Newcomers from the Other Side of the Globe: International Students’ Local Information Seeking During Adjustment

Chi Young Oh  
University of Maryland, College Park  
College Park, MD, USA  
jcoh@umd.edu

Brian S. Butler  
University of Maryland, College Park  
College Park, MD, USA  
bsbutler@umd.edu

ABSTRACT
Through the findings from a longitudinal survey and the preliminary analysis of the follow-up interviews, this paper explores how international newcomer students’ needs for local information and their information-seeking behavior develop during adjustment to new host environments. Also, this study examines the relationships between their local information behaviors and the demographic and socio-national contexts of newcomer students. The results are discussed in a way to deepen our understanding of international students’ information-seeking behavior during adjustment to unfamiliar local environments and the various contexts that shape the changes of their information behavior over time. Finally, this paper provides implications for developing information behavior models and theories in the contexts of newcomers and for designing information systems, policies, and services to better support international students’ information practices and adjustment in unfamiliar environments.

Keywords
International students, immigrant information behavior, local information, everyday life information seeking

INTRODUCTION
As international education gets increasingly popular around the globe, more and more people leave their home country to study abroad. According to the report of Project Atlas (2015), there are 4.5 million students studying in colleges and universities in other countries in the world as of 2014, which is a 50 percent increase since 2005.

However, as newcomers in a host country, international students face various challenges. Specifically, they face informational challenges for adjusting to unfamiliar geospatial environments. They need to learn about local environments and various types of local information, such as housing, groceries, retail stores, banks, local geography, public transportation, and navigating directions. Developing this kind of local knowledge is also considered essential for international students’ general living adjustment to new environments (Hofmann, 2010; Mehra & Bilal, 2007). However, although there have been a number of studies on international students’ adjustment, these studies did not necessarily look into their needs for local information and their information-seeking behavior during adjustment.

The current paper presents the findings from a longitudinal study that examines international newcomer students’ needs for various types of local information and their information-seeking behaviors during adjustment to new environments. Specifically, this paper investigates the development and changes in their local information needs and information source use over the period of adjustment. Additionally, this project seeks to understand the factors shaping the changes in information behavior of international students during their adjustment to unfamiliar environments.

Throughout the paper, the term local information is used to refer to various kinds of day-to-day local information, such as information about places, space, events, routes, and transportation in a local area. Thus, in this paper, the term local information behavior (LIB) represents various sorts of information practices related to local information, such as perceiving needs for local information and using information sources and technologies for local information.

PREVIOUS WORK
Numerous studies have examined international students’ adjustment to host countries and various challenges that they experience. Those challenges relate to different cultures and customs; languages and communication problems; loneliness and loss of existing social networks; pressure and sense of uncertainty; and problems with daily tasks and living management in new environments (Toyokawa & Toyokawa, 2002; Zhang & Brunton, 2007). Studies also indicated that international students have more challenges and greater stress than domestic students (Cheng, Leong, & Geist, 1993; Misra & Castillo, 2004). Researchers also explored various ways to help international students with their adjustment to unfamiliar environments (Mallinckrodt & Leong, 1992; Misra, Crist,
Information behavior of international students has been explored in Library and Information Science (LIS) field although those primarily examined international students’ information seeking in libraries rather than in everyday life (Allen, 1993; Bordonaro, 2006; Jackson, 2005). While studies on international students’ information seeking in everyday life was limited, LIS scholars have explored everyday life information seeking of immigrants who have many commonalities with international students, as international newcomers (Caidi, Allard, & Quirke, 2010; Komito & Bates, 2011).

However, there have been a few recent exceptions, which specifically focused on everyday life information seeking of international students (Oh, Butler, & Lee, 2014; Oh & Butler, 2015; Sin & Kim, 2013; Sin, 2015). By surveying international students in a U.S. university, Sin and Kim (2013) examined international students’ use of social networking sites for daily information seeking. In her other study, Sin (2015) investigated demographic differences in international students’ everyday life information seeking (ELIS) and identified their information sources and the problems affecting their ELIS. These studies examined international students’ ELIS, although these did not necessarily consider the use of temporal frames to understand the contexts of international students’ information behaviors during adjustment.

