

Understanding Casual-leisure Information Behaviour

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Abstract. Originally grounded in library and information science, the majority of information behaviour and information seeking theories focus on task-based scenarios where users try to resolve information needs. While other theories exist, such as how people unexpectedly encounter information for example, they are typically related back to tasks, motivated by work or personal goals. This research, however, focuses on casual-leisure scenarios that are typically motivated by hedonistic needs rather than information needs, where people engage in searching behaviours for pleasure rather than find information. This book chapter describes two studies on: 1) television information behaviour and 2) the casual information behaviours described by users of Twitter. The first study focuses on a specific casual-leisure domain that is familiar to many, while the second indicates that our findings generalise to many other casual-leisure scenarios. The results of these two studies are then used to define an initial model of casual-leisure information behaviour, which highlights the key differences between casual-leisure scenarios and typical information behaviour theory. The chapter concludes by discussing how this new model of casual-leisure information behaviour challenges the way we design information systems, measure their value, and consequently evaluate their support for users.

1. Introduction

Most of our models, theories and understanding of information behaviour were originally grounded in the use of libraries, and have been attained through studying people in work contexts. This is a reflection of the fact that traditionally, most information interaction has taken place with work purposes in mind. However, huge technological developments and cultural shifts, especially in the last few years, mean that this is no longer the case. In 1995, Tague-Sutcliffe wrote that:

“...information has become like the air we breathe, so pervasive that we scarcely notice its existence, and yet so essential that we cannot live without it.” (Tague-Sutcliffe, 1995)

Fifteen years later, information without question pervades all aspects of our lives, and leisure time is no exception. Web 2.0 technologies such as Facebook, Flickr, and Twitter; search services such as Google and Yahoo!; and digital broadcasting services for television and radio are just some of the many examples of new information channels people use actively in their leisure time. Despite the role such channels play in leisure contexts and the importance of this time in our lives, little is currently understood regarding if and how the characteristics of information behaviour change from work to non-work situations. For example, what are the scenarios that motivate leisure-time information needs, the factors which can influence them, and how should this, in turn, influence how systems for

leisure-time use should be designed? It is important to understand these aspects not only because of the value of leisure-time, and the increased pervasiveness of technology used during this part of our lives, but because there are people who use information systems in leisure situations who have no experience of using information systems in their work lives. These individuals may have completely different needs and different mental models of how information systems function from those who use information systems regularly in work situations. If this is the case, this lack of work-oriented experience impacts other research domains that study activities often performed in casual-leisure contexts e.g web search, exploratory search, personal information management etc.

In this chapter we present two studies that have helped us develop a new theory of casual-leisure information behaviour. The first is a diary study, which investigates information needs in the very specific casual-leisure situation of watching television. The second uses Twitter¹ as a data-source to learn about behaviour in a wide range of casual-leisure situations. We use the findings from both studies to illustrate how information behaviour can change in casual-leisure scenarios compared to well understood models that have been derived from work-based situations. A model is presented, which incorporates these new findings with existing understanding of information behaviour from work contexts. We believe this new model represents a good starting point for investigating casual-leisure information behaviour and should influence how research in this area, as well as other related areas should be performed. We conclude the chapter by outlining our thoughts on how the presented work should impact on future research directions.

2. Related Work

There is an abundance of theories and models of information behaviour (see Fisher et al. (2005) for 72 examples), and this chapter contributes, through a model (shown later in Figure 5), a new theory of Casual-Leisure Information Behaviour. Theories and models help us to externalise, communicate, and investigate observed phenomenon². Below, Section 2.1 first uses existing theories and models to communicate a baseline understanding of Information Behaviour on which we later build. Section 2.2 continues by reviewing prior literature that relates to Casual-Leisure Information Behaviour, before we begin describing our research, our new model, and our developing theory.

2.1. Existing Theories of Information Behaviour

The many examples of Information Behaviour (IB) theory focus on several aspects of how human users deal with information. Some focus on how we encounter information incidentally (Erdelez and Rioux, 2000), how different cultures and contexts use information (e.g. the homeless (Hersberger, 2001)), how we look for information to resolve specific knowledge gaps (Dervin and Frenette, 2003), how we deal with unwanted or shocking news (Chatman, 1996), and cognitive models of how we think about or perceive information and systems (Ingwersen and Järvelin, 2005). In order to consolidate the various theories of information behaviour, Godbold (2006) created a general model of IB, as shown in

¹www.twitter.com

²See Bates (2009) and Hjørland (1998) for a discussion on the difference between models, theories, and metatheories

Figure 1. Figure 1 builds upon Brooke's equation that information (I) changes knowledge (K) to create a new state of knowledge (K') (Brookes, 1980). The model includes an Information Behaviour wheel to describe the different ways people interact with information, which builds partially on Dervin's observations of how people make sense of a knowledge gap. Dervin and Frenette (2003) noted that when confronted with the gap, people 1) try to bridge it with new information, 2) try to close or remove the gap, 3) avoid crossing the gap by avoiding information.

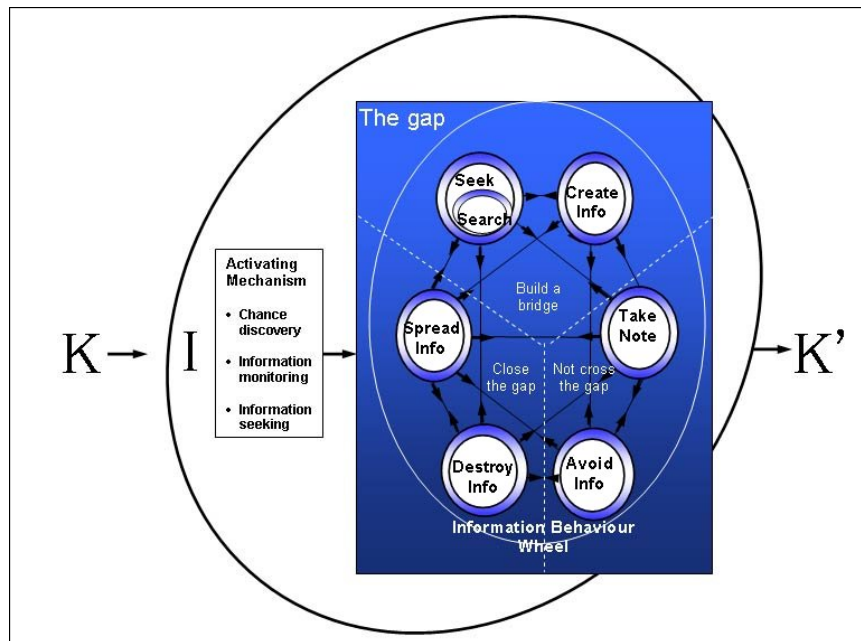
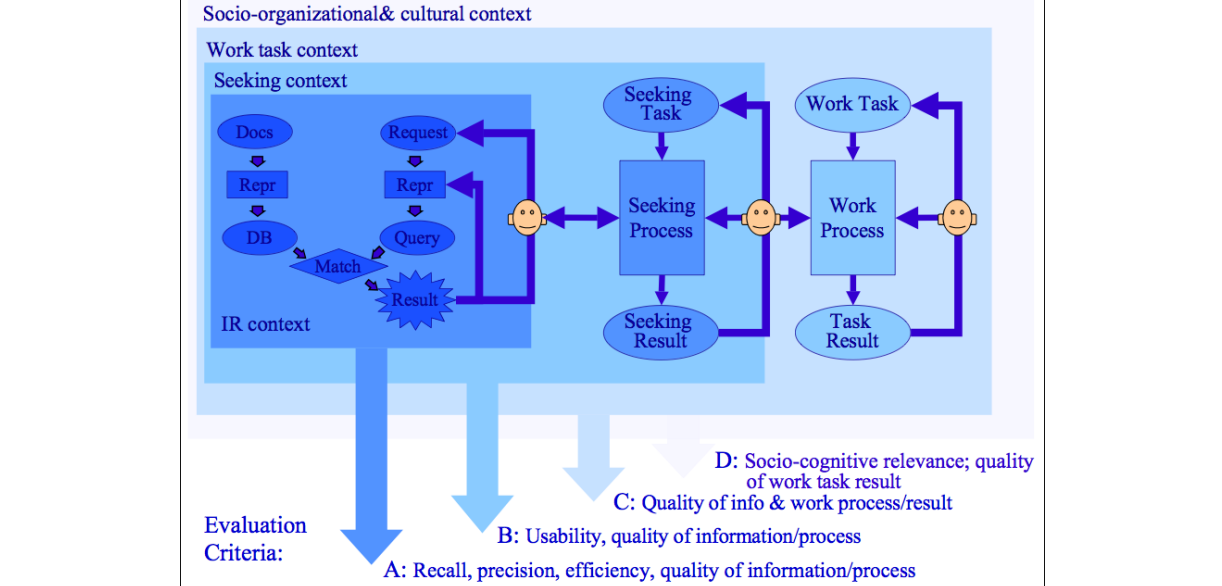


