**The Sense-making Theory: Studying Seniors’ Information Behaviours in Context**

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**1. Introduction**

Brenda Dervin’s Sense-making theory is well established in library and information science (LIS) and has long been associated with the critique of traditional system-centred approaches to information seeking (Savolainen, 1993). By emphasizing a system-centred approach, Dervin (1998) proposed that, instead of asking who is using the library or how much the library is used, the question should be for what purpose is the library used and how does it help. Despite its relatively long history, however, only a small proportion of LIS literature has undertaken contributing to the development of Sense-making theory. More studies are needed in order to examine information as something that is embedded in the fabric of people’s everyday lives and works, especially senior citizens aged 60 years and older who may have limited access to information because of some circumstances related to their age (Stanziano, 2016).

According to the World Health Organization (WHO) (2018), by 2050, the world’s population aged 60 years and older is expected to total 2 billion, up from 900 million in 2015. The pace of population aging is much faster than in the past, and all countries face major challenges to ensure that their health and social systems are ready to make the most of this demographic shift.

With this long-standing concern for these upcoming demographic changes come questions of how the growing senior population can be best served by information professionals. It is worth analyzing how seniors make sense of their lives and work in various contexts. By reviewing and analyzing the LIS literature studying the patterns of seniors’ information behaviour and practices in different contexts, this individual study aims to answer the following questions:

• How do different contexts, such as living situation, mobility, health, language use, education level, and internet accessibility, influence seniors’ information behaviours?

• What is different about seniors’ information behaviours and practices in terms of Dervin’s Sense-making Theory?

This study identifies the contexts of focus in the LIS literature mainly from 1990 to 2019 and the major context themes influencing seniors’ information behaviours. The identified context themes are factors of age, living situation, Internet/technology, role and hobbies, specific disease and health concerns and psychological concepts. This study also aims to discover whether seniors’ information behaviours entail engagement, reflection, learning, and action—all the behaviours that scholars and research subjects often speak of as making sense. The study reveals that seniors’ information behaviours often involve their experiences of information encountering and information avoidance, both of which tie closely to various contexts. These two unique experiences present gaps in Dervin’s Sense-making theory. Bringing these understandings and gaps to light will provide a strong direction for library services and future research.

**2. Identified gaps**

***2.1 Seniors’ information behaviours in context***

The information behaviour and practices of senior citizens are of crucial importance to informational professionals. However, the senior group is, in general, understudied in LIS, and the group is always solely included in some studies as part of larger groups, such as users of public libraries (Allen and Wilkinson, p.106). Some studies, such as the study by Aagard et al. (2015), aim to “address [this] gap,” but the researchers acknowledge that there is a paucity of LIS material on this topic. Most literature is dominated by investigations of seniors’ health information-seeking behaviours without considering the contexts. These contexts include their living situation, their mobility, their language use, their internet use and accessibility, and whether they have family or friends to rely on. Much of the research often relies on conceptualizations of older adults, viewing this population as a homogeneous group and assuming their health information needs because of general dependence and decline related to age. Studies solely focusing on seniors’ health information-seeking behaviours without considering context run the risk of advancing problematic assumptions about this group including searching only for the purpose. Only a few scholars, such as Williamson (1998, 2009), Chatman (1999) and Wicks (2004), stress that seniors’ information behaviours must be understood within respective contexts and criticize viewing seniors as a homogeneous group.

***2.2 Content analysis in LIS***

In LIS, much of the research studying seniors’ information behaviours is survey or interview based. A study focusing on reviewing and analyzing published literature may provide a deeper and more nuanced understanding of the seniors’ information behaviours within contexts, and gaps that need to be addressed in Dervin’s Sense-making Theory. Bringing these understandings and gaps to light will provide a strong direction for library services and future research. This study will prove to be useful to information professionals and researchers interested in seniors’ information-seeking behaviours in contexts as it aims to contribute to Sense-making theory and sheds light on the gaps in LIS literature.

