**INTRODUCTION**

Smartphone use to perform job-related activities during off-work hours may help individuals to better coordinate work and nonwork demands (Dettmers, Bamberg, & Seffzek, 2016; Kühl, Vahle-Hinz, de Bloom, & Syrek, 2017). Individuals who use smartphones for work during off-work hours get to play different roles simultaneously, as smartphones can be used during intervals especially during nonwork activities (e.g., in the gym, or during family dinner). So, smartphone use during off-work hours provides individuals with a feeling of successfully combining work and nonwork life (Olson-Buchanan, Boswell, & Morgan, 2016), which serves as a way for individuals to take care of unfinished or ongoing work issues and fulfill different roles at the same time.
However, as smartphone use continues to increase and become more pervasive in individuals’ lives, there is a need to recognize the potential negative impact. Indeed, the constant connectivity of smartphones facilitates individuals to solve work problems, and to extend the ongoing coordination among clients, colleagues, and supervisors. Nevertheless, its use increases the pace of work and ties individuals to their work, even during off-work hours that once were mainly dedicated to nonwork life (Butts, Becker, & Boswell, 2015; Fujimoto, Ferdous, Sekiguchi, & Sugianto, 2016; Perry-Jenkins & Wadsworth, 2017). With the growing irresistibility of the smartphone, its usage competes with individuals’ attention to other activities, which may cause difficulty to concentrate in the nonwork domain. For example, responding to work-related messages in another’s presence while having lunch may distract one’s concentration. No doubt, frequent task switching (i.e., multi-tasking) is something that everybody does, but the more often individuals switch, the more difficult it is to pay attention to and to complete one particular task (Gazzaley & Rosen, 2017; Rexroth, Michel, & Bosch, 2017).

PROBLEM STATEMENT

Whilst some research has been carried out on work-related smartphones and work-nonwork conflict (e.g., Derks & Bakker, 2014), there have been few empirical investigations on whether the strength of the relationship between daily smartphone use for work during off-work hours with daily work-life conflict are influenced by individuals’ segmentation preference. The present research seeks to address the following questions: First, does daily smartphone use during off-work hours affect work-life conflict? The researcher chose to focus on work-life conflict rather than life-work conflict, capturing the spillover of the work domain onto the personal life domain. Second, does the individuals’ preference to segment work and personal life domain, affect the strength of their daily smartphone use during off-work hours and work-life conflict? As such, the current study aims to contribute to the debate on whether using a smartphone to perform work outside of traditional working hours (especially during evening hours) is associated with an increase in daily work-life conflict.

In the following, the researcher laid out the theoretical foundation of the research and the main concepts in the literature.

THEORETICAL FOUNDATION

Referring to role theory, individuals manage their roles and responsibilities according to their various role structures (e.g., work and personal life). Role conflict occurs when individuals are experiencing the demands of one role interfering with another role. Role theory supports the notion that segmentation is a suitable boundary management strategy, whereby separating roles helps to reduce role conflict and facilitates performance in each role (Rothbard & Ollier-Malaterre, 2016).

To investigate the relationships in this study, the researcher utilized boundary theory (Allen, Cho, & Meier, 2014; Piszczek, 2017) as the theoretical foundation. Basically, boundaries influence individuals in managing their work and personal life domain. This means that some individuals might prefer to keep personal life matters out of
their work (strong boundaries), while others might prefer to integrate all their life domains (weak boundaries) (Kinnunen, et al., 2016; Ma, 2017; Noor & Mahudin, 2016; Park, Fritz, & Jex, 2011).

Presently, the demands to be connected to the workplace outside of working hours are due to an increase in connectivity enabled by smartphones to meet the demands from supervisors, colleagues, and clients. Because of the smartphone use during off-job time, work demands may intrude personal life domain, which blurs boundaries between work and personal life domain (Derks, Bakker, Peters, & van Wingerden, 2016; Derks, Duin, Tims, & Bakker, 2015; Diaz, Chiaburu, Zimmerman, & Boswell, 2012; Park & Jex, 2011).

Hence, the ways in which individuals manage their work and personal life boundaries determine whether they will experience conflict at work and personal life situation. In the present study, the researcher examined the interruptions from daily smartphone use for work-related purposes during off-work hours.