Figure 1. Godbold's information behaviour wheel highlights the many ways in which we interact with information; image taken from paper Godbold (2006).

Godbold's IB wheel summarises much prior work to produce two example behaviours for each of Dervin's responses, and highlights that humans move interchangeably between them. When trying to bridge a gap, people either look for new information (our understanding of seeking and searching is defined further below) or can create new information through deduction or imagination. Often, when choosing not to resolve the gap, people avoid or ignore information, or choose to postpone addressing the problem to a later time. Finally, people can try to remove the gap entirely by destroying unwanted information, or by spreading alternative viewpoints to dispute the information. In this chapter, we mainly focus on behaviours surrounding the seeking and searching of new information. Future work, as we discuss later, can focus on the difference between casual and work contexts in other forms of Information Behaviour.

Several other encapsulating models of IB exist, including the procedural model by Wilson (1999) and the extensive and detailed model by Narayan and Spink (2008). Such models are informative, accurate, and important, but the model most conducive to commu-



In terms of the new theory we describe later in this chapter, there are several aspects to Irgenssen and Jürgelin's nested model, and many other IB models, that should be

- the motivations captured in the Work Task context level are mainly work oriented

- the tasks covered are typically work-focused

- the behaviours and processes described are influenced by the work focus
- the focus is generally on the information found, as reflected by the evaluation criteria

These points will be revisited in our discussion towards the end of the chapter. We continue below, however, by defining some of the terms seen so far in more detail, using appropriate models.

Work Tasks

Work Tasks are widely considered to be the contextual scenarios through which information needs are identified and Information Seeking begins. Much research has been focused on understanding Work Task scenarios, how doing so can inform our understanding of Information Seeking, and how realistic ‘simulated Work Tasks’ (Borlund, 2003) can be included in user studies. Work by Hansen in 1999 had already summarised a number of related publications to identify 10 dimensions of Work Task characteristics, including: complexity, definition, structure, continuity, and perceived difficulty (Hansen, 1999). More recent work by Byström and Hansen (2005), however, further noted that Work Tasks have three levels of definition that each must be understood: the topical description, the situational motivation, and the contextual constraints. Ingwersen and Järvelin highlight this third level in their socio-organisational context. These Work Tasks motivate the Information Behaviours that are used in the Work Process in order to achieve the Work Task, which as Godbold notes, includes seeking and searching behaviours.

While many papers take a specific work-only focus on the definition of Work Tasks (e.g. (Byström and Hansen, 2005) others acknowledge that more leisurely domestic examples may exist (Hansen, 1999; Borlund, 2003). Common work-oriented Work Tasks include writing reports (e.g. (Kuhlthau, 1991)), while domestic or leisurely Work Tasks often include planning travel, buying a car, or researching medical diagnoses (e.g. (Morris, 2008)). Although they can be considered as non-work-focused Work Tasks, these tasks are by no means leisurely. We further define the facets of leisurely activities later in this related work section, as these differences highlight the novel types of Work Task being modelled in this book chapter.

Information Seeking

Typically, Information Seeking is defined as the process through which we resolve an information need (Marchionini, 1995). The model shown in Figure 3 highlights the common stages and behaviours that exist in Information Seeking, including the recognition of a need, the active pursuit of information, and the consolidation of the problem at hand. Ingwersen and Järvelin (2005) note that one or more Information Seeking episodes are required as part of the information behaviours exhibited to complete the Work Task. Similarly, Godbold noted that Information Seeking is one of the IBs often exhibited. Ingwersen and Järvelin, Godbold, and Marchionini all note that more specific searching behaviours are a part of Information Seeking. We refer to this more specific searching behaviour as Information Retrieval.

Information Retrieval

Information Retrieval (IR) is most commonly associated with keyword search, where doc-

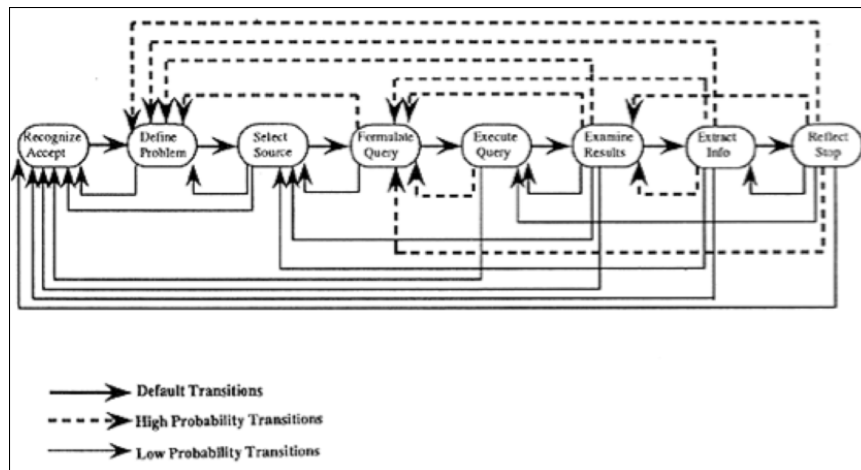


Figure 3. Marchionini describes Information Seeking a 7 step process of resolving an information need; image from paper (Marchionini, 1995).

uments are matched to terms submitted by users. We take keyword search to be one of the many search tactics that can be used during IR, where other tactics (including browsing) allow users to find documents. We take IR, therefore, to encapsulate any behaviour that allows people to express or refine their information need as part of the Information Seeking process. Godbold's model calls this level of activity 'Search'. Ingwersen and Järvelin put this behaviour in the IR context box. Marchionini's model covers this level of behaviour in stages 4-6 of the Information Seeking process.

Above we have covered some key models of information behaviour that provide a suitable platform to discuss Casual-Leisure Information Behaviours below. The next subsection continues by providing more information about casual-leisure, how it relates to other forms of leisure activities and to work contexts.

