Understanding Users of Cross-media Information: Contexts, motivations, and information features focusing on visual narrative materials

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Abstract

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Librarians and information experts play key roles in facilitating access to multimedia objects, and the importance of their expertise has increased with the growth of digital libraries. Existing studies show, however, that current information systems—including online databases, library catalogs, and recommendation services—do not fully meet the needs of multimedia information users. This study contributes to improving multimedia access by focusing on three different types of visual narrative materials and their users: printed visual narrative (e.g., comic books, graphic novels, manga, newspaper comic strips), visual narrative with a moving image format (e.g., animated films, anime, TV cartoons), and interactive visual narrative (e.g., video games). The objective of this study is to understand users of different types of visual narrative materials through a two-pronged approach: a diary study complemented by a follow-up

interview, and a larger-scale content analysis of natural language queries collected from online fan communities. The researcher addresses three main themes in this dissertation: 1) the motivations, context, and situational information of users who consume visual narrative materials, 2) essential information features for the users to find relevant visual narrative materials, and 3) relationships among the motivations, contexts, and information features, if any. By better identifying and understanding users of visual materials, the contributions may improve recommendations and reference services for multimedia materials, encourage media trans-literacy, and serve as a foundation for developing enhanced organization and retrieval systems for multimedia information. Specifically, this work provided recommendations for cross-media advisory services in libraries. By introducing patrons to relevant materials in different formats, librarians and reference service providers will provide those patrons options that they may not have explored yet, and will promote usage of potentially under-utilized media collections in libraries. In addition, providing a rich narrative of users' information seeking needs and media consumption behavior will help current information systems provide enhanced search experiences to users.

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DEDICATION

To my family

Without the support from my family, this dissertation could have not been completed. I would like to thank my parents and brother for believing in me when I decided to pursue my doctorate degree in a different country. Over the years, whenever I was feeling discouraged, my family helped me stay strong. The emotional support and endless love that I received from them was one of the most crucial elements for me to be able to complete this journey.

Chapter 1. Introduction

> "On average, we spend over 15 years of our waking lives just watching television. Films, videos and the time spent reading newspapers and magazines, listening to music and surfing the Net, means that we spend **one-third** of our lives immersed in the media. Our abilities to speak, think, form relationships with others, even our dreams and our own sense of identity are now shaped by the media. So, studying the media is studying ourselves as social creatures" (Sardar, 2015, p. 8).

1.1. Why multimedia information, why visual materials?

Flooded as we are with diverse types of multimedia materials, there exist various information services and systems that offer these materials to their users: reference services or Readers' Advisory (RA) services in libraries, online databases, relevant websites, forums, blogs, and streaming services that are getting more attention in today's digital age. Among the different types of multimedia materials, the demand for and popularity of visual materials such as comic books, animations, and video games have increased in academia, the art world, and in the commercial market (Lubin, 2014; Andrews, 2016; Research and Markets, 2016; Masuda et al., 2016; ESA, 2017; Botzakis, 2009; Fennell, Liberato, Hayden, & Fujino, 2012; Lee et al., 2013). Academic Libraries Task Force of the Association of College and Research Libraries (ACRL) guidelines also state that: "moving images, sounds, and still images have become increasingly important in teaching, learning and research, and academic librarians are working closely with other agencies on campus to support faculty and student information needs."[1]

[1] http://www.ala.org/acrl/standards/mediaresources

Libraries, indeed, have increased multimedia collections in recent years. The latest *Library Journal* materials survey (Hoffert, 2017) shows that, although there was no circulation or budget growth for print books from 2014-2017, media materials budgets showed a significant increase. Media materials now account for 27 percent of library's materials budgets, which has grown nearly ten percent since 2006. However, whether the media collections of libraries are well promoted is another question. According to Hoffert (2017), "despite this budget uptick, media circulation stumbled slightly, falling 1 percent to 31 percent of total circulation overall." Despite this, the report states that media materials are "looking rosy, with downloadables leading the way."

1.2. Issues with recommending visual materials in libraries

The non-utilization of media collections has also been noted in the realm of readers' advisory services. RA has been a core library service (especially to public libraries) since the 1920s (Saricks, 2005), providing service for users to help them discover leisure materials. Saricks (2005) defines RA as a "patron-oriented library service for adult fiction readers. A successful readers' advisory service is one in which knowledgeable, nonjudgmental staff help fiction readers with their reading needs" (p. 1). Although this definition and the guidelines that the author provides do not necessarily address working with younger readers or with patrons seeking audio and video selections for their leisure time, the author still believes that those areas fall within the purview of readers' advisory.

The recent survey of 694 public libraries (Thornton-Verma & Schwartz, 2014) shows that despite competition from automated recommendation engines, the importance of RA is not declining. Fifty-one percent of respondents stated that the importance of RA had increased

during the last 3 years, and 54 percent stated that RA would become even more important within the following 3 years. Thus, RA has always been, and will be, a core service for patrons in libraries.

The survey also highlighted several challenges that RA services face, however. Librarians expressed concern about their ability to stay up to date on new materials and to recommend new or unfamiliar genres. Moreover, the report shows that approximately half of the librarians did not feel confident advising children or young adults, and the current RA work heavily focuses on only books and audiobooks, excluding much of the library's media collection (Lee, Windleharth, & Cho, 2017; Thornton-Verma & Schwartz, 2014). Lee, Windleharth, and Cho (2017) argue that visual materials such as video games highlight a problem with RA; despite the explosive growth of the video game industry and consumer use and its important role in attracting younger patrons to libraries, video games are rarely suggested in library advisory services. Considering that libraries have increased their media collections for their patrons in recent years, it is problematic that their core recommendation services cannot fully utilize these collections.

