between the work domain and private domain. While so-called "segmentors" (setting strong and impermeable boundaries) e.g. carry separate agendas and key rings for their work and private life, and normally keep these two domains separated from each other, so-called "integrators" (setting weak and permeable boundaries) hold on to one agenda and one key-ring for both domains and mix these living environments as required. Whilst segmentation is reflected in a fundamental separation of the domains work life and private life (e.g. in thoughts, worries and physical markers), integration represents the merging of both domains, up to the degree where no distinction is feasible between work and private anymore [cf. 12, 14].

In the model of "Work-Home Boundary Work" developed by Kreiner et al. [12] it becomes apparent that these individual need for segmentation resp. integration encounter the then again individual segmentation/integration needs of the social environment (e.g. family members, superiors, where applicable employees, profession, organizational culture). The more these segmentation/integration needs differ from those of the social environment, the more boundary incongruences can be found between personal needs and the needs of the corresponding stakeholder group. As a result, these boundary incongruences lead to so-called "Work-Home-Conflicts" (also referred to as Work-Family Conflicts in literature) caused by boundary violations due to border crossings or the setting of as unnecessary perceived boundaries. According to Kreiner et al. [12] work-home-conflicts can be overcome with the help of suited "Boundary-Work-Tactics" for the purpose of an ideal person/environment fit and hence boundary congruence. A simplified
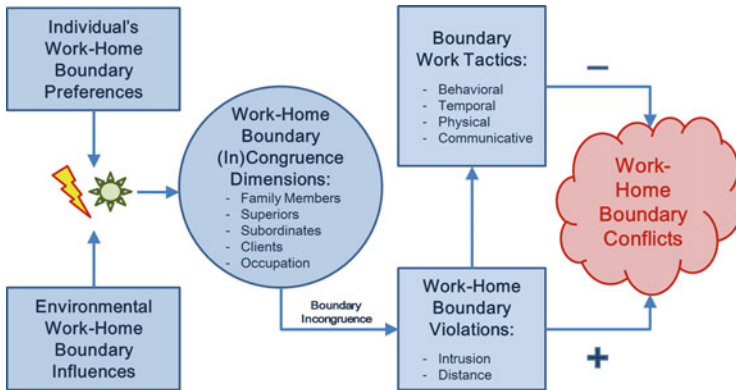
Fig. 2 Simplified "Work-Home Boundary Work" model, in accordance to Kreiner et al. [12, p. 711]

"Work-Home Boundary Work" model (in accordance to Kreiner et al. [12]) is illustrated in Fig. 2.

Kreiner et al. [12] have elaborated several boundary-work-tactics by means of two qualitative studies conducted with parish priests and have subdivided them into four categories labelled "behavioural", "temporal", "physical" and "communicative". Kreiner et al. [12] state, that they specifically chose to work with parish priests, as the nature of their occupation is particularly demanding in view of being aware of one's boundary needs and reacting upon them with the help of an appropriate boundary management. Such extremes lend themselves suitable for the construction of new theories, as they may clarify and illustrate the underlying dynamics more clearly thanks to the very quality of the extremes themselves.

This classification system of boundary-work-tactics was constructed by Kreiner et al. [12] based on detailed analysis and evaluation of the data collected in above mentioned studies, and subsequent comparative and contrasting discussion on the findings and within the research team; thereby including evidence found in previous research. Kreiner et al. [12] complete their report with the message, that the introduced reference framework resp. the typology of boundary managers shouldn't be over interpreted, as in reality conceptual overlapping can be observed, and described tactics aren't standalones; rather on the contrary they're often combined at random and in regard of the specific boundary need at hand. In an extreme case it is quite possible that the transposing of a personal boundary need involves combining integrative and segmentative boundary-work-tactics in each other. As a concrete example Kreiner et al. [12] quote a parish priest, who on one hand has his occupational mobile phone on him during holidays (integrative, behavioural tactic), for the reason of wanting to be accessible for his parishioners in case of an emergency, but let's his wife take the call, who determines if there is indeed an emergency at hand (segmentative, behavioural tactic).

Kreiner et al. [12] essentially state that (a) the proper use of boundary-work-tactics results in boundary congruency thus reducing boundary violations and

(b) the use of multiple boundary-work-tactics (within and between the categories as stated above) has a synergistic effect, which delivers additional active game facing the challenges of managing the boundaries between work life and private life.

3   Methodical Approach

The present study builds on a mixed-method scheme, combining an online questionnaire survey with a subsequent qualitative interview study. Further the quantitative and qualitative findings are triangulated per central question. This approach appeared particularly reasonable for the explorative central questions posed, as the boundary-types and their correlations with variables such as occupational strains and health could best be demonstrated through quantitative data, whereas substantiating found interdependencies is best exemplified with deeper analysis of semi-structured interviews with representatives of the quantitatively encountered boundary-types. These proceedings were successfully achieved and are described in detail hereafter.