2.2. Research explicitly or implicitly relating to casual-leisure activities

While within the information science community Casual-Leisure Information Behaviour has not been an explicit topic of study, there have been some studies that deal with casual-leisure topics and situations. There is also related work in media studies, as well as some specific research fields such as Exploratory Search (White and Roth, 2009) and Personal Information Management (Jones and Teevan, 2007) which attract research interest from a wide-range of disciplines, including Information Retrieval, Human Computer Interaction, Databases and Psychology amongst others. We summarize appropriate work below.

Within the field of Leisure-Studies there have been some useful definitions of leisure for our purposes. Stebbins defines leisure as being concerned with activities "...that people want to do and can do at either a personally satisfying or a deeper fulfilling level" (Stebbins, 2009). He proposes three categories of leisure:

- *Serious leisure*: the systematic pursuit of an amateur, hobbyist, or volunteer core activity that people find so substantial, interesting, and fulfilling that in the typical case, they launch themselves on a (leisure) career centered on acquiring and

expressing a combination of its special skills, knowledge, and experience.

- *Project-based leisure*: a short term, moderately complicated, either one-shot or occasional, though infrequent, creative undertaking carried out in free time. It requires considerable planning, effort, and sometimes skill or knowledge, but for all that is neither serious leisure nor intended by the participant to develop into such.
- *Casual leisure*: an immediately, intrinsically rewarding, relatively short lived pleasurable core activity, requiring little or no special training to enjoy it.

As briefly mentioned in the section on Work Tasks, some forms of leisure tasks may have many similarities with work-oriented tasks. This is especially true for tasks related to Serious and Project-based leisure activities. Casual-Leisure tasks, however, appear to be notably different from work-oriented tasks. The new theory described in this chapter focuses the differences we have identified in these Casual-Leisure scenarios.

Stebbins (2007) differentiates 8 types of casual leisure: 1) Play (including dabbling, dilettantism); 2) Relaxation (e.g., sitting, napping, strolling); 3) Passive entertainment (e.g., through TV, books, recorded music); 4) Active entertainment (e.g., games of chance, party games); 5) Sociable conversation (e.g., gossip, “idle chatter”); 6) Sensory stimulation (e.g., sex, eating, drinking, sight seeing); 7) Casual volunteering (e.g., handing out leaflets, stuffing envelopes); and 8) Pleasurable aerobic activity.

As Stebbins writes “It is likely that people pursue the eight types of casual leisure in combination of two or three at least as often as they pursue the separately. For instance, every type can be relaxing, producing in this fashion play-relaxation, passive entertainment-relaxation, and so on” (Stebbins, 2007). For Stebbins, one thing that ties the casual leisure activities together is that they are hedonic. That is, that they produce feelings of pleasure or enjoyment for the participant.

As part of his framework, Stebbins (2007) lists five types of benefits people expect or experience from casual leisure activities: 1) Serendipity; 2) Edutainment; 3) Regeneration or re-creation; 4) Maintenance of interpersonal relationships; and 5) Well-being. These benefits are comparable to Waples and colleague’s five values people get from reading (i.e., 1) instrumental; 2) prestige; 3) reinforcement; 4) vicarious aesthetic experience; and 5) respite) (Waples et al., 1940), and McQuail’s four reasons for media use (i.e., 1) Information; 2) Personal Identity; 3) Integration and Social Interaction; and 4) Entertainment) (McQuail, 1983). For all 3 typologies the benefits, the values or motivations are typically related to instrumental tasks or hedonic activities.

Hartel, in studying episodes of gourmet cooking, noted that all leisure activities involve Information Seeking behaviour to some degree (Hartel, 2006). In this way, leisure research is closely related to studies of information behaviour, as reflected in the recent special issue of Library Trend that focused on a range of works relating to both leisure and information sciences (Fulton and Vondracek, 2009).

Without explicitly dealing with Casual-Leisure Information Behaviour, some LIS work relates to this area. There is a strong tradition on everyday information behaviour e.g., (Berelson, 1949; Dervin, 1976; Savolainen, 1995). This work deals with non-work related information needs and behaviour, stemming from, for example, consumer problems, health problems, family planning problems, crime or legal problems etc. None of which

are particularly casual. Other work within LIS has looked at activities that may be counted as Casual-Leisure Behaviours. Toms (2000), for example, examined behaviour with newspapers with goal and non-goal based tasks and found very different behaviours.

Similarly, Ross investigated pleasure reading behaviour and discovered, for example, that pleasure readers find information without having any purposeful or expressed need (Ross, 1999). This finding highlights one possible difference between work and non-work behaviour and underlines the potential benefit in studying casual leisure activities. The behaviour observed by Ross is comparable to the serendipitous behaviour noted in (Stebbins, 2007) and also in other everyday-life Information Seeking and web-search literature (Erdelez and Rioux, 2000). In the same vein as Ross, Pejtersen (1980, 1989) undertook an empirical study of fiction readers genuine information needs, and she found that they differ somewhat from non-fiction needs e.g., by being concerned with an emotional experience. For these reasons, and based on the findings of his own research, Vakkari (2009) recently concluded that IR-systems do not cope well with retrieval of fiction, as a form of Casual-Leisure scenario. Existing IR systems do not provide the possibility for the user to construct queries based on their hedonistic desires, as this will not match the textual content of books. Therefore, serendipity plays a crucial role in finding this kind of content, as do recommendations from friends and positive and negative experiences with particular authors etc. (Vakkari, 2009).

Although we have summarised much work that has investigated various forms of Leisurely Information Behaviours, with some even identifying short-comings of systems in more casual contexts, there has been little research that focuses specifically on the nature of Casual-Leisure Information Behaviours. Further, prior research has not produced a theory relating to Casual-Leisure Information Behaviour, neither has it produced a model to help us investigate it. Below, we present our own research that has led us to produce both a model and a surrounding theory of Casual-Leisure Information Behaviour.

3. Two Studies of Casual-Leisure Information Seeking

This section describes two recent studies that have provided insights into Casual-Leisure Information Behaviours. The first study focuses on the use of television systems and so provides insight into one specific domain of Casual-Leisure Information Behaviour. Our second study, although not originally focused on Casual-Leisure scenarios, provides evidence that the Casual-Leisure Information Behaviours identified in the first study can generalise into many other contexts. Both studies are summarised below, in a way that demonstrates how they inform our theory of Casual-Leisure Information Behaviour. The full details of the work can be examined in separate publications.

3.1. A Diary Study of TV Information Behaviours

In recent work (Elsweiler et al., 2010), we performed a diary study with a heterogeneous population ($n=38$) to learn about information needs in the context of television viewing. The population was balanced in terms of gender (19 males, 19 females) and age (10-72, avg. 39.5, $sd=17.4$) and the participants had wide varying levels of education, occupations and living arrangements. Over a period of 1 week, 381 diary entries were completed (approx. 10 per participant), recording details of information needs, surrounding context information, motivating factors and behaviours exhibited to solve needs.

An inductive grounded theory approach (Strauss and Corbin, 1998) was taken by four researchers to analyse both the recorded needs and motivating factors given for the needs. The outcome of the process was two coding schemes; one describing the breadth of information needs experienced in connection with television viewing and a second outlining the categories of factors, which can influence or motivate such needs. The final coding schemes can be found in (Elsweiler et al., 2010). Here we present specific examples, selected to illustrate interesting characteristics of exhibited information behaviour in this specific casual-leisure situation.

In the collected data we found many examples of different kinds of information needs, some of which correspond to aspects of existing work-based models of how people look for information. Table 1 shows some specific examples.

