AGE OF DISTRACTIONS STUDY REPORT

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Background

In today's world we are often bombarded by various forms of irrelevant distractions, from external sources such as noise, passing vehicles, adverts to personal gadgets such as our mobile phones and tablets. Moreover, people appear to be distracted not just when they are alone, but also when they are together with other people, even when spending time with family and friends.

Much research on attention and distraction documents the detrimental effects of irrelevant distractions on task performance. Performance efficiency measures (such as the accuracy and speed of task completion) show significant impairments due to people's failures to ignore irrelevant distractors (for example, Forster & Lavie, 2007; Lavie, 1995; Lavie & Cox, 1997; Lavie, Hirst, De Fockert & Viding, 2004; Lavie, 2005; 2010 for reviews). These findings hold even when the distracting items appear infrequently, people try their best to ignore them, and the nature of the distractor items is clearly entirely unrelated to the task (e.g. Forster & Lavie, 2008a; 2008b). High level of distraction is also known to impair performance of daily tasks at work, driving and education (e.g. Eby & Kostyniuk, 2003; Mark, Gonzalez, & Harris, 2005; Merrell & Tymms 2001; Spira, J. B., & Feintuch, J. B. 2005; Stutts, Reinfurt, & Rodgman, 2001; Wang, Knipling & Goodman, 1996)

However, although the direct impact of distraction on task performance is very well established, little is known about the level of distraction during typical daily life activities (for example while shopping, running errands or simply taking a coffee break). Moreover, some daily life activities are inherently social, and may only reach full satisfaction when jointly engaged with other people (for example dining with friends or family compared to alone). However, the majority of scientific attention research has so far investigated the effects of attention on a person's ability to perform a task alone, rather than jointly with others. Thus, it is currently unclear whether people would be as prone to irrelevant distractions and attention interruptions when they are interacting with other people, including with those closest to them (such as their own family).

Finally, little is known about the relationship between the level of distractions that a person experiences, and their overall feeling of happiness.

Study questions

The 'age of distraction' study set out to establish the level and type of distractions that prevail in today's environment, during daily life activities, and their relation to the person's feeling of happiness. We considered the person's environment, demographics, overall level of health and employment status (employed, unemployed or student). We also considered their social context (whether the person is alone or with others) and the level of closeness to the other people present (whether they are with family, friends or colleagues).

The study included two main parts. In the first part, participants entered responses on the Distraction Diagnostic Tool (*Copyright © BrainFocus)*, which examined the level and type of irrelevant distractions that the person faces[1] as well as whether or not they were engaged in a social interaction and with whom (family, friends, colleagues or others).

In the second part of the study, we examined the relationship of distractions and happiness in people's memory of a close social occasion. To this purpose we asked people to reflect about their most recent family gathering and recall both their level of distraction and their level of happiness during that time.

Study methodology

Sample environment and demographics.
The study was conducted in six UK cities and towns selected to provide a representative sample of population size (two small, two medium and two large cities)[2] and economic metric of income (see Table 1). In relation to the national income average (£21,326)[3], the average income level was either high (two cities), medium (two cities) or low (two cities)[2] [Office for National Statistics 2011 UK Census]. The locations within each city were in pre-identified constituencies that were representative of the city average level of income.

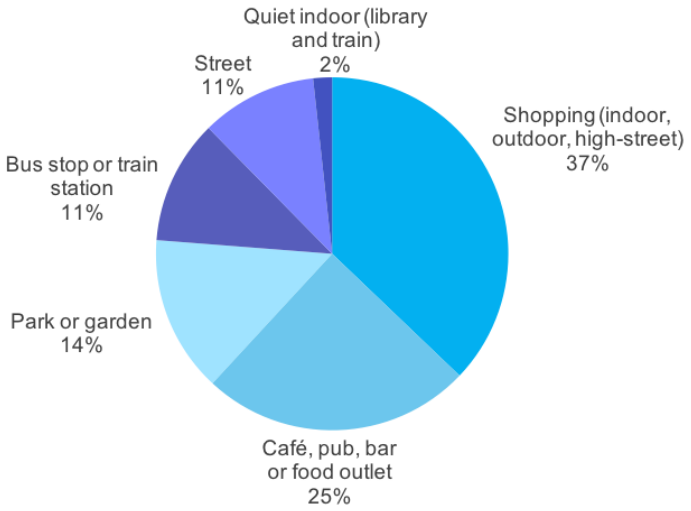
Table 1. City selection based on size[2] and level of income.[3]