Quantitative methods and data: Following the official "Swiss Home Office Day 2013", a widely scattered online survey has been conducted through the Institute for Research and Development of Collaborative Processes FHNW, in collaboration with the Swiss Home Office Day Consortium. A total of $N = 562$ individuals have taken part in this survey, whereof $n = 395$ experienced home office users answered the included items regarding boundary-typ and boundary-work-tactics in use. Roughly 49 % of these 395 experienced home office users are female, 51 % male. Further the majority of 85 % are between 26 and 45 years old ($M = 42.62$, $SD = 10.74$) and salaried employees (89 %). The collected data were statistically analysed with the help of the SPSS Statistics 21 and Microsoft excel software with regard to the central questions posed (also see Sects. 1 and 3.1–3.3).

Qualitative methods and data: Based on the quantitative findings from the home office day 2013 survey, the central questions 1 through 3 were further explored by means of $N = 9$ semi-structured interviews with representatives of all three statistically verified boundary-types [cf. 6].[1] For the recruitment of the interview candidates a modified "theoretical sampling" [7] has been contrived. In this specific case, three groups of resembling types (segmentors, mix type and integrators) were determined, which vary in themselves in regard to the potentially relevant factors gender and age. Thus the sample consists of five female and four male interviewees, involving an age-range from 26 to 55 years ($M = 39.89$, $SD = 9.28$). Except for one person, all interviewees are salaried employees. Due to the small case number, additional potentially relevant factors could not be included (like for instance

---

[1] For an in-depth understanding of the methodical approach and presented results the authors refer to the master thesis "Boundary-Typen, Boundary Management und Boundary Taktiken im Home Office" [6].

regularity of home office use or hierarchical position within the organization could have been).

Data Triangulation: In conclusion and in terms of a mixed-method approach, the quantitative and qualitative findings have been triangulated [cf. 6] in order to enhance the validity of later presented research results. Moreover systematic errors can be reduced by triangulating varying data sets.

3.1   The Distinction of Boundary-Types in Case of Working in Home Office

In a first step, in order to scientifically prove the existence of distinguishable boundary-types within flexible-mobile work, the role segmentation-role integration-continuum was divided as follows into the presumed boundary-types segmentor, mix type and integrator (also see Fig. 1 and Table 1): 100 % segmentation needs to 70 % segmentation needs (30 % integration needs) = boundary-type segmentor (N = 243); 60 % segmentation needs (40 % integration needs) to 40 % segmentation needs (60 % integration needs) = mixed boundary type; 30 % segmentation needs (70 % integration needs) to 100 % integration needs = boundary-type integrator.

As a second step, these in this manner created boundary-types haven been compared with the items on working at night or on weekends, by means of pivot tables with Chi-square tests. According to theory, there should be significant differences between segmentors and integrators. Based on Nippert-Eng's work [14] it was assumed, that segmentors tend to adhere to traditional working hours and days (8 am–5 pm, Monday through Friday), whereas integrators more likely work scattered throughout the day and week (including weekends), since the life domains work and private aren't separate spheres in their eyes. To obtain information on which subgroups significantly differ from each other, pairwise comparisons based on the exact test of Fisher and Yates were performed.

To be able to characterize these quantitatively identified boundary-types, the 9 semi-structured interviews with N = 3 segmentors, N = 2 mixed types, and N = 4 integrators have been coded and analysed with regard to specific characteristics, thereby using the qualitative content analyses method by Mayring [13]. The interview guide was developed following the model of Kreiner et al. [12] and covering central questions 1 through 3. The assignment of boundary-type was also determined by means of a prior self-allocation of the interviewees on the role segmentation-role integration-continuum (see Fig. 1 and Table 1).

3.2   Health and Productivity of Boundary-Types When Working in Home Office

To establish what probable effects flexible-mobile work can have on the documented boundary-types, varying health, performance, and satisfaction

Table 1 Division of the role segmentation-role integration-continuum into "segmentors", "mix type" and "integrators"

Segmentor	Mix Type	Integrator
100 % segmentation 90 % segmentation, 10 % integration 80 % segmentation, 20 % integration 70 % segmentation, 30 % integration	60 % segmentation, 40 % integration 50 % segmentation, 50 % integration 40 % segmentation, 60 % integration	30 % segmentation, 70 % integration 20 % segmentation, 80 % integration 10 % segmentation, 90 % integration 100 % integration

parameters have been compared with regard to their central tendencies using the Kruskal-Wallis test (H-Test). Where significant differences were found, pairwise comparisons were conducted on top; in order to find out which subgroups (boundary-types) are involved.