- (a) Need: How old was Tina Turner when that concert was filmed?
- (b) Need: [I would like] a list of interesting films / documentaries showing, from 7 or 8pm
- (c) Need: “[I am looking for] up-to-date news; [I need to know the] channel and time of broadcast”
- (d) Need: plot overview of a film, Reason: [I want to know] if I’ve seen the film before.

Table 1

Example tasks recorded in diary entries: (a) a simple information-based need, (b) a fuzzy information-based need, and (c) a complex information-based need.

Corresponding to the work-based models outlined in Section 2.1, in each of the examples (a)-(c) there is clear information need. In (a) the need is relatively simple and well-defined, in (b) the need is less well-defined, but still clear, and in (c) the need is complex, at a high-level there is a desire for news, but to achieve this there are lower-level needs to establish the channel and time of a suitable broadcast. One difference between these needs and those typically considered in work-based scenarios is that there is no surrounding work-task situation or motivating activity that cannot be completed as a result of failing to resolve the need. It could be argued that example (d) has such an activity, with the surrounding activity being the watching of a film.

Many of the motivations given in the diary entries had very little to do with information, as shown in Table 2. The focus was instead on experience. At the highest level, some participants reported wishing to ‘kill time’, while others noted the desire to find something that would distract their attention or provide entertainment while they performed a monotonous and laborious task like ironing. This kind of situation or need could be considered the casual-leisure equivalent of a work-task – a high-level situation that prompts some kind of Information Seeking behaviour. This is likely also true of the example we referred to earlier in Table 1(d). The motivating situation surrounding the desire to watch a film in that case was probably the participant being bored, stressed, or having free time. In each of the examples described in Table 2, the information found was not of critical importance and played a secondary role to the experience achieved. In examples (c) and (d) in Table 2, there is no obvious information need described. Not only do the participants not specify the kinds of information that might satisfy their need, but killing time or alleviating boredom could well be achieved without information.

A commonly recorded need was for edutainment, where the user learns something, at least in this context, through the consumption of media (Nahrstedt, 2000). When looking

for edutainment the participants' needs were mostly non-specific in nature with participants noting a desire for something "interesting", "sophisticated" or "challenging" and not on a particular topic or domain as would be typical of work-based tasks. Participants often reported satisficing for the first appropriate result found (as indicated by items (d) to (f) in Table 2), regularly not being bothered with what exactly they would eventually watch as long as it met their need to alleviate boredom (d), keep them awake (e) or distract them (f).

(a)	Need:	[I want an] entertaining programme, something funny, to distract me
	Reason:	Stressful day!
(b)	Need:	[I want] something interesting, distracting, informative, cultured such as a travel report or history programme
	Reason:	I need to iron and at the same time i like to watch tv - it takes my mind off the chore
(c)	Need:	[I'm looking for] short entertainment during dinner
	Reason:	[I have a] little time to waste
(d)	Need:	I'm "zapping" (channel hopping) around. Again without a goal
	Reason:	Boredom
(e)	Need:	Anything uplifting, entertaining, that will keep me awake
	Reason:	[It is nearly new year] The New Year Bells are loud and if I fell asleep before it would wake me up and I would find it hard to get to sleep again. I'd rather stay awake and I'm too tired to read
(f)	Need:	Entertainment (for example, an appealing nature documentary or an exciting film)
	Reason:	Distraction

Table 2

Example entries where the information found is secondary to the experience achieved during and after searching.

User motivated	<u>Personal Interest, Knowledge or Lifestyle, Habits:</u> (a) "I am interested in food and learning new recipes" (b) "I like to keep up to date as it is related to my work" (c) "I tend to watch soaps in the evenings"
Context motivated	<u>Mood or State:</u> (d) "I want to be thrilled / entertained / distracted" (e) "I'm tired / bored / curious / frustrated" <u>Time Related:</u> (f) "It is ...8.15pm, ...after work, ... the weekend" (g) "I have 30 mins to kill" <u>Socially motivated:</u> (h) "My mum was watching it..." (i) "...something that my dad and I can watch together" <u>Programme Related:</u> (j) "I saw an advert for computer games" Planning "so that I can plan my day / week/ weekend"

Table 3

Examples of different kinds of motivational factors described in the diary entries

When analysing the motivating reasons, we observed a wide variety of factors which influenced the participants' needs (see Table 3). Some of the needs were user motivated, being mostly linked to the individual's personal interests, knowledge or lifestyle. There seemed to be a strong context dependency present in many of the recorded needs. We recorded examples of participants wishing to enhance or change their mood through finding something relaxing, thrilling, entertaining, or simply new (d). Some participants also

reported finding content to watch because they could not sleep or because they were simply feeling curious (e). There were also socially motivated needs e.g. (h) and (i). In all of these situations, the goal was primarily hedonistic in nature, where perceived success in their search was more closely tied to achieving an experience than finding a specific show or even type of show to watch. Example (d) in Table 2, the oft recorded “need” to channel hop, which was regularly motivated by a short period of free time or boredom, in particular, highlights the importance of experience over information found. In all of these cases the information found or encountered help to stimulate an emotional or physical reaction for the user, but it is the reaction and not the information that is of greatest importance.

In the television diary entries we found evidence for each of the 5 types of benefits listed by Stebbins i.e. 1) Serendipity, 2) Edutainment, 3) Regeneration or re-creation, 4) Well-being and 5) Maintenance of inter-social relationships. Further, we believe that our data provide evidence for another benefit not included in Stebbins’ work. *Escapism*, i.e. from work-tasks that need to be completed or from aspects of reality, such as a boring or stressful life, was an important benefit established in our findings that is not fully covered in the framework as it stands.

This investigation of information needs in this one very specific casual-leisure context has provided novel insights into the motivations behind Information Behaviour in this context. However, from this study alone, it is not clear if or how the insights generalise into other casual-leisure situations e.g. online shopping. Our second project, discussed below, has started to demonstrate that these kinds of behaviours do pervade both our physical and digital worlds in a wide range of casual-leisure situations.

3.2. A Grounded Theory Analysis of Self Reported Information Behaviour

In the second study, Twitter was used as a data source to learn about different Information Seeking behaviours in a wide variety of situations. As well as helping us to investigate many forms of Information Seeking, the work has also provided clear evidence that the Casual-Leisure Information Behaviours identified in the television study generalise to many other contexts (Wilson and Elswiler, 2010). Twitter provides a public forum where people can describe and comment on a broad range of everyday life experiences, including searching behaviours (Wilson, 2009). A corpus of 2.4M unique tweets was collected over a period of 5 months, by accessing and storing tweets containing search-oriented keywords. 12 seed-terms, including ‘browse’, ‘explore’, and ‘search’ were used to query Twitter once an hour for the 100 most recent tweets. The corpus contains information about hundreds of thousands of real human searching scenarios and information needs similar to those shown in Figure 4.