City Size		
Small (<150k)	Medium (150-749k)	Large (over 750k)
St Albans *Annual income > national average*	Brighton *annual income = national average*	London *Average annual income > £25k*
Walsall *Average annual income < £20k*	Leicester *annual income < national average*	Birmingham *Average annual income £20-24k*

[1] The distraction diagnostic tool includes assessment of distraction by unrelated thoughts, however in this report we focus only on the external sources of distraction.
[2] "Population Estimates for UK, England and Wales, Scotland and Northern Ireland, Mid-2014". Office for National Statistics. 25 June 2015. Retrieved 27 June 2015.
[3] Personal Income and Wealth data from the 2011 UK Census Annual Survey of Hours and Earnings, 2011 Provisional Results (SOC 2000) held by the Office for National Statistics was obtained from the ASHE 2011 - Place of Residence by Parliamentary Constituency file located on this webpage: http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-235202. Retrieved 29 July, 2015.

Members of the public in these six cities were approached in a variety of environments that capture a representative range of daily life activities (see Figure 1). These included parks, gardens, shopping areas (indoor, outdoor and high-street), streets, cafes, pubs, bars, food outlets, libraries, bus and train stations. The study was conducted across all days of the week, including both days of the weekend.

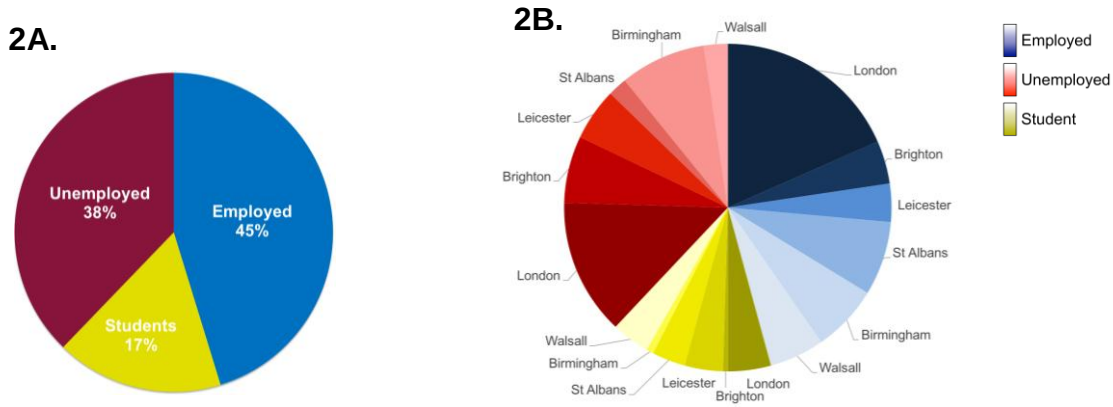
Figure 1. Sample population shown for each environment.



Participants

The Distraction Diagnostic Tool (*Copyright © BrainFocus)* was administered to 459 participants (188 males) aged between 13 – 79 years (*Mean* age = 31.83 years, *SD* = 15.71). A mixture of employed (45%) unemployed (38%) and students (17%) took part. Figure 2 shows the employment demographics (panel 2A shows the overall employment levels panel 2B shows the employment rates for the different cities).

Figure 2. Sample participant employment breakdown. Overall breakdown (A) Employment breakdown by city (B).



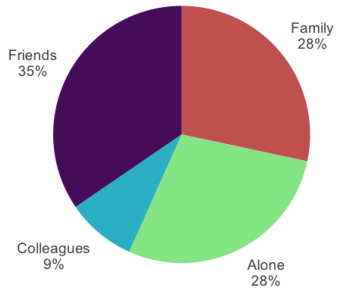
Study procedure

Part 1.

Participants first reported how long they were engaged in their current activity in response to the question: '*How long have you been here (in minutes)?*'. They then rated, how often and for how long over this time period their attention was diverted away from their focus to different types of distractions.