In contrast to those studies, the current study examines information behaviors of new international students, rather than more established international students. Also, the current study aims to examine their local information behaviors (LIBs) in two different time points (Time 1 in the participants’ first year in the program and Time 2 in the second year). The current paper aims to add to Oh and Butler (2015), which examined local and geospatial information behaviors of new international students during early adjustment, by investigating the changes in their local information behaviors over the period of adjustment.

Caidi, Allard, and Quirke (2010, p520-521) pointed out that, despite various information behavior studies of immigrants and sojourners, it is unclear how information behaviors of international newcomers change across the settlement process and how information behaviors differ between those of international newcomers and longer established migrants. In addition, although existing information behavior models and theories provide basic frameworks to understand local information behaviors of international newcomers, these do not necessarily function as complete models to characterize information behavior of international newcomers in unfamiliar environments (Caidi et al., 2010; Sin & Kim, 2013). The current paper contributes to the literature on information behavior of international newcomers by specifically parsing its development over time during the period of adjustment. Following questions summarize these research motivations and the goals of the current study:

RQ1. How do local information behaviors (LIBs) of international students change during the period of adjustment to new local environments?

RQ2. What factors shape the changes in local information behaviors (LIBs) of international students during adjustment?

METHODS

To answer the research questions, the authors conducted longitudinal surveys and follow-up interviews with 50 participants over two academic years, beginning in Fall 2014, the first semester of the participating students at the university. The online surveys were conducted at two times over the two academic years with international graduate students and out-of-state graduate students in University of Maryland, College Park (UMD), Maryland, U.S. In order to examine LIBs of international students who are new to College Park area, first-year international students were recruited in Fall 2014, and first-year out-of-state U.S. students were also recruited as a comparison group.

In terms of students’ study levels, participants were limited to graduate students since graduate and undergraduate students have been reported to exhibit different information needs and international students are a larger proportion in graduate programs than in undergraduate programs both in U.S. and at UMD (about 13.3% of graduate students in U.S. and 31.1% at UMD VS. about 3.1% of undergraduate students in U.S. and 3.7% at UMD) (National Center for Education Statistics, 2014; Sin & Kim, 2013; University of Maryland, 2013).

Participants were recruited through campus email lists from October 2014 to March 2015 (Time 1), and the follow-up study was conducted one year after the Time 1, between October 2015 and March 2016 (Time 2). The survey was developed based on previous studies of information behavior of immigrants and international students (Lingel, 2011; Oh, Butler, & Lee, 2014; Komito & Bates, 2011).

The survey questionnaires examined participants’ demographics, local information needs, and information sources and technologies used. Participants rated their perceived importance of 12 types of local information and their use frequencies of 18 types of information sources, using 7 point Likert scale. The questions regarding their LIBs remained the same for both Time 1 and Time 2, but for Time 1, the temporal frame of the questions was their early adjustment period in their first month in the area and for Time 2, the temporal frame was their current LIBs in their time of participation, which is the second year in the area/university. The data in both Time 1 and Time 2 were compared and analyzed, using SPSS 22.
After Time 1 and Time 2 surveys, we invited participants for follow-up semi-structured interviews. The interview questions were designed to better understand participants’ survey answers and the reasons and contexts behind their specific local information needs and information source use. The interviews were recorded and transcribed, and notes were taken for each interview. While the current analysis of the interview data is preliminary, some of the findings will be used to further elaborate the survey results.

### FINDINGS

As results of Time 1 study, 149 first year graduate students, all of whom entered UMD in Fall 2014, participated in Time 1 survey, and 57 of them participated in the follow-up Time 1 interviews. For Time 2 study, 50 out of the 57 students participated the Time 2 survey and follow-up interviews. The current paper uses the data obtained from the 50 participants who participated in both Time 1 and Time 2 studies for longitudinal comparison of the data.

Of the 50 participants, 34 were international students from 16 different countries including China, India, Korea, Argentina, Iran, Italy, Russia, South Africa, Sri Lanka, and Vietnam, and 16 were U.S. students from 13 different states, who were new to College Park, Maryland. In terms of gender and study levels, 22 were Masters students and 28 were PhD students, and 23 were male and 27 were female.