To investigate the information behaviours described in the corpus, we have embarked on a large-scale inductive, Grounded Theory analysis. The approach taken was very similar to that applied to the television data, with the researchers starting from a point of no preconceived ideas about that data and generating theory from patterns observed in the data. So far 2500 tweets from a stratified sample, across the 12 seed terms, have been manually coded by two assessors. The analysis to date has taken approximately 40 person-hours and has produced a still-evolving taxonomy of factors that affect search-focused information behaviours. Already, we have begun to develop a series of dimensions

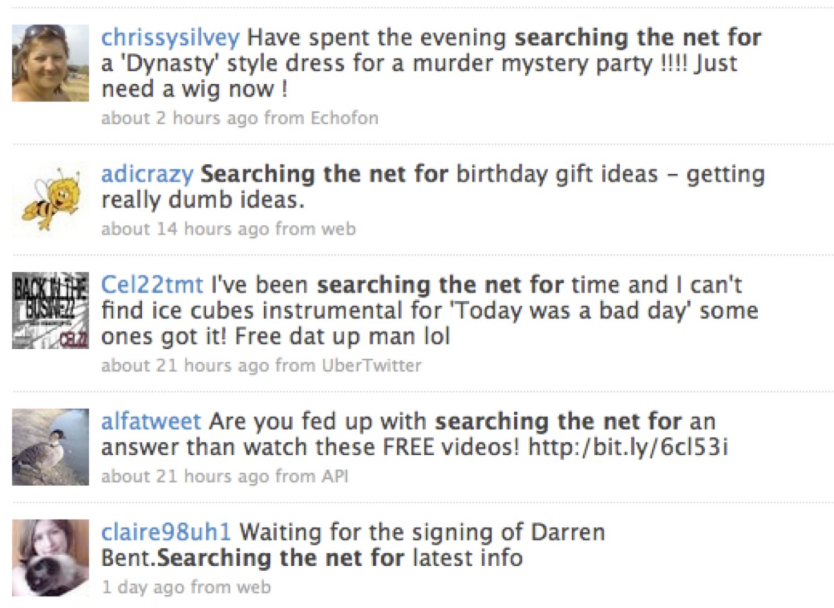


Figure 4. Example tweets that include real information needs and searching behaviours.

and learned, ourselves, a great deal about the kinds of search scenarios that people experience in both the physical and digital domains in both work and non-work contexts. The dimensions identified so far include: emotional response, domain, motivator, successfulness, and number of people involved, as well as factors such as the length, frequency, and urgency (in terms of time).

3.2.1. Need-less browsing

Much like the desire to pass time at the television, we identified many examples (some shown in Table 4) of people passing time; typically associated with, although not unique to, the 'browsing' seed term.

- 1) ... I'm not even *doing* anything useful... just browsing eBay aimlessly...
- 2) to do list today: browse the Internet until fasting break time..
- 3) ... just got done eating dinner and my family is watching the football. Rather browse on the laptop
- 4) I'm at the dolphin mall. Just browsing.
- 5) Cannot sleep...la di da...browsing iPhone apps.

Table 4

Example tweets where the browsing activity is need-less.

From the collected tweets it is clear that often the information-need in these situations are not only fuzzy, but typically absent. It is not clear exactly what people do when entering a need-less browsing episode like those shown in Table 4. People clearly exhibit low-level searching and Information Retrieval activities, but the Information Seeking pro-

cess is unclear. We hypothesise that people may create a series of transient Information Needs to keep the session going, but such sessions need to be studied, as we discuss later in the chapter. The main aim in these scenarios, however, is typically on the casual activity, where the measure of success would be in how much they enjoyed the process, or how long they managed to spend ‘wasting time’. If we model these situations by how they manage to make sense of the domain, or how they progress in defining their information-need, then we are likely to provide the wrong types of support e.g these users may not want to be supported in defining what they are trying to find on eBay, nor be given help to refine their requirements.

To further highlight that Casual-Leisure scenarios are experience focused, rather than information focused, we discovered many examples that lead to negative emotions, as shown in Table 5. Example 3) in particular appears to represent a user who has become immersed in browsing a website for longer than intended. This example is representative of a number of tweets, where the authors appear to be in a state of flow (Csikszentmihalyi, 1997) for longer than was desirable. The addictive nature of these activities appears to be important to note, as when supporting users in meeting casual needs, a system may need to facilitate moderation over indulgence. Further, however, examples 1) and 2) appear to represent users who have repeated or have become aware that they are about to repeat examples of negative experiences. Such examples provide evidence that these systems should support awareness during immersed periods of engagement, so that users can disengage appropriately (see O’Brien and Toms (2008) for recent work on engagement and disengagement).

- 1) It’s happening again. I’m browsing @Etsy. Crap.
- 2) browsing ASOS again. tsk.
- 3) hmmm, just realized I’ve been browsing ted.com for the last 3 hours.
- 4) It’s always sad when you browse around your friends on Facebook and you come across a buddy who has unfriended you... Something I said? :(

Table 5

Example tweets where the information-need-less browsing has created negative emotions.

3.2.2. Exploring for the experience

Typically referring to the exploration of a novel physical spaces, we saw many people emphasising the experience of exploring over the things found by doing so, such as exploring *with* family and friends. These behaviours were socially-motivated similar to those needs recorded in the television study (see Table 3). The aim in such socially-motivated exploration (see Table 6), is often not to find specific places, although things may well of course be discovered, but to spend time with family. Another point of note is that in these situations people regularly tried to behave in such a way that accidental or serendipitous discoveries were engendered. Regardless, the information, or equivalent physical alternatives found are secondary to the experience.

In these cases, the goal may be to investigate or learn about the place, space or collection, but the the focus of the activity is less on the specific knowledge gained than on the experience itself. While examples 1) and 2) are physical-world examples, it is easy to

- 1) exploring the neighbourhood with my baby!
- 2) What a beautiful day to be outside playing and exploring with the kids:)
- 3) Into the nineties and exploring dubstep [music] while handling lots of small to-dos

Table 6

Example tweets where the experience outweighs the things found.

imagine digital world equivalents, such as exploring the Disney website with one's children. In this research project, we are not specifically focused on digital information, but on human-seeking behaviour. There is a strong connection between physical behaviour and informational behaviour. For instance, in the neighbourhood exploration example above, this behaviour may result in the gaining of information, e.g. where the nearest baker is, which shops are open after 6pm etc.. In future work, it may be possible to use this dataset to analyse and compare both physical world and digital examples of human-Information Seeking. While much of Information Seeking theory research was originally grounded in the study of Library and Information Science, growing initially from library use, the twitter dataset covers a wider range of physical, casual environments.

Below we attempt to combine the characteristics we have discovered in both projects, to create an initial theory, and associated model, of Casual-Leisure Information Behaviours.

4. Casual-Leisure Information Behaviours

We have seen many examples of Casual-Leisure Information Behaviours in these two recent studies that we believe do not fit into the standard models we have of Information Behaviour. Our results have an impact, as we discuss further below, on the way we understand the motivations of users, the importance of successful searches, and the focus that systems should have. First, however, we highlight four observable differences in behaviour that have been identified in our studies.

1. Casual-Leisure Information Behaviour tasks are often motivated by being in or wanting to achieve a particular mood or state. Tasks often relate at a higher level to quality of life and health of the individual.
2. In Casual-Leisure situations, therefore, the finding of information is often of secondary importance to the experience of finding.
3. Casual-Leisure needs are frequently associated with very under-defined or absent information needs. We hypothesise that transient or temporarily-defined needs are created in order to facilitate meeting the casual need, but our studies have, so far, not directly studied searching behaviour.
4. The success of casual-leisure behaviour is often not dependent on actually finding any information or results. Even if notable information needs exist, the low importance of the task means that users satisfice or can achieve their hedonistic needs without them.

We believe these defining points are specifically related to casual forms of leisurely information behaviour, as opposed to the serious- and project-leisure scenarios described

by Stebbins. Project-leisure scenarios were regularly captured by domestic Work-Tasks, and Serious-leisure activities are often considered to be work-focused in nature. These defining points of casual-leisure, however, break our models of seeking-focused information behaviours in several ways. To convey how these differences affect the typical models of Information Seeking and information behaviour, we present a revised model of seeking-focused information behaviour below.