In addition, participants were asked to rate their level of happiness over the past hour on a scale of 1 (extremely unhappy) to 100 (extremely happy); report whether they are alone or with others, and specify their relationship to the other people (if present) using the categories of family, friends, colleagues or 'other' (see Figure 3). They were also asked to report if they are currently well or unwell (health wise); employed or unemployed and whether they are student (note, the categories were treated as mutually exclusive so that students were not included in the employed/unemployed categories; see Figure 2a).

Figure 3. Sample percentage of people in each social category.



Part 2.

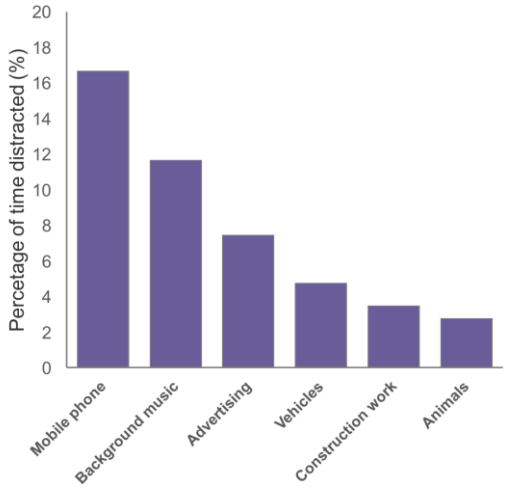
In the second part of the study, participants were asked to reflect on their last family gathering (if they were part of a family), and report whether they noticed any distractions (either for themselves or for another family member). They were then asked to rate their level of happiness during that time.

Results

Distraction

Participants reported being in the testing environment for a time period of 34 minutes and 25 sec on average (*SD* = 43 minutes and 34 sec; *range* = 1 minute to 6 hours). The mode was 30 minutes and only 13 people reported about a time period of 2 hours or more. During this time, people reported having their focus of attention diverted by the different types of distraction shown in Figure 4.

Figure 4. Average duration of attention interruptions (as proportion of the total time reported) by each distraction source



Note that while Figure 4 divides the distractions into distinct types, people tended to report being distracted by more than one distractor type over the reported time period, and on average reported being distracted by 2.8 different sources. Distraction from multiple sources could have occurred either separately or simultaneously (where numerous different distractions bombard the person collectively at the same time). To estimate the average amount of time a person was distracted by the various sources reported, we calculated the total sum duration of distractions (47%, which represents cases of no distractions overlap) and the minimum duration (8% which is the average of a single distraction duration and therefore representative of a full overlap). The mid-point duration between these two extremes (28%) represents an equal mix of overlap and no overlap in multiple distractions and thus provides the best estimate of the total duration of distractions endured.

The range of distraction durations for all categories was 0% to 100%. Note that the 0% distraction from mobile phone reports includes people who were not in possession of a mobile phone during the testing. Similarly, for the other distraction categories 0% reports referred to the absence of the distractor category in the environment (e.g. no construction work present). There were few reports of distraction for 100% of the total duration (16 people for background music, 13 for mobile phone, 1-4 for the other categories). For the background music category, it is not clear whether the reports of 100% duration of attention diversion truly reflect sustained distraction or simply reports that background music was present for the entire time period.

As can be seen in Figure 4, mobile phone distractions constituted the largest source of distractions. The average duration of mobile phone distractions was 17% of the time (*SD* = 23%). This estimate included people reporting 0% of the time spent on their mobile phone (including those who did not have a mobile phone during testing or at all). Distraction duration for those who did report using their mobile phone was, on average, 22% (*SD* = 25%).

Figure 5. Frequency (number of people) distribution of reports on mobile phone distraction.
The x axis shows the duration of mobile phone distractions and y axis shows the number of people reporting each distraction duration. (Distraction duration is calculated as percentage of total activity time).