The transcribed data collected during the qualitative interviews were coded and analysed with regard to central question 2, thereby again using the qualitative content analyses method by Mayring [13], but this time around focusing on type-specific difficulties with flexible-mobile work.

3.3 Type-Specifically Boundary-Tactics

In order to find out which boundary-types apply what kind of boundary-work-tactics to create personal boundary congruency, the open-ended answers regarding boundary-work-tactics in the home office day survey 2013 have been assigned per type to the category system of boundary-work-tactics structured by Kreiner et al. [12]. Where advisable, the category system has been expanded in-vivo with additional subcategories. Finally the tactics were counted out and frequencies were compared between the distinct boundary-types.

The transcribed data collected in the interviews were coded with regard to central question 3, and analogously assigned per type to the category system of boundary-work-tactics [12] and finally counted out and compared between types.

4 Results

In this section the results of previously described research are presented ordered by central question 1 through 3.

4.1 The Distinction of Boundary-Types in Case of Working in Home Office

As shown in Table 2, significant differences were found between segmentors and integrators with respect to working at nights and on weekends (Working Saturdays,

Table 2 Exact test by Fisher and Yates for pairwise comparison of boundary-types with regard to working at night and on weekends

Variable	Segmentor vs. integrator		Segmentor vs. mix type		Integrator vs. mix type	
	p	Cramer's V	p	Cramer's V	p	Cramer's V
Working Saturdays	.000***	.27	.118	.09	.009	.23
Working Sundays	.001***	.21	.001**	.19	.601	.05
Working between 8:00 p.m. and 9:59 p.m.	.000***	.27	.077	.10	.024	.19
Working between 10:00 p.m. and 05:59 a.m.	.000***	.25	.012	.14	.067	.06

[Note. *p ≤ .004; **p ≤ .001]

$p \leq .001$, $V = .27$; working Sundays, $p \leq .001$, $V = .21$; working between 10:00 pm and 05:59 am, $p \leq .001$, $V = .27$; working between 8:00 and 9:59 pm, $p \leq .001$, $V = .25$).

While segmentors (as supposed) tend to adhere to traditional working hours (between 8 am and 8 pm, Monday through Friday), integrators work scattered over the course of the day and week. The effect sizes indicate small to medium-sized effects. The results concerning the mix type in between draw a less clear picture on their behaviour in regard to working hours. Nevertheless as expected, he is situated between segmentors and integrators in terms of frequencies.

The analysis of the interview data revealed, that the statistically found differences lead back to the archetypical peculiarities of segmentors and integrators, as already outlined by previous literature on the topic of boundary theory and boundary management. Whilst segmentors try to keep work life and private life separate according to possibility, prefer regulated working hours and need a lot of structure and clearly defined time periods for recovery at any rate, integrators tend to interweave work life and private life as time opportunely as possible, therefore experience regulated working hours as obstructive, and are in need of flexible and permeable structures, where they can fit in recovery periods wherever they make sense within their actual work day or work week.

Further the interview data enables to provide a first tangible characterization of the mix type, which hasn't been specified in previous literature. In the present study it becomes apparent, that mixed types have great difficulties assigning themselves distinctly to one of the poles (segmentation/integration). Ultimately, the decision of mixed types over what is handled in an integrative manner (perceived as important) and what in a segmented manner (perceived as unimportant) is steered by their

Table 3 Comparison of the individual characteristics of boundary-types

Criterion	Boundary-Type		
	Segmentor	Mix Type	Integrator
Self-Placement boundary-type	Has no difficulties to place himself/herself on the role segmentation-role integration-continuum	Clear allocation on the role segmentation-role integration-continuum is rather difficult	Has no difficulties to place himself/herself on the role segmentation-role integration-continuum
Attitude towards working in home office	Home Office (HO) only if situational advantages outweigh	Ambiguous	HO facilitates flexibility, which is much appreciated
Working energy while working in home office	Needs rituals to create the right working energy in home office	Creates working energy when the task at hand is perceived as important	Has no troubles creating the right working energy, no matter where and when
General attitude towards place of work	Prefers to work in MO (main office) whenever possible. Even if overtime is implied	Tends to prefer working in MO, but doesn't always behaves that way	Works wherever it makes sense for the tasks at hand
General attitude towards work hours	Prefers working normal office hours (+/− 8 am–5 pm)	Wants and tries to maintain normal office hours, but doesn't always succeeds	Doesn't need regular working hours. Works whenever it makes sense
General handling of technologies	Keeps technologies separate, whenever possible. No automatic synchronisation	Handles technologies quite disparately (sometimes integrating, at other times separating them)	Whenever possible technologies are integrated. Constant synchronisation
Handling of structures	Needs a lot of structure and defined periods of recreation and relaxation	Knows that he/she needs structure, but doesn't always applies them	Doesn't needs a lot of structure. Structures are obstructive and tiresome
Handling of recovery time	Goes offline on weekends and during holidays. Is reachable by text message for emergencies. Going offline as a condition for recreation and relaxation	Are reachable for (self-perceived) important project/tasks at all times. For everything else going offline is more relaxing	During times of recreation decreased reachability. Going completely offline is not possible, would lead to decrease of perceived recreation
Embodiment of ideal leadership	Needs a segmentor as superior, or an integrator with a good understanding for segmentors	A segmenting superior is more favourable for this boundary-type, in terms of a protective function	Has to be managed as independently as possible. Needs maximal temporal freedom

