Individualized Design: The Role of Individual Boundary Preferences on Technology Acceptance and Work-Life Conflict

Research-in-Progress

Kristina Roeding

Katharina Jahn

Andreas Weigel

Bjoern Niehaves

Abstract

Reaching the ideal level of work life balance can be beneficial for various factors, including well-being and health. Research has already shown that technology plays an important role in facilitating or diminishing work life balance. In this research in progress paper, we want to find out which design elements a) individuals prefer and b) can minimize work life conflict based on their boundary preference. To test our proposed model, we plan to conduct a 2 (Boundary Preference Design: Integration vs. Separation) x 2 (Automaticity: Manual vs. Automatic) between-subjects experiment. With our results, we aim to extend the theory of IT-related boundary tactics by showing which design options are getting preferred depending on the individual boundary preference.

Keywords: Boundary Management, IT-related boundary tactics, between-subjects experiments, boundary preference design

Introduction

Due to the increase in mobile devices used by individuals in their work and private life, the importance of setting boundaries becomes more and more relevant (Chen and Karahanna, 2018; Ezzedeen and Zikic, 2017; Klesel et al., 2018, 2016; Köffer et al., 2015; Lim et al., 2017). With the growing number of ubiquitious information systems (IS) (Sørensen and Landau, 2015; Vodanovich et al. 2010), we can see how individuals can adopt hardware and software to reach an optimal balance between work and private life (Baskerville 2011).

Looking at this blurred use of IS, especially with the use of mobile devices, the phenomenon of "IT consumerization" has emerged. IT Consumerization describes the trend that employees use their own Information Technology (IT) (hardware and software (Klesel et al., 2018)), to fulfill working tasks (Klesel et al., 2018; Ortbach et al. 2013). Looking at IT Consumerization from a conceptual point of

view, we can see that phenomenon's like Bring-Your-Own-Device (BYOD), which expresses Bring-Your-Own-Behavior (BYOB) are getting more popular (Ortbach et al. 2013).

The increasing availability of technology, fostered by IT consumerization, lets individuals face new challenges to maintain and improve their work life balance (Duxbury and Smart, 2011; Mellner et al. 2014; Sarker et al. 2012). Recent literature have used Boundary and Border Theory to analyze how individuals manage their work life balance with setting boundaries between work and private life. Especially, previous research have looked at positive and negative effects on an individual's private and work life with information technology (Allen et al. 2014). For example, positive effects (e.g. increased productivity in business tasks (Cecchinato et al. 2015; Cousins and Robey 2015; Duxbury et al. 2014; Fleck et al. 2015)) can support an individual, whereas tensions between work and family domains (Kreiner et al. 2009) can result in stress or work and private domain overload. These results in a negative effect on the individual (Kreiner et al. 2009).

In the last decades different boundary management tactics, styles and strategies have been developed (Allen et al. 2014; Kreiner et al. 2009; Duxbury et al. 2014, Jahn et al. 2016), showing how we use IT to manage work and family domains. Jahn et al. (2016) introduced IT-related boundary tactics individuals use to integrate or separate between work and private life (Jahn et al. 2016). However, research on design options, which are getting preferred depending on one's individual boundary preference are sparse. Based on the IT-related boundary tactics from Jahn et al. (2016) (Psychological detachment, automatic response, pull information, boundary App, push information and dynamic filtering), we aim to develop design elements to first, confirm the assertions of Jahn et al. (2016) and second, to analyze the influence individual preferences have on the acceptance and the work life conflict of design elements. In order to address our objective, this paper is guided by the following research question:

RQ: How do individual preferences influence perceived usefulness and work life conflict of design elements?

This paper is structured as follows: First, we give a short overview of the theoretical background and the development of our model. In the second section, we introduce the method used in this study. Section three will end with discussing our expected findings, proposing implications for theory and practice and showing chances for future research.