#### Local Information Needs of Newcomer Students

**Perceived Importance by International Students**

The findings from the Time 1 and Time 2 surveys include the perceived importance of each type of local information and its change over the two time periods. The change was statistically significant for several types of information.

<table>
<thead>
<tr>
<th>Table 1. Perceived Importance of Information and Its Changes between Time 1 and Time 2 for Each Group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>International Students (N = 34)</strong></td>
</tr>
<tr>
<td><strong>T1</strong></td>
</tr>
<tr>
<td>Housing</td>
</tr>
<tr>
<td>Grocery stores</td>
</tr>
<tr>
<td>Retail stores</td>
</tr>
<tr>
<td>Cafes/Restaurant</td>
</tr>
<tr>
<td>Health related</td>
</tr>
<tr>
<td>School related</td>
</tr>
<tr>
<td>Banks/ATMs</td>
</tr>
<tr>
<td>Transportation</td>
</tr>
<tr>
<td>Routes/Paths</td>
</tr>
<tr>
<td>Leisure/exercise</td>
</tr>
<tr>
<td>Entertainment</td>
</tr>
<tr>
<td>Event/fairs</td>
</tr>
</tbody>
</table>

Note. *p < 0.05 **p < 0.01

<table>
<thead>
<tr>
<th>Figure 1. Perceived Importance of Each Information Type by International Students (Mean)</th>
</tr>
</thead>
</table>

For Time 2, international students’ frequency of interaction with different information sources was examined. The findings show that international students were more frequently using than any other social information sources in Time 1.

Specifically, paired-samples t-test showed that information about **housing** and **banks/ATMs** was perceived significantly less important in Time 2, while information about **entertainment-related places** (i.e. movie theatres and other entertainment venues) was perceived significantly more important in Time 2 than in Time 1 (Table 1).

**Perceived Importance by U.S. Out-of-state Students**

In Time 1, U.S. out-of-state students’ perceived importance of local information was quite similar to the ones of new international students. However, most types of local information which were perceived less important in Time 1, such as information about **health-related places**, **leisure/exercise places**, **entertainment-related places**, and **event/fair/festivals** were all perceived significantly more important in Time 2 than in Time 1.

#### Information Sources of Newcomer Students

**Information Sources for International Students**

In terms of information source use, Time 1 survey results show that new international students used mobile, online, and geospatial information technologies, such as **smartphone/mobile maps**, **web**, **online maps**, and **location-based services** (e.g. Yelp, bus apps), more frequently than other information sources for seeking local information in their new environment. In terms of information sources, **senior co-national students** were more frequently used than any other social information sources in Time 1.

But for Time 2, international students’ frequency of interaction with different information source use dropped for many types of information sources, compared to Time 1. Specifically, **senior co-national students**, which had been the most frequently used social information source in Time 1, were significantly less frequently used in Time 2 (t = 2.593, p = 0.01).
Table 2. Use Frequency of Information Sources and Its Changes between Time 1 and Time 2 for Each Group