From the positive perspectives, empirical evidence suggests that smartphones allow greater coordination and integration between work and personal life, which reduces the ability to separate work and nonwork domain (e.g., Butts et al., 2015; Derks et al., 2016; Harris, Harris, Carlson, & Carlson, 2015; Kühnel et al., 2017). With real-time information and feedback at times and in places that were previously not possible, smartphones permit better coordination of tasks (Wajcman, Bittman, & Brown, 2008), greater speed in sending and receiving emails, or analyze documents (Borges & Joia, 2015). However, constant smartphones use may cause the work domain spill over to the personal life domains, which may result in feeling conflicted between work and personal life. In this study, the researcher aimed to replicate the relationship between daily smartphone use for work during off-work hours and daily experience of work-life conflict (Dettmers, 2017; Dumas & Sanchez-Burks, 2015).

In addition, as compared to previous studies (e.g., Greenhaus & Beutell, 1985; Pluut, Ilies, Curșeu, & Liu, 2018), this study looks at work-life conflict rather than work-family conflict to emphasize the potential role of daily smartphone use interfering with one’s personal life. It is crucial to not only focus on individuals with traditional family households (i.e., immediate and extended family, couples with children). Individuals who live alone without immediate family care responsibilities may also face challenges and dilemmas when faced with constant connectivity of smartphone use after work hours. Therefore, in a broader sense, work-life conflict may result from individuals’ attempts to meet the demands of both work and personal life domains (which require great amount of involvement).

Hence, as suggested by previous researches (e.g., Sonnentag, Reinecke, Mata, & Vorderer, 2018; Wilkinson, Tomlinson, & Gardiner, 2017), this study includes individuals from all walks of life and not merely on those with traditional family households and childcare as the primary nonwork concern. Within this context, the researcher tested the following hypothesis:

**Hypothesis 1:** Daily smartphone use for work-related purposes during off-work
hours is positively related to daily work-life conflict.

Moreover, it is expected that the relationship is stronger for individuals with high segmentation preference. Normally, individuals who segment seldom discuss work-related issues (or personal life issues) at home (or at work). But when constant work-related smartphone use is involved during off-work hours, these individuals may experience high interference in their personal life domains. Calling for research to assess segmentation preferences as moderator (Syrek, Kühnel, Vahle-Hinz, & De Bloom, 2017), the researcher thus propose:

**Hypothesis 2:** The relationship between daily smartphone use for work during off-work hours and work-life conflict is moderated by segmentation. More specifically, smartphone use with high segmentation will increase work-life conflict more than smartphone use with a low segmentation.

**RESEARCH FRAMEWORK**

Based on past studies and related theory, the conceptual framework of the study as illustrated in Figure 1 was developed.

![Figure 1: Research framework](image)

**METHOD**

**Participants and Procedure**

The sample of this study were recruited by invitation emails with a request to participate in a diary study. Of the total 100 respondents, 57% are predominantly female, and 32% are between the age of 40 to 44. Participants are 64% married, and 57% has bachelor degree. As for household composition, 46% are dual-earner parents, 23% are single without children, 10% are dual-earner without children, 9% are single-earner parents, 9% are single-earner without children, and 3% are single parents.

The data were collected through online questionnaires. Participants were first invited to fill out a one-time survey which consisted of personal background information, general information about their smartphone use, and their segmentation preference. Since smartphone use during nonwork time may be considered as an intrusion on other activities, the day-to-day variation was assessed to best capture smartphone use for work during off-work hours, as well as the episodes of work-life conflict for five successive workdays. At this stage, participants received timed emails containing instruc-
tions and a link to the diary study, requesting them to respond to a diary study for five consecutive workdays. To increase participation throughout the week, a reminder signal was sent to participants who did not finish the daily survey within the given period of time. Overall, participants completed 393 out of 500 daily surveys (100 participants X 5 days), resulting in a 78.6% daily response rate.

**Study measures**

All the measures described (unless otherwise indicated) are anchored on a 1 = Completely disagree to 6 = Completely agree Likert-type scale. Following recommendations from Beal (2015), the same anchors were used for all the measures, and short scales were implemented for the daily portion of the study to avoid burdening participants (e.g., Lanaj, Kim, Koopman, & Matta, 2018).

