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MOBILE COMMUNICATION TECHNOLOGIES AND THE WORK-LIFE BALANCE OF CONSTRUCTION MANAGERS

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ABSTRACT

The work-life balance of construction managers is precarious due to long work hours and high levels of work-family conflict (WFC). The impact of mobile communication technologies (MCT), such as the mobile phones and tablets, on WFC has not been researched in construction. Research suggests that their use contributes to the blurring of work and non-work boundaries, making it easier for work to intrude on home activities. This research examined the effect of MCT usage on the WFC of Australian construction site managers. An online survey of site management staff with a national construction company ascertained WFC and MCT usage and investigated psychological attachment to work, segmentation preferences (between home and work) and segmentation supplies. Respondents who had higher levels of WFC worked longer hours and extended their work time by using MCTs at home for work. However, they did not perceive MCTs to be useful for their job and overall, a pattern of MCT devices interfering in home life was apparent. Younger workers considered themselves technologically savvy and used more MCT devices at home for work demonstrating that, if correctly configured, MCTs may allow workers to better manage their work and home boundaries. Future research in the area is discussed.

Keywords: Construction site management, mobile communication technology, ICT, work-family conflict, work-life balance, boundary theory.

INTRODUCTION

The separation of work and home life has always been difficult in construction due to the project nature of work and the long hours demanded of its workers. In particular, the work-life balance (WLB) of site staff is problematic. They work longer hours per week than their regional and head office counter-parts and have the highest levels of work-family conflict (WFC) and burnout of all construction staff (Lingard and Francis, 2009). The impact of information and communications technologies (ICT) on work-life balance has been the subject of research for some years (Gajendran & Harrison, 2007) with more recent research focussed on mobile communication technologies (MCT) such as the mobile phones, laptops, tablets and other digital assistants (Hislop & Axell, 2011; Cousins & Robey, 2015). Much research suggests

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that the use of MCTs contribute to the blurring of work and non-work boundaries, making it easier for work to intrude on home activities.
The impact of these technologies on work-family balance in construction has not previously been explored. Therefore, the current research aims to investigate the work-family experiences and use of MCTs of site based managerial staff; thus expanding research knowledge in this area, informing organisational policy and potentially leading to technologies that enhance rather than detract from WLB in construction.

WORK-FAMILY BALANCE IN CONSTRUCTION

Work-family balance is defined as "an overall level of contentment resulting from an assessment of one's degree of success at meeting work and family role demands." (Valcour, 2007: 1512). Conversely, WFC occurs when there is tension and strain between the roles undertaken in the separate domains of work and family, with one domain impacting negatively on the other (Hammer & Thompson, 2003). WFC, by definition, makes daily tasks of living more difficult to manage in conjunction with work responsibilities. Australian construction industry employees in site-based roles have been found to experience high levels of WFC and longer work hours than those on head office based roles (Lingard and Francis, 2009).

THE ROLE OF TECHNOLOGY AT WORK

Technologies such as smartphones, tablets etc., afford greater flexibility in working behaviour (e.g. users access work emails 24/7) (Derks, et al., 2015), however they contribute to individual workloads in that recipients are available anytime and in any place. Furthermore, MCTs are said to contribute to a blurring of the boundaries between work and home life, by allowing work to impact on areas of our life which have been absent from technology within the domestic sphere e.g. sleeping, eating and even bathroom breaks (Cecchinato et al, 2014). Construction site staff have become 'super available', with MCTs increasing their availability beyond what can already be described as excessive working hours. Even when having a break at work, employees may be constantly in demand, resulting in them not making full use of these necessary respite occasions.

BOUNDARY THEORY

There are a range of theories which can be used to examine the relationships between ICT/MCT and work-life balance but the most pertinent is boundary theory (Cousins & Robey, 2015). According to boundary theory people manage their WLB by using personal strategies that unconsciously or otherwise cross over from their working roles into their domestic lives and vice versa. However, it has also been argued that different people have different preferences for the extent to which they allow work to intrude into non-work time (ibid) and this in itself, may affect their technology use.