<table>
<thead>
<tr>
<th>Source Type</th>
<th>International Students</th>
<th>Male (International; N = 17)</th>
<th>Female (International; N = 17)</th>
<th>Masters (International; N = 14)</th>
<th>PhD (International; N = 20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fellows co-nationals</td>
<td>3.88</td>
<td>3.53</td>
<td>2.89</td>
<td>3.53</td>
<td>3.14</td>
</tr>
<tr>
<td>Senior co-nationals</td>
<td>4.11</td>
<td>3.59</td>
<td>2.85</td>
<td>3.59</td>
<td>3.12</td>
</tr>
<tr>
<td>Fellow other nationals</td>
<td>3.35</td>
<td>3.17</td>
<td>2.49</td>
<td>3.17</td>
<td>2.81</td>
</tr>
<tr>
<td>Senior other nationals</td>
<td>3.59</td>
<td>3.38</td>
<td>2.81</td>
<td>3.38</td>
<td>2.81</td>
</tr>
<tr>
<td>Family</td>
<td>2.21</td>
<td>1.35</td>
<td>0.95</td>
<td>1.22</td>
<td>0.84</td>
</tr>
<tr>
<td>Neighbors</td>
<td>3.09</td>
<td>2.00</td>
<td>0.68</td>
<td>1.22</td>
<td>0.84</td>
</tr>
<tr>
<td>Staff at unis/offices</td>
<td>3.65</td>
<td>3.17</td>
<td>2.16</td>
<td>3.17</td>
<td>2.16</td>
</tr>
<tr>
<td>Uni websites</td>
<td>4.59</td>
<td>3.00</td>
<td>0.68</td>
<td>4.59</td>
<td>3.00</td>
</tr>
<tr>
<td>Online communities</td>
<td>3.12</td>
<td>2.00</td>
<td>0.68</td>
<td>2.00</td>
<td>0.68</td>
</tr>
<tr>
<td>Web</td>
<td>5.71</td>
<td>2.86</td>
<td>0.68</td>
<td>2.86</td>
<td>0.68</td>
</tr>
<tr>
<td>Online maps</td>
<td>5.62</td>
<td>2.96</td>
<td>0.68</td>
<td>2.96</td>
<td>0.68</td>
</tr>
<tr>
<td>Smartphone maps</td>
<td>6.03</td>
<td>2.86</td>
<td>0.68</td>
<td>2.86</td>
<td>0.68</td>
</tr>
<tr>
<td>Location-based service</td>
<td>5.33</td>
<td>2.18</td>
<td>0.68</td>
<td>2.18</td>
<td>0.68</td>
</tr>
<tr>
<td>Paper maps</td>
<td>3.12</td>
<td>2.88</td>
<td>0.68</td>
<td>2.88</td>
<td>0.68</td>
</tr>
<tr>
<td>Offline media</td>
<td>2.53</td>
<td>1.85</td>
<td>0.68</td>
<td>1.85</td>
<td>0.68</td>
</tr>
<tr>
<td>Wander by myself</td>
<td>3.68</td>
<td>3.00</td>
<td>0.68</td>
<td>3.00</td>
<td>0.68</td>
</tr>
<tr>
<td>Wander with others</td>
<td>3.44</td>
<td>2.94</td>
<td>0.68</td>
<td>2.94</td>
<td>0.68</td>
</tr>
<tr>
<td>Find by chance</td>
<td>3.88</td>
<td>3.25</td>
<td>0.68</td>
<td>3.25</td>
<td>0.68</td>
</tr>
</tbody>
</table>

Note. * p < 0.05  ** p < 0.01

Differences in LIB Changes by Gender

For both male and female international students, the perceived importance of housing and banks/ATMs information decreased significantly in Time 2, while the perceived importance of entertainment-related place information increased significantly for male international students (Table 1). In terms of information source use, male international students demonstrated more changes than female international students. Male international students’ use of 7 different types of information sources, including fellow co-national students and senior co-national students, decreased significantly, and male international students’ use of fellow other national students (t = -2.167, p = .046) increased significantly in Time 2, compared to Time 1 (Table 2). For female international students, the use of 5 types of information sources significantly decreased in Time 2, but no information source use increased significantly in Time 2 than in Time 1.

Differences in LIB Changes by Study Levels

Changes in LIBs were different in several ways between international students in Masters programs and in PhD programs. International PhD students perceived entertainment-related place information (t = -2.714, p = .014) significantly more important in Time 2 than in Time 1. Also, while international Masters students’ source use

Figure 3. Use Frequency of Information Sources by International Students (Mean)

Figure 4. Use Frequency of Information Sources by U.S. Out-of-state Students (Mean)
frequency significantly changed only for 3 types of information sources (family, paper maps, and wandering by myself that decreased in Time 2), international PhD students’ source use frequency decreased significantly for 7 types of information sources, including senior co-national students and online communities.

DISCUSSION
By integrating the results of both Time 1 and Time 2 surveys and the preliminary findings from the follow-up interviews, the current study investigates local information behavior of new international students and its changes over the period of adjustment. The results provide a range of insights into the information behaviors of international newcomer students and will contribute to the development of existing information behavior models and theories. In this section, the findings are discussed to answer the proposed research questions and to provide implications for developing a research framework for information behaviors of international migrants.