**3. Definitions**

***3.1 Senior adults***

In any discussion of information behaviour and older adults, the term “senior adults” requires definition. The United Nations (2002) has agreed that 65+ years may be usually denoted as old age and Allen and Wilkinson (1990) found about forty percent of participants identified 65 as the age when one becomes a senior in a survey. While most developed countries have accepted the age of 65 years as a definition of 'elderly' or older person, but like many westernized concepts, this does not adapt well to some situations in non-western countries. At what age old age begins cannot be universally defined because it differs according to the context. For example, for a study of old age in Africa, the World Health Organization (WHO) set 55 as the beginning of old age. At the same time, the WHO (2002) recognized that some countries often define the age at which one becomes an “older adult” not by years, but by new roles, loss of previous roles, or inability to make active contributions to society. Therefore, for the purpose of this paper, senior adults will be broadly defined to include people over 60 years of age with change in social role (i.e. change in work and life patterns, adult status of children and menopause) and change in capabilities (i.e. invalid status, senility and change in physical characteristics). As suggested by Gorman (2000), "the ageing process is of course a biological reality which has its own dynamic, largely beyond human control. However, it is also subject to the constructions by which each society makes sense of old age.” Defining old age by focusing on change in social roles and capacities will help to study seniors in context while addressing the research questions.

***3.2 Information behaviour***

A primary contributor to understanding information behaviour is the sense-making theory and associated sense-making methodology of Dervin (1999a). Dervin’s Sense-making theory focuses attention on situations, information gaps, and the actions that people take to bridge these gaps. In this theory, humans’ actions play a significant role in adapting and responding to unexpected or unknown situations, as well as recognized situations, and consequently, this theory emphasizes verbings (acts) over nounings (states) in understanding people’s making of sense. The early descriptions of the theory (Dervin & Nilan, 1986) and supporting sense-making research tend to emphasize the system-centred approach and thus it has long been associated with the critique of the traditional approach to information seeking (Savolainen, 1993). According to Savolainen (1993), Dervin’s Sense-making theory interestingly reflects the basic values of Western Culture: the central position of an individual actor, the importance of making things happen and moving forward, in spite of barriers faced, and relying on individual capacities in problem solving. Moreover, in Sense-making theory, the world is seen as an open field; therefore, human beings do not have many external standards determining what information people can get and how to value information. However, it is vital to examine information as something that is constructed by people in their interactions with other people, media, technology and structures as they make their ways through life and work. Thus, information behaviour in this individual study conceives of information as being constructed through involvement in life's activities, issues, tasks, and social structures, as opposed to being independent and context free (Solomon, 2002; Savolainen, 1993). The insights gained from this study that explores seniors’ information behaviours in context will inform the ways in which seniors seek, shape use and create information as part of their work and life and shed light on Dervin’s Sense-making theory.

**4. Literature Review**

From the 1970s into the 1990s, most LIS studies focused primarily on audits of services, programs, and the allocation of library resources for older patrons, for example Bewley & Crooks, 1984; Su & Conway, 1995; Turock, 1982. All of these studies regarded older users as an undifferentiated group, aged about 65 and older (Williamson & Asla, 2009).

Since the 2000s, some researchers have started to consider various contexts, aiming to address the gaps in LIS literature; seniors are viewed within the context of their own circumstances and experiences, including their personal characteristics, values, socioeconomics circumstances, and physical environments (Hummert, Nussbaum, & Wiemann, 1992). However, much of the recent research is dominated by an American perspective, focusing on seniors’ health information seeking.

***4.1 Information needs***

Many studies claim that health information is one of the major areas of information needs among seniors (Williamson & Stayner, 1980; Williamson, 1995; Williamson, 1998; Ijiekhuamhen et al., 2016). In a 2-round Delphi study of the information and library needs of the aged in the Melbourne suburbs of Ringwood and Croydon, Williamson & Stayner (1980) found that seniors’ information needs were in the areas of health and nutrition, nursing care and home assistance. In 1995, Williamson conducted another study investigating information needs of 202 seniors in Australia; the author asserts the most important information needs was health. Similarly, Ijiekhuamhen et al. (2016) indicates the top two information needs of elders in Igueben Local Government Area of Edo State, Nigeria aere health conditions and pension/finance.

Some researchers acknowledge the information needs of seniors are not only limited to health; rather, their information needs fall into diverse categories (O’Connor, 2013; Su & Conaway, 1995; Barrett, 2000; Blake, 1998; Wicks, 2004 ). One study, which examines the information needs of elderly Chinese immigrants in Florida, identifies participants’ information needs included news and information about health issues, hobbies or interests, cultural or religious activities (Su & Conaway, 1995). Seniors in the UK identified finance and benefits, community care (support, services and practical help at home), and housing as major areas of information needs (Barrett, 2000). Another study focusing on seniors in the UK also reveals that the seniors’ information needs were diverse; their information needs were educational opportunities; planning and use of leisure time and in retirement; welfare rights and benefits; and sources and providers of information (e.g. CABx, legal advice centers) (Blake, 1998).