4.1. A Revised Model of Information Behaviour

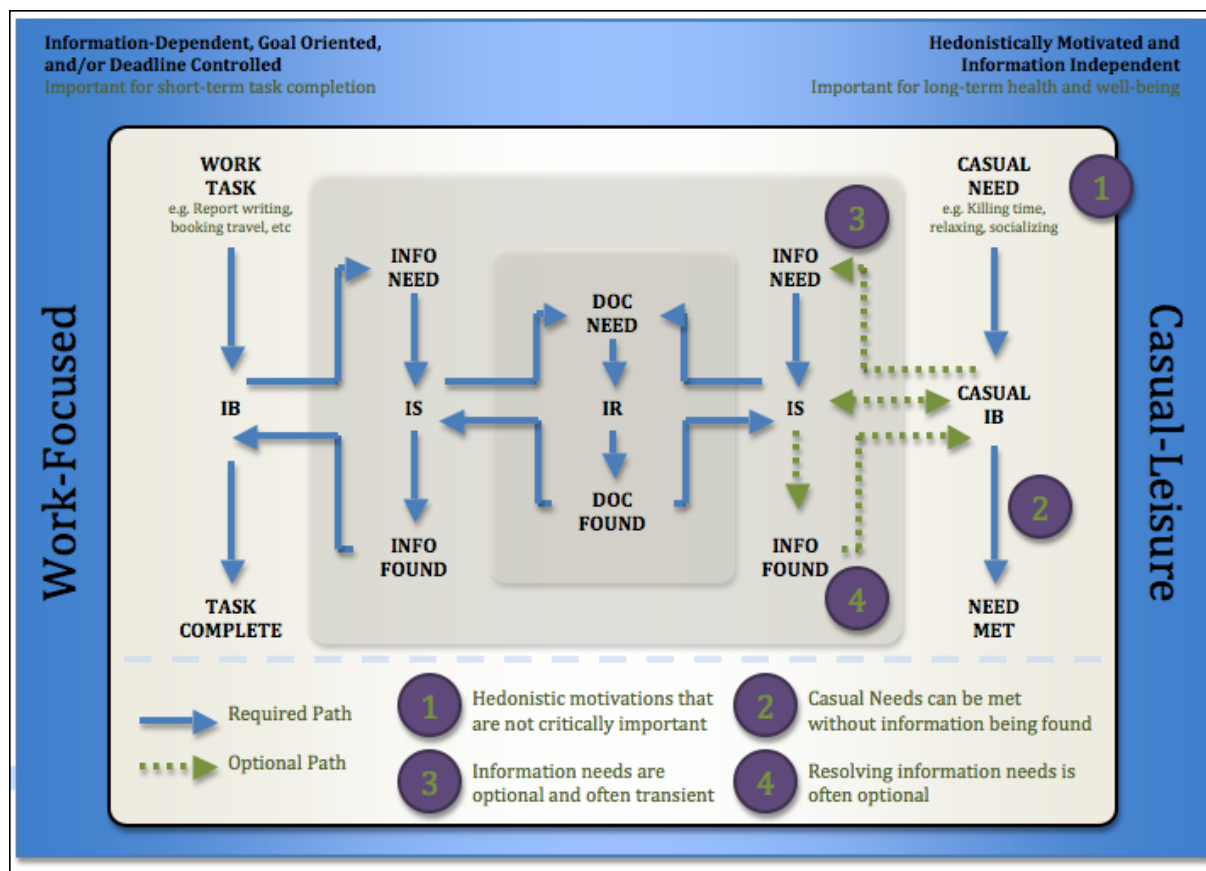


Figure 5. A revised model of information behaviour that accommodates both the extremes of well defined Work Tasks and casual-leisure driven needs.

Figure 5 has been created to highlight the 4 key observable differences listed at the beginning of this section. The diagram is an extension of Järvelin and Ingwersen's nested model of contexts (Ingwersen and Järvelin, 2005), as discussed in the related work section. While the left-hand side follows the model as originally described for well defined Work Tasks, the right-hand side models the opposite extreme of Casual-Leisure Information Behaviour. One of the first points to make, however, is that regardless of the motivation, underlying searching and browsing behaviours are still observable. These may be different

in terms of the tools, techniques and criteria for evaluating appropriateness of results. However, it is clear that they exist in both cases. Consequently, the IR context can be reached by both work-task and casual-leisure behaviours.

The key differences we have discovered, with regards to Casual-Leisure Information Behaviour, lie in the Information Seeking and Information Behaviour contexts, and are further performed in a divergent socio-organisational context. This divergent context is represented by the two opposing sides of the blue outer layer in the model. Casual-Leisure Information Behaviours do not occur in the context of deadlines or goals, but instead are often hedonistically motivated, people are trying to achieve the benefits Stebbins mentions in his framework (Stebbins, 2007). Consequently, the Casual Need (#1 above) is fundamentally different from the Work-Tasks typically modelled.

As well as making many of the arrows optional on the Casual-Leisure side of Figure 5, an additional arrow has been added between Casual IB and IS. This additional arrow was added because, as users begin exhibiting searching and browsing behaviours, there is often no explicit information need. While there are many casual-leisure scenarios that do contain information needs, it is not a requirement to have one before engaging in IS behaviour (#3 above). Similarly, as casual-leisure needs are often not dependant on information being found, the model optionally accommodates users meeting their casual needs without ever finding information (#4 above). Both the optional information need, and the optional resolution of the information need, reflect the #2 point above, that the overall importance lies in achieving the motivating hedonistic need.

4.2. Casual-Leisure Examples

In the traditional model of a Work Task (the left-side), users exhibiting information behaviours experience or recognise information needs. To complete the Work Task, these information needs must be resolved and so users enter into one or more Information Seeking episodes. Similarly, to resolve these information needs, users may require information from one or more documents (or other sources), and so enter into one or more Information Retrieval episodes. Below, we describe examples that instead follow the Casual-Leisure pattern of our above model.

Time-wasting Scenario

Those who are trying to pass time, by channel hopping or perusing eBay for example, often begin with the casual need (or desire) to enjoy themselves. They exhibit a range of Information Behaviours, and often begin Information Seeking without formalising a specific Information Need. Those who don't find a show to stop and watch while channel hopping, don't find specific suitable information' (a show they want to watch), but still meet the hedonistic need (to pass time, relax etc.).

In Figure 5, users exhibiting such time-wasting behaviours (call-out #1) enter into the Information Seeking context layer through the middle double-ended dotted arrow (conforming to the optionality of call-out #3), and then move immediately into the Information Retrieval contact layer. Typical models of search-focused information behaviours would identify an information need, and have to resolve that with Information Seeking and Information Retrieval. Those channel-hoppers, for example, who do settle on a show follow the dotted arrow towards call-out #4. Those who do not, however, exit the Infor-

mation Seeking context layer on the middle dotted arrow (conforming to the optionality of call-out #4) and still meet their casual need (#2).

Hedonistic-need Scenario

(Need:) “[I want an] entertaining programme not requiring any intellectual effort.”

(Reason:) “I’m looking for peace and relaxation because it is a holiday”

Those who begin with a significantly hedonistic motivation, like the author of the quote above, begin with a notable casual need (call-out #1), and *do enter* the information-seeking level with an identifiable information need (not opting out of call-out #3). Such users, however, may satisfice and take an early route out of the Information Seeking context layer (conforming to the optionality of callout #4). The importance, however, is not on the result of the Information Seeking episode, but on meeting the hedonistic need (call-out #2).