Adjustment to the Environments
In Wilson’s (1981) information need and seeking model, he included several aspects of environment—work environment, socio-cultural environment, politico-economic environment, and physical environment—as the factors affecting persons’ needs for seeking information. Building upon this model, we argue that not only the environment itself, but also person’s level of adjustment to environments should be considered as an intervening variable that plays a role in the development of human information needs, specifically for newcomers in an area. The follow-up interviews with the participants also reflected this as their LIBs at the time of participating Time 2 sessions were strongly geared towards recreational place information, including cafés, restaurants, and local attractions, rather than information about day-to-day, essential places which were dominant in the participants’ local information behaviors in Time 1. This preliminary finding from the follow-up interviews, combined with the findings from the longitudinal surveys, suggests that temporal factors or level of adjustment to environments should be accounted for in understanding the rise and development of local information needs of international or domestic newcomers.

Survival, Survival, and Survival
Although the information needs of the participants changed over time in several ways, the degree of change was smaller in international students, compared to U.S. out-of-state students. While the perceived importance of most types of recreational local information, such as information about leisure/exercise places, entertainment-related places, and event/fair/festivals, significantly increased for U.S. out-of-state students, only the perceived importance of entertainment-related place information significantly increased for international students. Basic/essential local information, such as grocery stores, public transportation, and school-related place information, was still among the most important types of local information for international students, and their perceived importance of other recreational local information, such as café/restaurants, leisure/exercise places, and event/fair/festival information, in Time 1 did not change significantly in Time 2.

In a mixed-method study of international students’ local information behavior, Oh et al. (2014) suggested the theme of Survival First, Recreation Next that international students perceived basic, survival-related local information, such as groceries and transportation information, more important than recreational place information, and consider seeking recreational place information later in their adjustment process. However, the findings from the current longitudinal study shows that survival is still important for international students and that the pursuit of recreational information is still limited for international newcomers in their second year in the host environments. International students’ limited pursuit of recreational information may be further examined, specifically focusing on its relationships with international students’ adjustment to new academic and cultural environments (Toyokawa & Toyokawa, 2002).

Situational and Social Contexts of LIBs
The current findings indicated that international students’ information source use was more focused on mobile, online, and geospatial information sources in Time 2. This simplified pattern of information source use may reflect the socio-technical characteristics of international students, the degrees to which international students are adjusted to local host environments, and their pursuit of more effective and efficient information tools in their time-sensitive graduate student life environments. This emergent pattern of focused information source use may be further studied through the lens of Savolainen’s ELIS model by examining the situational factors of ELIS of international students (Savolainen, 1995).

Also, the current findings indicated that there were changes in international students’ socio-cultural contexts. They used fellow other nationals more frequently as their local information sources in Time 2, while their use of senior co-nationals significantly decreased. This implies that international students’ social context changed and that this change affected their use of interpersonal information sources. However, the findings in the current study also show that there are differences in the changes of social information source use between different genders and different study levels. In this aspect, information behavior models for newcomers and international migrants would benefit from taking into account various demographic factors, such as gender and study levels (e.g. Masters, PhDs) as well as social and situational contexts.

CONCLUSION
As Caidi et al. (2010) noted, there have been few studies investigating changes in information behaviors of international newcomers over time. To attend the call for deepening our understanding of the specific area of research, the current study examined how international
students’ local information behavior changes during adjustment to new environments. The current study contributes to existing information behavior literature by identifying the factors shaping international newcomer students’ information needs and information seeking behaviors, such as time, adjustment to the environment, and changes in social relationships, as well as by describing the changing nature of LIBs of international newcomer students over time. The findings presented here are a step toward better models of international newcomers’ information behaviors and will allow information professionals, system designers, educators, and policy makers to more effectively support newcomers from the other side of the globe as they navigate the challenges of adjusting to unfamiliar host environments.

REFERENCES
Hofmann, P. N. (2010). Examining factors of acculturative stress on international students as they affect utilization of campus-based health and counseling services at four-year public universities in Ohio (Doctoral dissertation, Bowling Green State University).