RELATIONSHIP BETWEEN TECHNOLOGY AND WORK-LIFE BALANCE

MCTs have been found to generate stress as they spill over into time and places normally reserved for self, family or rest (Chesley, 2014). Duxbury (2014) found that when adopting a new technology (a Blackberry device) around half of their participants struggled to maintain their preferred boundary behaviours. Other studies have found that people who rely on technology to get their work done are more likely to conduct work in places other than the office, such as using technology at home and in other locales. However, the greater use of technology by these people the likelier they were to feel burnt out. Overall MCTs can contribute to stress by extending work hours and making it more difficult to disengage from work and engage with domestic life (Boswell & Olson-Buchanan, 2007). Further, the increasing blurring of boundaries between work and home

life can lead to negative outcomes in terms of spill-over from one role to another, and a sense of increased job stress (Nam, 2013) and a heavier workload (Park & Jex, 2011).

RESEARCH AIMS AND METHOD

In recent years MCT accessibility and the ease of use has increased, now they are ubiquitous in modern life yet their impact on WLB in construction has not previously been explored. We aim to investigate this and in particular to explore the relationship between MCT usage, ease of use and perceived usefulness with WFC, work-home segmentation preferences and supplies, and psychological attachment to work.

Methodology, Procedure and Participants

A cross-sectional correlational field study was adopted as the purpose of the study was to examine the extent to which variation in one or more characteristics is related to differences in other characteristics. To maximise participation, a web-based delivery of the survey was considered appropriate for the managerial employees in the sample. Respondents remained anonymous so that participation posed no risk to ongoing employment. Potential respondents were invited to complete the survey in an email from senior management and two follow-up emails were used to maximise response rates.

Site-based employees from a national private sector organisation were invited to participate in the study. Their organisation constructs large building projects, such as hospitals and high rise apartments. It is estimated the invitation email was sent to around 150 employees, so the response rate of 77 would be considered as high. Of the 77 responses three were deemed ineligible.

The questionnaire

The questionnaire was divided into three sections. Section A comprised seven questions relating to the demographics of the sample namely: year of birth; gender; years working in construction; tenure; typical weekly work hours; location of work; and family situation. Three work locations were provided namely: on site - in direct construction activity; on site - but mainly in the site office; and Head or regional office. This was to ascertain that all completed questionnaires came from site-based personnel. Seven categories were provided for respondents' family situation ranging from single to couple with non-dependent children. Section B on use of various information and mobile technology comprised seven questions. The first four asked about usage and then frequency of use for various information technology devices e.g., mobile phone, laptop, desktop computer, iPad/tablet, pager and other (filled in by participant) in four specific situations namely: at work for work-related purposes; at home for work-related purposes; at work for home-related purposes; and at home for home-related purposes. These items were modified from a study by Park, Fritz et al. (2011). Usage was gauged through a dichotomous Yes/No question and frequency through a 5-point scale ranging from 1 = Never to 5 = Very often. The frequency for those who indicated they did not use a particular technology was coded as 1 (Never). The number of devices used in each situation (e.g. work for work) was summed and classified as Number of devices. Frequency of use was also calculated for each situation (e.g. work for work) by considering the frequency of use of each device and dividing it by number of devices. A higher number was therefore indicative of more ICT/MCT devices and their greater use.

The second part of Section B asked about Ease of use of MCT, Perceived usefulness of MCTs at work and Perceived usefulness of MCTs at home. These questions were

developed from Davis' Technology Acceptance Model and modified to suit MCTs (Davis, 1989). The original 7-point response scale ranging from extremely likely (1) to extremely unlikely (7) was retained but values were reversed scored so that a higher value was indicative of greater ease of use or perceived usefulness. Four items were selected for Ease of use with a sample item being 'I find using MCTs easy to use'. The Cronbach alpha coefficient for this scale was .92, indicating a high level of internal consistency. Three items were selected for Perceived usefulness at work and a sample item was "I find MCTs enable me to accomplish work tasks more quickly". Due to the nature of this research the Perceived usefulness at work items were modified to explore Perceived usefulness at home and personal life. Three similarly worded items were adopted. The scale included items such as 'I find MCT useful in my home and personal life'. The Cronbach alpha coefficient was .82 and .89 respectively.