underlying personal prioritization scheme. Between all detected boundary-types it is the mix type which has the most difficulties to apprehend and act upon his personal boundary needs, as following interview quote (translated from Swiss German) exemplary demonstrates:

> ... Well, what I notice is, that as a result of being a mix type, I realize, that when I try to set boundaries I'm not taken seriously ... I'm not able to set the necessary boundaries I need ... (Mix Type 1)

These quantitative and qualitative findings are taken as prove and confirmation, that distinguishable Boundary-Types can be found in regard to flexible-mobile working. The existence of segmentors and integrators is validated and the mix type documented for the first time. Table 3 provides a summary of the individual characteristics of boundary-types, as substantiated on basis of the interview data collected.

The triangulation of the quantitative and qualitative results (with regard to central question 1) imply, that the boundary-types segmentor, mix type and integrator can be identified within flexible-mobile work arrangements and that they differ in view of significantly relevant work characteristics. The experienced home office users from the home office day survey 2013, which have been identified as integrators due to their self assignment on the role segmentation-role integration-continuum, work significantly more often at marginal times and on Weekends, than the identified segmentors do. The interview results reinforce these findings on the existence of Boundary-Types by being able to provide evidence and explanatory approaches for various differences in regard to relevant work characteristics.

4.2 Boundary-Type-Specifically Loads in Case of Working in Home Office

According to the statistical analysis of health, performance and satisfaction parameters of experienced home office users the proven boundary-types only differ significantly in their perceived efficiency within flexible-mobile work arrangements (see Table 4). The pairwise comparison shows, that it's the mixed type which feels significantly less efficient while working in home office, than segmentors ($\chi^2(2) = 34.66$, p $\leq$ .05, r = .22) and integrators ($\chi^2(2) = 60.03$, p $\leq$ .01, r = .18) do. The effect sizes of these differences are small to medium (cf. Table 4).

The interview data analysis with regard to central question 2 underpins the quantitative findings. The mix types' difficulties with flexible-mobile work arrangements start with having difficulties observing their own boundary needs and respond to them in a reasonable manner. This for instance and among other things leads to not being able to stringently enforce chosen boundary-work-tactics. Regarding the environment of mixed boundary types it gets evident, that stakeholders in turn also have great difficulties classifying the alternating work behaviour of mix types in view of segmenting and integrating between work life

Table 4 Pairwise comparison of the variable "improved job performance"

Variable	Segmentor vs. integrator			Segmentor vs. mix type			Integrator vs. mix type		
	χ	Adj. p	r	χ	Adj. p	r	χ	Adj. p	r
Improved job performance	−1.61	.651	–	2.72	.040*	.22	−3.36	.005**	.18

[Note. N = 395–399; *p ≤ .05, **p ≤ .01, ***p ≤ .001 (two-tailed)]

and private life. The consequence is that mixed types' segmentation efforts often aren't taken seriously by the immediate environment.

Although segmentors (lack of boundary mechanisms, rituals and appropriate integrational boundary-work-tactics while working at home) as well as integrators (lack of appropriate segmentative boundary-work-tactics while working at home) have initial difficulties with flexible-mobile work arrangements, they're both quite capable in facing them with appropriate boundary-work-tactics and hence in short fully benefit from the various advantages associated with flexible-mobile work.

The following table (Table 5) presents an overview of each boundary types' specific difficulties with regard to flexible-mobile work arrangements, in particular with regard to working at home.

Contrasting (triangulation) the quantitative with the qualitative findings in regard to central question 2 it gets evident, that the disparate boundary-types have distinguishable difficulties with flexible-mobile work arrangements resp. with working from home. It gets thereupon clear that it is particularly the mixed types which have the most difficulties with this new way of working. Individuals who assign themselves to the mixed type feel less productive while working at home, than segmentors or integrators do. When considering the figures of the remaining examined areas (work-life-balance, ERI-quotient, health, sleeping quality, motivation, structuring problems and satisfaction with working from home), which haven't turned out significant, it gets apparent that mixed types have invariably the lowest figures, followed by segmentors, who marginally contrast with integrators, which have the best values in regard to all queried health, performance and satisfaction parameters. These quantitative findings are then again substantiated by the interviews. Here, too, it gets obvious that it's in particular the mix type, who has the greatest difficulties with flexible-mobile work arrangements.