1.3. Search problems of visual materials

Search tools available for direct patron use may also be inadequate. Online databases, library catalogs, and recommendation services, for example, are often focused more on traditional books than on visual materials. The Library of Congress Subject Headings (LCSH) have only two narrower terms for *Animation (Cinematography)*[2] (as of 03/06/2019)*: Animators* and *Computer animation*. The remaining animation-related terms listed often describe technical aspects of animation, such as *Animation cels*, *Computer animations*, and *Rigging (Computer animations)*,

[2] http://id.loc.gov/search/?q=animation&q=cs%3Ahttp%3A%2F%2Fid.loc.gov%2Fauthorities%2Fsubjects

rather than animation contents such as themes and plots, which are particularly important for users when searching for animations. Avenues to search or browse printed visual narratives through library databases are also limited. As another example, in the University of Washington library database, users need to navigate to *Browse search* and then search for *Graphic novel* as a subject heading to start browsing any comic books and graphic novels. In OCLC WorldCat records, too, printed visual materials are assigned format subjects mainly (e.g., *Figure 1*), such as *graphic novels* and *manga – strips; Japan*, so the search experience can easily become frustrating if users want to browse different genres or themes of these materials.

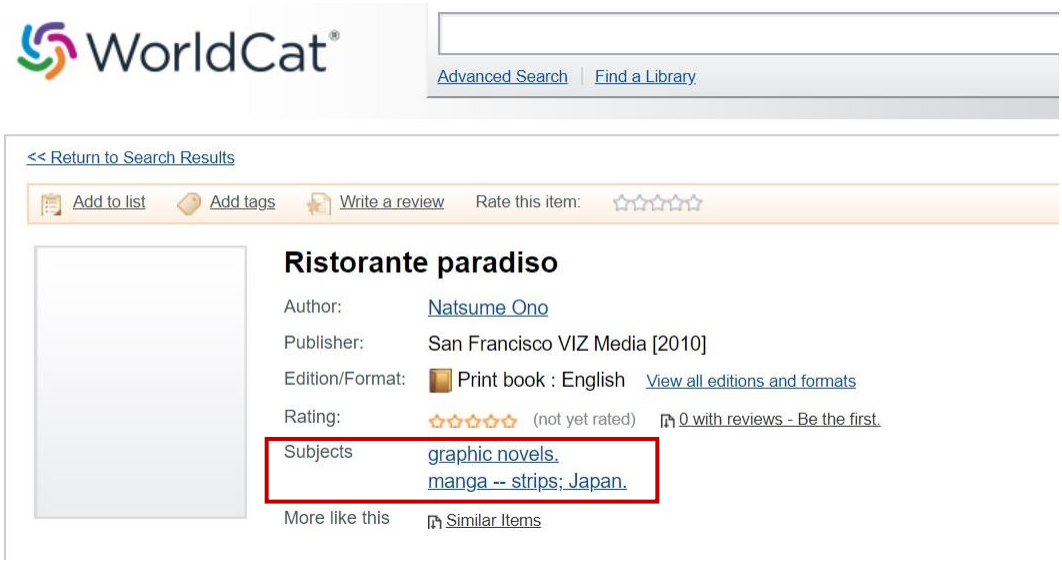


Figure 1. OCLC Worldcat record of Ristorante Paradiso (2010)

The problem of searching and getting recommendations of visual materials have been also discussed in some of the previous studies by Cho, Donovan, and Lee (2018), Rossi, Lee, and Clarke (2014), Welhouse, Lee, and Bancroft (2015), and Cho, Schmalz, Keating, and Lee (2017). In particular, Cho, Schmalz, Keating, and Lee (2017) point out the lack of subject access in current retrieval and recommendation systems for anime, except for *genre*.

Relevant user studies that could help us understand what visual material users actually need are still lacking. Due to this, we do not have enough empirical data to adequately evaluate the current retrieval and recommendation systems to determine whether they are satisfying users' seeking needs well or not. Some recent video game user studies have attempted to address this issue, investigating what users need when they search for video games as well as how to organize these materials (Lee, Clarke, & Perti, 2015; Cho, Donovan, & Lee, 2018; Rossi, Lee, and Clarke, 2014; Welhouse, Lee, and Bancroft, 2015). However, most existing visual material-related studies (Gluibizzi, 2007; Chute, 2008; Crutcher, 2011; O'English, Matthews, & Lindsay, 2006; Levi, 2013) have tended to focus on the medium itself rather than on its users. Information systems—including retrieval, organizational, and recommendation systems—can be improved and provide better search experiences to their users by obtaining a good understanding of real user groups. Therefore, empirical understanding of users' needs will improve current information services and designs, offering more educated ideas to which features could be more appealing to visual material users.

1.4. Whole collection advisory

RA services in libraries can also significantly benefit from user studies. Existing studies in RA (such as Pearl (2012) and Saricks (2005; 2011; 2013)) have attempted to find the core appeals of different works to improve the quality of recommendation services. To understand what makes a particular work more attractive to a certain user, these studies explored *appeal factors*—the fundamental characteristics of materials that may be commonly applied to different works (Saricks, 2005; Pearl, 2012). For example, if a user finds the *Harry Potter* series interesting because of its story and setting, additional recommendations can be made to that user based on

the similar plot or setting of the fictions. However, these studies mainly focused on books or audio books only, excluding library media collections.