Instead of conceptualizing seniors as one homogenous group, some researchers focus on subgroups of this population, such as seniors who return to school and seniors who are social dancers. Aagard, Antunez & Sand (2015) examined the use of academic library resources and services by older adults (over 50 years of age) seeking undergraduate or graduate degrees . The results of the paper reveal the information needs of this group were library services and university resources. One research that investigates information needs and requirements of seniors who are social dancers reveals that the information needs (i.e., demands of life, problems, and decisions) of these social dancers are very specific and motivated by physical and social events of the world.

***4.2 Information sources and information-seeking behaviour***

Many studies have been conducted for examing seniors’ information seeking behaviours. Several studies have found that seniors prefer seeking information from interpersonal sources. Wicks (2004) study examines the information-seeking behaviour of two groups of 29 older adults, between the ages of 57 and 95. Wick’s first group was defined simply by those living in a retirement residence; the second group of individuals were living independently, and either retired or over the age of 65. With participants ranging from age 57 to 95, Wicks (2004) found a divide between what he calls “oldest-old” and “old-old/young old” adults in his study and suggests interpersonal sources together with internally-produced print materials were relied on for the information needed for participation in community clubs and organizations; interpersonal sources to find answers to medical and financial questions; and printed resources for hobby-related information seeking. Campbell and Nolfi (2005) also suggest that the elderly adults are willing to use the internet as a starting point for general information, but when it comes to making informed decisions about their health care, the majority preferred to talk to professionals, such as doctors and physicians. Similarly, Walker et al., (2017)’s research supports the ideal that the primary sources of information for the seniors were through friends, family, and physicians.

Despite similar findings on the importance of interpersonal information sources, studies have found differing perspectives on the internet use and seeking health information. Medlock (2015) found that the internet was an important source of information, often after talking to a doctor, while Wicks (2004) argued that the internet was the least used source for health information among the participants. Lipkova et al. (2017) also found increasing use of technology compared to traditional forms of locating information on current events.

Another popular information source for the elderly is the printed material, which is used for information seeking for entertainment, news, and for their interests (Niemela et al., 2012). Rothbauer and Dalmer (2015) indicate that newspapers were valued for being rich sources of local community news, events, and other useful information.

As reading has been recognized as the liberal arts hobbyist’s primary means of acquiring new information and developing knowledge (Cox, Griffin, & Hartel, 2017; Stebbins, 1994); as well as one of the major ways that older adults chose to spend their time, several studies have been conducted for investigating older adults and their reading practices. In an interpretive case study, Rothbauer and Dalmer(2018) found out that reading plays a key role in older adults’ lives, functioning as a way to navigate and chart one’s life events. The authors also suggest that aging readers perceive reading as a means of escape, allowing them to escape from pain and isolation related to aging. Reading, as suggested by Rothbauer and Dalmer (2018), “connect seniors to meaning, to purpose, to pleasure, to people and to the world” (p. 170).

Seniors’ information seeking behaviour often involves the avoidance of information, with Chatman (1992) finding particular examples related to residents' fear for the future. The retirement community where Chatman (1992) undertook her research did not have an attached nursing facility. This means when a senior became too physically frail or cognitively impaired, the person had to move away to a nursing home. Consequently, the residents to whom this occurred were more apt to avoid seeking information out of fear that their families or the retirement community's manager would learn about their condition and have them institutionalized. Willamson and Asla's (2006) research supports Chatman's observation. In their research, one of the retirement communities had an on-site nursing home and the other did not. At the retirement community with a nursing home (as well as a very strong home health program designed to keep residents in their apartments), the participants expressed less concern about discussing health issues openly. “It's all people want to talk about” one individual quipped (Williamson & Asla, 2009, p. 79). The situation appeared to be somewhat different at the other site where participants appeared to avoid the health information and were uncommunicative about their health for fear of having to move.

***4.3 Information use***

Several scholars suggest seniors use the information for making sense of their lives and dealing with changes in their lives. Guidarini (2012) in his article "living large: The continuing need for large print materials" notes after seniors get the required information, they would use the information to make better choices and have a good understanding of a particular area of life. similarly, Getz & Weissman (2010) conclude Israeli older adults use the information of laws and social services for dealing with changes in their lives.