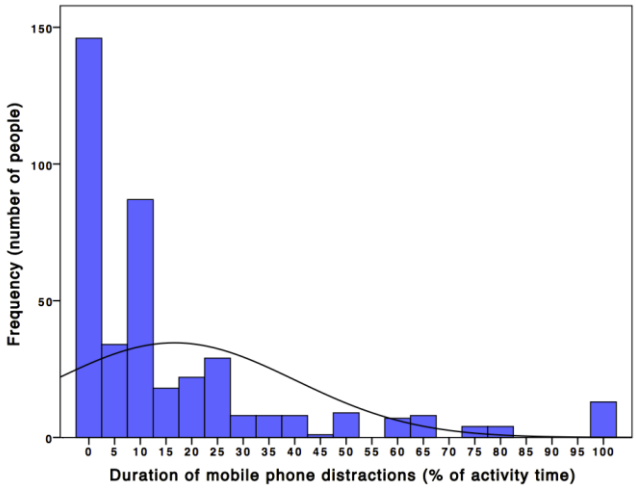
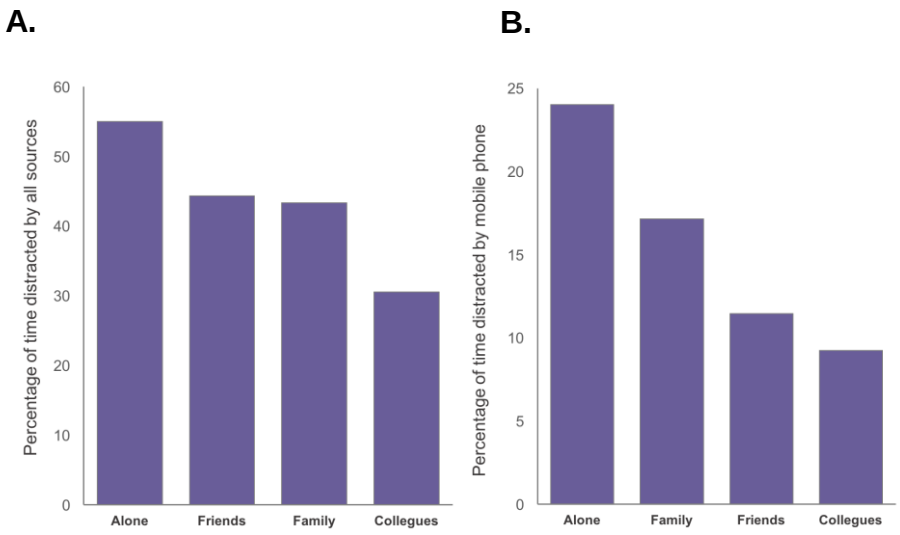


Figure 5 shows the number of people reporting each of the mobile phone distraction durations. Note that 15% of the people distracted by their mobile phone reported having diverting their attention to their phone for at least 50% of the time (typically more). Clearly, the mobile phone took precedence over the activity they were intending to engage in.

Distraction and social interaction

Figure 6 shows the amount of time people spent having their attention diverted to irrelevant distractions as a function of their social context. The figure shows that people were most distracted when alone. However, when in a social context, the level of distractions was higher with the closer groups of family and friends compared to colleagues. In the case of mobile phone distractions (shown in panel B) when these occurred in a social context, the largest distraction is found for people being with their family.

Figure 6. Percentage duration of distractions across all distractor categories (A) and by mobile phone (B) for each category of social interaction.

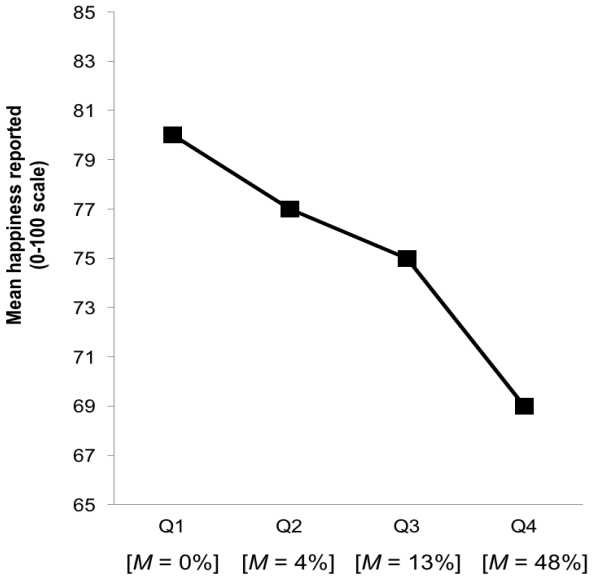


Distraction and level of happiness

Multi-level regression analysis of the relation of distraction duration and level of happiness revealed that when all the external distraction sources are considered (apart from 'animals' which produced too few distractions to be included), mobile phone alone was the only significant predictor of happiness (b = -.138, t = -3.09, p = .002). Spearman correlation confirmed that a longer duration of distraction by the mobile phone was associated with a lower level of happiness, (r = -.194, p < .001). Figure 7 shows the rating of happiness as a function of the mobile distraction duration.