Theoretical Background and Model Development

Boundary Management describes the way of how individuals manage, this includes trying to create, maintain, change, simplify or order their work and private life (Ashforth et al. 2000; Clark 2000; Nippert-Eng 1996; Reyt and Wiesenfeld 2015; Rothbard et al. 2005). Nippert-Eng (1996) shows that a continuum of border demarcation arises due to the variance of transitions, showing on the one hand individuals who integrate (drawing a thin line between work and family roles) and on the other hand individuals who separate (drawing a thick line between work and family roles) between work and family domains.

Existing literature has already differentiated boundary management tactics for technology use. For example, Kreiner et al. (2009) describe a sub-category of behavioral tactics with a micro-category called "leveraging technology". This micro-tactic is relating to the use of information technology to manage different boundary strategies (Jahn et al. 2016). Similarly to Kreiner et al. (2009), Duxbury et al. (2014) discovered individuals as not being able to separate between the two domains of work and family life due to a lack of self-discipline and self-control, e.g. while using mobile devices (e.g. smartphones). Köffer et al. (2015) found six technology-related aspects (dual use of company IT for private task, dual use of private IT for work tasks, remote access to work data, distinct devices for private and work purposes, separate private and business accounts and quality of company provided IT), describing the intense use of IT at work. Jahn et al. (2016) found six different IT-related boundary tactics individuals use in order to go along with their individual boundary preference of separation and integration of the private and work domain.

Qualitative research indicated that employees use different IT-related tactics in order to be able to live their individual preference to integrate or to separate between work and private life and adapt technology accordingly (Jahn et al, 2016). The technical implementations (here referred to as automaticity) were divided into two dimensions, namely manual or automatic implementation. When talking about the manual implementation the individual has to actively engage with the technology in order to be informed, whereas the automatic implementations needs to be set up for once by the individual and is afterwards automatically applied.

Following our objectives, we aim to extend recent research by Jahn et al. (2016) and we introduce our research model for this study (Figure 1) with our hypothesis.
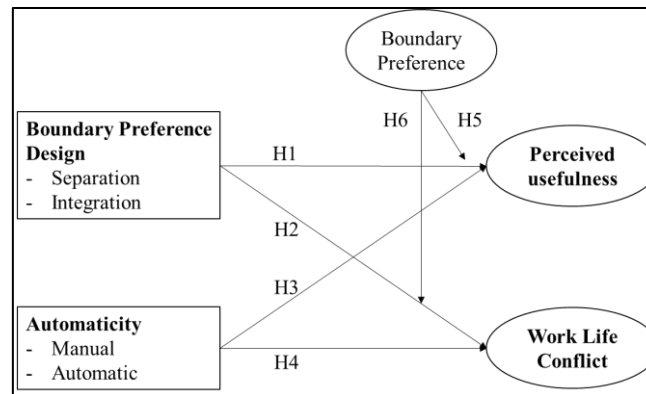

Figure 1. Research Model for the influence of Boundary Preference Design

Aligning to task technology fit (Dishaw and Strong 1999; Goodhue and Thompson 1995) and boundary theory (Allen et al. 2014; Kreiner 2006; Kreiner et al. 2009) literature, preferences of an individual have an effect on usefulness. Technology, which supports an individual's preference, is seen to be more useful (Goodhue and Thompson 1995). As we have different preferences in our study using one specific task, we hypothesize that individuals will find it useful when their preferences will be supported. We decided to use perceived usefulness as it describes an antecedent of acceptance as dependent variable. Thus, we expect that individuals perceive IT, which helps them to follow their preference of integration or separation, as more useful. Additionally, research has yet to investigate whether technology design facilitates individuals' work life balance depending on their individual boundary preference. Therefore, it is important to find out to what extant design options effect work life conflict and address an individual's preference to integrate or separate work and life domains. Because first literature showed a relationship between preferences and enactment, we hypothesize an interaction effect for work-to-life conflict and boundary preference design (Allen et al. 2014).

H1: Boundary preference design for separation leads to increased perceived usefulness compared to integration.

H2: Boundary preference design for separation leads to decreased work life conflict compared to integration.