Section C included four specific measures namely: Psychological attachment to work; WFC; Segmentation preferences; and Segmentation supplies. Psychological attachment to work was measured using a scale developed by Sonnentag and Fritz (2007). Participants were asked for their level of agreement (ranging from 1 = I do not agree at all to 5 = I fully agree) with respect to their non-work time on four statements. A sample statement was "I distance myself from work". The Cronbach Alpha was .81. The items were reversed scored so that a higher score was indicative of a greater level of attachment. WFC was measured using a five-item scale developed by Netemeyer et al. (1996). Participants were asked to decide to what extent they disagreed or agreed with five statements (7-point scale) about their experiences at work, and outside of work. The scale included items such as "I often have to miss important family activities because of my job". A higher score was indicative of greater levels of conflict. The Cronbach's alpha coefficient for this scale was .73, indicating an acceptable level of internal consistency. Segmentation preferences and Segmentation supplies at work were measured using four-items each which were developed by Kriener (2006). Again a 7-point agreement response was used with higher scores indicative of greater segmentation or higher levels of supplies. A sample item for Preferences was 'I don't like to have to think about work while I'm at home' and the Cronbach alpha coefficient was .92. A sample item for supplies was 'At my workplace, people are able to prevent work issues from creeping into their home life' and the Cronbach alpha coefficient was .89.

RESULTS AND DISCUSSION

Data were analysed using IBM SPSS Statistics (version 20). The results are presented in Tables 1 and 2. Table 1 demonstrates that the sample was relatively young (M=33.7, *SD*=10.1), ranging from 20 to 64 years, with 43.3% being parents. Weekly work hours ranged from 30 to 78, with an average of 58 hours per week (*SD*=8.5). These indicate a large portion of the sample work hours that can be considered as excessive. A slightly larger group of 66.2% worked predominantly in the site office compared to 33.8% in direct construction activity.

Table 2 provides the average and standard deviations for the study variables as well as bivariate correlations. These indicate that younger respondents reported greater levels of ease with using MCT devices and perceived them to have a greater level of usefulness both at home and at work than their older colleagues. However, the number of devices and frequency of use at home for work-related purposes increased with age. This may well reflect the higher level of responsibilities as careers in construction progress. Therefore as this younger cohort advance into roles of responsibility they

may have a great ability and acceptance of new technologies as they are developed. Notably, those who worked longer in construction used a significantly higher number of devices at work for home-related purposes. This may reflect their increased status as well as greater home responsibilities and is used to better manage their personal lives. Technology can blur work-home boundaries (Day, Scott, & Kelloway, 2010) so perhaps this is bidirectional. Kossek (2012) determined that the ways in which people manage their boundaries is determined by a range of factors including the type of job they do, workplace attitudes and policies, their work-role identification and their feelings of control over their boundaries. Those of higher status/longer tenure may feel more comfortable using devices at work for home purposes. Considering the long hours they work it is important that individuals are able to deal with home matters whilst at work, resulting in higher levels of job satisfaction (Nam, 2013).

Table 1: Demographic characteristics of the sample

	N	%		N	%
Gender			**Family Structure**		
Male	63	85.1	Couple (dependent children)	17	23.0
Female	11	14.9	Couple (non-dependent children)	12	16.2
Age			Single (dependent children)	2	2.7
30 years or less	37	50.0	Single (non-dependent children)	1	1.4
31 - 40 years	21	28.4	Couple (no children)	10	13.5
41 - 50 years	9	12.2	Single person	32	43.2
Over 50 years	7	9.5	**Work hours/week**		
Work location			39 hours or less	2	2.7
On site	25	33.8	40 - 49 hours	6	8.1
- direct const activity			50 - 59 hours	24	32.4
On site	49	66.2	60 – 69	37	50
- mainly in site office			70 hours or more	5	6.8

The data also demonstrates that those who work longer hours had higher levels of WFC and more frequently used MCT devices at home for work. Higher levels of WFC was also associated with the use of a greater number of MCT devices for work both at home and work. People who rely on technology to get their work done may be more likely to work in places other than their office. It may be that MCT usage contributes to WFC that leads to burnout. Research has also demonstrated that mobile devices generate stress in that they spill over into time and places normally reserved for self, family or rest. Interestingly, those with higher levels of WFC also perceived MCTs to be less useful at work and home. This appears to indicate a level of frustration with the use of MCTs for those with WFC issues. They perceived them less favorably but use them more frequently. Duxbury (2014) found that when adopting a new technology around half of their participants struggled to maintain their preferred boundary behaviours.

Having a greater psychological attachment to work was correlated with greater frequency of using MCTs for work at home and a lower level of use of MCTs at home for home. People who use communication technologies outside work hours can feel more in control and more productive in terms of their working practices (Diaz et al, 2012). It may also be those with a greater attachment to work are less familiar with MCT application and technologies to assist in home life or alternatively less time is invested in home activities. Interestingly, those with a higher psychological attachment to work also reported significantly lower levels of segregation supplies. In other words they considered they had less support from their organization to assist in separating their work and home life.

Table 2: Bivariate Correlations of Work-family conflict and other variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Age in years	33.68	10.09	1																
2. Years in construction	10.79	9.64	.840**	1															
3. Work hours/week	58.01	8.47	-.050	.039	1														
4. Work-family conflict	4.14	.96	.223	.209	.281*	1													
5. Psychological attachment to work	2.52	.80	.152	.218	.190	-.072	1												
6. Segmentation preferences	4.08	1.91	.235*	.222	-.114	-.074	.197	1											
7. Segmentation supplies	3.52	1.26	-.222	-.203	-.195	-.208	-.243*	.042	1										
8. Ease of use of MCTs	5.32	.66	-.400**	-.373**	-.003	-.161	.018	-.086	.111	1									
9. Perceived usefulness MCTs (work)	5.41	.72	-.224	-.249*	.000	-.307**	-.073	.016	.302**	.459**	1								
10. Perceived usefulness MCTs (home)	5.37	.68	-.230*	-.226	-.072	-.208	-.062	-.167	.114	.525**	.756**	1							
11. No. of devices (work for work)	2.80	.72	.134	.160	.108	.287*	.116	.077	-.055	-.026	.037	.045	1						
12. Freq of MCT (work for work)	2.59	.35	.154	.155	.114	.319**	.136	.092	-.055	.037	.138	.167	.863**	1					
13. No. of devices (home for work)	2.00	.91	.258*	.340**	.137	.158	.151	.259*	-.197	-.012	-.007	-.037	.356**	.349**	1				
14. Freq of MCT use (home for work)	1.78	.44	.241*	.228	.256*	.175	.371**	.142	-.263*	.055	-.028	.003	.303**	.349**	.741**	1			
15. No. of devices (work for home)	1.80	.91	.162	.301**	.088	.254*	.106	.156	-.139	-.003	.114	.212	.335**	.401**	.450**	.258*	1		
16. Freq of MCT use (work for home)	1.52	.35	.178	.234*	.039	.208	.146	.083	-.124	-.016	.112	.220	.367**	.464**	.312**	.247*	.770**	1	
17. No. of devices (home for home)	2.57	.92	.016	-.005	-.169	.146	-.158	.141	.000	.105	.144	.100	.278*	.285*	.246*	.103	.270*	.219	1
18. Freq of MCT (home for home)	2.19	.49	-.036	-.146	-.147	.042	-.257*	-.078	.054	.227	.217	.258*	.229*	.282*	.103	.092	.141	.267*	.769**

* Correlation is significant at the 0.05 level (2-tailed), ** Correlation is significant at the 0.01 level (2-tailed).

Participants who preferred to have a higher level of separation between work and home reported a greater number of MCT devices at home for work purposes. It could be that they are using these devices at home in order to be physically present at home rather than at work. As expected respondents who had higher levels of segmentation supplies also report less frequent use of MCT devices at home for work. Kossek (2012) also who found having some control over ones work life boundaries assisted people in better managing these boundaries. Perhaps unsurprisingly Ease of use and both dimensions of Perceived usefulness (at work and home) were all strongly correlated to each other. In addition, Number and Frequency of MCT use in all four situations (e.g. at home for home, etc.) were significantly correlated. These results demonstrate that if individuals use MCT devices and see them as useful they become more dominant in their lives.

CONCLUSIONS

It would appear that the use MCTs do contribute to WFC by increasing the already excessive work hours of construction managers. However, there is some evidence that these managers are using these devices at work to assist in their personal lives. It is interesting that those who have a higher level of psychological attachment to work perceive their work places as allowing a lower level of segregation of work and home. Younger workers consider themselves to be more tech savvy and perceive MCT as being useful for both work and home. However, it is their older colleagues, with greater work and home responsibilities, who use these technologies more and have higher levels of WFC. Schieman and Glavin (2016) demonstrated that those with higher statuses having increased "blurring" of work-family boundaries.

Barber et al (2013) argue that reducing ICT for work purposes at home is often impractical as technology is becoming more integrated into everyday life. For those unable or unwilling to completely eliminate boundary crossing at home, being able to set specific boundaries around ICT use may mediate negative employee health outcomes (ibid). However, as the ease of use and accessibility of MCTs continues to increase, perhaps it may the new generation of worker that will pave the way to adapt and adopt technologies that assist them in setting boundaries, ultimately achieving better work-life balance outcomes for future construction site staff.

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