When focusing on older adults’ everyday information behaviour, Niemelä, Huotari and Kortelainen (2012), suggests the seniors used the information for some observable actions, such as organizing their daily activities, preparing food, exercising and engaging in healthy activities, practicing language skills, or filling in crossword puzzles.

***4.4 Uncertainties and Barriers***

Several uncertainties and barriers affecting seniors’ information seeking behaviour have been identified in the LIS literature. The main barrier, as suggested by many researchers, is an unawareness of information resources and services. Seniors reported that they do not know where to find help. Barrett (2000) found out the elderly participants in the UK demonstrated a general lack of awareness of the vast amount of information on practical help, services, health, benefits and equipment available to them and how to access it. In a similar vein, Getz & Weissman (2010) indicate the seniors did not know enough about the laws and services existing for their benefit. Aagard, Antunez and Sand (2015) also suggest the some of the barriers that are mentioned by degree-seeking older adult students were an unawareness of library services, a lack of time to use the library and a lack of expanded library hours.

Wicks (2004) also suggests the difficulties related to declining physical abilities, such as loss of eyesight or loss of hearing, are also the barriers that seniors faced when they gather information for everyday life tasks. Some seniors expressed concern about incomplete and inadequate content, while others encountered wth information overload.

Other barriers that seniors facei include a lack of self-confidence, discriminations against senior citizens, illiteracy, memory constraint, and the learning methods of senior citizens (Esquer Ramirez, 2004; Barrett, 2000; Jensen et al., 2017; Walker, 2017; Choi, 2011).

***4.5 Ways of Bridging the gaps***

Only afew articles examine and focus on the ways seniors bridge the gaps and cope with uncertainties in LIS. In the paper, “Exploring older adults' health information seeking behaviors,” the participants reported three coping mechanisms that helped them to solve the uncertainty: disregarding the problem, relying on the physician, and searching for information (Manafo & Wong, 2012).

**5. Methodology**

This study adopts a content analysis approach to investigate seniors’ information behaviour in the LIS literature. Four databases, namely Western Summon, Library and Information Science Abstracts(LISA), Library Literature & Information Science Full Text (H.W. Wilson), and ProQuest Dissertations & Theses Global, were used to gather articles for analysis. Search keys included specific descriptors related to information behaviour as well as senior adults. Search keys are listed as follows:

* “Seniors” OR “elderly people” OR “elders” OR “older adults” OR “senior citizens” OR “older people” OR “aged” OR “aging”, AND
* “Information behavior” OR “information behaviour” OR “information seeking” OR “information needs” OR “information use” OR “information retrieval.”

Searches were limited to English language, scholarly peer-reviewed journals published from 1970 through 2019. Only substantive and full text articles were selected for analysis. Book reviews, editorials, duplicates, news items, brief articles, and unrelated pieces were removed. After screening at the title/abstract level and then full-text level, fifty-five articles remained to be analyzed.

These fifty articles were coded by the context of focus and specific information behaviour:

* Context of focus: Language use, gender, age, internet use, living situation, education level, health condition, social role, leisure activities, etc.
* Information behaviour: information needs, information seeking and sources, information use and creation, barriers and uncertainties, ways of bridging the gaps.

**6. Findings**

***6.1 Distribution of articles***

It is clear to see the number of published papers on this topic has increased significantly since 2005. Before 2000, 1993 and 1999 are the two peak years when researchers and scholars published the most literature on this topic. Table 1 illustrates the distributions of articles published since 1980.

Table 1: Distribution of papers published since 1980 in the literature

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1980-1984 | 1985-1989 | 1990-1994 | 1995-1999 | 2000-2004 | 2005-2009 | 2010-2014 | 2015-2019 | Total |
| # of papers | 3 | 2 | 3 | 5 | 3 | 7 | 12 | 20 | 55 |

***6.2 Contexts of focus***

Fifty-five papers are coded by the particular contexts of focus and specific information behaviour documented in the literature, aiming to address the research questions. Some major categories have emerged through the coding process. Table 2 illustrates the context of focus in the study.

Twenty-two percent of papers examine seniors’ information behaviour in a general way. This category contains articles focusing on the general pattern of seniors’ information behaviour, and considers how these patterns can contribute to libraries’ programs and services in a broad way. Topics in this category include seniors’ library services and needs, the guide to library programs, etc.