H3: Automaticity that reacts automatically leads to higher perceived usefulness than manual implementation.

H4: Automaticity that reacts automatically leads to lower work life conflict than manual implementation.

H5: The relationship between boundary preference design and perceived usefulness is moderated by individuals' boundary preference. Individuals with a separation preference experience higher perceived usefulness for separated boundary preference design (compared to integrated

design) whereas individuals with an integration preference experience higher perceived usefulness for integrated boundary design (compared to separated design).

H6: The relationship between boundary preference design and work life conflict is moderated by individuals' boundary preference. Individuals with a separation preference experience lower work life conflict for separated boundary preference design (compared to integrated design) whereas individuals with an integration preference experience lower work life conflict for integrated boundary design (compared to separated design).

Table 1 gives an overview of how the constructs of this study are defined.

Table 1. Construct definitions

Construct	Definition	Source
Boundary Preferences	""Segmenters" prefer to keep the two domains as separate as possible, creating and maintaining a boundary or "mental fence" (Zerubavel,1991); "integrators," (…), prefer to combine elements of both domains, essentially removing boundaries between the two and blending facets of each. Of course, most individuals are not "pure types"— rather, their position on the continuum bounded by complete integration and complete segmentation depends on the particular circumstances and individuals involved."	Kreiner et al. 2009, p. 710
Boundary Preference Design	The degree to which technology design facilitates to enact integration or separation.	Jahn et al. 2016
Automaticity	The degree to which a technological implementation can react to events automatic (e.g. through predefined filters) or the user has to react manually (e.g. through deciding the reaction after reading a message for push notification).	Jahn et al. 2016
Perceived usefulness	As an antecedent of acceptance, perceived usefulness shows how users perceive technology to enhance their work life balance.	Agarwal and Karahanna 2000; Davis et al. 1989
Work Life Conflict	"A form of inter-role conflict in which the role pressures from the work and family domains are mutually incompatible in some respect."	Adam et al. 1996; Ahuja et al., 2007

Method

Data Collection

Method selection. In order to answer our research questions, we will gather data from an online survey including design options and demographics, including work experience, working position, working hours per week and educational degree. Using an online survey for this purpose is most convincing to address our research question because participants can answer these questions for example on their computer or with their mobile devices (e.g. smartphone, tablet and laptop) which is close to a work life boundary management environment.

Participants. We will recruit 128 participants by promoting the survey via e-mail and facebook. We will recruit participants of different working contexts (e.g. project partners from the public sector and different industrial companies).

Measures

Boundary Preferences. To ask for the individual preferences of the individual we adapt the segmentation preference scale from Kreiner (2006). We use four items describing whether the individual prefers to integrate or to separate work and family domains. Participants will be asked to indicate their preference using a scale ranging from 1 (strongly agree) to 5 (strongly disagree). Aligning to Kreiner (2006) the following item is used as an example: "I prefer to keep work life at work." (Kreiner 2006).

Perceived Usefulness. To measure perceived usefulness we align to Argarwal and Karahanna (2000). We adapt the scale using a 5-Point Likert scale instead of a 7-Point Likert scale, from 1 (strongly agree) to 5 (strongly disagree) and adapted the items to our context using mobile devices to manage work and family boundaries. One example item for perceived usefulness is: "Using the mobile device enhances my effectiveness at work and private life".

Work Life Conflict. Aligning to Ahuja et al. (2007) we adapt items from Adam et al. (1996), as they used already a short item scale for work life conflict in Information Systems Research. We adapted the scale using a 5-Point Likert scale instead of a 7-Point Likert scale, from 1 (strongly agree) to 5 (strongly disagree): For example, we ask: "If you are not married and/or do not have children, you can choose to respond to these questions in terms of your life outside of work in general (for example, replace "family" with "friends" and think of your other commitments, such as gymnasiums, book clubs, or any other: The amount of time my job takes up makes it difficult to fulfill family responsibilities."