4.3 Application of Type-Specifically Boundary-Tactics

It can be stated in general, that spread over all three identified boundary-types all by Kreiner et al. [12] suggested categories and subcategories of boundary-work-tactics could be accounted for. Within the category of behavioural based tactics two additional subcategories could be opened up for flexible-mobile workers [cf. 6].

The content-analytically evaluation of the quantitative and qualitative data collected in regard to boundary-work-tactics in use yielded, that segmentors

Table 5 Boundary-type-specifically loads within mobile/flexible work arrangements

| Criterion | Boundary-type | | |
	Segmentor	Mix type	Integrator
Personal difficulties	The mobile/flexible work style requires lots of demarcation efforts and rituals for the role transitions Working in home office requires adaptive performance	Has troubles identifying his/her boundary management needs and acting appropriately Has troubles enforcing chosen boundary-tactics	Has troubles keeping an overview of accomplished work hours Is very challenged to create and utilize scopes for development
Difficulties with the social environment	Has troubles dealing with heavily integrative organisational cultures and individuals Needs appreciation for the selective exemptions made for the sake of good will	The social environment has difficulties classifying his/her work style Is influenced by the social environment due to his/her ambiguous attitude. Segmentation efforts are not taken seriously by the social environment	Has troubles dealing with heavily segmentative organisational cultures and individuals Collaborating time synchronously is difficult, as integrators don't stick to the standard working hours

apply above all segmentative boundary-work-tactics (88 %) and integrators by the majority engage in integrative boundary-work-tactics (61 %) in order to establish their personal boundary congruency between individual needs and those of the environment. Regarding the mix type, the proportion of segmentative to integrative boundary-work-tactic in use lies between segmentors and integrators, whereas they indisputably utilize more segmentative tactics (see Fig. 3).

Even for the situational application of boundary-work-tactics differences can be stated between boundary-types. In case of segmentors results imply, that they predominantly use segmentative boundary-work-tactics in order to ensure the strong demarcation and distinction of the life domains work and private. Integrational strategies are introduced as exceptions, for the reason of wanting to generate a better fit between individual boundary needs and those of the immediate environment (boundary congruency), and in doing so maintaining their desired demarcations over time. Further segmentors apply integrational strategies when working at home, where they've realized, that a partial integration of private elements into their work life can have its benefits for their work life balance. In contrast to this, integrators tend to stick to integrational boundary-work-tactics, whereas they also use a considerable amount of segmentative boundary-work-tactics. These segmentative boundary-work-tactics serve integrators as enablers for the creation of recreation spots they need to boost their energy levels. For the constant integration of work life and private life definitely also has its downsides. Continuingly, integrators explicitly use segmentative boundary-work-tactics when working at home, where both domains (work/private) strongly overlap, and a minimal structuring gets necessary for the otherwise very flexible and boundary-shy integrator. Mix types on the other hand use segmentative and integrative
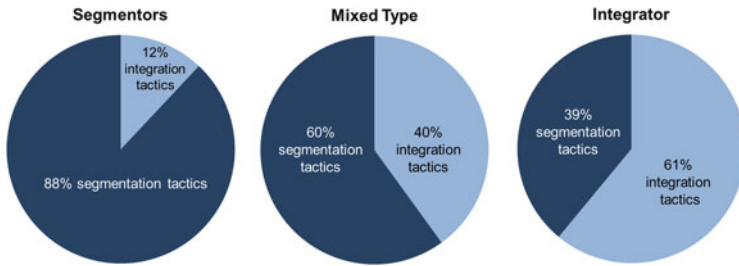
Fig. 3 Overall distribution of tactics in use according to type and sort (survey and interviews)

boundary-work-tactics to an equal degree, whereby segmentative boundary-work-tactics slightly outweigh. On closer inspection it gets moreover obvious, that mixed boundary types indeed try applying boundary-work-tactics to translate their boundary needs, but don't pursue them stringently. Whilst segmentors and integrators are comparatively successful in the application of their individual and situational appropriate boundary-work-tactics, mixed boundary types have difficulties identifying and applying them.

With central question 3 as well as with the previous two central questions, the quantitative results converge with the qualitative ones. Regarding this, the triangulation of these findings substantiates the fact that segmentors tend to use more segmentative boundary-work-tactics and integrators more integrative boundary-work-tactics within flexible-mobile work arrangements. Mixed boundary types show a slight tendency towards using more segmentative than integrative boundary-work-tactics in both data-sets. Complementary explanations for the selective integrational efforts of segmentors and selective segmentational efforts of integrators are delivered through interview data. In regard to mixed boundary types the interviews obviously point out, that they not only have trouble with the enforcement of boundary-work-tactics, but also are the boundary-type which name the fewest boundary-work-tactics and hardly elaborate them.