Other contexts of focus in the literature include seniors’ internet/technology use (22%), their living situations/levels of dependency (13%), their age (9%), their roles and hobbies (9%), seniors who have specific disease or health concerns (4%), seniors living in non-western countries(5%), changes in life(2%) and psychological concepts (4%).

Only a small number of literature reviews are found in the literature; five percent of articles provide reviews of existing LIS literature and shed light on the gaps in the LIS literature.

Table 2: Distribution of articles by context of focus in the literature

|  |  |  |
| --- | --- | --- |
| Context of Focus | # of papers | % |
| General | 12 | 22% |
| Internet/technology | 12 | 22% |
| Age | 5 | 9% |
| Role and hobby | 5 | 9% |
| Living situation | 7 | 13% |
| Specific disease and health concerns | 2 | 4% |
| Non-western country | 3 | 5% |
| Changes | 1 | 2% |
| Psychological concept | 2 | 4% |
| Mix | 3 | 5% |
| Others(Literature review) | 3 | 5% |
| Total | 55 | 100% |

**6.3 *Contexts and seniors’ information behaviours***

***6.3.1 Age***

Many scholars in the literature claim age is a significant factor that influences seniors’ information needs and sources, as well as their information- seeking behaviours. In contrast to older people under 85, Friedrich (2001) found evidence suggesting that chronological age actually may be a significant factor for those over that age. Indeed, some significant recent studies on this topic, such as Wicks (2004), Williamson(1995, 1998, 1998), Asla & Williamson(2006), all claim seniors are not a homogenous group and so should be subdivided into different old age groups. Even earlier, Turock (1982), in her exploration of public library services for older adults, subdivided old age into the young aged (65–74), the old-old (75–84), and the very old (85+).

Wicks’ research (2004) can be seen as one of the most significant studies on the topic because it divides seniors into younger-old, older-old, and oldest old. Wicks(2004) found that age is a significant factor influencing seniors’ information sources and information seeking behaviours. According to Wicks(2004), the younger-old in this study rely on interpersonal sources together with internally-produced print materials for participation in community clubs and organizations. Interpersonal sources are used to find answers to medical and financial questions, while printed resources are more commonly used for hobby-related information seeking. Older adults of all ages indicate interest in a variety of hobbies, but the younger-old are also engaged in activities (mostly volunteer) which closely resemble traditional jobs. Newspaper and local television newscasts, which are the primary means for the older-old to keep current, are no longer preferred by the younger-old.

Much of the attention has been given to seniors who are in “the fourth age,” or the “oldest-old” in the literature. Braungart (2005) considers this group “a unique subset of older adults” and seniors in the fourth age are “survivors who have made it through into such advanced age” (p. 130). Braungart (2005) suggests researchers should not consider the oldest-old to be the same as the other senior groups, which, in their younger cohorts, include “future survivors” and “future non-survivors” (p. 30). Much research indicates that the fourth age presents a unique informational context. It is easy to understand why when one considers the likely effect on information-seeking behaviors of many of the circumstances related to their age, such as problems with vision, hearing, memory constraints and loss, and physical incapacity.

One of the most obvious results of physical and mental deficits is that purposeful information seeking and information needs by people in the fourth age are likely to decline (Williamson, 2009). “On average, the very old needed significantly fewer information topics than the old-old who, in turn, needed significantly fewer topics than the young aged” (Williamson, 1995, p. 251). Williamson concludes that, although participants aged 85 and older have important information needs, the number of topics of interest appeared to have diminished significantly. However, health, income, recreation, and pharmaceuticals have still remained as their primary information needs.

Williamson's (1995, 1997, 1998) study suggests for all of the groups of older adults, especially the oldest-old, “incidental information acquisition” or information encountering is vital. Rather than through purposefully seeking information, seniors often acquire information through discussions with friends or from the mass media (Williamson, 2009). That is to say, seniors’ information needs are often unknown and only become recognized when relevant information is “discovered”(Williamson & Asla, 2009).

***6.3.2 Living situation***

Seniors’ living situations, according to many researchers, influence their information behaviours. Using the profiles of women living in a retirement community, Chatman(1992) explores the information and social worlds of aging women and examines the ways in which older women search for information. Chatman(1992) found not only several areas of information needs of the participants, including failing health, financial concerns, and loneliness, but also particular examples related to residents' fears for the future. For many of the women, death is not a problematic area. The author suggests that the most critical areas of need were not shared with others. In fact, the residents in the community chose to conceal their most dire needs for assistance because the retirement community where Chatman(1992) undertook the research did not have an attached nursing facility, meaning that when a resident became too physically frail or cognitively impaired, she had to move away from the community to a nursing home. Consequently, the residents to whom this occurred tended to avoid seeking information out of fear that their families or the retirement community's manager would learn about their condition and have them institutionalized.

Asla, Williamson and Asla (2006) tend to support Chatman's observation and findings. In this study, one of the retirement communities that the authors interviewed had an on-site nursing home and the other did not. At the retirement community with a nursing home and a very strong home health program that is designed to keep residents in their apartments, the participants expressed less concern about discussing health issues and they were more willing to discuss health issues openly. However, the situation appeared to be somewhat different at the other site where the retirement community did not have an on-site nursing home. The participants were not willing to be communicative about their health due to their fear of having to move. “Their families would throw them in a nursing home in a heartbeat if they thought they had a problem,” observed the manager of the retirement community without a nursing home (Williamson & Asla, 2009).

Walker et al. (2017) also concentrate on a series of focus groups with elders in retirement communities and their families as to how they manage health information and communication. The findings reveal that the seniors and families turn first to their personal networks, such as the staff in the retirement community, when they need information or help, and use online resources infrequently. Walker et al.’s (2017) study supports the idea that seniors’ living situations play a major role in seniors’ information behaviours.

***6.3.3 Internet/technology***

A large number of papers in the literature focus on the role of the internet in the process of seniors’ information-seeking behaviours. There appears to be a general belief that more and more older adults, especially baby boomers, will use the Internet as their primary information source in the future because they have grown up with it and/or have experience of using it in their workplace (Williamson & Alsa, 2009). This assumption seems to explain why today's oldest members of society prefer interpersonal information sources over the internet. The internet, to those older-old and oldest-old, may not be part of their earlier life experiences. Wales (2004) sees the internet being important for seniors “who are usually considered more frail or vulnerable” as “a person issue before a technology issue” (p. 41). Some seniors in this age group will be able, with assistance, to learn internet skills for themselves, but a personal approach is needed “because many older people do not see the benefits of IT,” and “some have great physical limitations” (Wales, 2004, p. 41).

Several studies have proved the internet has become one of the most important information sources for the younger-old and some of the older-old. Medlock et al. (2015) state that the internet is an important resource for health information on which many seniors rely. Notably, seniors are more inclined to use the internet after seeing a health professional rather than to prepare for an appointment, presumably because new information during the appointment stimulates information seeking behaviour (Medlock et al, 2015). Van Boekel, Peek, and Luijkx (2017) also found the younger-old spend most time on the internet for various activities. The authors (2017) reveal that these respondents mainly use the internet for practical and financial purposes such as searching for information, comparing products, and banking and for social and leisure-related activities such as gaming and social network sites.

Linton’s (2009) paper emphasizes the connection between seniors’ computer use and social ties. The author (2009) found that any computer with the internet in a large retirement community is valued by the seniors not only as a tool for seeking information, but also a symbol of competence and intelligence. Some seniors bring their computers with them when transferring to the single-room residence of assisted living or nursing care facilities. Interestingly, even when use has ceased, their computers are displayed to signal that their owners were or had once been keeping up to date.

***6.3.4 Role and hobby***

Examining seniors’ information behaviours in the contexts of their everyday lives is rare in the LIS literature. The literature focus is primarily on those seniors who are retired without considering their everyday life activities, such as their hobbies and roles. The information behaviours of seniors who are attending university in their retirement or seniors who are interested in reading or dancing are largely understudied. However, as suggested by many scholars in the literature, these seniors’ information behaviours are significantly different from the general senior population.

Lipkova et al. (2017) examine the information behaviours of seniors who are currently attending University in their retirement. The focus is primarily on these seniors’ information-seeking behaviours in regard to daily news and events. The authors found that compared to traditional information sources, such as printed materials or interpersonal sources, this particular group is more willing to use the internet or other technologies to locate information on current events. Aagard, Antunez, and Sand’s (2015) research also focuses on those older adults seeking undergraduate or graduate degrees. By investigating these older adults’ use of the university library and other university services, the authors found this population makes significant use of library services. This group uses multiple information sources in universities for seeking information and help. They prefer in-person meetings with librarians for reference help but are also interested in library services over email, text or telephone. Some of the older adult students make use of university resources such as the advising and academic enhancement office, the financial aid office and the registrar's office (Aagard, Antunez, and Sand’s, 2015). This “returning to school” stage contrasts with the lifestyles and stages of life of the general senior population in several previous studies, such as Wicks’ (2004) study, where participants are mostly either retired or living in senior residences, and not returning to school to further their careers.

Esquer Ramirez (2004) is one of the few researchers to examine information needs and information requirements of seniors who are social dancers. Unlike the general senior population, according to Esquer Ramirez (2004), the information needs and information requirements of these dancers are very unique and specific. Findings in this article reveal that the information needs, such as demands of life, problems, and decisions, of these social dancers are motivated by the physical and social events of the world. Physical events include “happenings that affect the dancers’ bodies (e.g., aging, weight gain) and the landscape (e.g., weather, temperature),” while social events of the world are “happenings that affect the ways dancers live or interact together (e.g., divorce, war)” (Esquer Ramirez, 2004, p. 98). These social dancers value dancing as a means to help them deal with both physical and social issues, such as illnesses and loneliness. Dancing allows these seniors to effectively react to events of the world, address their information needs, and achieve their security, development and well-being goals.

Like seniors who are social dancers, seniors who like to read also present unique information behaviours and practices. Rothbauer and Dalmer’s (2015) research not only sheds light on older adults’ reading practices, but also reveals this population's own perceptions about the meaning of reading in their lives. As Rothbauer and Dalmer (2015) suggest:

To convey one's understanding of the experience of reading necessarily requires attention and reflection on how reading is embodied. The physical activities that involve connecting to texts of all kinds, the sensory engagement of consuming and recalling texts, the sheer materiality of the texts themselves, as well as of their artefactual traces, the pleasures of sharing reading and ideas about reading are all clear indications of how the body is implicated in the accounts of reading offered by the readers in this study. (p. 171)

The authors suggest these seniors use personal reading histories as a method of navigating and charting their lives, and as a means of “escape from pain and isolation to vicarious experience, pleasure, and connections with other” (Rothbauer & Dalmer, 2015, p.170). To this group, reading is also a way to preserve what is deemed vital about life and living.

***6.3.5 Specific disease and health concerns***

Some researchers focus on specific diseases and health concerns to examine how these diseases and concerns influence seniors’ information behaviours. Jensen et al. (2017)’s paper outlines the impact of information overload relating to cancer and “cancer worry” on US adults aged from fifty to seventy-five years. The authors group these seniors into high-scan/seekers, low-scan/seekers, high-scan/no seekers, and low-scan/no seekers. Jensen et al. (2017) found that both those considered low-scan/no seekers and high-scan/seekers have high levels of “cancer worry” (p.96). Thus, the authors conclude that both information overload and information avoidance can lead to a higher incidence of cancer worry.

Similarly, Harland et al. (2017)’s paper also sheds light on this context of focus. The paper investigates the information behaviours of seniors newly diagnosed with dementia. The authors found that reactions to a diagnosis of dementia influence the perception of the value of information when making sense of the diagnosis. Information is avoided if participants rely on internal explanations to normalize their memory loss. The diagnosis of dementia also causes some barriers in information seeking and use. These barriers include not knowing whom to speak to, perceived stigma associated with dementia, and difficulty of applying generic information to one’s own situation. Some participants value and need information that can confirm their suspicions and provide explanations of the diagnosis.

***6.3.6 Psychological concept***

A small number of papers focus on how physiological concepts influence seniors’ information behaviour. Eriksson-Backa et al.’s (2018) paper uses the concepts of Locus of control and self-efficacy to determine how confident elderly were in their abilities to locate health information and employ the information they found in a meaningful way that would improve their well being. Locus of control is how a person views the impact of their behaviour on their life, and self-efficacy is a term describing an individual’s belief about their capacity to action. Focusing on the aspects of information seeking and information use, results show that both a stronger belief in one’s capability to master health information and to act in a healthy manner are positively linked to better health and health behaviour, as well as more active information behaviour.

Manafo & Wong (2012)’s article validates Eriksson et al.’s observation. This study interviewed 20 older adults in Toronto, Ontario, between the ages of 55 and 70 years old. The article clearly relays the fact that if information behaviour is enabling for older adults, it might result in individuals feeling empowered by this new knowledge and inspired to make healthy changes to their lifestyle. On the other hand, if information behaviour is disabling for older adults, they might become overwhelmed by the amount of information available and discouraged from doing further research.

**7. Discussion: Dervin’s Sense-making theory and seniors’ information behaviour**

***7.1 Information encountering***

In the LIS literature, information seeking and use has been largely discussed in terms of cognitive “gaps” (Dervin, 1980; Dervin, 1989; Dervin & Nilan, 1986) or “uncertainties” (Krikelas, 1983). Information seeking is variously conceptualized as resulting from people's perceptions that they have cognitive gaps which they need to bridge (Dervin & Nilan, 1986). In this view, information seeking is purposeful and this purposeful aspect is mostly implied in the literature rather than delineated.

Most researchers and scholars ignore the fact people frequently “discover information” while monitoring their world in an attempt to keep their “internal models up to date” (Wilson, 1977, p. 36). Other scholars who later gave prominence to this concept are Erdelez (1997), who used the term “information encountering, ” (p. 412) and Savolainen (1995) who saw everyday life information seeking as manifesting itself in the “monitoring of everyday life events” (p. 272).

It is worth noting that seniors’ purposeful information seeking behaviours, in general, are likely to decline because of their physical and mental deficits (Williamson, 2009). Williamson's (1995, 1997, 1998) study found that for all of the samples of older people, including the oldest-old, incidental information acquisition is vital. Rather than purposefully searching for information, the seniors are found to acquire information mostly through discussions with friends, family members, staff in retirement communities, etc.. Even when using mass media, seniors are found to be more commonly using “without the intention of locating specific information” (p. 25). According to Williamson (1998), the participants often picked up information they had not even known that they needed until they heard about or read it through these sources. That is to say, some needs are “unconscious” becoming recognized only when relevant information is “discovered”.

Seniors’ information encountering experience demarcates the gaps in Dervin’s Sense making theory. The Sense-making theory gives a central place to the “situation” resulting in a cognitive “gap,” and the “bridge,” which is a process in which the individual attempts to seek information through information sources in order to satisfy the information need (Krikelas 1983; Wilson, 1977). However, the notion of people “being informed” rather than “seeking information” or “bridging the gaps” seems to be more appropriate to the senior group. Moreover, the “situation” stage in Dervin’s Sense-making theory may or may not exist because seniors’ information needs, according to many scholars (Williamson, 1995, 1998, 2007; Khayesi et al., 2013), are often not recognized by the individual concerned until they heard about or read them. Apparently, seniors’ “situation” is a variable one, because much depends on the contexts that are mentioned in the previous section.

***7.2 Information avoidance***

Seniors’ information seeking behaviours also involve the avoidance of information, with Chatman (1992) finding particular examples related to residents' fears for the future. Chatman’s (1996, 1999) studies of the information worlds of participants in retirement communities and prisons has led her to develop a theory of life in the round, where context shapes inhabitants’ definitions of what information is as well as appropriate ways of seeking and using it. The notion of roundness (Chatman, 1999) presents the difference between a focus on purposeful information seeking and discovering information in context. Chatman’s theory of life in the round provides a basis for explaining why some seniors cut themselves off from relevant information sources. The use of those sources may influence what happens in the future in a negative way, as was the case for an elderly woman who was afraid to discuss her dizziness with others for fear that she would lose her independence and end up in a nursing home. Not only Chatman, but also Harland, Wainwright and Seymour (2017) found that seniors who have been diagnosed with dementia tend to avoid information if it is seen as a challenge to their ways of life or makes them feel upset or worried about the future.

The concept of information avoidance leads to another gap in Sense-making theory, that is, following the “situation” resulting in a cognitive “gap,” the individual may not seek information through information sources in order to satisfy the information need. In the case of seniors newly diagnosed with dementia, a diagnosis of an illness does not necessarily lead to the senior seeking information to bridge the gap, as might be expected in Dervin’s Sense-making theory; rather, information avoidance may be adopted as a coping strategy, particularly when a senior who has been diagnosed feels powerless to help or change their situation (Case and Given, 2016).

**8. Conclusion**

This study seeks to contribute to Dervin’s Sense-making theory and offers a unique in-depth look at seniors’ information behaviours in different context in an attempt to fill the gaps in the LIS literature. As mentioned, the senior group is understudied; more studies need to be done in order to examine seniors’ information behaviours as they are embedded in the fabric of their everyday lives and work. The literature review indicates that the senior group is far from homogeneous. Solely focusing on older adults’ health information seeking behaviours and centering on Sense-making theory without considering context, like most of the literature has, is a limited approach that should be rectified.

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