Control Variables: As possible control variables, we ask for Perceived Ease of Use, "It is easy for me to become skillful at using the mobile device.", for Personal Innovativeness, "I like to experiment with new information technologies.", and for Behavioral Intention to Use, "I plan to use the mobile device in the future."

Manipulation checks. We used following self-developed items, measured using a 5-Point Likert scale, ranging from 1 (strongly agree) to 5 (strongly disagree) for a manipulation check. For example, we ask: "I made the setting to get my emails pushed, when I receive them. I had to check my received e-mails autonomous. When I get an e-mail and I am out of office, the sender will get an automatic notification about the date when I am back at the office. I sorted my contacts in different groups, so that I can differentiate between the people I want to get anywhere at any time e-mails from and people I do not want to get notifications from."

Procedure. After opening the link to the survey, a cover page will be provided, including a short introduction that will explain the context of the survey. The short introduction will also assure privacy for our participant´s answers. Next, we will ask participants about their individual preference of separating or integrating work and private life. We will also ask for their average weekly working hours, their average time working at home or in the office, and how many years they had been working at their current employer. Then, participants will be instructed to read the following text before being presented the different design options:

> "It is Sunday and you are sitting with your family at the breakfast table. You just submitted an important project report at work on Friday. You worked on this projects and its report for the last three months. You are not sure how your supervisor will react, and in the past, his reactions ranged from only changing a few words to changing the whole concept. You know that it will be fine for your supervisor if you read his feedback on Monday."

Thereafter, four design options (push and pull information, dynamic filtering and automatic notification) will be presented in random order and each participant has to indicate his or her reaction for each design option displayed. We selected the design options because they represent the outer points of the dimensions automaticity and boundary preference design. They are shown in Table 2.

Table 2. Design options for pulling and pushing information, for automatic notifications and for dynamic filtering

Automaticity / Boundary Preference Design	Manual	Automatic
Separation	**Scenario 1 – pull information** „After breakfast you decide to check your e-mails. You open up your Outlook Application and look actively for responses from your supervisor. "	**Scenario 2 – automatic notification** "Your supervisor did response to your e-mail and got an automatic notification, saying that you are not available until Monday, when you are back at the office."
Integration	**Scenario 3 – push information** "Your phone is ringing as you got a new e-mail from your supervisor about the project and you already can read the email while looking on the display of your mobile phone."	**Scenario 4 – dynamic filtering** "Your phone is ringing as you have got an incoming e-mail from your supervisor. You actively choose your supervisor to be one of the people who are able to e-mail you on the weekend so that you see the e-mail right away."

When participants afterwards open the e-mail, following e-mail will appear:

"Hi,

I just got around proving your work on our project. Enclosed you will find my revisions on your work for our project report. I had some mayor revisions, so please do not forget, that this report needs to be finished by Monday 12am. Please send it to me until Monday 10am, so I can review it for the last time before we have to hand it in.

Best regards

Alex"

Afterwards participants will be asked to answer the questions for the indication of perceived usefulness and work life conflict. Finally, participants have to fill in information about e.g. their gender, age, and had the opportunity to give additional comments in a free text field.

Data Analysis

We will analyze the data using ANOVA and covariance-based structural equation modeling.

Discussion

With the experiment, we plan to show which design options are preferred depending on the individual preference of setting boundaries between work and private life.

We propose that there will be a possibility to show empirically that the proposed IT-related tactics of Jahn et al. (2016) fit with the way of individual preferences and the way of automaticity. Thus, we propose, that the option of pulling information will be part of the individual preference named separation and the automaticity of manual settings. We also propose, that automatic notifications can be a way of separate automatically between private and work life by installing for example automatic response e-mails upfront, before changing into the domain of another part of life. Looking at pushing information, we propose that this is a possible way of fully integrate work and private life, as e-mails,

phone calls and text messages will always come through, not depending on the location, time or domain an individual is located in. We also propose that dynamic filtering is a form of automatic moderation between integration and separation. In this status an individual does not want to get all messages and phone calls from each individual in their life. Instead, an individual can actively choose, which person are allowed to, for example call and come through any time they want.