When all other variables (social group, employment, age, gender and wellness) were taken into account in a multi-level regression analysis, the duration of mobile phone distractions (expressed as a percentage of the total time period) remained a significant predictor of happiness (R^2 = .014, F(1, 360) = 5.523, p = .019.). Similarly when the environment factors of city size, city income and location type (e.g. street, shopping centre etc.) were taken into account in a multi-level regression, mobile duration (as percentage of the total time period) remained a significant predictor of happiness, (R^2= .017, F(9, 382) = .728, p = .638. Thus, the relationship of mobile phone distractions with happiness did not depend on any other factor.

Figure 7. Mean reported happiness as a function of duration of mobile phone distractions for each duration quartile.



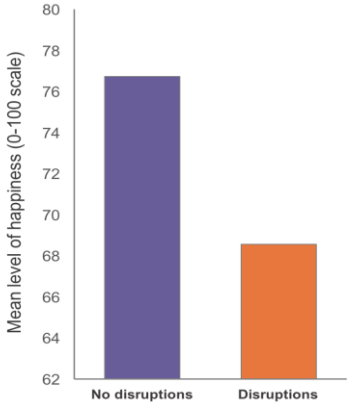
Study part 2

In the second part of the experiment, we asked people to recall any disruptions in their last family gathering, as well as their level of happiness (again on a scale of 1 to 100) during the occasion.

2. Effects of disruptions in a family setting on happiness

Of the participants that took part in first part of the study 380 participants also contributed reports on their last family gathering. 37% of these participants reported interruptions or disruptions in a family setting. As shown in Figure 9, participants recalled being significantly happier when there were no disruptions (*Mean* happiness rating = 76.74, *SD* = 21.80) compared to when there were interruptions (*Mean* happiness rating = 68.56, *SD* = 23.716; $t(344) = -3.28$, $p = .001$).

Figure 9. Mean level of happiness reported for a family gathering in the presence versus absence of disruptions.



Summary and conclusions

This study established the level of distraction in the typical daily life environment and related it to people reports on their level of happiness as well as to their social context. Part one focused on the present link, while part two addressed the link between distraction and happiness in memory recollection.

Main study findings:

People reported being distracted by approximately three different types of distractors within a time period of just over half an hour on average. The total duration of distractions was estimated to take almost a third (28%) of the time. Distractions were most prevalent when people were alone, however when they were together with others, distractions were more prevalent in the closer contexts of family and friends compared to colleagues.

Mobile phone constituted the most distracting category, with attention diversions to the phone lasting, on average, between 17% - 22% of the total duration. In addition, 15% of the people distracted by their mobile phone reported having diverting their attention to their phone for at least 50% of the reported time (typically more).

Distraction by mobile phones was associated with a significantly lower level of happiness: the longer people were distracted from their current activity by attending to their mobile phone, the lower level of happiness they reported. This relationship held across all the other factors we have considered (age, gender, social context and state of wellness health wise) and across all city sizes and city level of average income.

Further examination of the relationship in memory between attention disruptions and level of happiness in the context of a family gathering demonstrated a clear negative relationship: memory of disruptions during a family gathering was associated with a memory of a significantly lower level of happiness compared to when there were no disruptions. This demonstrates a lasting relationship between distractions and happiness that colours people's memory.

Overall conclusion:
The study established that people are prone to significant levels of distraction and attention interruptions during typical daily life activities, and during their social interaction with family, friends and colleagues. Distractions however are found to be associated with reduced level of happiness in all contexts, not just in the present time but also in people's memory. Raising awareness of this lasting link between attention diversions and happiness may lead to improving both attention and happiness overall.

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