5   Discussion, Recommendation and Prospect

In this last section previously presented results are discussed, summarised and reflected (Sect. 1.5.1), further based on discussed results, recommendations are derived for flexible-mobile workers as well as for the organization of heterogeneous teams in flexible-mobile work arrangements (Sect. 1.5.2), and finally an outlook for future research is pointed out (Sect. 1.5.3).

5.1   Summary and Methodological Reflection

In this study a mixed method approach has been chosen to answer the question, whether the boundary-types suggested by boundary theory [4] can be determined in case of flexible-mobile work, especially in the case of working at home. Thereon the goals were to characterize identified boundary-types in context of flexible-mobile work and name their type-specific difficulties with regard to boundary management in flexible-mobile work arrangements. Furthermore, research was conducted into which of Kreiner et al. [12] suggested boundary-work-tactics are used by whom (boundary-type) in order to create boundary congruency, and if at best additional categories and subcategories of promising boundary-work-tactics could be identified and labelled.

In regard to boundary-types previous research has primarily focused on the opposites of segmentors and integrators [cf. 4, 12, 14]. The intervening mix type although mentioned, is not described in detail. By means of research on central question 1 and 2 (see Sect. 1.1) the boundary-types segmentor and integrator could be confirmed and the mixed type accounted for first-time. Distinct differences were found in view of their boundary management while working in flexible-mobile work arrangements. It is primarily the mixed boundary type which has the most difficulties in understanding his demand situation concerning boundary management and lacks handy boundary-work-tactics to reduce the therefore experienced boundary incongruences.

Research around central question 3, which focused on boundary-work-tactics and how they're used by the varying boundary-types in flexible-mobile work settings, clarified that all boundary-types involve the boundary-work-tactics suggested by Kreiner et al. [12] in their daily boundary management, but differ in terms of distribution and situational application of them. In case of the segmentors it was shown by numbers that they employ mainly segmentative boundary-work-tactics to guarantee the delimitation between work life and private life, for which they strive for. The fact that segmentors most frequently engage in boundary-work-tactics could be connected to the fact that their need for segmentation forces them to use a lot of strategies for role transitions and the partially rather artificial partitioning of live domains [cf. 4, 14]. Integrational boundary-work-tactics are only introduced in exceptional cases, but always with the goal to maintain the demarcation between work and private over time. In addition segmentors apply integrational boundary-work-strategies when working at home, because they recognized the beneficial effects of flexible-mobile work on their work life balance. In contrast to segmentors, integrators use integrative boundary-work-tactics on the majority, assuming this proportion is even bigger considering that the mere waiver to install a boundary by using segmentative boundary-work tactics could be counted as an integrational behaviour. If integrators use segmentative boundary-work-tactics it is in order to create recreational islands for energy boosts, or giving minimal structure to the times they work at home, where the overlapping of work and private life are too great, even for an integrator. As we have lived in a rather over structured world and have been given a lot of structure by our employers in

former times, integrator are more familiar with dismantling them than building them up.

Mixed boundary types in turn help themselves with both segmentative as well as integrative boundary-work-tactics, whereby segmentative boundary-work-tactics are slightly more in use. By closer inspection it however gets evident, that although mixed boundary types try to manage their boundaries with boundary-work-tactics, they're not always able to keep track of them. Whilst segmentors and integrators are rather successful boundary managers within the new age of flexible-mobile work, it is the mixed boundary types which struggle the most with their personal work-life-balance. They seem to make priorities dependent on whether an issue is handled like an integrator or a segmentor, rather than having a clear preference for one of both aptitudes. It is conspicuous that mixed boundary types feel significantly less productive in flexible-mobile-work arrangements, don't elaborate on boundary-work-tactics too much and have difficulties naming them when asked to do so. If they use boundary-work-tactics, the results aren't always satisfying and they wish for appropriate strategies which could properly help them to manage their boundary needs and thus improve perceived work life balance.

As critical remark it has to be admitted, that in order to build boundary-types responders and interviewees had to self-assess their need for integration/segmentation and therefore their position on the role segmentation-role integration-continuum. As a further criticism it has to be stated, that the sample of the interview study is rather tight with only 9 interviewees. But as a sampling of boundary-types was successfully realized by means of 9 interviews and their enriching character to the broadly spread home office day 2013 survey was able to supply a solid quality of statement. Further research has to be conducted to corroborate quantitatively findings, such as studying the forms and prevalence of mixed boundary types for example. Continuingly it should be considered, if in place of simple recommendations for action, a type specified boundary type training would be more reasonable in supporting and qualifying the herein verified distinct boundary types in regard to their daily boundary management in flexible-mobile work arrangements. A first boundary type independent attempt of boundary management training has shown that boundary management can be taught [17].