Implications for theory. We aim to extend future research, specifically by Jahn et al. (2016), in order to show which design options are getting preferred depending on one's individual preference to separate or integrate between private and work domains. We want to show experimentally that the proposed IT-related tactics of Jahn et al. (2016) match the automaticity and which design options are needed for this.

Implications for practice. Showing which design options are getting preferred depending on one´s individual preference of segmentation and integration, organizations can use our results to support their employees in order to find the right balance between work and private life.

Based on our results, we expect that future research can extend our study by developing a construct for IT-related boundary tactics, giving the possibility to use it for measuring effects on and of IT-related boundary tactics and work life conflicts.

References

Agarwal, R., Karahanna, E., 2000. „Time Flies When You're Having Fun: Cognitive Absorption and Beliefs about Information Technology Usage," *MIS Quarterly* (24:4), pp. 665-694.

Ahuja, M.K., Chudoba, K.M., Kacmar, C.J., McKnight, D.H., George, J.F., 2007. "IT Road Warriors: Balancing Work-Family Conflict, Job Autonomy, and Work Overload to Mitigate Turnover Intentions," *MIS Quarterly* (31:1), pp. 1-17.

Allen, T. D., Cho, E. and Meier, L. L., 2014. „Work–Family Boundary Dynamics," *Annual Review of Organizational Psychology*, (1:1), pp. 99-121.

Ashforth, B. E., Kreiner, G. E. and Fugate, M., 2000. "All in a Day's Work: Boundaries and Micro Role Transitions," *Academy of Management Review*, (25:3), pp. 472-491.

Baskerville, R., 2011. "Individual information systems as a research arena," *European Journal of Information Systems*, (20:3), pp. 251-254.

Chen, A., Karahanna, E., 2018. „Life Interrupted: The Effects of Technology mediated Work Interruptions on Work and Nonwork Outcomes," *MIS Quarterly* (42:4), pp. 1023-1042.

Cecchinato, M. E., Cox, A. L. and Bird, J., 2015. "Working 9-5? Professional Differences in Email and Boundary Management Practices," in *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing System,* pp. 3989-3998.

Cousins, K. and Robey, D., 2015. "Managing Work-Life Boundaries with Mobile Technologies: An Interpretive Study of Mobile Work Practices," *Information Technology & People* (28:1), pp. 34-71.

Davis, F., Bagozzi, P. and Warshaw, P., 1989. "User acceptance of computer technology - a comparison of two theoretical models," *Management Science* (35:8), pp. 982-1003.

Dishaw, M. T. and Strong, D. M., 1999. "Expanding the technology acceptance model with task-technology fit constructs." *Information & Management* (36), pp. 9-21.

Duxbury, L., Smart, R., 2011. "The "Myth of Separate Worlds": An Exploration of How Mobile Technology has Redefined Work-Life Balance," in *Creating Balance?* Springer, Berlin, Heidelberg, pp. 269-284.

Duxbury, L., Higgins, C., Smart, R. and Stevenson, M., 2014. "Mobile Technology and Boundary Permeability," *British Journal of Management* (25:3), pp. 570-588.

Ezzedeen, S.R., Zikic, J., 2017. „Finding Balance Amid Boundarylessness: An Interpretive Study of Entrepreneurial Work–Life Balance and Boundary Management," *Journal of Family Issues* (38:11), pp. 1546-1576.

Fleck, R., Cox, A. L. and Robison, R. A. V., 2015. "Balancing Boundaries: Using Multiple Devices to Manage Work-Life Balance," in *Proceedings of the SIGCHI Conference*, pp. 3985-3988.

Goodhue, D. L. and Thompson R. L., 1995. "Task-Technology Fit and Individual Performance." *MIS Quarterly* (19:2), pp. 213-236.

Jahn, K., Klesel, M., Lemmer, K., Weigel, A., Niehaves, B., 2016. „Individual Boundary Management: An empirical Investigation on Technology-related Tactics," in *Pacific Asia Conference on Information Systems (PACIS)*, pp. 1-13.

