Enhancing and Managing Group Creativity through Off-Task Breaks

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ENHANCING AND MANAGING GROUP CREATIVITY THROUGH OFF-TASK BREAKS

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Abstract: Moments of insight have played a key role in the evolution of technology over the decades. But how can these ephemeral and enigmatic 'eureka' events be managed? This paper explores the role played by off-task breaks in triggering the unconscious processing of ideas. By breaking up the working day with low effort routine tasks and breaks, individuals can significantly enhance their creativity. So taking time away from the job becomes the key link in the creative process. This research therefore points to the careful management of off-task breaks during the innovation process.

Key words; Creativity, Mind-Wandering, Unconscious Thought, Off-Task Breaks

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1. INTRODUCTION

We have all experienced moments of insight when we least expect it, whether that happens in the bath or under an apple tree, and not thinking about the problem seems oddly to trigger these 'eureka' events. In this paper, I draw on recent research in cognitive and social psychology to explore the impact of off-task breaks on the creative process in groups. Research in cognitive psychology has identified a positive link between off-task breaks and creativity (Simon, 1996; Smith, 1995). It is seen that taking time away from a problem and indeed not thinking about it, leads to key insights being made. Some suggest that during such incubation breaks, unconscious problem-solving processes allow creative ideas to emerge (Bowers et al., 1990; Smith, 1995) through processes of association where the mind makes new links and connections between ideas (Dijksterhuis & Nordgren, 2006; Zhong et al., 2008). Incubation thus refers to the temporary shift away from an unsolved problem to allow a solution to emerge (Wallas, 1926). Given this link between off-task breaks and creativity, some have explored further key characteristics of the incubation period. For instance, when one engages in low cognitive effort tasks during the incubation period, such as washing dishes or having a shower, creativity is enhanced (Baird et al., 2012). Breaks should thus be viewed as an essential part in the creative process, as one cannot think one's way towards a more creative outcome. A lack of creativity underpins the current gap in productivity in the UK economy, and working more it seems, is not the solution to filling this. I argue that the UK workforce needs to take more breaks and work less, not more, in

order to close this gap with our more productive European neighbours. Therefore, finding ways to enhance organizational creativity through off-task breaks is an important future endeavour for both educators and managers.

2. CREATIVITY AND OFF-TASK BREAKS

2.1 The Unconscious and off-task breaks
Both a passive and an active interpretation have been put forward to explain the positive effect on creativity of off-task breaks. Adopting a passive approach, the *mental set-shifting* or *forgetting-fixation* argues that putting ideas aside can reduce associations with incorrect solutions, and allow new ones to emerge (Smith & Blankship, 1989), as the individual takes a fresh look at the problem. This passive view of incubation results in associations with incorrect solutions being reduced. So not thinking about a problem, may result in wrong heuristics and approaches becoming less accessible and being forgotten, and as a result a fresh look being given (Dijksterhuis, 2004) when the individual returns to the problem. Other more active interpretations of incubation have emerged with the unconscious having an active role in idea processing (Koestler, 1964). Zhong et al. (2008) suggest that unconscious thought (task-related thought processes that occur while conscious attention is directed elsewhere) facilitates the discovery of remote associations, as opposed to the passive role of relaxation suggested by the forgetting-fixation or mental set-shifting hypothesis, noted above. In other words, the individual continues to think about the problem in the absence of any conscious attention (Dijksterhuis, 2004), as our unconscious mind continues to work on ideas below the level of consciousness (Wallas, 1926). Dijksterhuis (2004) proposes that with unconscious thought, disorganized sets of information become reorganized into clearer and more integrated representations of information in memory. Through a process of continued associative activity, information is clustered resulting in a more organized representation (Dijksterhuis, 2004). Therefore Dijksterhuis and his colleagues argue that unconscious thought excels at integrating and associating information and is capable of carrying out associative searches across a broad range of background knowledge (Dijksterhuis & Nordgren, 2006). Extending this view, Zhong et al. (2008) put forward a two-step process in which, unconscious thought associates and creates the novel idea, which is then transferred to consciousness. But how can this process be managed, and crucially how can we trigger such moments of unconscious thought?

2.2 Mind Wandering and Off-Task Breaks
Recently a group of psychologists have explored in more depth the cognitive processes underpinning off-task breaks. Specifically, they have found that when one engages in low cognitive demand tasks during an incubation period, the mind wanders (Baird et al., 2012). These episodes of mind wandering enhance creativity more, than if one does nothing during the break, or if one is engaged in a more cognitively demanding task (Baird et al., 2012; Sio & Ormerod, 2009; Webster et al., 2006). Baird et al. (2012) thus posit that mind wandering might enhance the process of unconscious association. On the one hand, engaging in an off-task activity allows the mind to wander, triggering unconscious associations and insight. On the other, this incubation task cannot be too cognitively demanding, as this in turns limits the working memory resources left for unconscious thinking (Smallwood and Schooler, 2006). Therefore, with simple or automatic tasks, mind wandering occurs as attention shifts from the primary task to one's memories (Smallwood and Schooler, 2006), with information processing being

decoupled in a sense from the task in hand (Smallwood et al., 2003). The more repetitive and automatic the off-task activity, then the less executive control needed in performing it (Smallwood and Schooler, 2006). So the more routine, and automatic the incubation task, then the lower the cognitive effort needed to complete it, and the more mind wandering occurs (Antrobus, 1968; Giambra, 1995; Smallwood et al., 2003; Smallwood et al., 2004). In summary, when an individual engages in familiar and routine tasks during off-task breaks, the greater the likelihood mind wandering will occur, and with this the associated benefits of increased creativity through unconscious thought processes.