5.2 Recommendation for Action and Organization Based on Presented Results

For home office users which correspond to the boundary-type of segmentors, it is recommended based on present findings that they plan home office days fixed and recurrently, in order to meet the segmentors need for rituals and structure. As working at home gets an inherent part within the working week, segmentors are able to get accustomed to it and plan/structure their weeks accordingly. Further it appears helpful, if segmentors set daily goals for their home office days, which they can consult in the evening, by means of a productivity check. As segmentors strongly link their home domain with recovery and leisure time, which then can

lead to the assumption that productive work isn't possible in such surroundings. Another very important recommendation for segmentors would be, that they acquire suitable rituals for the role-transitions (private to work/work to private) when working from home. So far these role-transitions have been realized and designed by rituals such as getting dressed in occupational clothing and leaving the house thus moving to the workplace provided by the employer. These transformational processes are omitted when working at home, what can lead to the unpleasant sensation, that the appropriate work mood and energy can't be warranted like in the case of working at the main office. The more such predefined rituals are repeated and institutionalized, the easier role transitions are realized in situations of having to work at home [cf. 4]. Finally segmentors are advised to adopt personally suited integrational boundary-work-tactics when working at home, in order to maxing out the advantages of home office work. For a stubborn replication of a workday at the main office, which is purely work-related, could have negative effects on the psychological wellbeing and thus work life balance of home working segmentors.

For those home office users which correspond to the boundary-type of integrator, it is recommended based on results that they try to control their effective work hours in order to ensure that required recovery periods are incorporated where needed. Thereby it is important for integrators to prior reflect on what is experienced as straining work in sense of energy consuming, and which activities are perceived as recreational, as they have reenergizing effects and contribute to recreational needs; this independent from context (work or private), as both domains are interlaced with integrators and both have straining and energizing components, and integrators need to find their balance in this mix. Further it is important for integrators to have a maximum of time flexibility in order to being able to integrate the life domains work and private as opportune as possible. The more structures are dictated to integrators, the less flexible and effective they feel towards work issues. Instead of setting up fixed home office days, integrators should be allowed to make use of their home office as suited. Home office should be applied wherever perceived as sensible in view of the work day resp. work week at hand. As last recommendation for integrators it is advised, that they adopt personally suited segmentative boundary-work-tactics for the home office situation. The through industrialization created culture of segmenting between work life and private life has thus far forced integrators to focus on the abolishment of structures, rather than building and enforcing them. The, in sight of work, much unstructured home office situation forces integrators to segment by setting up boundaries. For the otherwise very flexible boundary-type integrator it is therefore vital to give themselves suitable structures for flexible-mobile work, in particular for the home office situation.

Concerning mixed boundary types, which have been substantiated by this study for the very first time, deepened investigation have to be conducted in order to obtain an extensive understanding for their underlying motivational mechanisms. The results at hand still allow first cautious recommendations for the case of flexible-mobile Work. As a first and most important recommendation it is advised that mixed boundary typed individuals perform a personal need assessment, in order to gain clarity about which issues and areas of life are preferentially treated in

a segmentative manner, and which issues and areas of life are mainly handled in an integrative way. Building on that, mixed boundary types are advised to develop a corresponding set of rules (in sense of a policy) which they rend transparent towards their environment. It is expected that stakeholders such as teammates gain a better understanding for the functionality of this individual mixed type and therefor have a better idea about the approachability during spare time. Furthermore mixed boundary types are advised to stick to segmentative behaviour if in doubt about the personal needs at hand. As mixed boundary types have a tendency to experience more stress with the integrational behaviour mode than they have when segmenting. The results indicate that mixed boundary types wish for catchy segmentative boundary-work-tactics, in order to re-establish high productivity performances while working from home. What seemingly works for segmentors and integrators concerning boundary-work-tactics misses its desired effects with mixed boundary types.

For a successful and preferably smooth collaboration of these three very distinct boundary-types organizations are advised to set fixed work days for collaboration and team synchronization. The remaining workdays can then be designed according to the individual and unequal needs of each boundary-type. Furthermore especially the interview data point to the fact, that mutual respect and an understanding for other boundary-types' needs in regard to boundary management can be supported and fortified through communicational efforts. For this matter heterogeneous teams (meaning teams consisting of different boundary-types) should deliberately initiate such exchanges in order to avoid conflicts which arise out of their diversity. In conclusion organizations are advised to educate and enable their flexible-mobile knowledge workers for the challenges of this new way of working through boundary management trainings. As related research [17] has demonstrated, boundary management is learnable and can be supported due to specific interventions. It remains open, whether such trainings should be geared boundary type wise or not.