Klesel, M., Jahn, K., Müll, M., Niehaves, B., 2016. „How to design Information Technology that facilitates detachment from work: An empirical Investigation of work-discontinuance intention," in *Pacific Asia Conference on Information Systems (PACIS),* pp.1-16.

Klesel, M., Kampling, H., Bretschneider, U., Niehaves, B., 2018. "Does the Ability to Choose Matter? On the Relationship between Bring Your Own Behavior and IT Satisfaction," *Communications of the Association for Information Systems* (43:36), pp. 690-710.

Köffer, S., Anlauf, L., Ortbach, K., Niehaves, B., 2015. „The Intensified Blurring of Boundaries Between Work and Private Life through IT Consumerisation," in *Twenty-Third European Conference on Information Systems (ECIS)*. pp. 1-17.

Kossek, E.E., Lautsch, B.A., Eaton, S.C., 2006. „Telecommuting, control, and boundary management: Correlates of policy use and practice, job control, and work–family effectiveness," *Journal of Vocational Behavior* (68:2), pp. 347-367.

Kreiner, G.E., 2006. "Consequences of work-home segmentation or integration: a person-environment fit perspective," *Journal of Organizational Behavior* (27:4), pp. 485-507.

Kreiner, G. E., Hollensbe, E. C. and Sheep, M. L., 2009. „Balancing Borders and Bridges: Negotiating the work-home interface via boundary work tactics," *Academy of Management Journal*, (52:4), pp. 704-730.

Lim, H., Arawjo, I., Xie, Y., Khojasteh, N., Fussell, S.R., 2017. „Distraction or Life Saver?: The Role of Technology in Undergraduate Students' Boundary Management Strategies," *Proceedings of the ACM on Human-Computer Interaction* (1:CSCW), pp. 1-18.

Mellner, C., Aronsson, G., Kecklund, G., 2014. „Boundary management preferences, boundary control, and work-life balance among full-time employed professionals in knowledge-intensive, flexible work," *Nordic journal of working life studies* (4:4), pp. 7-23.

Nippert-Eng, C., 1996. „Home and work: Negotiating Boundaries through Everyday Life," *University of Chicago Press*.

Ortbach, K., Köffer, S., Bode, M., & Niehaves, B., 2013. „Individualization of information systems— analyzing antecedents of IT consumerization behavior, " in *Proceedings of the 34th International Conference on Information Systems*.

Reyt, J.-N. and Wiesenfeld, B. M., 2015. „Seeing the Forest for the Trees: Exploratory Learning, Mobile Technology, and Knowledge Workers' Role Integration Behaviors," *Academy of Management Journal*, (58:3), pp. 739–762.

Rothbard, N. P., Phillips, K. W. and Dumas, T. L., 2005. "Managing multiple roles: Work-family policies and individual's desires for segmentation," *Organization Science* (16:3), pp. 243-258.

Sarker, S., Sarker, S., Xiao, X., Ahuja, M., 2012. "Managing Employees' Use of Mobile Technologies to Minimize Work-Life Balance Impacts," *Faculty Scholarship*.

Sørensen, C., & Landau, J. S., 2015. „Academic agility in digital innovation research," *Journal of Strategic Information Systems* (24:3), pp. 158-170.

Venkatesh, V. and Davis, F., 2000. "A theoretical extension of the technology acceptance model: Four longitudinal field studies," *Management science* (46:2), pp. 186-204.

Venkatesh, V., Morris, M., Davis, F. and Davis, M., 2003. "User acceptance of information technology - toward a unified view," *MIS Quarterly* (27:3), pp. 425-478.

Venkatesh, V. and Bala, H., 2008. "Technology acceptance model 3 and a research agenda on interventions," *Decision Science* (39:2), pp. 273-315.

Vodanovich, S., Sundaram, D., & Myers, M., 2010. "Research commentary—digital natives and ubiquitous information systems," *Information Systems Research*, 21:4, pp. 711-723.