Experience-focused Scenario

Those who enter into experience-focused, often socially-engaging, casual scenarios, like those exploring physical spaces with family in the twitter dataset, begin with a notably hedonistic need once again (call-out #1). While some people may have a list of known locations they wish to visit, those without a guided plan for the day enter into the Information Seeking context layer through the middle double-ended, dotted arrow (conforming to the optionality of call-out #3). Normally, however, it would be expected to find not only results (e.g. the Information Retrieval context layer), but also interesting and exciting things (e.g. hoping to follow the vertical arrow to call-out #4). Finding such results may be important for not getting bored, so that they meet the casual need (call-out #2).

Casual-information Scenario

Although the examples discussed above highlight many of the observable differences listed above, some do not. Section 3.1 included the example of a user wishing to find the synopsis of a film so that they could decide whether or not they had seen it before. In this case, the motivation is embodied by boredom or stress, which may be resolved regardless of finding this particular plot synopsis (conforming to call-out #1). However, a clear knowledge-gap driven information need is formed (following the arrow to call-out #3) that must be resolved (#4) in order to make the decision. It is questionable whether this decision is important, however, and so here the user may be able to ignore the problem and simply choose to watch another film. This highlights that a user might be able to meet the casual need despite not managing to resolve the information need originally formed (call-out #2).

The point of this final example has been to highlight the optionality of the observable differences. The four traits highlighted in Figure 5 are typically seen in casual-leisure information behaviours, but these casual-leisure contexts can still create Information Seeking contexts that *do* follow established models of Information Seeking behaviour. We feel it is important, therefore, to highlight that some casual-leisure scenarios can be captured by traditional models of Information Seeking. Our model, however, highlights that there are

many scenarios that do not, and describes where they typically differ. The next section continues to discuss the impact of identifying these observational differences may have on the future directions of information behaviour research.

4.3. A definition of information in our model

The casual-leisure scenarios above include, and have been developed based upon, a range of situations in both physical and digital environments. In the first study, we focused on television programmes, and the second study included examples, such as exploring neighbourhoods and browsing online shopping sites. We take this opportunity to clarify what we mean by ‘Information within our model. In our view, while a television programme itself may not be information, it is a vehicle for the communication of information. Further, in order to watch a programme, the viewer needs to know the channel and the time that it will be broadcast. Similarly, in the Twitter study, although the neighbourhood may not itself be information, by exploring, the user implicitly discovers information about the area, what is happening, and what can be found there. Likewise, in the online shopping examples, the user may be trying to pass time on a website, but implicitly explores the information space and while there learns about available products, prices, etc.

A document has always been considered an abstract term, representing a source of information; on the web a document might be an html file, a database, a picture, a video clip, and so on. Our understanding of documents and information aligns with this abstract definition. A television programme can be considered an equivalent to a document, in that it contains information and has, itself, meta-data. Similarly, a neighbourhood or online shop can be considered an information container. One key differentiator in our model is that while information seeking is defined as resolving an information need, many of the examples we describe above do not explicitly have an information need, but still result in searching behaviours and the consumption of information from these ‘documents.

5. The impact on future research directions

The model presented in Section 4.1 depicts how information behaviour can change between work-based and casual-leisure situations. These differences are very important and have implications for the ways research on information behaviour in casual-leisure situations is performed. We believe these points should be accounted for when designing information systems, when evaluating how new systems are used and when ascertaining the utility or success of designs. This is true not only for researchers specifically interested in the casual-leisure domain, but also for scholars working in areas such as: web-search, exploratory search, and personal information management – all of which investigate activities that can take place in both work and non-work scenarios, but as communities do not delineate between work and casual-leisure situations. We discuss the consequences of these points in greater detail below.

5.1. How the findings should influence system design

Current information system designs are heavily influenced by models of Information Seeking behaviour, such as those described in Section 4.1. We have shown, however, that these models do not always fit the behaviour exhibited in casual-leisure situations. The fact that in casual-leisure situations the focus tends to be on the experience and not on information highlights a different goal or purpose of systems to be used in these scenarios and this should be reflected in the design of such systems. The experience of using the system has to be appropriate. It is not enough simply to provide appropriate information or content, but the interaction with the system itself has to facilitate the desires of the user. The interaction has to be engaging, entertaining, fun etc. This is in stark contrast to work-situations where the enjoyment of using the system is a secondary concern to efficiently finding information that solves a particular, often tightly specified, need. There are numerous examples which could illustrate this point with concrete examples in the associated research fields we mentioned above. In PIM, for example, there have been many efforts to provide tool support for the management of personal photographs e.g. (Patel et al., 2004; Elswailer and Ruthven, 2007). The emphasis in these projects has been to allow the user to effectively find one or more specific photographs, as opposed to, for example, supporting reminiscence or the emotions achieved when mentally reliving past experiences. In the exploratory search community there have been efforts to support exploratory learning from sources such as wikipedia³ (Fissaha and de Rijke, 2006). However, researchers have not yet addressed the negative outcomes that can result from these activities, like ineffective use of time, guilt etc. (see Table 5). Web-search engines are designed to find content on specific topics, allowing users to address well-defined needs. However, they would be very poor at addressing the vague, subjective needs our studies reveal typical in casual-leisure situations. This suggests that researchers in this field and also search engine designers should look at ways of improving support for these types of need. An interesting approach may be to consider an interface that encourages people to stay and continue i.e. that is session focused rather than result focused.

Our findings also have implications for specific features of casual-leisure information systems. They suggest that explicit support for serendipity would be beneficial. In casual-leisure situations, users often start without any fixed idea of the kind of information they require, but instead report vague descriptions of what they want, such as the desire to find something “interesting”, “sophisticated” or “challenging”. This discovery is similar to Pejtersen’s findings with library users’ requests for fiction novels (Pejtersen, 1989) and is related to the work of Vakkari (2009) on finding fiction, much of which happens in casual-leisure situations. All of this work underlines the important challenge of discovering how systems can provide content to meet the vague, subjective requests people have in these situations. Personalisation or user-modelling (Hoashi et al., 2003; Ludwig and Mandl, 2010) approaches may be possible ways of achieving this.

Another point of note is the large role that context plays in determining what people want in casual-leisure situations. In the television study we learned that the needs recorded were often context dependent, being motivated by factors such as time, situation, other people present, mood or emotion, and previous events, experiences, knowledge

³<http://www.wikipedia.org>

and habits. Although context has been discussed regularly in the LIS literature e.g. (Ingwersen and Järvelin, 2005; Savolainen, 1995), the relationship between the needs and contextual motivating factors recorded in our TV study seem to be much tighter. It was very often the case that the participants reported the same needs in the same situations (after work they wanted to relax or wind-down, at the 8.15pm they regularly wanted films or drama, when they were tired they wanted something light and entertaining etc.). Many of the contextual factors shown to be important in our data (time, mood, preferences etc.) could theoretically be detected, modelled or utilised in casual-leisure information systems.

5.2. How the findings should influence user evaluations

If systems used in casual-leisure have a different goal, it makes sense that this should influence the way the system is evaluated. We discuss the implications our findings have for system evaluation below in terms of tasks and metrics.