2.3 Off-Task Breaks and Group Processes
While much of the research to date on breaks and creativity has focused on individuals, groups are the creative vehicle in most organizations (Faure, 2004). Group dynamics thus play an important role in our understanding of breaks. The activities of groups develop over time in pace with other time-based cycles including personal (e.g. daily routines), organizational (e.g. start and finish times) and institutional (e.g. the financial year end) cycles. For example, in an education environment, group tasks follow assignment deadlines, tutorial timetables and tutor engagement sessions. In an industrial setting, group processes follow product development cycles, project management stages, annual budgeting cycles etc. The synchronisation of group processes with other external temporal patterns is known as entrainment. These cycles of activity vary from daily routines to broader monthly and annual calendars. On the one hand temporal entrainment can trap or lock a group into a routine, making it difficult to schedule the off-task breaks needed to trigger creativity. On the other hand, entrainment naturally identifies pauses or interruptions in time cycles, that groups can use to "stop and think" about their work progress (Okhuysen, 2001), and maximise opportunities for change (Zellmer-Bruhn et al., 2004). For example, the lunchtime break is much underutilized in the UK, when compared with our siesta-taking neighbours. Social research has shown that the more a group works together, and the more familiar they are with each other, then the greater the probability that interruptions will occur (Okhuysen, 2001) (e.g. horse play, or catching up on personal chit chat). These interruptions trigger moments of reflection and insight, boasting creativity. In experimental research, I have found that as groups develop over time, they generate more ideas and spend more time in divergent thought when completing group creativity exercises (Breslin, 2014). Familiarity can thus lead to interruptions in three ways (Okhuysen, 2001). First social norms within the group may encourage interruptions aimed at diffusing tensions or building bonds. Second as the group know each other, there is less chance for negative reaction if someone interrupts work, by form example joking or clowning around. Third familiar groups can express disagreements without the risk of escalation. In summary, group processes naturally follow cycles of entrainment with other temporal rhythms occurring at the level of the individual, organization or wider institution. These cycles lead to distinct pauses or interruptions, which create opportunities for off-task breaks and creativity. Furthermore, as familiarity develops within the group, then the greater the probability such pauses will naturally occur.

2.4 Off-Task Breaks and Time-of-Day
Research has shown that an individual's behavioural and cognitive function changes over the course of the day. This time-of-day effect is linked to physiological changes in body temperature and hormone production over the course of the day. These 'circadian rhythms' of individuals differ between morning and evening types. Morning types wake up early, are more active in the

morning and go to bed earlier in the evening (Horne and Ostberg, 1976). Evening types are less active in the morning, staying awake later in the night. The distribution of morning and evening types varies with age. For instance, children tend to shift from morning to evening types as they reach adolescence (Kim et al., 2002; Roenneberg et al., 2004). This prominence of evening types continues into young college age adults, reversing back to morning types in older generations (Adan and Alrnirall, 1990; Giampietro and Cavallera, 2007; Intons-Peterson et al., 1998; May and Hasher, 1998). Scholars have explored time of day effects on cognitive functions associated with the creative process. May and Hasher (1998) focused on the notion of inhibitory processes, which control the flow of information from thought and perception (e.g., Hasher et al., 1999), and thus act to suppress the processing of distracting or task unrelated information. Inhibition has a number of effects on information processing (Hasher et al., 1999; May and Hasher, 1998), by restricting attention to only relevant, task-oriented stimuli, suppressing information that was but is no longer relevant to the task, and restraining the production of strong responses. These three inhibitory functions may be impaired at off-peak relative to peak times (May, 1999). Wieth and Zacks (2011) showed that reduced attentional control at a non-optimal time of day, can positively affect performance on insight problems. Specifically, they argue that evening types perform better at insight problems in the morning, which is their non-optimal time of day (Wieth and Zacks, 2011). They therefore point to a relationship between cognitive performance and an individual's circadian arousal. Others similarly showed that individuals were less able to ignore additional distracting information during their non-optimal time of day compared to their optimal time of day (Breslin, 2016; May, 1999; May et al., 2005). In summary, the effectiveness of off-task breaks on the creative process depends on the time at which pauses and breaks are scheduled.

3. MANAGING OFF-TASK BREAKS

In light of this brief review, educators and managers should look towards enhancing and managing the group creative process through off-task breaks. As noted above, breaks should be seen not as an impediment to productivity, but an essential element in the creative process. First educators and managers need to be more aware of the opportunities created by breaks (Zellmer-Bruhn et al., 2004). This counter intuitive view clearly flies in the face of drives to work harder and produce more. Staudenmayer et al. (2002) for instance found that engineers and managers did not recognize the potential for change during interruptions. Second management need to set expectations for change, adaptation and creativity within groups during breaks (Staudenmayer et al., 2002; Zellmer-Bruhn et al., 2004). Breaks must thus be seen as key to improving productivity. Third and reflecting on the research noted above, guidance can be given on how to structure daily group activities, in terms of the nature, duration, frequency and timing of off-task breaks. In this way, groups can learn to manage the process and maximize benefits for the ongoing needs of the organisation and wider economy.

3.1 The nature of the off-task break
The type of off-task break completed has an important influence on incidences of mind-wandering, with past experimental work looking at the impact on creativity of different incubation tasks from high cognitive demand (e.g. counting backwards, visual memory tests) to low cognitive demand (e.g. reading) (Sio and Ormerod, 2009). In recent research I have carried out here in Sheffield I have found that sorting Lego® in groups has a greater effect than building

a Lego® tower. As noted above, when task demands are high, idle cognitive processes and with this mind wandering events, are reduced. On the other hand, when routine and habitual tasks are completed in a repetitive and automatic manner, mind-wandering processes are triggered. Therefore, it is important to identify tasks which are repeated routinely within the daily rhythms of the group, such as eating together, reading, going for a walk. History is filled with stories of renowned creatives who develop and stick to rigid daily routines, in which their periods of work are interspersed with off task breaks (Currey, 2013). Engaging in these low effort activities enhances opportunities for mind-wandering, and with this insight.

3.2 The duration and frequency of off-task breaks

The length of the off-task break can also have an effect on mind-wandering and with this creativity (Sio and Ormerod, 2009). Sio and Ormerod (2009) argue that with a long preparation period in which an impasse has been reached, incubation effects can have a positive effect on creative problems. In these cases, a strategic shift in restructuring the problem is achieved during incubation. However, there is no standard on what is considered a long or short incubation period. For instance, Smith and Blankenship (1989) consider 15-min break a long incubation period. The length of the incubation might also be considered relative to the preparation time worked on the problem before incubation. There has also been little prior research which has explored the effects of frequency of off-tasks breaks and creativity. For instance, is it beneficial to develop repeated periods of problem-solving-incubation-selection on the same problem over time, or are fewer extended problem-solving-incubation-selection sequences better? Future research should investigate these issues by tracking individuals over a period of time. In this way, a more fine-grained assessment of the immediate impact of incubation period and incubation frequency on the group creative process can be made.

3.3 The timing of off-task breaks
In light of recent research which points to a link between creativity and an individual's non-optimal time-of-day (May, 1999; May and Hasher, 1998; Wieth and Zacks, 2011), the benefits of off-task breaks can be maximised when taken during these times. For evening types this is the morning and vice versa for evening types. Groups can thus identify when occurrences of mind wandering and with this insight are more likely to occur. The post lunch period also represents a key time slot for all types, as energy levels dip and with individuals feeling drowsier (Horne and Reyner, 1999). In recent experimental research, I have a found a post-lunch peak in group creativity (Breslin, 2016). It is no accident that the European siesta has for millennia occurred at this time. In conclusion, it is argued here that off-task breaks are likely to be more effective when they coincide with the group's less cognitively active or non-optimal time-of-day. As the individual is more likely to be distracted during these periods, then opportunities for mind-wandering and with this insight are increased.

In summary, groups should seek to organize their day to get the most out of off-task breaks. The exact timing, duration, frequency and nature of these breaks may change depending on the complexity of the problem being worked on. As noted above, the more complex the problem, then the more frequent and longer breaks should become. In addition, it is noted that groups in which individuals are familiar with each other are more effective self-organisers and generators of breaks (Okhuysen, 2001). Indeed, Okhuysen (2001) found that when pauses are imposed by

management the adaptiveness of the group decreases. Therefore, while educators and managers understand the important of breaks, and set the agenda for these incubation periods (Staudenmayer et al., 2002; Zellmer-Bruhn et al., 2004), micro-level organization needs to be managed by the group itself.

4. CONCLUSION

Given the role played by the unconscious in creative thought, one clearly cannot manage the direction of insights and thought patterns that emerge. However, one can shape the overall creative process, through the careful management of interruptions and breaks. Therefore, walking away from the job is no longer seen as unproductive, but a key element in the creative process. This involves educating educators and managers, and changing the mind-set of time-keeping administrators towards prioritising breaks. Breaks should no longer be viewed as unproductive or instances in which employees 'slack off', but as an essential and critical part of the creative process in groups.

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