Wyatt (2007), Saricks (2011), and McArdle (2014) have recommended that libraries implement a whole collection advisory, a guide that encompasses different types of multimedia materials. The whole collection advisory concept is based on the understanding that modern patrons are "format omnivores"—that they tend to consume more than one type of media (Lee, Windleharth, & Cho, in press). Similar to the concept of appeal factors, communication and media studies have investigated the *gratifications* of media, the reasons an audience consumes particular media materials, using Uses and Gratification (U&G) theories (Swanson, 1992; Rubin, 1979; Rubin & Perse, 1987; Albarran, 1990). However, these studies have generally focused on single types of media, often on television programs (Johnstone, 1974; Greenberg, 1974; McLeod & Becker, 1974; Rubin & Perse, 1987). We still lack an understanding of motivations relating to different types of visual narrative materials, as well as of common, unifying motivations across various types of media to support *cross-media advisory service* that can promote the whole collection of libraries.

1.5. Objective and research questions

In order to address these issues, this study will investigate users of multimedia information, particularly users of narrative-heavy, visual materials. The scope of narrative-heavy visual materials in this study includes printed visual narrative (e.g., comic books, graphic novels, manga, newspaper comic strips), visual narrative with a moving image format (e.g., animated films, anime, TV cartoons), and interactive visual narrative (e.g., video games). By implication, other types of multimedia information that lack a strong visual narrative—music, audio books,

and some graphic arts, for example–are excluded. There are two reasons that this study focuses on narrative-heavy visual materials. Firstly, a number of studies have been conducted on users of music and other audio (see Lee, Kim, & Hubbles, 2016; Fuller, Hubener, Kim, & Lee, 2016; Lee et al., 2017; Lee, Cho, & Kim, 2016; Hu, Lee, & Wong, 2014) while only few studies have been conducted on consumers of the type of visual media that has recently increased in popularity. In addition, the previous explorative study that investigated the core appeal factors of cross-media materials (Lee, Windleharth, & Cho, in press) found that narrative components of media materials such as *Mood, Setting, Complexity, Character,* and *Theme* were one of the most important aspects of the cross-media materials to users, worth investigating further.

The general objective of this study is to improve our understanding of visual material users, to better inform the work and practice of information services. In particular, this study aims to investigate three aspects of visual material users' needs: motivations and context of visual materials consumption, information features that users require to find relevant visual materials, and relationships among the motivations, contexts, and information features, if any. To address these topics, the following research questions are answered:

- **RQ1**: What are users' motivations for consuming visual materials?
- **RQ2**: What are the contexts or situations for consuming visual materials? Do motivations for consuming visual materials differ depending on different situations, and if so, how?
- **RQ3**: What information features are typically needed to obtain visual material recommendations?

- **RQ4**: Are associations present in certain combinations of themes, specifically among motivation, context, and information features?

1.6. Definitions of key concepts

Some of the key concepts used in this study are defined as follows:

1) **Narrative-heavy visual materials (visual materials)**: In this study, narrative-heavy visual materials, refer to specific types of multimedia information that have a graphic form with a heavy narrative. In other words, visual materials that tend to have a strong plot are considered narrative-heavy visual information. These visual materials include: printed visual narrative (e.g., comic books, graphic novels, manga, newspaper comic strips), visual narrative with a moving image format (e.g., animated films, anime, TV cartoons), and interactive visual narrative (e.g., video games).
2) **Cross-media information**: The nuance of this term can be slightly different depending on domains. For example, in marketing or business, it is often used as "cross-media marketing" or "cross-media advertising," a form of promoting strategy using more than one type of media.[3] Also, the Cambridge Dictionary defines it as "involving more than one form of public communication,[4]" in communication studies' point of view. In this study, the definition follows one from a previous study (Lee, Windleharth, & Cho, 2017) that considers cross-media as rather a simple notion of "across multiple types of media." Thus, referring to different media materials, particularly including comic books/graphic novels/manga (printed visual narrative), anime/animations (visual narrative that has a

[3] http://www.marketing-schools.org/types-of-marketing/cross-media-marketing.html

[4] http://dictionary.cambridge.org/us/dictionary/english/cross-media

format of moving images), and video games (interactive visual narrative) together, will be considered as cross-media materials in this study. In this study, *cross-media information* mainly refers to the cross-media objects themselves but does not exclude any relevant information about the cross-media materials, such as background knowledge about the game developer, or information about the other relevant media objects that influenced the creation of an anime. The use of "information" will be consistent throughout the paper, so when it discusses multimedia information, visual information, or cross-media information, they will all mainly refer to media objects themselves, including relevant information about them.

* *Transmedia* is often confused with cross-media. *Transmedia* is a set of narrative and media production techniques that use multiple media platforms to tell a single story. For example, fictional books, animations, and games each can tell a unique part of the story to enhance and deepen the reader's experience of the whole (Vukadin, 2014). In other words, reading a fictional book would let audience get a partial story of the whole, which can be supplemented and completed by consuming other relevant media objects such as animations or games.