*Between-person measure.* Segmentation preference was measured using four items from Kreiner (2006). A high score indicated high segmentation between work and personal life domains.

*Within-person/Daily-level measure.* The daily measures were assessed one week following the administration of the demographic background and between-person measure survey. Daily smartphone use after work hours was measured with a four-item scale developed by Derks et al. (2016). A high score indicated high smartphone use among the participants. Daily work-life conflict was measured using two items from Matthews, Kath, and Barnes-Farrell’s (2010) scale, and one item from Glavin and Peters’ (2015) scale. High scores on the items indicated a high work-life conflict.

**Analyses**

This study focused on a two-level model with series of repeated measures at the day-level (within-person; n = 393 study occasions), and the individual persons at the person-level (between-person; n = 100 participants). This data was treated as multilevel, and multilevel path modeling was used. Within multilevel analysis, the analysis started with a null model that includes only the intercept and did not specify any predictor variable. Consecutively, each model added several predictor variables.

**RESULTS**

**Preliminary Analysis**

Means, standard deviations, and correlations among all the study variables are presented in Table 1 and Table 2.

At the between-person level, smartphone use was positively related to work-life conflict ($r = .40, p < .01$). Smartphone use was negatively related to segmentation ($r = -.22, p < .05$). At the within-person level, smartphone use was positively related to work-life conflict ($r = .47, p < .01$).
Before testing the hypotheses, the researcher examined the between-person and within-person variance components of all variables used in the analyses. The value of the interclass coefficients (ICC) for work-life conflict was $\rho = .48$, which shows that 48% of the answers in questions about daily work-life conflict could be explained by between-person variations in the five days measurement occasions, whereas 52% of the variance of work-life conflict could be explained by within-person or daily variation. These findings showed that the outcome variables (i.e. work-life conflict) varied substantially, both between persons and across days, providing sufficient reason to conduct multilevel data-analysis.

All the results regarding the findings can be found in Table 3. First, at the day-level, the results showed a significant positive effect of daily smartphone use for work-related purposes during off-work hours on work-life conflict ($B = 0.47, p < .01$). This is in line with Hypothesis 1. Indeed, smartphone use was positively related to higher work-life conflict, replicating findings from previous research.

### Table 1: Descriptive statistics and intercorrelations among the variables at the between-person level (Level 2)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Smartphone use</td>
<td>3.60</td>
<td>1.10</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td>40**</td>
</tr>
<tr>
<td>Work-life conflict</td>
<td>3.48</td>
<td>1.37</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td>0.40*</td>
</tr>
<tr>
<td>Segmentation</td>
<td>5.21</td>
<td>0.89</td>
<td></td>
</tr>
</tbody>
</table>

Note: n = 100.
* p<.05; **p<.01.

### Table 2: Descriptive statistics and inter-correlations among the variables at the daily-level or within-person level (Level 1)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Smartphone use</td>
<td>3.09</td>
<td>1.20</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td>0.47**</td>
</tr>
<tr>
<td>Work-life conflict</td>
<td>2.78</td>
<td>1.23</td>
<td></td>
</tr>
</tbody>
</table>

Note: n = 100.
* p<.05; **p<.01.
Next, it is argued that the relation between constantly answering work-related messages in the evenings has a stronger interference between work and personal life domains for those who segment their work and personal life than those who integrate (H2). The result shows that the relationship between smartphone use and work-life conflict was negatively moderated by segmentation ($\gamma = -0.16$, SE = .07, $t = -2.187$, $p < .05$). To examine whether the direction of the interactions was in line with the expectations, the interactions were visualized in Figure 2. The plot of the interaction effect in Figure 2 shows, in contradiction to Hypothesis 2, the relation is stronger for individuals high on smartphone use for work during off-work hours when segmentation is low. On the other hand, there is no relation for those who have high segmentation.

**DISCUSSION**

This study set out to determine the effect of smartphone use for work during off-work hours on work-life conflict, and also the moderating role segmentation preference. The results were consistent with previous studies, in that the more individuals use
smartphones during off-work hours, the more they experience work-life conflict (Derks & Bakker, 2014; Dettmers, 2017; Harris et al., 2015; Sonnentag et al., 2018).

In testing Hypothesis 2, the findings were the direct opposite of earlier prediction. Smartphone use for work during off-work hours is more strongly related to work-life conflict for individuals who have low segmentation preference (integrators) as compared to individuals who keep their work and personal life separate (high segmentation preference). This finding was surprising and went against the boundary theory logic. A plausible explanation for this finding is that individuals who favor to integrate work and personal life domain (i.e. low segmentation) prefer to frequently transition between work and personal life domain. And, when there is an increase in smartphone use, individuals’ preference to integrate work and personal life causes conflict of resources (where each domain requires different resources at the same time), which eventually leads to work-life conflict. It is also speculated that individuals with low segmentation probably cannot tell the difference between work and personal life domain. For example, individuals who constantly use smartphones for work even after office hours tend to blur the boundaries between the two domains, reducing the ability to separate work and personal life spaces. As a consequence, their preference to integrate work and personal life domains may actually hurt them.

On the other hand, high segmentation preference implies low integration between work and personal life domain. Individuals who either frequently use smartphones or seldom use smartphones to complete their work outside of the work domain, they did not experience work-life conflict. Hence, high segmentation could be beneficial for overcoming work-life conflict because separating and maintaining boundaries between work and personal life domains helps to

Figure 2: Moderation of segmentation on the relationship between smartphone use during off-work hours and work-life conflict

![Figure 2: Moderation of segmentation on the relationship between smartphone use during off-work hours and work-life conflict](image-url)
prevent individuals from spending resources on these domains simultaneously.

CONTRIBUTION

This study used a diary study design, which provided reports that best capture particular experience in a way that is not possible using traditional designs. This means that the use of diary methods reduces retrospective bias by minimizing the amount of time elapsed between experiences (Bolger, Davis, & Rafaeli, 2003). Therefore, this study validates previous studies which suggests that daily reports on the experience of smartphone use for work during off-work hours on work-life conflict were exhaustive as compared to measuring general levels of smartphone use and work-life conflict.

Moreover, this study found that the moderating role of segmentation were in contrast with previous research (e.g., Dumas & Sanchez-Burks, 2015; Kinnunen et al., 2016; Park et al., 2011). With high smartphone use for work during off-work hours, individuals with low segmentation experienced high work-life conflict while those with high segmentation preference experienced similar levels of work-life conflict independent of their levels of smartphone use. The results suggest that, when faced with frequent smartphone use for work during off-work hours, individuals with low segmentation were not able to control the boundaries between their work and personal life domain. In such a situation, smartphone use blurred the boundaries between work and personal life domain and influenced work-life conflict (Derks et al., 2016; Derks et al., 2015).

Finally, this study focused on a non-Western setting, in which the importance of social ties is valued among the Malaysian community. For example, the needs of the immediate and extended family members are prioritized over the needs of the individual person. Thus, smartphone use for work during off-work hours affected Malaysians who are obligated to care for their elderly parents, siblings, and extended family members. In this case, it appears that smartphone use for work during off-work hours among integrators increased work-life conflict, especially among individuals who put family before themselves.

LIMITATION AND FUTURE RESEARCH

Several limitations of the current study should be noted. First, this study was conducted based on a self-report questionnaire, and the participants may have had the tendency to answer the questionnaire which is considered to be more socially acceptable. Next, although the diary study method provides better estimates of individual’s smartphone use and work-life conflict because it helps to capture the daily fluctuations of work-related smartphone use during off-work hours and its outcome, such method required participants’ commitment and dedication, which may burden them by repeated e-mails.

Future research may need to look at how smartphone use for work during off-work hours reflects on different team members of the same organizations discussing expectations and work processes outside of working hours. This means that future research extends the current study by considering colleagues’ segmentation preference that may
influence work-life conflict. For example, individuals with low segmentation may not take into account that constant interaction with other colleagues will affect others in terms of their well-being.

Furthermore, human resource practitioners and organizations alike need to start recognizing individuals with many life roles that they constantly involve in. For instance, instead of focusing on merely work and family roles, and practicing family-friendly policies that organizations provided, it is time to adopt more life-friendly policies and benefits.

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