5.2.1. Tasks or motivating situations

Our findings indicate that it is important for researchers to think carefully about the tasks they assign when performing laboratory evaluations of systems that could be used in casual-leisure situations. Simulated work-tasks situations (Borlund, 2003) – the standard approach to performing such laboratory experiments in interactive IR – would often be, according to our findings, inappropriate for casual-leisure system evaluations. Instead, researchers need to think about ways of simulating situations that would facilitate ecologically valid casual-leisure behaviour. For example, how do you engineer a situation where the experimental participant is frustrated, curious or has spare time to kill? Here, we can learn from previous LIS studies. For example, although Toms (2000) did not explicitly study the casual-leisure domain, she studied information behaviour with newspapers with goal-based and non-goal based tasks. The second of which could certainly be considered as a Casual-Leisure activity. Further, in order to devise suitable tasks, there is a need to understand much more about the needs people have in casual-leisure situations and the factors which motivate and influence information behaviour in these situations. Although our investigations have provided a starting point, there are many casual-leisure situations which have yet to be investigated, but which could be important with respect to characteristics of casual-leisure behaviour / situations. There is also a need for controlled experimental work, similar to that performed for work-based tasks in order to establish which properties of tasks (activities) can have an influence on user behaviour. A good example of this is the work on task-complexity (Byström and Järvelin, 1995; Bell and Ruthven, 2004). We observed evidence of differing task complexity in our data (see Table 1) and this may be a good place to start such investigations.

5.2.2. Metrics

In addition to the types of tasks issued in laboratory evaluations, researchers need to think about the metrics they use to assess system performance. Typically, in interactive IR evaluations a combination of objective (task complete, time taken, etc.) and subjective (satisfaction, relevance judgements etc.) are used. We need to establish, as a community, if these metrics are suitable and useful for casual-leisure situations. In some cases, they may well be. For instance, in the example in Table 1(a), where the participant was looking to find the age of Tina Turner, the motivation may not have been a work-task, but the

user still wants accurate information as quickly and efficiently as possible. In this case metrics, such as task complete and time to complete are sensible.

Time is an interesting metric for casual-leisure situations. Typically in IIR experiments shorter times relate to improved performance. However, in casual-leisure situations this may not be the case. Capra et al. (2007) chose specifically not to use time as a metric for Exploratory Search, noting that a good Exploratory Search system may encourage people to search for longer. Their tasks, however, had information-oriented learning goals, and so increased time would not have been a suitable measure in their case either. More appropriate measures of casual-leisure search are beginning to arrive. O'Brien and Toms (2008), for example, have designed a measure of Engagement, identifying how long people remain engaged in an activity, and the factors that influence their prolonged engagement. Our work supports the use of this kind of metric for casual search scenarios.

In other examples we have noted that such metrics would not be so useful. When people want to relax, stay awake, or change their mood, we need to find ways of establishing emotional, physical or cognitive state of the user before, during and after using the system. This could be achieved through carefully designed subjective questionnaires or objective measures such as readings from physiological sensors. In both cases research needs to be performed to establish the optimal means of measurement.

5.3. Behaviour

The model proposed in Section 4.1 demonstrates where understanding of Casual-leisure Information Behaviour could be increased through further investigation, serving as a framework for future research. Each of the callouts (#1-4) in the model highlight specific behavioural processes, and so represent areas where researchers could target future work.

1. To learn about the motivational factors for Casual-leisure Information Behaviour. This was the focus of our TV diary study. However, much is still to be learned about this, especially in other Casual-leisure contexts. One area we believe deserves attention is mobile casual needs. Technological development mean that it is becoming more common to answer information needs without being tied to a fixed information system. We are interested to know if mobility changes the characteristics of the needs people have and also whether the locational and situational contexts are likely to be strong motivational factors.
2. To understand how and why information or content promotes particular emotional or physical responses from the user. This would allow system designers insight into what kinds of content to provide and when.
3. To learn about how behaviour at the shared IR level of our model changes from work to casual-leisure situations. For example, how do people behave when they have no formulated information need and are there any query characteristics that would allow casual-leisure searching to be detected and different support to be provided? People may create transient information needs to facilitate resolving their hedonistic motivations, but further work is required to see exactly what strategies people adopt to do this.
4. To learn about the nature of satisficing decisions. As casual searchers often resolve

their needs without finding ideal, or sometimes even any information to resolve their information need, Casual-Leisure Information Behaviour scenarios provide a strong platform to study satisficing.

5.4. Summary

Above, we have highlighted many ways in which our theory of Casual-Leisure Information Behaviours can impact future work. We have a range of future work planned in these areas, as well as studying other specific Casual-Leisure contexts. We hope, however, that as many fields and research agendas typically consider both Casual-Leisure and work contexts, that many other disciplines will be strengthened by focusing on differences so far highlighted in our theory of Casual-Leisure Information Behaviour.

6. Conclusions

In this chapter we have presented a new theory of information behaviour relating to specific Casual-Leisure contexts. Casual-leisure situations involve performing short-term activities, requiring little or no training, but which are often intrinsically rewarding. We have described the results of two separate studies, which together indicate how information behaviour can change between work-based and casual-leisure situations. We have illustrated the discovered differences through several examples and in a model. This model demonstrates how many of the behaviours that were reported in casual-leisure situations do not fit with existing models of information behaviour in the literature. The findings from our studies, and the process of generating our model and theory, has led us to three key conclusions about the differences between Work-Focused and Casual-Leisure scenarios:

1. **Different motivation.** In work-based scenarios, exhibited behaviour is typically motivated by a work-task or work-related activity, tends to feature an obvious information need relating to specific gap in knowledge and which requires information on a specific topic to resolve the need. In casual-leisure situations, on the other hand, there is often no surrounding task or activity, information needs can be poorly defined or even absent, and the user regularly has no specific knowledge gap to bridge. In place of a motivating work-task situation, casual-leisure behaviours can have a wide range of motivating factors, including a desire to change mood or physical state, to kill time, to further knowledge generally, often with no requirement for a specific topic, or to interact socially etc.
2. **Different focus.** In work-based scenarios, the focus of the behaviour tends to be on the information, with the method used to achieve this being of secondary importance. In casual-leisure situations this is often not the case. We discovered many situations where the focus was on the experience attained with this being described in terms of engagement, satisfaction and enjoyment. The information found or encountered plays a role in determining the experience - acting as a stimuli to facilitate emotional or physical responses in the user. However, it is the response or experience that is important. We uncovered several examples where no information of note was found, but the user's need was satisfied.

3. **Different kind of importance.** In work-based scenarios failure to resolve a need can have direct and sometimes serious consequences e.g. meeting a deadline, progressing career etc. The same cannot be said for many of the casual-leisure scenarios recorded in our studies. For example, failing to find a particular television programme or being able to flitter away time are unlikely to have any long-term impact on an individual's life. That being said, our data provides evidence of the importance of the reported needs. Many of the needs related to well-being, quality of life, and perhaps even health, often being motivated by a desire to change mood or state, to calm down, relax, and as a means to escape monotonous chores. In the television diary study many participants provided very detailed descriptions of the stressful situations that they were trying to recover from or escape, underlining the importance of the problem. Such examples support point 2, that the experience of using the system has to be appropriate and could in some cases even be more important than the information or content retrieved.

To think about how these conclusions might be involved in the future directions in Information Behaviour, we have also presented a detailed discussion section that describes how our new theory may impact a range of research agendas. Notably, this new theory may influence how many new systems are both designed and evaluated. A focus on Casual-Leisure situations, as a novel way of modelling searchers in many areas of information behaviour, may have a significant impact on future research.

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