5.3   Conclusion and Prospect

The results of presented research show, that the boundary theory [cf. 4, 14] is able to build a better understanding for potentials and risks of flexible-mobile working arrangements, especially for the situation of working at home, and helps in the derivation and development of suited intervention strategies. It is thereupon the identification and characterization of the herein confirmed mixed boundary type which constitutes the main and most important research contribution.

It seems that the role segmentation-role integration-continuum is a valid possibility to distinguish boundary-types. Further research in this direction is recommended, as there's a good chance that there exist better and more accurate ways of tackling the self-contained boundary-types on the role segmentation-role integration-continuum. Especially the mixed boundary type delivers prospects for additional research. The questions arises, whether an extension from three to for

example five boundary-types could produce further valuable insights, as there is evidence in literature, that a further subdivision is feasible [11].

References

1. Allen TD, Johnson RC, Kiburz KM, Shockley KM (2013) Work-family conflict and flexible work arrangements: deconstructing flexibility. Pers Psychol 66(2):345–376

2. Arlinghaus A, Nachreiner F (2014) Health effects of supplemental work from home in the European Union. Chronobiol Int 31(00):1100–1107

3. Ammons SK (2013) Work-family boundary strategies: Stability and alignment between preferred and enacted boundaries. J Vocat Behav 82:49–58

4. Ashforth BE, Kreiner GE, Fugate M (2000) All in a day's work: boundaries and micro role transitions. Acad Manage Rev 25(3):472–491

5. Brenke K (2014) Heimarbeit: immer weniger Menschen in Deutschland gehen ihrem Beruf von zu Hause aus nach. DIW-Wochenbericht 8:131–140

6. Gisin L (2014) Boundary-Typen, Boundary-Management und Boundary-Taktiken im Home Office. Untersuchung des Einflusses der "Boundary Theorie" auf das mobile Telearbeiten, insbesondere der Arbeit im Home Office. Master Thesis, S. 178. Olten: Hochschule für Angewandte Psychologie FHNW

7. Glaser B, Strauss A (1967) The discovery of grounded theory. Aldine, Chicago

8. Grebner S, Berlowitz I, Alvarado V, Cassina M (2010) Stress bei Schweizer Erwerbstätigen. Zusammenhänge zwischen Arbeitsbedingungen, Personenmerkmalen, Befinden und Gesundheit. Staatssekretariat für Wirtschaft SECO, Bern. S. 135

9. Horx M (2014) Das Megatrend-Prinzip. Wie die Welt von morgen entsteht. Pantheon Verlag, München

10. Karmaker U, Apte U (2007) Operations management in the information economy: information product, processes and chains. J Oper Manag 25(2):438–453

11. Kossek EE, Ruderman MN, Braddy PW, Hannum KM (2012) Work-nonwork boundary management profiles: a person-centered approach. J Vocat Behav 81:112–128

12. Kreiner GE, Hollensbe EC, Sheep ML (2009) Balancing borders and bridges: negotiating the work-home interface via boundary work tactics. Acad Manage J 52(4):704–730

13. Mayring P (2010) Qualitative Inhaltsanalyse. In: Mey G, Mruck K (eds) Handbuch Qualitative Forschung in der Psychologie. VS Verlag für Sozialwissenschaften, Wiesbaden

14. Nippert-Eng CE (1996) Home and work: negotiating boundaries through everyday life. University of Chicago Press, Chicago

15. Paridon H, Heise O (2012) Ständige Erreichbarkeit: Wie belastet sind wir? Ursachen und Folgen ständiger Erreichbarkeit. Deutsche Gesetzliche Unfallversicherung e.V, Berlin

16. Rey L (2002) Mobile Arbeit: Zwischen Hochgefühl und Untergangsstimmung. In: Ray L (Hrsg) Mobile Arbeit in der Schweiz. vdf Hochschulverlag AG, Zürich

17. Rexroth M, Sonntag K (2014) Abgrenzung der Lebensbereiche lernen - Effekte eines Boundary-Management Trainings. GfA, München

18. Schulze H, Weichbrodt J, Meissner J (2015) Gestaltung mobil-flexibler Arbeit. Gastherausgabe. Zeitschrift für Wirtschaftspsychologie, 1(17), Pabst Science Publishers

19. Vartiainen M, Hyrkkänen U (2010) Changing requirements and mental workload factors in mobile multi-locational work. N Technol Work Employ 25(2):117–135

20. Weichbrodt J (2014) SwissFlexWork 2014. Repräsentative Befragung der Schweizer Erwerbstätigen zur Verbreitung von mobiler Arbeit und Home Office. Bericht, 14 S. Olten: Hochschule für Angewandte Psychologie FHNW