

# Understanding Casual-leisure Information Needs: a Diary Study in the Context of Television Viewing

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## ABSTRACT

In this paper, we provide novel research on information behaviour and information needs in the context of television viewing. We conducted a diary study of a heterogeneous population ( $n=38$ ), in the non-work related activity of watching television, and we received 381 responses. From the collected responses, we used a bottom-up approach to generate coding schemes for the needs and reasons given for those needs, respectively. Subsequently, 4 coders tested the coherency of the coding schemes by coding 50 random needs and reasons, and this revealed a large consistency in the use of the schemes. Our findings reveal important aspects of information behaviour in the context of television viewing and show how the characteristics of information needs can be different in leisure or non-work situations. We also found that contextual factors are very influential in relation to the needs and reasons. With these findings we provide important knowledge in relation to future television information systems design.

## Categories and Subject Descriptors

H5.1 [Multimedia Information Systems]:

## General Terms

Measurement, Management, Experimentation, Human Factors

## Keywords

Diary Study, Information Needs, Casual-leisure, Television

## 1. INTRODUCTION

Most of our understanding of information behaviour has been attained by studying people in work contexts. We know that people have information needs reflecting a failing or gap in knowledge [2, 9] and from empirical work we know that this is usually motivated by some kind of work

task scenario [37, 3]. The numerous models we have of how people behave to address such needs and the factors which influence behaviour, e.g. [39, 19, 1, 22, 31], have evolved based on decades worth of empirical research. Far less is known about information behaviour in non-work or leisure contexts. People clearly interact with, find and use information in non-work situations and recent work has highlighted this as an under-explored and important research domain [17, 13, 18]. Non-work situations are certainly an important part of human life and given the limited leisure time people have, it is important that the information systems used in these contexts provide appropriate support in order to make the most of this time and not detract from the experience. Given the differences between work and leisure scenarios, it is very possible that people will have different needs and expectations from the information systems they use in non-work situations. However, we currently have little understanding of if and how the characteristics of information needs change from work to non-work situations, the scenarios which motivate leisure-time information needs, the factors which can influence them, nor how systems for leisure-time use should be designed. To further our understanding of these issues, in this paper we provide an initial set of data points, derived from a diary study designed to learn about information needs and behaviour in the context of viewing television, a predominantly leisure-time pursuit. Based on qualitative analyses of the data, we present a coding scheme for information needs people have that are associated with watching television and a set of dimensions that motivate these needs. These findings reveal key differences between the concepts of information needs and behaviour as they are understood in work situations and those that we discovered when examining one example leisure-based activity. We discuss these differences with respect to previous literature and suggest that they could influence the design of leisure-oriented information systems, in this case an electronic programme guide for television sets.

The remainder of the paper is structured as follows: in Section 2, we present related research and motivate the presented work; in Sections 3 and 4, we outline the methods employed and data analysis approach in detail; Section 5 presents our findings; in Section 6 we discuss the findings with respect to previous work and the design of future systems. Finally, in Section 7, we summarise our contributions and outline our ideas for future research directions.

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## 2. RELATED WORK

The background literature for the paper is described in three stages. First, we outline research on general leisure activities. This is followed by a review of non-work-based research within the information seeking and library and information sciences communities. Finally, we highlight relevant work on television behaviour and television information needs. The presented literature motivates our research goals and, in particular, explains our choice of studying television information behaviour, which we believe to be a good starting point for researching information behaviour in the context of casual leisure activities.

### 2.1 General Leisure Research

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" [35]. 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.
- *Casual leisure*: an immediately, intrinsically rewarding, relatively short lived pleasurable core activity, requiring little or no special training to enjoy it.
- *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.

While most of his work focuses on serious leisure, Stebbins [34] 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"[34]. 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 [34] lists 5 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.

Hartel notes that all leisure activities involve information seeking behaviour to some degree [18]. In this way, leisure research is closely related to studies of information behaviour, as reflected in the special issue of Library Trend on leisure studies [14].

### 2.2 Related Information Seeking Literature

In library and information science, leisure research is concerned with non-work contexts, such as those described in Savolainen's everyday life information seeking approach [31]. Like Stebbins' work, most research on leisure information seeking has been conducted within the serious leisure domain [18, 33, 13, 4] and project-based leisure [5]. To date there has been little work in the casual leisure domain, although there has been one study of note. Ross investigated pleasure reading behaviour and discovered, for example, that pleasure readers find information without having any purposeful or expressed need [30]. This finding highlights one possible difference between work and non-work behaviour and underlines the potential benefit in study leisure-based scenarios. The behaviour observed by Ross is comparable to the serendipitous behaviour noted in [34] and also in other ELIS and web-search literature [[12]].

Web search is a well-studied domain, and a prominent leisure-time activity [23]. However, web-search is often studied using search engine logs, where the intention of the searcher is unknown e.g. [20] or in lab-based studies, where the participants are given work-task scenarios [e.g. [38]]. Using such approaches it is difficult to discover much with regards to information needs in casual-leisure scenarios nor the motivating factors behind needs. Personal Information Management (PIM) is another related domain. For example, [11] revealed work- and leisure-based tasks in their study of re-finding needs. However, as they did not make a distinction between these situations it is difficult to learn much about how needs change in leisure-based scenarios. There are also studies of personal information behaviour for specific non-work activities e.g. health-care [25], although this work focuses on organising and management behaviours and reveals little about the needs people have when searching or re-finding information. Nevertheless, all of the reviewed work indicates the regularity and importance of information behaviour in non-work contexts. The following sub-section motivates our investigation of television needs in particular.

### 2.3 Television Research

Most research on television within the LIS community has focused on the needs of professionals, such as scholars or students in media studies [21]. However, Stebbins [34] lists television viewing as an example casual leisure within his framework. Television is the most popular leisure-time pursuit in many western countries, with surveys indicating that in Europe people watch on average 24 hours of television per week [15, 23]. There is also evidence that digital technology is changing the way people view television [23], with increasing numbers of channels and amounts of content, repeated programmes and new methods to record and store content, meaning people are often unsure of what content is available and have difficulty in deciding [7]. In response, researchers have attempted to build intelligent electronic programme guides (EPGs) to help the user find appropriate content [24, 41, 7, 6]. Nevertheless, with the exception of the fact that people use them to find programmes, we know very little about what people use television guides and EPGs for, the factors which influence their needs, what information they have available to them when they search, and what kind of support is required.

This situation forms a second goal of the presented work. Not only do we hope to improve our knowledge of casual-

leisure information behaviour in general, but we aim to discover findings which would be useful in inspiring the design of new information systems for which we know there is a specific need within the casual-leisure domain i.e. EPGs.

### 3. METHOD

To achieve these aims we performed a diary study to learn about information needs in a television viewing context. Diary studies offer the ability to capture factual data, in a natural setting, without the distracting influence of an observer. There are limitations to the technique, specifically difficulties in maintaining participant dedication levels and convincing participants that seemingly mundane information is useful and should be reported [27]. [11] suggest that the effects of the negatives can be limited, however, with careful design and good implementation. In our diary study, we followed their suggestions to achieve the best possible data. To this end, we restricted the study length to 7 days as we felt that this was sufficient for our data collection needs and that asking participants to record for a longer time period would only detract from the quality of the data. The diary was designed to make it as quick and easy as possible for participants to record the information required. The participants were asked to use the provided diary to note any information need associated with watching television or with a television guide. The diary was in the form of an A5 booklet [see Figure 1], with each double page spread having a mixture of question types to establish details regarding one individual need i.e. each need had an associated diary page (equivalent to an A4 sheet). Each sheet contained space for the participant to record the time and date of the need and there were two spaces for free-text descriptions: one to record the sought-after information, and another to describe the reason or motivating factor behind the need. The space provided reflected the amount of information that was expected from the participants and this was explained to them at the outset. Additionally, each sheet provided multiple-choice options to detail how the need was addressed, how difficult the task was and how often this or similar needs occur. There were also questions which aimed to attain information regarding the context surrounding the task including the current mood of the participant, his location and other individuals present.<sup>12</sup> In this paper we focus solely on the analyses performed on data recorded via the free-text fields for sought-after information and the motivating factors for the need.

To ensure the participants understood what was expected of them and the kinds of situations they might record, the diary form was explained verbally and clear and concise reminders of the instructions were printed on the diary itself.

The study was conducted during the Christmas holiday period as this is a time when individuals have a particularly large amount of leisure time. 38 participants took part in the study. Our recruitment strategy reflected a desire to achieve a mixed population: our aim being to mirror, as far as possible, general society demographics and balance the factors which can influence television viewing habits [15]. To

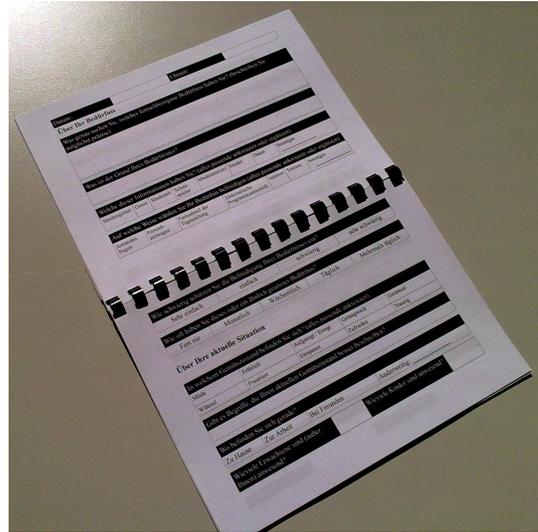


Figure 1: The diary in the form of an A5-booklet

achieve this we encouraged colleagues and students to ask friends and members of their families if they were interested in participating. This strategy suited our desire to explore the breadth of behaviour and needs (we had no preconceptions of what would be recorded) and allowed us to achieve a heterogeneous population within the boundaries of our geographical location (the South of Germany). The end population consisted of wide range of participants with different ages (min=10, max=72, mean= 39.5, sd=17.4), gender (19 male and 19 female), educational levels, living arrangements and occupations (the population included, amongst others, teachers, a lawyer, a baker, a chemical plant worker, a medical doctor, a dental assistant, housewives, students, retired individuals, academics and school pupils). As a result of being such broad collection of individuals, the population reported extremely varied television viewing habits, information needs and programme interests. t'

### 4. ANALYSES

In total 381 needs were reported in the study, that is ~10 per participant. We analysed the responses qualitatively using an affinity diagramming technique, a group-based process, which allows the discovery and validation of patterns in the data [16]. This process consists of two stages. First, a brainstorming session is conducted whereby group members explain the observations they make in the data. We typed and printed each separate response on a small piece of paper and used a large meeting table to find and demonstrate observed patterns [see Figure2]. The second stage involves finding a structure in the data by categorising and naming the responses [see Figure3].

This process was carried out separately for the two sets of responses (needs and motivating factors) with a total of five sessions being required to categorise the data. We deliberately removed evidence of responses being on the same form and by the same participant. The process was conducted in a bottom-up fashion, with duplicate, similar or related responses being grouped together and the groups collapsed until a hierarchical structure was formed. Due to the multi-dimensionality of the reasons behind information needs [we

<sup>1</sup>The diary layout can be found at <http://tinyurl.com/34h96uf>

<sup>2</sup>To test the effectiveness of the diary design and establish the kind of data we would receive we piloted the design with 5 participants for 5 days



Figure 2: The Affinity Diagramming Process



Figure 3: The Categorising and Naming Phase

explain this further below] it was not possible to achieve a fixed scheme against which responses could be coded mutually exclusively. Instead, we report the dimensions, which the participants used to describe the motivating factors for their needs. It is important to note that we did not begin the process with a pre-defined model but allowed a coding scheme to emerge organically and inductively from the process. The approach taken aligns with the guidelines from grounded theory [36].

## 5. RESULTS

The final coding for needs and the motivating dimensions are presented in Figures 4 and 5 respectively. To ease the communication of the main findings – the full coding schemes have many levels and groupings – we only present the upper levels and use selected responses to exemplify the kinds of groupings that appeared in lower levels.

Due to the nature of the recording technique and subject matter there were a number of issues that arose that made coding the responses challenging. There were some cases, for example, where the need described remained unclear. The description, “I need a list of films on at 20.15”, may have meant that the participant wanted to watch a film, but we cannot make this assumption as it may equally have been the case that he wanted to recommend films to a friend. We coded such needs as type A3, where the user requires a list of programmes restricted by a set of criteria. This was a very

<b>A Overview</b>	<b>(81)</b>
A1 Channel Hopping	4
A2 Programme List	5
A3 A list of programmes, restricted by specified criteria	
“All the films on at 8:15pm”	
“A list of society critical films sorted by topic”	72
<b>B Looking for Information</b>	<b>(71)</b>
B.1 “Programme-related”	
“Length of current programme”	
“Name of actor in film I am watching”	39
B.2 Non-programme-related	
“News or current affairs”	
“Weather in Lund, Sweden”	32
<b>C Looking for something to watch</b>	<b>(195)</b>
C.1 Specific Programme known	
“The Simpsons”	77
C.2 By genre/type	
Documentary/knowledge programme/sophisticated level	
Entertaining/relaxing/distracting/thrilling	
Funny programme	
Music programme	
Sport related	111
C.3 Film	7
<b>D High-level needs</b>	<b>6</b>
• “to be entertained”	
• “to kill time”	
<b>E Other television functions and nonsense</b>	<b>25</b>
• “play Wii”	
• “record a film”	
<b>F Not enough information to classify</b>	<b>2</b>

Figure 4: The Coding Scheme Developed for Recorded Needs

common way to describe a need (there were 74 instances in the results) and some of these criteria were quite unusual and would be very difficult to achieve with existing systems, for example those shown in Table 1.

Need:	[I would like] a list of society critical films, ordered by topic
Need:	[I would like] a list of interesting films / documentaries showing, from 7 or 8pm

Table 1: Examples of interesting Tasks of type A3

Types A1 and A2 in the needs coding scheme are not really needs, but behaviours in response to needs. For example, when the participant reported “channel hopping” (A1), it is likely that he wanted to find something to watch. Responses such these are a natural consequence of slight differences in understanding between researchers and the participants who know nothing about the research aims and methods. We included these categories because the coding schemes were generated from the data and using a grounded theory approach it is not possible to make assumptions about the responses. Categories such as A1 and A2 are also useful as they provide clues regarding user behaviour.

There were also needs that were described in very high-level language, which were troublesome to categorise. “I want to be entertained”, for example, could have potentially been satisfied by a programme, a film or perhaps even in-

formation. Again, in such cases, we made no assumptions about what the participant required and created a particular category (D) for needs described in this way.

A further difficulty comes from needs which could potentially apply to many categories. “I want something funny” could mean a funny programme (type C2) or perhaps a funny film (C3). We decided to code such examples as C2 as a film was not mentioned. C3 was only used when a film was explicitly mentioned in the need description, which explains the relatively low count for this category.

In general categorising the reasons behind needs was typically more difficult because these were often multi-dimensional. For example, the entry shown in Table 2 is motivated both by the situation (seeing the games on television) and by a personal desire (wanting to buy the games).

Need: There were PC games shown in MTV and I want to find out where you can buy them.  
Reason: I want the game “Day of the tentacle”

**Table 2: Example of Multi-dimensional Motivation**

To test the coherency of the taxonomies, 4 coders (2 of whom did not participate in the categorisation creation process and who had no other involvement in the project) recorded 50 needs and reasons selected at random from the dataset. These needs were categorised with the context intact i.e. the researchers had access to both the needs and reasons and this greatly eased the task of categorisation. Despite the difficulties described above, when categorising the needs, 3 out of 4 coders agreed relatively often (84% of the time, Fleiss Kappa = 0.65<sup>3</sup>). When categorising the reasons 74% agreement was achieved (Fleiss Kappa = 0.57). These scores indicate moderate to strong agreement between coders. One of the above coders categorised all of the recorded needs and reasons and these are the codes used to establish the frequencies in Figures 4 and 5.

The results reveal a much broader range of needs than might have been expected and certainly than would be supported with the intelligent EPGs proposed to date. Not only do people require to find programmes and content (type C1,C2,C3), but television and television guides are also used as information sources in their own right. People use them to look for current, up-to-date information (news, stocks, weather etc.- type B2), and to solve classic information needs. Good examples of this in our data were looking for travel reports for holiday planning and looking for recipes for dinner guests. Other recorded needs included looking for meta-data regarding individual programmes (type B1), such as the example shown in Table 3.

Need: “Who is the actress in ‘Phantom of the Opera’ that was on a few days ago? Is she really the same actress that was in ‘the Day After Tomorrow’?”

**Table 3: Programme Meta-data Example**

There were also several examples of the participant wanting something to have on in the background, while doing another task, such as ironing etc.. These needs were coded as type D. An important factor regarding type D responses

<sup>3</sup>Fleiss’ kappa is a statistical measure for assessing the reliability of agreement between a fixed number of raters when assigning categorical ratings to a number of items

was not that the participant was looking for a particular programme, nor a particular type of programme, but they were looking for something with a specific quality i.e. that it was exciting, entertaining or would distract them from what they were doing. Needs such as these, where the user would have difficulty explaining what he wants and it is very likely that content that would satisfy such a need would be very personal, would not be well supported by existing paper-based or electronic programme guides.

Although different to information needs in the traditional sense, in cases where the participants were looking for something to watch (types C1,C2,C3), we still consider this to be a type of information need. In these situations the participant requires information about content in order to establish if it meets his need and to discover how and when to access it if desired. In types C1, C2 and C3, the participants sometimes had a very specific idea in mind (programme name), but often the specification was more vague. How detailed the specification was often depended on contextual factors [see motivating factors below].

There was also evidence in the recorded needs of the participant requiring to weigh up the pros and cons of watching a particular programme or taking a particular action (e.g. “is it worth watching this episode again?”, “I am channel hopping and want to know if it is worthwhile stopping on this channel”).

Another point of note, which is not visible in the coding schemes is that occasionally the described needs were chained. The example in Table 4 illustrates this.

Need: plot overview of a film  
Reason: [I want to know] if I’ve seen the film before.

**Table 4: Chained Need Example**

Here, the reason is in fact another need. Actually, the main need is likely to have been to find a film to watch. However, during the search process other needs become apparent “have I seen this film before?” and the process of solving these needs raises further needs “I need the plot overview of a film”. We describe this as an information-need chain. Not only are these chains a good example of a challenge for the categorisation process, but they also reveal a characteristic of user needs and behaviour.

Although we have no exact data on how often chained needs occur, they were relatively frequent in the data. It was also sometimes the case that a single diary entry described more than one need in the chain [see Table 5].

Need: “[I am looking for] up-to-date news; [I need to know the] channel and time of broadcast”

**Table 5: Diary entry with multiple chains**

The diary entries reveal many different reasons for information needs. The participant himself was an important motivating factor for many of the needs, with personal interest (category G), knowledge and lifestyle (category H) and habits (category E) all being cited as reasons for having information needs.

Many of the motivating factors for needs were contextual in nature. Mood or state was often important i.e being in a particular state, e.g. tired, distracted, stressed, curious etc. (category B), or wanting to achieve a particular mood

<b>A Want to be in a certain mood/state</b>	<b>85</b>	<b>E Because of habit</b>	<b>8</b>
<ul style="list-style-type: none"> <li>• thrilled</li> <li>• funny_entertainment</li> <li>• relaxing</li> <li>• distraction</li> <li>• entertained</li> <li>• variation/something different</li> <li>• to be emotionally moved</li> </ul>		<ul style="list-style-type: none"> <li>• watch regularly</li> </ul>	
<b>B Because of being in a certain mood/state</b>	<b>47</b>	<b>F Because of past event</b>	<b>7</b>
<ul style="list-style-type: none"> <li>• cannot sleep</li> <li>• bored</li> <li>• curious</li> <li>• tired or physically exhausted</li> <li>• frustration</li> </ul>		<ul style="list-style-type: none"> <li>• missed the programme</li> </ul>	
<b>C Planning/future</b>	<b>26</b>	<b>G Personal interest</b>	<b>75</b>
<ul style="list-style-type: none"> <li>• planning the day</li> <li>• not to miss</li> <li>• recording not to miss</li> <li>• spontaneous decision perhaps planning</li> <li>• planning the evening</li> </ul>		<ul style="list-style-type: none"> <li>• i want</li> <li>• sport</li> <li>• interested in</li> </ul>	
<b>D Time related</b>	<b>29</b>	<b>H To do with personal knowledge</b>	<b>18</b>
<ul style="list-style-type: none"> <li>• it's been a while since i watched it</li> <li>• freetime/weekend/work is finished</li> <li>• particular time point</li> <li>• sunday evening</li> <li>• it is 8.15pm</li> </ul>		<ul style="list-style-type: none"> <li>• because of who i am and the way that i live i need (job/hobby)</li> <li>• gap in knowledge</li> <li>• to further knowledge</li> </ul>	
		<b>I Motivated by current situation</b>	<b>30</b>
		<ul style="list-style-type: none"> <li>• new tv guide</li> <li>• motivated by programme</li> <li>• motivated by actor</li> <li>• I have a short break</li> </ul>	
		<b>J Socially motivated</b>	<b>2</b>
		<ul style="list-style-type: none"> <li>• Because my mum was watching it</li> </ul>	
		<b>K Is a need</b>	<b>10</b>
		<b>L Difficult to classify</b>	<b>30</b>
		<b>M No reason recorded</b>	<b>13</b>

**Figure 5: The Coding Scheme Developed for Reasons for Recorded Needs**

or state, e.g. excited, thrilled, distracted etc. (category A). Naturally, there was some overlap between categories (A and B), but the entries were coded based on how the descriptions provided by the participants. Another important contextual factor was the dimension of time (category D), with specific needs often being motivated by the time of day (e.g. 20.15, when films and dramas are often shown in Germany) or if the participant had not seen something for a long time. Strongly related to time were the activity of planning (category C), which was often cited as a motivating factor and events, such as noticing that a programme had been missed (category F). Other contextual motivating factors included situational factors (category I), such as receiving a new television guide magazine or being motivated by a programme itself (see examples in Tables 2 and 3) and socially motivated needs, such as those that arose because of the presence or actions of others (category J).

In this section we have revealed the main outcomes of our analyses, which demonstrate some of the characteristics of television information needs and behaviour and the reasons behind these.

## 6. DISCUSSION

In this section we discuss our findings with respect to three different aspects. First, we compare and contrast the properties of the recorded needs and reasons with what we know about work-based tasks from LIS literature. Second, we discuss our findings with respect to Stebbin’s leisure framework, using our data to demonstrate where television behaviour fits within the theoretical framework. Lastly, we

discuss some of our ideas regarding how the presented findings could influence the design of future EPGs.

### • Discussion with Respect to LIS Literature

Based on our data, one important difference between leisure- and work-based needs seems to be that they have a different kind of motivation. Our leisure needs were not, in the majority of cases, task-based, nor did they tend to be a response to a specific gap in knowledge. Instead, the needs recorded often related to entertainment or edutainment [26], a desire to further knowledge generally or to bring knowledge up-to-date (news, weather, stocks etc.).

Our data suggests that edutainment needs seem to be relatively non-specific in nature with participants regularly recording a desire for something “interesting”, “sophisticated” or “challenging” and not on a particular topic or domain as would be typical of work-based tasks [19].

It could be argued that in some sense the needs recorded in our study have a different level of importance to classic work-based tasks. While failure to address a work-based information need may have serious consequences, an isolated leisure-time task failure is unlikely to have a long-term impact on an individual’s life. Nevertheless, 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 also as a means to escape chores (e.g. watching television while ironing). Even the information-oriented needs (types B1 and B2) were regularly motivated by the wish to avoid frustration (e.g. wanting to know the name of actor, song, year etc.).

All of these examples highlight a different goal or purpose of systems in non-work scenarios i.e. 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. 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 the need. These findings also relate strongly to mood or emotion, which has been an important topic in LIS literature, although, typically it has been investigated from a completely different perspective. For example, [10] investigated how emotional states affect information seeking behaviour and [28] looked at how this influences people’s reaction to returned results. Our results indicate that in the context of information needs related to television viewing, the user’s mood, as well as his emotional and physiological state can influence the kind of information or content he seeks.

Another property we observed in the recorded needs was that often the needs were chained, such as the example in Table 4. These situations are comparable to the muddled needs described by [19].

We also uncovered the fact that the act of watching television itself can be the instigating factor for information needs i.e. needs arise during television viewing that would not otherwise occur. This is related to Stebbin’s serendipitous discovery [34] and Ross’ non-goal oriented information encountering [30].

### • Where Do Our Findings Fit Within Stebbin’s Framework?

Our results provide concrete data to populate Stebbin’s theoretical framework. For example, in the recorded diary

entries we found evidence of 3 of the 8 types of casual leisure he defined: 1) Passive entertainment, which was evident in needs of type C1, C2 and C3, 2) relaxation, which was a common motivating factor for the recorded needs and 3) sensory stimulation, which was evident when the participants were looking for concerts, musicals and films to watch.

We also found 4 of the 5 types of benefits listed by Stebbins i.e. 1) Serendipity, 2) Edutainment, 3) Regeneration or re-creation, and 4) Well-being. Further, we believe that our data provide evidence of 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.

Further, our data tends to contradict Stebbins' claim that all leisure activities are hedonic. Although we found a lot of evidence of people treating television as a pleasurable activity and as a means to relax, our data show that people also use television for more "serious" information seeking activities that don't in themselves necessarily bring pleasure, but that are performed in leisure time, possibly being necessary in order to prepare for a pleasurable future activity. Examples in our data included travel planning and looking for recipe inspiration for a dinner party. Other examples, which do not fit with Stebbins' argument are the recorded needs, which were a response to frustrating situations, such as forgetting something e.g the name of an actor, the time or channel of a sought-after programme etc.. All in all, this is in line with the concept of media enjoyment to be more the just hedonic in nature e.g., as expressed by [8].

- How the Findings could Influence System Design

We believe our findings are instructive with respect to how EPGs should be designed. The finding that people do not only require to look for programmes is very important since nearly all of the systems designed to date focus solely on this task [24, 41, 7, 6].

The fact that there were 39 needs of type B1 recorded, where information was required about some aspect of the programme, suggests that providing access to programme meta-data and databases containing information about actors, directors, locations, year of production etc. would be a useful feature.

Further, the regularity of needs of type A3 (72 occurrences), where the participants described their need in terms of requiring a list of programmes, indicates that providing the user with the possibility to filter programmes based on a broad range of properties, perhaps with an interface similar to faceted browsing systems [32, 40] may be beneficial.

We discovered that when seeking something to watch, the participants did not always have a specific programme or even type of programme in mind, but often sought programmes with a particular property, e.g. they had to be distracting, entertaining, relaxing etc., all of which are highly subjective. This discovery is similar to Pejtersen's findings with library users' requests for fiction novels [29]. This could be considered as evidence for utilising user modelling or profiling approaches in EPGs, as suggested by [24], which would allow an understanding to be attained over time of what the user wants in such situations. Further evidence for using this kind of approach comes from the reasons our participants gave for the needs that they recorded. 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 and habits. Although context has been discussed regularly in the LIS literature e.g. [19, 31], the relationship between the needs and contextual motivating factors recorded in our 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.) All of the contextual factors shown in our data to be important (time, mood, etc.) can in theory be readily detected, modelled or utilised in information systems.

Our discussion has highlighted the utility of our findings with respect to previous LIS literature, Stebbins' leisure framework and as a source of inspiration for future television information systems, such as EPGs.

## 7. CONCLUSIONS

In this paper we have described a study, performed to learn about information needs and behaviour related to watching television viewing. The data collected and the coding schemes developed from the data are useful for the library and information science community in several ways.

They provide some initial data points for leisure-based information behaviour by demonstrating differences between work and non-work information behaviour and needs in the context of television viewing. We have also illustrated ways in which our findings can influence system design. In these ways, we have illustrated the benefit of studying information behaviour in leisure or non-work situations.

However, this work represents only a starting point for this kind of research in casual-leisure situations. In addition to examining other specific domains as we have treated television-viewing needs, we feel it is important to investigate casual-leisure information behaviour generally. To this end, we have been using Twitter<sup>4</sup> as an information source to learn about how information behaviour. Twitter is commonly used by individuals to describe their thoughts, opinions and actions and there is a great deal of material describing individual's information seeking behaviour and experiences. Our work with Twitter data builds on the findings presented here and will be published in the near future.

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<sup>4</sup><http://twitter.com/>

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