3) **Information seeking needs**: Information need is a "recognition that your knowledge is inadequate to satisfy a goal that you have," and information seeking is "a conscious effort to acquire information in response to a need or gap in your knowledge" (Case & Given, 2016, p. 6). The scope of this study is understanding users' information seeking needs, which is a narrower scope than information needs; in this study, information seeking need is defined as "what users need when they make a conscious effort to

acquire information." It will particularly investigate the types of **information features**[5], descriptive information elements that users need when they seek multimedia information or look for recommendations.

4) **Motivations/Appeals/Gratifications**: Motivations that explain why users are attracted to particular media information are referred to in several different ways including appeals and appeal factors, doorways, gratifications, aesthetics, motivations, and dimensions (Rosengren, 1974; Mediatore, Pearl, & Chelton, 2003; Klimmt, 2003; Hunicke, LeBlanc, & Zubek, 2004; Sherry et al., 2006; Yee, 2006). Although these terms describe similar concepts, appeals and aesthetics tend to describe more content-based aspects such as *Plot* and *Pacing* of the work, while gratifications tend to contain more experiential motivations such as "for relaxation" or "to forget" (Lee, Windleharth, & Cho, 2017). In this study, *motivation* will be mainly used to describe both concepts of appeals and gratifications, encompassing content-based appeals and experiential appeals.
5) **Information systems:** In this study, information systems refer to visual material-related online databases, library catalogs, and recommendation services.

[5] This term is adapted from Lee (2008).

Chapter 2. Literature Review

In this chapter, the existing literature of two main topics of this study, visual materials and relevant user studies and motivations of consuming multimedia materials, will be discussed to understand the different characteristics of visual materials and what efforts have been made to understand their users. The first part of this chapter will focus on discussing different types of visual materials and their users, and the second part of this chapter will discuss Readers' Advisory and appeals. Any research gaps identified in this literature review will be discussed at the end of each chapter, *2.1.4. What is missing in the current literature of visual materials and user studies,* and *2.2.2. What is missing in the current literature of multimedia consumption motivations.*

2.1. Visual materials and user studies

Most of the studies that investigate visual media so far have focused on a single medium. Thus, there has been limited accumulated knowledge of visual materials and their users in general. As this study investigates three types of visual media—comic books/graphic novels/manga, anime/animations, and video games—relevant studies from each domain will be discussed separately.

2.1.1. Printed visual materials: Comic books/graphic novels/manga

The terms, comic books and graphic novels, are often used interchangeably. However, technically they are classified as different "genres" (or different "formats," depending on different scholars, e.g., Carter, 2008). It is important for scholars to clarify terminology and establish context to "dispel any misperceptions about the medium and the stereotypes of comics" (Hoover, 2011, p.

175). McCloud (1994) defines comic books as "juxtaposed pictorial and other images in deliberate sequence, intended to convey information and/or to produce an aesthetic response in the viewer" (p. 20), and Chute and DeKoven (2006) define graphic novels as "narrative work in the medium of comics" (p. 767), although they prefer to refer to it as *graphic narrative*.

> "Graphic narrative, through its most basic composition in frames and gutters—in which it is able to gesture at the pacing and rhythm of reading and looking through the various structures of each individual page—calls a reader's attention visually and spatially to the act, process, and duration of interpretation" (p. 767).

Eisner (2008) provides a broader, more inclusive definition, using the term *sequential art*, to define both comics and graphic novels as "a means of creative expression, a distinct discipline, an art and literary form that deals with the arrangement of pictures or images and words to narrate a story or dramatize an idea" (p. xi).

Generally speaking, it is understood that graphic novel is usually either the compilation of comics or reads like a book by completing the full arch of a narrative by the end of the novel, while comic books are periodicals that are produced monthly whose story lines forward to the next issue.[6] In this study, *graphic novels* are defined as "book-length work in the medium of comics," following Hoover's (2011) rather simple definition, and *Comic books* will be used to specifically indicate the visual narrative that is periodical. Lastly, *Comics* is going to be used at times as the broadest term, as it encompasses comic books and graphic novels altogether (Hoover, 2011).

[6] See the following sources for more information: https://www.youtube.com/watch?v=UxqqFrYe6Vw; http://dailyutahchronicle.com/2012/09/19/graphic-novels-vs-comic-books-whats-the-difference/

There is another important format of visual narrative to be added in this group: manga. Manga refers to Japanese comics. Schwartz and Rubinstein-Ávila (2006) state, "manga are printed comics found in graphic-novel format, whereas anime are animated cartoons (i.e., moving images on television, movies, or video games). What begins as manga in Japan and ultimately gains popularity is likely to become anime" (p. 41). Manga has been gaining more popularity and attention in the US due to its various traits; it is extremely successful and even dwarfs American comics in sales (Davis, 2015). One example is *One Piece* (serialized in *Shueisha*'s *Weekly Shōnen Jump* magazine since July 22, 1997), created by the artist Eiichiro Oda. Davis (2015) states that the only fiction book series that has outsold *One Piece* is *Harry Potter* at 450 million copies (estimated, 2013). Other than the success in the commercial market, manga has unique characteristics favored by fan communities, which will be further discussed in the next section with anime.

This study includes webcomics (also known as digital comics, internet comics, or webtoons) under the "printed" visual material category as well, primarily due to its 2D platform, despite the medium's often more complex format. In fact, because of its versatility in format, many researchers have had hard times defining what a webcomic is. Walters (2009) considers a webcomic to be "a comic originally published on the Internet," and it is "primarily made up of stationary art and text, though the boundary between some interactive display methods and animation is sometimes difficult to distinguish" (p. 2). We say a webcomic is "primarily" stationary art because, sometimes, it is not. These days, most webcomics are distributed via mobile applications on top of authors' websites or through specialized websites for webcomic services, which enable authors to be more creative in their storytelling methods. They can insert soundtracks

for different episodes, or they can create a short animated image to provide a different effect. Some webcomics can be interactive as well, by letting readers select and click certain parts of the image to proceed the story. With new technologies and diverse platforms, storytelling techniques in comics are evolving.

There have been several studies on these printed, visual narrative media. Some of the themes include **(1) defining the media** (Meskin, 2007; O'English, Matthews, & Lindsay, 2006; Hoover, 2011; Schwartz & Rubinstein-Ávila, 2006; Fallis, 2005; Wong, 2006; Levi, 2013; Jang & Song, 2017; Dittmar, 2012; Walters, 20019), **(2) validating it in the literary and artistic point of view** (Gluibizzi, 2007; O'English, Matthews, & Lindsay, 2006; Levi, 2013; Chute & DeKoven, 2006; Chute, 2008; Crutcher, 2011; Bussert, 2005), and **(3) its positive influence on literacy** (Frey & Fisher, 2004; Hoover, 2011; Jacobs, 2007; Schwartz & Rubinstein-Ávila, 2006; Schwarz, 2002; Schwarz, 2006; Leckbee, 2005; Fallis, 2005) and **(4) education** (Yang, 2008; Leckbee, 2005; Williams, 2008; Botzakis, 2009; Downey, 2009; Frey & Fisher, 2004; Heaney, 2007; Hoover, 2011; Jacobs, 2007; O'English, Matthews, & Lindsay, 2006; Choi, 2016; Metraglia & Villa, 2014; Vassilikipoulu, Retalis, Nezi, & Boloudakis, 2011). In the studies that suggest the positive influence of comics on literacy and education, researchers pay particularly close attention to the format of comics. For example, Hoover (2011) claims that since comics rely on a set of conventions, navigating these conventions requires readers to possess and apply a robust repertoire of information literacy skills, and the act of interpreting and applying these conventions when reading comics is referred to as decoding. Yang (2008) also argues that the comics medium can be a powerful educational tool due to its bridging of the gap between the media we watch and the media we read, through combination of image and text. The author specifically presents a

successful teaching experience that he had when he was teaching an Algebra class.

In the library and information science domain, the main topics discussed and/or studied have been **(5) how libraries can provide these materials to their users better and what librarians' roles would be** (Welch & Brown, 2005; Jones, 2005; Lavin, 1998; Exner, 2012; Kruse, 2013; Serantes, 2005; Espelage, 2005; Ching, 2005; Fletcher-Spear & Jenson-Benjamin, 2005; Snowball, 2005; Radford, Radford, & Alpert, 2015; O'English, Matthews, & Lindsay, 2006; Gluibizzi, 2007), **(6) how to develop these collections** (Ching, 2005; Jones, 2005; Serantes, 2005) and **(7) how to organize them** (Morozumi et al., 2009; O'English, Matthews, & Lindsay, 2006). More specifically, Welch and Brown (2005) explain the process of how they could start building the visual narrative collections at the Cleveland Public Library as young adult librarians, and from an art librarian's point of view. Gluibizzi (2007) introduces the concept of *sequential art* and how she personally conducts a bibliographic instruction session for graphic novels. Similarly, Ching (2005) describes her personal experiences of developing a graphic novel collection as a high school librarian, claiming the importance of having these materials at the library. The author states that one particular concern that she had was with manga since it is meant to be read from right to left which may be too difficult for some students to follow, but she found her fears were "completely unfounded" when she observed how comfortable the students felt with these visual materials.

In terms of the organization of these materials, few studies have been conducted; Morozumi et al. (2009) suggests a metadata framework for manga, based on the Functional Requirements for Bibliographic Records (FRBR). This suggested framework is comprised of three aspects: bibliographic description, structural description, and intellectual entities contained in the manga. Compared to this more theoretical approach, O'English, Matthews and Lindsay (2006) present

some of the inconsistent practices of graphic novel classifications in academic libraries, as well as relevant discourses on the complexities of cataloging graphic novels, in a more practical, hands-on point of view.

A handful of studies have attempted to understand the users of comic books, graphic novels, and manga, especially on their fandom culture. For example, Raphael (2007) wrote his doctoral dissertation about *Marvel* comics using historiography, political economy, literary analysis, and sociology. The author states that comic fandom is a "leisure subculture that provides a sense of community for its members without necessarily eclipsing the importance of other social ties or subcultures" (p. 128). However, the author emphasizes that comics fandom reflects a wide spectrum of aesthetic tastes, and because of this, it is less easily mapped than other media fan cultures. As an example, many comics fans are focused on the superhero genre, while smaller subgroups would reject superheroes and prefer alternative genres such as autobiography or social satire (Raphael, 2007).

Similarly, Swafford (2012) used a critical ethnography approach to study the comics fan community. Based on his observations, several themes were identified: the comic shop is like a clubhouse metaphorically, being used as a place for comic fan community members to frequent, and individuals must prove their membership by providing a sort of password, such as speaking the language of the club. Secondly, there is a gendered division at the comic shop. Most of the "members" are male and they do not welcome female members, which leads to women's nervousness at being in the comic shop. Lastly, the fan community of the comic shop is self-organized as the employees are also acting like patrons. There is no clear distinction between employers and patrons.

From a librarian's point of view, Exner (2012) conducted a survey study with 151 participants, which was distributed at the 11th *Animazement*, an annual convention that celebrates the world of Japanese visual culture through anime, manga, video games, etc. The author focused on respondents from North Carolina only for the purpose of the study, which resulted in a total of 115 respondents. Forty-one respondents identified themselves between 22-30 years old, followed by 18-21 years old (33 people) and 14-17 years old (22 people). While 50% of the respondents mentioned that their public libraries carry manga, 44% of the respondents mentioned that their libraries do not carry anime. The majority of the respondents hoped that their public library would support anime (77%) and manga (70%) to check out, and they also wanted their school and college libraries to support manga (80%) to check out.

Currently existing studies still show the lack of understanding of users. Although there have been some studies that explored the comics users, their main focus was either the culture of the fan communities or demographic information of these fans. In order to serve comics users better, which was frequently mentioned in most of the comic related studies, the user study that can describe what users need in terms of the comics materials should be conducted.

2.1.2. Visual materials with a format of moving images: Anime/animations

Similar to the term *comics*, there are many definitions of animation. The term itself is widely used and well-known, as "a motion picture that is made from a series of drawings, computer graphics, or photographs of inanimate objects (such as puppets) and that simulates movement by slight progressive changes in each frame[7]" (a definition from Merriam-Webster dictionary). However,

[7] https://www.merriam-webster.com/dictionary/animated%2Bcartoon

Denslow (1997) argues that this definition reflects a limited exposure to what the artform has to offer.

> "Is virtual reality a form of animation? Does computer-generated lifeform simulation qualify? What about the computerized recording of a mime's movements that are later attached to a character which is rendered a frame at a time? Do digital post-production techniques allowing for undetectable compositing and manipulation of live action scenes reduce the shooting of actors onto film to merely an image acquisition phase of the overall production? Is that production then in reality an animated film?" (pp. 1-2).

The author states that even the narrow definition of animation, which excludes all but classic *Disney* character animation, is threatened by the computerized ink-and-paint process. With the development of technology, the definition of animation is becoming more complicated, and the discussions may perhaps become endless. However, for the specific scope of this study, animation is defined as a "visual narrative that is the creation of moving images through the manipulation of all varieties of techniques apart from live action methods," slightly modified definition of *The Association of International Film Animation* (ASIFA).[8]

One assumption this study had in the designing phase was that potential participants might discuss anime more frequently than "Western" animations or cartoons. It is because approximately 60% of the world's animated television shows originate in Japan[9], and considering its growing popularity and close relationships with other media[10], it was likely that participants of this study

[8] http://www.asifa.net/who-we-are/statutes/
[9] http://news.mit.edu/2013/the-soul-of-anime-0129
[10] Anime, manga, and many games are often created based on each other, sharing the same universe or characters.

would enjoy this medium than other genres of animations. It was indeed the case at the end of data collection stage. Thus, the narrower genre of animations, known as anime, requires a separate discussion in this study.

As briefly explained in the previous section, anime is commonly defined as Japanese animation, or animations produced in Japan. Davis (2015) defines it as "Japanese limited-animation, which is a form of animation that utilizes fewer frames than the classic Disney animation and a variety of other cost-saving techniques" (2015, p. 35), in a quite pragmatic perspective. Brenner (2007) on the other hand, focuses more on different types of its market distributions:

> "Animated films produced in Japan for a Japanese audience. The word itself comes from the word animeshon, a translation of the English word "animation." This term encompasses all animated titles including feature films, television shows, and original video animation (OVA) released to the home entertainment market" (p. 29).

Anime has several unique characteristics compared to Western comics and animations, which should be discussed together with manga due to their close relationship and the fact that most of the anime that is created is based on popular manga series. Anime and manga's variety of themes is one of the biggest appeals to many users. For example, Levi (2013) states sadness, environmentalism, and terror are unique themes found in anime, and Brenner (2007) also points out that manga's varied topics are a large part of its appeal compared to American comics that still have difficulty attracting female readers. In the interview with Davis (2015), a graphic novel writer and former employee at *Bandai Entertainment*, Robert Napton, responded that plot and narrative style are anime's main appeals:

> "with anime you were engaged in a real level the way an adult is engaged in a TV series or movie. There was some story, some character, romance, death… I remember when Robotech aired, and the creators of that show—even though they altered the story lines, if a character died they tried to keep that intact, and in animation in American cartoons you don't have characters dying, you know?" (p. 37)

Despite a plethora of existing literature on anime and animations in general (Napier, 2016; Davis, 2015; Levi, 1996; Levi, 2013; Beckman (Ed.), 2014; Lamarre, 2009; Cooper-Chen, 2010; Treat, 1996; Clements, 2013; Condry, 2013; Swale, 2015; Odell & Le Blanc, 2013; Toshiya & Arnold, 2006; Fennell et al., 2013; Zanghellini, 2009; McCarthy, 2002), user studies in this domain are severely limited. One of the few user studies is Napier (2006), where the author examines "the *Miyazaki Mailing List*, an international group of fans devoted to the works of Miyazaki Hayao, who is Japan's, and arguably the world's greatest living animator" (p. 48). In the case of the members of *Miyazaki Mailing List*, 26% of the fans were between 40-49 years old, 25% were 20-29, 23% were between 30-39, and 14% were between 50-60, showing more older fans. The author states that the intriguing part was their relatively high educational backgrounds; 45% had a BA, 20% had an MA, and 5% had a PhD, which might indicate the biased sample. The author emphasizes that Miyazaki's Western fans, in particular, think that "Miyazaki's subtle and complex worldview allows them to "break the rules" of Western culture, to go beyond the Hollywood happy endings, or the need for a defined good and evil, and embrace the world in all its ambiguity, heartbreak, and hope" (p. 62).

Lee, Shim, and Jett (2015) analyzed recommendation questions in a Korean Online anime Q&A community to identify the primary features of anime described by users; authors found *genre, title,*

mood, story, series, style, character, audience, length, scene, temporal, character name, and *format* are 13 prominent features for anime fans in Korea. Similar to this study, Cho, Schmalz, Keating, and Lee (2017) analyzed 396 online forum threads from the Anime News Network,[11] the foremost anime news/journalism website (Davis, 2015), particularly focusing on the ones asking for anime recommendations. The authors identified 19 anime information features with 3 types of associations *(+Don't Like, +Similar to, and +Related to*) to each other.

Feature	**Description**	#
Work	Title of anime or other related media based on the anime (e.g., video games based on anime, related manga, etc.)	638
Theme	Frequently recurring anime structures	250
Genre	Categories of anime characterized by similarities in form, style, or subject matter, including typical genre labels that are commonly used by anime users	223
Audience	Intended audience and rating information regarding anime, including descriptions about the audience	154
Mood	The feeling and overall atmosphere of an anime	140
Plot/ Narrative	How the main events of anime are presented as interrelated sequence, including types of endings	134
Characters	Specific characters (a character from an anime mentioned by name) or types of characters (personality, appearance, occupation, age, etc.)	101
Tropes	Significant or recurrent motifs, relating or described by anime scenes or	94

[11] https://www.animenewsnetwork.com/

	events	
Package	Price, different versions, region code, special features	53
Artwork/ Visual Style	The visual features and artistic design of an anime	50
Source/ Platform	Sources of anime and different types of platforms for viewing (e.g., DVD, streaming)	44
Creators	Individuals and Corporate Bodies responsible for creating anime	34
Audio Style	The Sound effects, music, or voices in anime	30
Language	Language of anime, including whether the anime is dubbed or has subtitles	29
Release Date	The timeframe of an anime's release	27
Length	Running time, number of episodes	26
Popularity	Popularity of anime at certain time	9
Completeness	Whether anime has an ending or ongoing episodes	5
Other	Miscellaneous	23

Table 1. Identified anime information features (Cho et al., 2017)

Findings suggest that although some features such as *Work, Theme,* and *Genre* were mentioned more frequently, lesser mentioned features are not necessarily less important. These lesser mentioned codes are often highly descriptive and specific requests, for instance, with *Artwork/Visual Style* (e.g., "well animated, that also pays attention to detailed movement and fluidity," (T125843)) or *Audio Style* (e.g., "very sophisticated music (i [sic] am a classical music fanatic ranging from pre-renaissance to modern and avant-garde music so i [sic] can really

appreciate the debussian and romantic influences that can be heard in the music)." (T57152)). The authors suggest that their findings reveal a need for increased granularity in current retrieval systems and creating a robust taxonomy to satisfy users' specific needs.

2.1.3. Interactive visual materials: Video games

As an interactive medium, video games also contain heavy narrative. For example, some game genres such as Role-Playing Games (RPG), "a game where players take responsibility for acting out these roles within a narrative, either through literal acting, or through a process of structured decision-making or character development,[12]" particularly tend to have even heavier narrative. However, the discussion about the relation between video games and narrative is still ongoing (Domsch, 2013) and can be simplified as follows:

> "Narratologists claim that video games *are* narratives; ludologists claim that video games are *not* narratives. In order to see that both standpoints are not mutually exclusive, one needs to specify what they actually relate to. When ludologists claim that video games are not narratives, they are giving a partial answer to the question: what is the *essence* of a video game? Their answer to this is, correctly, that the essence of a video game, its *differentia specifica*, is not captured by cataloguing them as just another form of narrative. Or, to put it another way: what differentiates them from other narratives is not the fact that they are narratives. When, on the other hand, narratologists make the claim that video games *are* narratives, they are (or they should be) talking about the properties that video

[12] See following sources for more information: https://en.wikipedia.org/wiki/Role-playing_game; http://www.dictionary.com/browse/role-playing-game; https://www.gamespot.com/forums/system-wars-314159282/define-what-an-rpg-is-32898915/; https://www.computerhope.com/jargon/r/rpg.htm

> games have or contain. In this sense, video games *are* narratives because they *contain* narratives (just like a picture might be a narrative because it contains one, without losing its *differentia specifica* as a visual image)" (p. 13).

Even in this debate, it still remains true that video games contain narrative in their gameplay. It is a matter of whether they should be classified as a complete narrative genre or a separate genre that contains narrative; the narratological view is that video games should be understood as novel forms of narrative, and due to this, games should be studied using theories of narrative. On the other hand, under the ludological point of view, the studies of video games should focus more on the rules of game, concerning the analysis of the abstract and formal systems (Tyler-Jones, 2013 May 4). In this study, video games are considered a visual media with heavy narrative, without particularly choosing either narratologists' or ludologists' perspectives. In fact, narrative is one of the most important information features mentioned by game users in the existing studies (Lee, Clarke, & Kim, 2015; Lee, Clarke, & Perti, 2015; Lee, Clarke, & Rossi, 2016).

Studies of video game users have been more active in recent years. Video games are now not only successful commercial objects (the global video game marketplace including mobile games is forecast to reach US$134.9 billion by 2018[13]) but also cultural objects that have gained attention from the academic domain. Aside from some of the video game studies which focus on game addiction issues (such as Weinstein, 2010; King et al., 2013), there have been several studies (Lee, Clarke, & Perti, 2015; Cho, Donovan, & Lee, 2018; Rossi, Lee, and Clarke, 2014; Welhouse, Lee, and Bancroft, 2015) on what kinds of information features are needed for video game users.

[13] https://newzoo.com/insights/articles/newzoo-cuts-global-games-forecast-for-2018-to-134-9-billion/

Based on the user interviews and survey, Lee, Clarke, and Perti (2015) developed a complete list of metadata elements for video games. *Price* and *Platform* were the most highly rated elements with over 80% of respondents finding them useful, while a number of other subject metadata such as *Genre, Style, Plot/Narrative, Theme*, and *Mood/Affect* also found to be important. Visual information such as *Gameplay videos* ("video footage of the gameplay excluding such things as introductions, cutscenes, or trailers," p. 2620) was also highly valued in this study.

Some of the video game subject elements including visual style, mood, and plot have been further studied for even more granular organization and refinement. For example, Cho, Donovan, and Lee (2018) conducted a user study with 22 participants to evaluate and develop the controlled vocabulary of video games' visual styles. The authors created a revised set of controlled vocabulary based on the findings, which contains 21 visual style terms such as *Psychedelic, Cel-shaded, Comic book (anime/manga), Watercolor, Televisualism, Silhouette, Minimalism*, etc. Rossi, Lee, and Clarke (2014) investigated mood elements of video games specifically, which resulted 17 mood terms: *Adventurous, Aggressive, Cute, Dark, Horror, Humorous, Imaginative, Intense, Light-hearted, Mysterious, Peaceful, Quirky, Romantic, Sad, Sarcastic, Sensual,* and *Solitary*. Also, using a domain analysis and existing data structures, Welhouse, Lee, and Bancroft (2015) created a controlled vocabulary for video games' plot metadata. The authors attempt to categorize basic plots using the pair structure; each pair consists of a verb and object, each with its own controlled vocabulary (e.g., "seeking treasure" or "escaping a dystopia").

Table 2 presents identified information features from the visual media studies that have been discussed here. Information features that are identified by all three types of visual media studies (printed, moving images, and interactive visual media) are colored in blue, which are: *Work, Theme,*

Genre, Plot/Narrative, Characters, Artwork/Visual style, Source/Platform, and *Creators*.

Feature (Relevant/similar terms)	Domains where mentioned	Description	Literature
Work (Title, Alternative title, Association with other works, Identifier)	Anime/animations; Comic books/graphic novels/manga	Title of the work or other related media (e.g., video games based on anime, related comic books, etc.)	Cho et al., (2017); Morozumi et al., (2009); Lee, Clarke, & Perti (2015)
Theme (Topic, Subjects, References with other events)	Anime/animations; Comic books/graphic novels/manga; Video games	Frequently recurring subjects/topics	Cho et al., (2017); Morozumi et al., (2009); Lee, Clarke, & Perti (2015)
Genre (Style)	Anime/animations; Comic books/graphic novels/manga; video games	Categories of media objects characterized by similarities in form, style, or subject matter, including typical genre labels that are commonly used by users	Cho et al., (2017); Morozumi et al., (2009); Lee, Clarke, & Perti (2015)
Audience (Rating, Reviews)	Anime/animations; Video games	Intended audience and rating information regarding media objects, including descriptions about the audience	Cho et al., (2017); Lee, Clarke, & Perti (2015)
Mood (Affect)	Anime/animations; Video games	The feeling and overall atmosphere	Cho et al., (2017); Lee, Clarke, & Perti (2015); Rossi, Lee, & Clarke (2014)
Plot/Narrative	Anime/animations;	How the main events are presented	Cho et al., (2017);

(Story, Episode)	Comic books/graphic novels/manga; Video games	as interrelated sequence	Morozumi et al., (2009); Lee, Clarke, & Perti (2015); Welhouse, Lee, & Bancroft (2015)
Characters	Anime/animations; Comic books/graphic novels/manga; Video games	Specific characters (a character from an anime mentioned by name) or types of characters (personality, appearance, occupation, age, etc.)	Cho et al., (2017); Morozumi et al., (2009); Lee, Clarke, & Perti (2015);
Tropes (Motifs, Scenes)	Anime/animations; Comic books/graphic novels/manga	Significant or recurrent motifs, relating or described by specific scenes or events	Cho et al., (2017); Morozumi et al., (2009)
Package (Edition, Region, Price, Box art/cover)	Anime/animations; Video games	Price, different versions, region code, special features	Cho et al., (2017); Lee, Clarke, & Perti (2015)
Artwork/Visual Style (Visual object, Visual effects, