Diffusion of theories and theoretical models in the Ibero-American research on information behavior

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ABSTRACT

Ibero-American research on IB lacks the visibility typical of other parts of the world, and little is known about it in countries outside the area. The objective of this paper has therefore been to analyze the way in which Ibero-American research incorporates various theoretical references to empirical research on IB. The results point to the existence of different focuses of research in the past ten years, in the sense of a reduced empirical approach and a moderate to minimal use of theories in the design of such research. Furthermore, the most-cited theories and models of IB at an international level are those most widely applied in this geographical area, and the use of a wide variety of theoretical frameworks has been demonstrated, which gives the research under review a cognitive, but also socio-cultural, perspective. Future research should further elaborate on this issue, including other types of documents, such as conference papers, books and theses, while taking into account the publication landscape of the geographical area in question.

Introduction

Research on information behavior (IB) has been carried out in various countries over several decades, so today there is a great accumulation of knowledge that allows us to confirm the existence of a consolidated field, with theories, models and concepts of its own or imported from other areas (Fisher, Erdelez & McKechnie, 2005; Case & Given, 2016). One important question is to identify the extent to which these previously developed theories and models are being disseminated and effectively used in empirical research. The existence of a theoretical foundation is naturally considered to be an indicator of maturity in an area of science, as well as facilitating design, while helping to compare and interpret results and placing a study in a broader context (Fidel, 2012). Much research has been carried out in this respect in order to identify processes of diffusion and the use of theories in different contexts and realities, or from different perspectives.

Vakkari (1998) analyzed at an early stage the process of building a specific theory, by showing both its achievements and its gaps, contradictions and unanswered questions; a consideration of which might contribute to enriching the theory involved. From a broader perspective, McKechnie, Pettigrew, and Joyce (2001) analyzed the general use of theory in IB research. More recently, Rosenbaum (2010) analyzed the dissemination of Giddens' ideas in Library and Information Science (LIS), McKechnie, Serantes and Hoffman (2012) noted the use of postmodern approaches in IB research. Savolainen (2017) studied the integration and development of the David Ellis model, and Dewey (2016) worked on Foucault's proposals in LIS. Finally, González-Teruel and Abad-García (2018) studied the diffusion of the theories of Chatman, and González-Teruel and Pérez-Pulido (2020) that of the theories of Savolainen. It is this set of concerns that the present article is designed to address, based on an investigation into the diffusion and use of theories of information behavior (IB) in an Ibero-American research environment.

The term "Ibero-America" is used to designate the twenty countries of the Americas, sometimes with the addition of Spain and Portugal, which have Spanish or Portuguese as their main languages. The expression also has socio-cultural and geopolitical connotations. It refers, at a sociocultural level, to common historical links that have resulted in a shared identity and culture. (García-Canclini, 2003; Blas-Zabaleta, 2000). There is also a scientific dimension that promotes debates on the modes of production, dissemination and evaluation of scientific activity, and the different ways in which current practices benefit or harm increased visibility and international projection.

There has likewise been institutional interest within LIS, since the 1990s, in initiatives aimed at international cooperation. Examples include successive events held by *Latin American Educators of Librarianship and Information Science* (Barber, 2004) or the founding of the *Association of Education and Research into Librarianship, Archival Science, Information Science and Documentation of Ibero-America and the Caribbean* (EDICIC), which used several initial

EDICIC meetings as a space for the exchange of perspectives among teachers and researchers from different Latin American countries. The main results of these meetings include the establishment of formal links between different universities and even the search for a Latin American take on informational thinking which seeks, while respecting the regional diversity of the zone, to find common points of approach to scientific progress in this field (Araújo, 2019).

These initiatives are a result of what Whitley (1974) referred to as "social institutionalization", i.e. the creation and maintenance of formal structures that support an area of knowledge. There are two further factors that reinforce the idea of an early institutionalization of LIS at a local level in Ibero-America: The first of these is the existence of numerous specialized journals in the area. These have existed for a considerable time, but enjoy little visibility in the databases that keep a record of what has come to be called "mainstream science" (Herrero-Solana & Liberatore, 2008). The second factor is the implementation of specific university studies in the early years of the twentieth century in countries such as Argentina (1922), Uruguay (1945), Cuba (1946) and Brazil (1962) (Vílchez-Román, 2005).

University education in Ibero-America has however not tended to result in research; focusing mainly on vocational training at undergraduate and graduate level, although there are a few master's and doctorate-level teaching programs (Hernández-Salazar, 2006). It is nevertheless possible, in spite of this, to find early IB research carried out in various contexts. Examples include Romanos-de-Tiratel (2000), with a report on unpublished IB research carried out among university students in Argentina in 1971. In the 1980s, Andrade (1981) carried out a study of users in an organizational context, focusing on the formal and informal channels used to obtain both intra- and extra-organizational information; an approach doubtless similar to that employed in the INISS study. Finally, in the 1990s, Eggert (1994) studied the sources of information used by housewives in a way that contributed to the creation of a female identity. It has also been possible to recognize, since the 1990s, various centers of research that have consolidated lines of investigation into IB. Such is the case of the Department of Information and Society of the University of the Republic of Uruguay, where various projects focusing on IB have been developed in academic, organizational and everyday contexts (Pérez & Sabelli, 2010). Research in this latter context includes investigation into the IB of the elderly, of women or of young people in disadvantaged situations (Sabelli & Rodríguez-Lopater, 2012; Sabelli & Rasner, 2015). Furthermore, one outstanding center of research in Brazil (the country with the highest level of scientific output in Ibero-America) is the EPIC Group (studies in information practices and culture) of the School of Information Science of the Federal University of Minas Gerais (UFMG) where, since the turn of this century, numerous research programs have been carried out using a sociocultural approach to user studies, particularly in the field of everyday life. These focus on sex workers, the elderly and their experience of digital inclusion, or the sight-impaired and their interaction with the web, among others (Araújo, Sirihal-Duarte & Dumont, 2019). Finally, a third center of research where a stable line of investigation focused on the study of IB has been maintained is the Institute for Bibliotechnological and Information Research (IIBI) of the National Autonomous University of Mexico (UNAM). According to Hernández-Salazar (2020), initial studies date back to the 1980s, although the greater part of such activity has taken place in this century. It is also remarkable for having occurred in this center, where NEIN (the information needs model), one of the theoretical models for the study of IB conceived by Calva-González (2004), was developed. This is based on conceiving the information-needs phenomenon as a process that considers the emergence of information needs, search behavior and the satisfaction of these needs. All this is moreover influenced by both individual and external factors. It is a widely disseminated reference for the study of diverse groups outside the academic and professional world, such as farmers, adolescents or indigenous communities (Ramírez-Garrido & Calva-González, 2015).

It is generally possible to state that research on IB in Ibero- America has existed in some countries since as early as the 1970s, and that it is now deeply marked by social, economic and political conditions that result in a particular informational reality. We must therefore not forget that there are great socioeconomic asymmetries in the region, which translate into profound informational

asymmetries in the sense of a population with wide access to computers, the Internet, books and the media versus a population without any access to such resources. We should also emphasize, on the other hand, that the Ibero-American countries start out from an unfavorable position in terms of access to flows of international information (scientific, journalistic, cultural, entertainment), and that they essentially play the role of consumers of information produced in the world's hegemonic countries. This ecosystem necessarily determines the style of IB research carried out in Ibero-America.

It is in this context that this paper was developed, with the aim of pinpointing and highlighting the way in which Ibero-American research has incorporated various theoretical references to empirical research on information behavior (IB).

Methods

In order to achieve this proposed objective, published Ibero-American investigation in scientific journals on the subject of IB was researched on five databases: *Social Science Citation Index* (SSCI), *Scielo Citation Index* (SCI) and *Emerging Sources Citation Index* (ESCI) of the *Web of Science* (WoS), *Scopus* and *Library and Information Science Abstracts* (LISA). The strategy applied included the expressions "information behavior", "information practice", "user studies" and "information needs" insofar as they figure in the title, abstract and keyword or subject fields, and was limited to papers published between 2010 and 2020, where at least one author belonged to an institution based in an Ibero-American country. The coverage of these databases ensured the retrieval of papers published by these authors in both national and international journals. However, working on the assumption that the contents of scientific journals published in Ibero-American countries (especially in the early years of the period studied) had been only partially included, the search was completed by manually reviewing their contents on the websites of the journals indexed in these databases (Appendix 1). Once the bibliographic records had been retrieved, titles and abstracts were reviewed for relevance. The full text of the papers considered relevant was retrieved, and this relevance was once again judged on the basis of a reading of the text. In the context of this study, we considered empirical research on reports of original research that describe the systematic gathering and analysis of data for a particular purpose not considered or addressed in previous reports (APA, 2010), along with the empirical data on information resulting from this process.

From the papers finally considered to be of interest for this research, we extracted the journal in which they were published (in a South American country or elsewhere), the language of publication and the country in which the authors' institution is based. A content analysis was also carried out and the following information extracted: theoretical reference used, level of use of theory, empirical object and methodology employed. Bates' (2005) definition of theory and theoretical model was taken as a reference for theoretical purposes. This researcher considers theory to be the body of generalizations and principles developed from practice in a given field, and also a system of assumptions, principles and rules designed to analyze, predict or explain the nature or behavior of a phenomenon. Reference is likewise made to a theoretical model as an initial ideational structure, which serves as a test for the description of a phenomenon (Bates, 2005).

In order to identify a theory or model, the texts of the articles concerned were reviewed to locate citations of a work that included such a theory or model. Other works analyzing the use of theory in IB research, such as Fisher, Erdelez and McKechnie (2005), Case (2012) or Lund (2019), were consulted, in addition to the express statement that the citing document should constitute a theoretical reference for the author of the paper. The level of use of this theory or model was then analyzed, based on the classification shown in Table 1, as proposed by Kumasi, Charbonneau and Walster (2013).

0. THEORY NOT USED
1. MINIMAL USE
One or more theories are introduced in the introduction or in the literature review, but they do not appear in the rest of the article, i.e. they are not used when designing the research, and the results are not discussed in the light of the theory concerned.
2. MODERATE USE
A theory, or more frequently, several theories are introduced to outline the general frame of reference of the research or the coordinates in which the researcher is positioned. Its use in the design, analysis and interpretation of data nevertheless remains unclear.
3. MAXIMUM USE • A theory or theories are introduced at the beginning of the paper, and this determines the research design or the analysis and interpretation of the data concerned. • The theory or theories of others are introduced for validation, based on the contribution of their own empirical data. • A theory or model is proposed on the basis of data collection and analysis.

Table 1. Usage levels of theories or models (Kumasi, Charbonneau & Walster, 2013)

The processes of selecting papers and that of extracting and analyzing this information were both carried out independently by the three authors and signatories of this paper. Any discrepancies that arose were resolved by consensus.

Results

Process of selection and characteristics of the papers concerned.

The search of the five databases yielded 377 documents, of which 103 were empirical research. A review of the journal abstracts permitted the retrieval of 18 additional papers. A total of 121 papers was therefore included in the present study.(1) (Fig. 1).
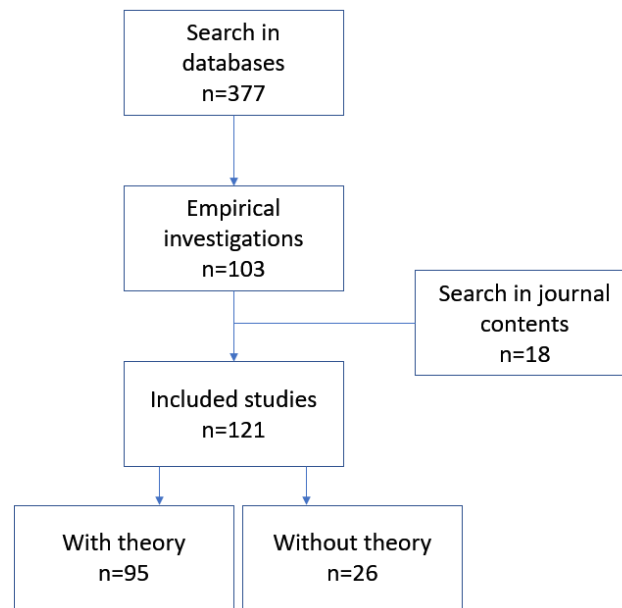

Fig. 1. Search and selection of the studies reviewed

The 121 papers were published in 36 different journals. Seven of these journals published 54.5% of the papers retrieved, while the other 29 published the remainder (Table 2).

Journal	n	%	Cumulative %
Perspectivas em Ciência da Informação	20	16.5	16.5
Informacao & Sociedade-Estudos	10	8.3	24.8
Biblios-Revista de Bibliotecología y Ciencias de la Información	8	6.6	31.4
Informação & informação	8	6.6	38.0
Investigación Bibliotecológica	8	6.6	44.6
Encontros Bibli	7	5.8	50.4
Revista Ibero-Americana de Ciência da Informação	5	4.1	54.5

Table 2: Journals in which the retrieved papers were published.

Most of the papers appeared in a journal published in an Ibero-American country (76.9%), with Portuguese (57%), followed by Spanish (22.3%) and English (20.7%) as the predominant language of publication. The authors belonged to institutions based in nine different countries, of which Brazil stands out, with 76 documents (62.8%) signed by an author from a Brazilian institution; followed by Mexico (15 documents), Chile (8), Cuba (7), Colombia (5), Peru (5), Uruguay (3) and Argentina (1). A major presence of four institutions stands out, in the shape of the Universidade Federal de Minas Gerais (UFMG) (18 documents), Universidade Federal da Paraíba (UFP) (11), Universidad Autónoma de México (UNAM) (9) and the Universidad de Santiago de Chile (7).

Usage level of theories and theoretical models

A reading of 121 papers revealed that 95 included some theoretical reference (78.5%). These 95 papers referred to 84 different theories or theoretical models. Their origin was principally in LIS (n=45; 52.9%), along with other social sciences (n=33; 39%); mainly sociology (n=10) and psychology (n=9).

Table 3 presents the nine models or theories that appeared most frequently (in seven papers or more). It is noteworthy that despite the number of mentions of each of the theories and theoretical models, these mentions in most cases involve a minimal or moderate use. Nevertheless, of the 95 documents examined, 53 corresponded to some theory or model with maximum use and 42 with at least moderate or minimal use. The list of all the theories or models that were mentioned in any of the 95 papers analyzed, as well as their level of use, appears in Appendix II.

Theory or model	Origin	MAXIMUM	MODERATE	MINIMAL	Total
Information behavior models - Wilson	LIS	9	13	16	38
Information use model - Choo	LIS	5	11	9	25
Information search process - Kuhlthau	LIS	5	4	13	22
Information seeking model - Ellis	LIS	5	1	7	13
Sense-making - Dervin	LIS	3	5	5	13
Information needs model (NEIN) - Calva-González	LIS	2	4	5	11
Anomalous state of knowledge - Belkin	LIS		4	6	10
Everyday life information seeking (ELIS) - Savolainen	LIS	4	2	1	7
Model of information seeking - Krikelas	LIS		2	5	7

Table 3. Level of theory usage in the theories or models most cited

Theories and models as a basis for the design of research

Most studies making maximum use of theory were carried out in an academic setting. The methodology most commonly used was qualitative (Table 4).

	QUALITATIVE	QUANTITATIVE	QUALITATIVE / QUANTITATIVE	Total
Academic	8	11	1	20
Everyday life	9	4	2	15
Work	7	2	4	13
General user	1	4		5
Total	**25**	**21**	**7**	53

Table 4. Context and methodology of the studies, with theories and models of maximum use.

In the 53 papers in which some theory or theoretical model was considered to be of maximum usage (i.e. essential in the research design), 46 different theories or models were applied, with most of them originating in LIS (23) and in other social sciences (19) such as psychology (5), sociology (4) or management (3). Most of the 53 papers applied only one theory or model of maximum usage, although 13 papers combined two or more theories or models in their design. The following section deals with a synthesis of the results obtained from the most cited theories or models, relating them to the empirical object and the data collection methodology.

Wilson's informational behavior models

The most frequent frame of reference for designing the research was the models of Wilson. Outstanding papers in this respect include those of Santana, Lima, Dias and Silva (2016) and Santana and Lima (2019), which study the IB of users of a Facebook page dedicated to Brazilian popular music, using netnographies and interviews. These investigators introduced other concepts into the research design along with this framework, such as Fisher and Naumer's (2006) notion of place and space on social networks. On the other hand, the work of Hernandez-Salazar (2019) focused on studying the IB of older women through interviews, focus groups and observation. She applied other models in this case, in addition to several of Wilson's references, such as Belkin's Anomalous State of Knowledge (ASK) and Brooks' fundamental equation, with minimal and moderate usage respectively.

The three papers mentioned above could be considered to have been created in an everyday-life setting, while the rest of the research introducing Wilson's models as a theoretical frame of reference was carried out in a workplace and/or academic context. Caldas and Santos (2016) took this approach when examining the IB of the specialized employees of the Court of Accounts of the Municipalities of the State of Goiás, by means of a survey study. Cavalcante et al. (2017) pursued the same purpose, but focused on the managers of a healthcare network, using interviews oriented according to critical incident; while Silva and Gasque (2016) focused on the use of a corporate web portal, researched through surveys and interviews. These three sets of research, carried out in a workplace environment, were guided by other models and concepts, such as those proposed by Choo (1998) on the basis of his information use model, with moderate usage in the first two cases and maximum usage in the third. Furthermore, other theoretical frameworks introduced in the case of Cavalcante et al. (2017), with minimal usage, were Davenport's information ecology and Kuhlthau's information search process (ISP).

The remaining investigations making maximum use of Wilson's models were carried out in an academic environment and stand out, like those already mentioned, for the variety of theories that they introduce. Casarin and Oliveira (2012) investigated the IB of postgraduates in education through focus groups, while also introducing the information needs model (NEIN) of Calva-Gonzalez (2004), which will be discussed later. On the other hand, Cunha and Cendon (2010) investigated the use of academic journals via CAPES, a Brazilian web portal, with interviews oriented according to the critical incident technique. This work stands out thanks to the introduction into its design of activation mechanisms and intervention variables based on Wilson's model, along with the application of up to five theories or models with minimal use; namely:

Hjørland's domain analysis, Kulhthau's ISP, Marchionini's information seeking in electronic environments, Choo's information use model and Ellis' model of information seeking behavior. Finally, research by Moreira and Ribeiro (2020) focused on the use of the digital library by teachers in higher education as part of their efforts to improve their pedagogical practices. The technique chosen for data collection was the focus group and, as in the work of Cunha & Cendon (2010), the aspects of the information seeking process that Wilson developed in his revised 1997 model served as a starting point for analysis of the results.

Choo's information use model

Choo's information use model was the second most applied main frame of reference used in designing the research. In three of the five papers where this occurred, it was used in addition to Dervin's sense-making, Kuhlthau's ISP and Taylor's information use environments. This was also the case in the study of business customers by Pereira, Jordao, Netto and Duarte (2018), using interviews; that of Pereira (2010), designed to reveal the IB of company managers in the three sectors, using timeline interviews; and that of Berti, Bartalo and Araújo (2014), likewise based on interviews, on children with Down's syndrome. The authors of this latter study also introduced other theories or models with minimal usage, such as Belkin's ASK, Goffman's social stigma theory and Wilson's information behavior model. Pereira (2016), on the other hand, also made maximum use of Choo's model in his research, along with a moderate use of Wilson's models, for the study of IB entrepreneurs through a survey study, and of Silva and Gasque (2016), along with Wilson's models with maximum use, as described in the previous section.

Information Search Process (ISP) of Kuhlthau

The third most frequently used theoretical model ~~used in the design of the studies reviewed~~ was Kuhlthau's ISP. In four of the five papers in which this occurred, this model was used as a framework reference for designing research in an academic context, as would be expected given the origins of the model. Abe (2011) conducted a survey-based study focusing on librarians and university students, in which he also introduced, with moderate usage, Wilson's models and Dervin's sense-making and (with minimal usage) Ellis's information seeking model. Furthermore, Gómez-Restrepo (2012) likewise introduced, in a university setting and through surveys, other models or concepts with moderate usage, such as Belkin's ASK, Wilson's models, Kelly's personal constructs and Vygotsky's zones of proximal development. On the other hand, and with a focus on the same type of user and the same methodology, Manhique and Varela (2016) used with moderate use the mathematical theory of communication of Shannon and Weaver and the ASK of Belkin, and (with minimal usage) Vygotsky's sociocultural theory of learning. Finally, as seen in the previous section, Pereira et al (2018) use ISP at a maximum level, along with Taylor's information use environments model, Choo's model and Dervin's sense-making model. Pereira's study (2010) was the only one conducted in an environment outside an academic setting, as seen in the section on Choo's model.

Ellis's model of information seeking behavior

Like the model of Choo and Kuhlthau, Ellis's model was used for designing research on five occasions. Of these, two that stand out for their introduction of theories and models originating in other disciplines are the work of Tabosa and Pinto (2016) and that of Barros and Neves (2011). The first case, which includes a series of interviews conducted with users of health services, applies (along with the Ellis model) Schutz's social phenomoenology at the highest level, plus – at a minimum level – the models of Wilson, Choo and Taylor. As for the work of Barros and Neves (2011) on users of a public archive, which used the interview method, this was combined at a moderate level with Flavell's theory of metacognition and, at a minimum level, Leckie, Pettigrew and Sylvain's model concerning the general information behavior of professionals, along with the models of Wilson, Kuhlthau and Choo.

On the other hand, two works that introduce the Ellis model into their designs do so along with other models originating in LIS. Such is the case of Figueiredo and Paiva (2015), on users of a media library, conducted through surveys, in which Wilson's models and sense-making are used moderately, as well as the study of Ramalho, Hamad, and Guimarães (2016) involving students

with visual impairments. This used a questionnaire, based – at a moderate level – on the Wilson and Choo models. Finally, it is also used as a single theory at the highest level in the study of Costa and Ramalho (2010) on postgraduates, likewise with questionnaires.

Everyday Life Information Seeking (ELIS) of Savolainen

The fifth theoretical model that was most used in the works analyzed is the Savolainen ELIS model, which was used four times at the maximum level. As would be expected, the environment in which they were applied was everyday life. They also stand out thanks to the abundance of theoretical models and theories applied. The study of Lanzi et al (2013) on the information-finding behavior of adolescent students, conducted through surveys and interviews, thus also took as a benchmark for its design the model of everyday life information needs of urban teenagers of Hughes-Hasell and Agosto and, at a minimum level, Bourdieu's judgement of taste, along with Wilson's models. On the other hand, Sá and Araújo (2020) applied, in the design of their research focused on the informational practices of literary bloggers (using netnography and interviews), the ELIS model and Arnault's theory of transmedia at the maximum level, Harlan's substantive theory of teens' information practices at a moderate level and, at a minimal level, McKenzie's model of information practices in accounts of everyday-life information seeking.

The other two papers with maximum usage of the ELIS model are those of Sabelli (2012) and Sabelli and Bercovich (2018). The former studied institutional information mediators, both as mediators and as users, in the context of the IB of young women from a vulnerable background. Interviews and focus groups were used for this purpose, and in addition to the ELIS model, Savolainen's model of network competence, Chatman's information poverty and life in the round, Erdelez's information encounter theory and Fisher's information ground were also used at the highest level, along with the communities of practice of Lave and Wenge, Certeau's practice of everyday life and Zipf's principle of least effort. Regarding the work of Sabelli and Bercovich (2018), focusing on LIS students, in which information was collected through surveys and focus groups, this used (together with the ELIS model) the ELIS social phenomenological model of Savolainen, the González-Calva NEIN model, with moderate usage, and minimal usage of the Belkin ASK model, Hjørland's domain analytic theory, Wilson's models and Dervin's sense-making.

Sense-making of Brenda Dervin

The sixth theory that appeared most in the articles under review was Dervin's Sense-making. However, its usage was maximum in only three papers, and moderate or minimum in nine.

In the first instance, Lemos and Nassif's research (2015) uses the Sense-making theory at the highest level, along with moderate use of the Choo model, in a study, using interviews, that involved customers of companies operating in three sectors of the economy. On the other hand, two of the studies already described, those of Pereira (2010) and of Pereira et al (2018), use sense-making in combination with other theories. Both of the studies were likewise carried out in a corporate environment.

Other theories and models

In addition to those described above, up to 40 more theories and theoretical models appear, with maximum usage, in the papers under review. Most of them have their origins in LIS. One which stands out is the NEIN model of Calva-González, because it is the only one originating from Latin American research, specifically from Mexico. Both papers apply this model at the maximum level. López-Franco (2010) used it as the sole theoretical framework for a study of the information needs of a community of Mexican wine growers, based on interviews. A survey-based paper by Vázquez-Moctezuma and Calva-González (2013), focusing on the information needs of a group of amateur boxers in Mexico, likewise apply the models of Wilson, Kuhlthau, Ellis, Krikelas and Taylor at a minimum level.

Finally, in addition to theories and models with maximum use originating in LIS, 23 of those applied with maximum usage have their origins in various disciplines of the sciences, social

sciences and humanities, especially in psychology and sociology, and in papers concerning everyday and academic life (Table 5).

Theory or model	Origin	Context**			
		E	A	W	G
Archetypes - Jung	Psychology			*	
Metacognition - Flavell			*		
Social representation theory - Moscovici			*		
Theory of planned behavior - Ajzen		*			
Theory of reasoned action - Fishbein - Ajzen		*			
Serious leisure - Stebbins	Sociology	*			
Social phenomenology - Schutz		*	*		
Stength of weak ties - Granovetter				*	
Theory of social practice - Schatzki		*			
Information orientation - Marchand, Kettinger and Rollins	Management			*	
Information richness - Daft			*		
Information systems success model - DeLone - McLean			*		
Transmedia - Arnault	Communication	*			
Uncertainty reduction theory - Berger		*			
Communities of practice - Lave y Wenger	Education	*			
Evaluation of training - Kirkpatrick			*		
Concept map for e-voting system - Realpe-Muñoz and others	Engineering				*
Usability - Nielsen			*		
Practice of everyday - Certeau	Philosophy	*			
Imaginaire - Durand	Anthropology			*	
Principle of least effort - Zipf	Linguistics	*			
Conceptual model of quality of service - Parasuraman	Marketing	*	*		
Mathematical theory of communication - Shannon y Weaver	Mathematics / engineering				*

**E: Everyday life; A: Academic; W: Work; G: General user

Table 5. Theories or models applied with maximum usage with origins other than in LIS and context of the studies.

First, and in relation to theories originating in psychology, Jung's archetypes and Durand's imaginary based on anthropology, they were used by Araujo (2019) in a qualitative study designed to investigate the unconscious aspects of IB prevalent among business executives in strategic, decision-making situations. On the other hand, Dal'Evedove, Neves and Fujita (2014) used Flavell's metacognitive strategies, along with the models of Ellis, Wilson, and Calva-González at a minimum level, to analyze the results of a verbal protocol used for studying the information-searching process employed by users of a university library. Furthermore, Moscovici's social representation theory was used by Brasileiro, Azevedo and Freire (2014), along with the models of Wilson and Choo, at minimum and moderate levels respectively, to study individual and collective social representations of officials at a Brazilian university in the process of managing documentation. Finally, Ajzen's theory of planned behavior and Fishbein and Ajzen's theory of reasoned action were the basis used by Libaque-Saenz *et al* (2016) to study the information practices of customers asked for authorization to use their personal data.

As for theories that have their origin in sociology, Vesga-Vinchira (2016) uses the concept of social practice from Schatzki's theory of the same name and the "serious leisure" aspect of Stebbins, along with Vickery and Vickery's information transfer model, to build a theoretical framework on which to base a study of the information practices of music fans. On the other hand, two papers use Schutz's social phenomenology at the maximum level as their theoretical basis. The first of these, the paper by Tabosa and Pinto (2016), is already described in the section on the Ellis model. The second is the paper by Terto and Sirihal-Duarte (2014), in which it is used to delve into the meaning attributed by people to the activities that they carry out in order to understand their IB. Finally, Ferreira (2011) uses Granovetter's "strength of weak ties" theory to study IB in an organizational context, along with Latour's actor-network theory, the "network society" of Castells and Choo's information-use model as minimum benchmarks.

Theories and models with moderate or minimal usage

As described above, the instances in which a theory or theoretical model appears in the works analyzed frequently correspond to moderate or minimal usage. Moderate usage implies, from the point of view of the reader of the paper, that the extent to which the model has been used to design the research is not clear. This occurs most often when authors introduce concepts to contextualize their own research, but fail to refer to them again in the rest of the text. This is the case, for example, with an analysis of the strategic importance of the use of information to generate knowledge within a company, its categorization of information sources and the factors that characterize the exchange of information (Woida, 2019; Corrêa, 2016) or the Kuhlthau principle of uncertainty (Valero-Rivero & Ponjuán-Dante, 2014). It also arises when the authors of a paper use a model to position the theoretical coordinates of the field of user studies or of their own work, e.g. by referring to the theory of sense-making in the light of its constructivist nature (Pereira, 2010; Pereira et al, 2018).

Another point that stands out is the fact that four of the theories or models that are most frequently cited never appear with maximum usage. This is the case with Belkin's ASK model, the Krikelas model, the Davenport information ecology model and Taylor's question-negotiation model. On the other hand, and as already seen, minimum usage occurs when the theory or model is barely mentioned solely as an in-text citation. As shown in Table 5, 19 theories or models appear with minimal usage only.

Theory or model	Origin
1. Actor-Network-Theory - Latour	Sociology
2. Behaviorism - Skinner	Psychology
3. Critical pedagogy - Freire	Education
4. Distintion - Judgemnt of taste - Bourdieu	Sociology
5. Ecological theory of human information behavior - Williamson	LIS
6. Evolutionary perspective of IB - Spink	LIS
7. General model of information behaviour - Niedzwiedzka	LIS
8. Generalized Information theory - Klir	Engineering
9. Information retrieval interaction - Ingwersen	LIS
10. Information tasks - Allen	LIS
11. Integrated model of browsing and searching on the web - Choo, Detlor and Turnbull	LIS
12. Model for studying engineers information. - De Preez	LIS
13. Model for understanding collaborative information behavior - Reddy	LIS
14. Model of use behavior in electronic environments - Eason and others	LIS
15. Network society - Castells	Sociology
16. Non-linear model of information seeking behaviour - Foster	LIS
17. Social media theory - Thompson	Sociology
18. Sociocultural theory of learning - Vygotsky	Psychology
19. Theory of information need for IR - Cole	LIS

Table 5. Theories or models applied with minimal usage only

Discussion

This research has shown the dissemination of various theories and theoretical models, and their incorporation into the empirical study of IB in the Ibero-American geographical area; a context with a high degree of social institutionalization of LIS, but with little visibility or internationalization of research, as evidenced by the difficulty in identifying and recovering the papers under review. No overall assessment of an entire continent can be made however, as there are considerable differences in the degree of institutionalization in general and with regard to research on IB in particular. Tracking of the organizations to which the authors belong has therefore allowed us to identify Brazilian institutions as the ones that contribute the greatest number of papers, along with Portuguese as the main language of publication. Furthermore, at least four centers of research have likewise been identified on the basis of the number of documents published in the ten years observed. These are UFMG and UFP in Brazil, along with UNAM and the University of Santiago de Chile.

As for the papers under review, the low proportion of empirical work recovered (compared to the total number obtained) stands out, with a proportion of just 32% for the ten years observed. This

result differs from that obtained by Tuomaala, Järvelin and Vakkari (2014), who observed, in the case of international literature in LIS, an increase in empirical strategies from 2005 onwards, reaching 76% of the studies analyzed by these researchers. This low percentage of empirical work points to a preference for conceptual, bibliographical or theoretical methodological strategies (which were excluded from this research), or a favoring of other channels of communication, such as book chapters for conference papers published in the form of minutes, as was frequently the case until recently in research on LIS in other geographical areas (Ästrom, 2008). The series of publications resulting from various events is worthy of note in this respect. The first of these is the *Information user seminar*: *the phenomenon of information needs in different communities*. This event promoted by Calva-González of UNAM has already been held 14 times in various Mexican and Latin American cities (e.g., Calva-González, 2013). The second is the dissemination of the results of important studies such as those carried out in Uruguay focusing on the role of information in the field of everyday life (Pérez & Sabelli, 2010; Sabelli & Rodríguez-Lopater, 2012; Sabelli & Rasner, 2015). The third is the publication, solely as conference presentations, of the results of research derived from doctoral theses at UFMG (Araújo, Sirihal Duarte, Dumont, 2019).

Beyond the issues of publication habits, attention is also drawn to the large number of papers found to contain theories and theoretical models, compared to the total number of empirical papers retrieved; a figure of 78.5%. This result again stands in contrast to the international literature mentioned above, although in this case a higher figure has been obtained than, for example, Julien, Pecoskie and Reed (2011), who observed a proportion of just 21% for theoretically based papers in literature on IB for the period 1999-2008. It has nevertheless been possible to qualify the figure of 78.5% in this research against an analysis of the contents of the papers concerned. Thanks to this, it can be seen that many of the theories or models cited by the authors of the papers under review are introduced merely as general reference at the beginning of the paper, or only partially as a conceptual reference. These practices with respect to the moderate or minimum usage of theories and theoretical models have already been pointed out in previous papers that analyze the use and influence of various theories in research in LIS (Rosenbaum, 2010; McKechnie et al., 2012; Savolainen, 2017; Dewey, 2016; González-Teruel & Abad García, 2018; González-Teruel & Pérez-Pulido, 2020). As stated by Kumasi et al (2013), a reflection on the scope of theoretical influences of research would help us to understand how the foundations of such research are being laid, in this case in the field of IB.

Regarding the theories and theoretical models that appeared most frequently in the papers under review, the results are in line with other studies that have observed the citation of theories in the field of IB, such as those of González-Teruel, et al (2015) or, most recently, Lund (2019). However, various events may explain the special interest in three particular models: Dervin's sense-making theory, Kulthau's ISP and the Choo model. In the case of Sense-making, in the early 1990's Uruguayan and Brazilian researchers came into contact with Brenda Dervin, which gave rise to various investigations that use this theory as a starting point. This has in turn led to various publications in Spanish and Portuguese which develop the foundations of sense-making (e.g. Ferreira, 1997). A similar case arises with the model of Kulthau and Choo. The two researchers visited various Brazilian universities in the 1998 and 2006, resulting in the Portuguese-language translation of their most emblematic works. The dissemination of these theories has continued to grow, from that time onwards, in Brazil and the rest of Latin America. As certain research has shown, the causes of more widespread citation of a particular paper may sometimes be linked to the social capital of its author (González-Teruel & Pérez-Pulido, 2020).

On the other hand, only one of the most cited models has its origin in the Ibero-American research itself. This is the NEIN model, which was first published in 2004 by Calva-González of UNAM. It is however striking that of the 11 times that it appeared, only two occasions correspond to maximum usage. This phenomenon, which also arises with other models such as Belkin's ASK, could be due to high levels of self-citation by members of a research group, as Davenport (2010) observed in studies of IB. It is nevertheless an issue requiring further research.

In addition to the theories and models most cited by the Ibero-American authors and their level of usage in the research under review, one relevant result worthy of analysis is the number of papers linking theories originating in the field of IB with other theories of the human and social sciences. This points to the differentiated nature of part of Ibero-American research in this field, in comparison to that carried out in other geographical areas. A proper interpretation of these results essentially depends on application of the framework proposed by Dervin and Nilan (1986) in terms of the system-oriented / user-oriented paradigm.

According to this duality, the Ibero-American research on the user can identify research papers that assume the perspective of the system. In fact, and although it has not been the objective of this research, a pattern is detectable in recovered works that did not explicitly use a theory and were therefore excluded from the final analysis. This contributes, as results, the characterization of users (by gender, age, profession, area of activity, sector of activity, age, etc.) of a given information system or service, and characterization of their interaction with such systems (tasks that motivate a need for information, channel and sources of information; barriers encountered, frequency of use, etc.). There is no association of these data with a theory or model, but rather only cross-referencing of them in order to identify areas that need changes or improvements.

It is furthermore possible, with respect to the research under review, to identify papers that could fall into the user-oriented paradigm of Dervin and Nilan (1986). These are works that use a theory or theoretical model mainly from a cognitive but also social, perspective. One example of this are the theories with roots in psychology (Jung, Flavell, Moscovici, Azjen, Skinner and Vygotsky), as well as in sociology (Stebbins, Schutz, Granovetter, Schatzki, Castells, Thompson, Latour and Bourdieu), which are taken as the basis for designing the research being analyzed, or simply as a general reference.

This is, in our opinion, an aspect which, despite needing further inquiry, points to a characteristic of research on Ibero-American IB. This concerns the search for theoretical references that go beyond those offered by IB research itself in order to address two particular aspects of the environment being studied. The first of these is the need for further study of IB in the context of everyday life, in order to address problems relating to situations of economic disadvantage and social asymmetries. As Savolainen (1995) states, the move into "worlds of life" ends up demanding other theoretical tools. The second aspect, partly derived from the first, is the need to understand the phenomenon of IB, not only by focusing on individuals, but considering also its social dimension.

Part of the user-centered Ibero-American investigation might thus be placed in a third strand of LIS research, identified by various authors as "pragmatic", "intersubjective" or "sociocultural" (Capurro, 2007; Hjørland, 2018), which considers information to be something that is not only objective or subjective in scope, but also intersubjective; belonging to the collective and derived from a social construct. These approaches corresponding to different Ibero-American countries might come to constitute, despite their current lack of visibility, a valuable contribution to international research on users of information.

Finally, we need to emphasize one aspect mentioned throughout this paper, which must be taken into account for a correct reading of the results. The scope of the retrieved data, and therefore of these results, is determined – as in any literature review – by the sources and strategy used. However, the habits of diffusion in the different Ibero-American countries; not only in journals, but also in books and conferences; as well as the exclusive dissemination via such conferences of theses written to obtain a master's degree or doctorate (which are in both cases difficult to find in bibliographic databases), all contribute to ensuring that the results presented here are only part of the research activity concerned. It therefore concerns the image created by research published in scientific journals only, which also ensures the higher quality that results from having been peer reviewed.

Conclusion

Ibero-American research on IB lacks the visibility typical of other parts of the world, and little is known about it in countries outside the area. This research has highlighted the use and

dissemination of theories and models in a geographic area with social, economic and cultural characteristics that are diverse, but nevertheless different to those normally reported in IB studies, especially with regard to social inequalities affecting access to information resources.

It has generally been shown that the IB theories and models most cited at an international level are also the ones most widely used in this geographical area. Similarly, the use of a great diversity of theoretical frameworks has been demonstrated, thereby giving the revised research a cognitive, but also a social, perspective; with models and theories from various fields, especially psychology and sociology. Future research should delve more deeply into the way in which these theories contribute to the design of studies, especially in the context of everyday life and from a social perspective. This could make an important contribution to Ibero-American research on IB at an international level.

Note

(1) Publicly accessible at: https://www.mendeley.com/community/ci_pa_uru_bra_esp/

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Appendix 1

Title	Country
Acesso livre	Brazil
Alcance	Cuba
Biblionline	Brazil
Biblios. Revista de bibliotecología y Ciencias de la información	Peru
Bibliotecas. Anales de Investigacion	Cuba
Bibliotecas. Revista de la Escuela de bibliotecologia documentacion e informacion	Costa Rica
Ciência da Informação	Brazil
Cuadernos.info	Chile
E-ciencias de la información	Costa Rica
Educaçao Profissional: ciencia e technologia	Brazil
EM QUESTAO	Brazil
Encontros BIBLI. Revista eletronica de biblioteconomia e ciencia da informaçao	Brazil
Enl@ce. Revista venezolana de información, tecnología y conocimiento	Venezuela
Informaçao and informaçao	Brazil
Informaçao and sociedade. Estudos	Brazil
Informacion, Cultura y Sociedad	Argentina
Investigacion bibliotecológica	Mexico
Perspectivas em ciencia da informaçao	Brazil
Revista cubana de información en ciencias de la salud	Cuba
Revista digital de biblioteconomia e ciencia da informaçao	Brazil
Revista ibero-americana de ciencia da informaçao	Brazil
Revista interamericana de bibliotecología	Colombia
Transinformaçao	Brazil

Appendix 2

Theory or model	Origin	MAXIMUM	MODERATE	MINIMAL	Total
Information behavior models - Wilson	LIS	9	13	16	38
Information use model - Choo	LIS	5	11	9	25
Information search process - Kuhlthau	LIS	5	4	13	22
Information seeking model - Ellis	LIS	5	1	7	13
Sense-making - Dervin	LIS	3	5	5	13
Information needs model (NEIN) - Calva-González	LIS	2	4	5	11
Anomalous state of knowledge - Belkin	LIS		4	6	10
Everyday life information seeking (ELIS) - Savolainen	LIS	4	2	1	7
Model of information seeking - Krikelas	LIS		2	5	7
Information ecology - Davenport	LIS		2	4	6
Question-negotiation - Taylor	LIS		1	4	5
Value-added process - Taylor	LIS	2	2	1	5
Mathematical theory of communication - Shannon y Weaver	Mathematics / engineering	1	1	3	5
Domain analytic theory - Hjørland	LIS		1	3	4
General model of information behaviour of professional - Leckie, Pettigrew and Sylvain	LIS	1		3	4
Information seeking in electronic environments - Marchionini	LIS	1		3	4
Model for understanding collaborative information behavior - Reddy	LIS			4	4
Affective paradigm - Nahl	LIS	2		1	3
Information grounds - Fisher	LIS	1		2	3
Information use environments - Taylor	LIS	2		1	3
Model of information practices in accounts of everyday-life information seeking - Mckenzie	LIS	1	1	1	3
Problem solving/ Uncertainty project - Wilson and others	LIS		1	2	3
Usability - Nielsen	Engineering	1		2	3
Information orientation - Marchand, Kettinger and Rollins	Management	2		1	3
Conceptual model of quality of service - Parasuraman	Marketing	2		1	3
Imaginaire - Durand	Anthropology	1	1		2
ELIS -Social Phenomenological - Savolainen	LIS	1	1		2
Information encounter - Erdelez	LIS	1		1	2
Information poverty - Chatman	LIS	1	1		2
Integrated model of browsing and searching on the web - Choo, Detlor and Turnbull	LIS			2	2
Life in the round - Chatman	LIS	1	1		2
Nested model of conceptual areas - Wilson	LIS		1	1	2
Evaluation of training - Kirkpatrick	Education	1	1		2
Principle of least effort - Zipf	Linguistics	1		1	2
Metacognition - Flavell	Psychology	1	1		2
Information richness - Daft	Management	1	1		2
Information systems success model - DeLone - McLean	Management	2			2
Network society - Castells	Sociology			2	2

Social phenomenology - Schutz	Sociology	2			2
Social representation theory - Moscovici	Psychology	1	1		2
Social media theory - Thompson	Sociology			2	2
Theory of planned behavior - Ajzen	Psychology	1		1	2
Brookes' Fundamental Equation - Brookes	LIS		1		1
Ecological theory of human information behavior - Williamson	LIS			1	1
Everyday life information needs of urban teenagers - Agosto	LIS	1			1
Evolutionary perspective of IB - Spink	LIS			1	1
General model of information behaviour - Niedzwiedzka	LIS			1	1
Information retrieval interaction - Ingwersen	LIS			1	1
Information tasks - Allen	LIS			1	1
Information transfer model - Vickery and Vickery	LIS	1			1
Library anxiety - Mellon	LIS	1			1
Model for studying engineers information. - De Preez	LIS			1	1
Model of network competence - Savolainen	LIS	1			1
Model the information behavior of lay mediaries - Abrahnson	LIS		1		1
Information search model of social sciences scholars - Al-Suqri	LIS		1		1
Model of use behavior in electronic environments - Eason and others	LIS			1	1
Archetypes - Jung	Psychology	1			1
Non-linear model of information seeking behaviour - Foster	LIS			1	1
Substantive theory of teens' information practices - Harlan	LIS		1		1
Theory of information need for IR - Cole	LIS			1	1
Behaviorism - Skinner	Psychology			1	1
Distintion - Judgemnt of taste - Bourdieu	Sociology			1	1
Behavioral model of rational choice - Simon	Economy		1		1
Communities of practice - Lave y Wenger	Education	1			1
Dramaturgy - Goffman	Sociology		1		1
Sources of uncertainty in the life trajectories of people with HIV - Carricaburu and others	Health sciences		1		1
Practice of everyday - Certeau	Philosophy	1			1
Concept map for e-voting system - Realpe-Muñoz and others	Engineering	1			1
Information culture - Curry	Management		1		1
Museum interactive experience model - Falk - Dierking	Education		1		1
Extended model - Yeoman	LIS	1			1
Critical pedagogy - Freire	Education			1	1
Personal constructs - Kelly	Psychology		1		1
Social stigma - Goffman	Sociology		1		1
Generalized Information theory - Klir	Engineering			1	1
Uncertainty reduction theory - Berger	Communication	1			1
Sociocultural theory of learning - Vygotsky	Psychology			1	1

Actor-Network-Theory - Latour	Sociology			1	1
Theory of reasoned action - Fishbein - Ajzen	Psychology	1			1
Transmedia - Arnault	Communication	1			1
Serious leisure - Stebbins	Sociology	1			1
Stength of weak ties - Granovetter	Sociology	1			1
Zone of proximal development - Vygotsky	Psychology		1		1
Theory of social practice - Schatzki	Sociology	1			1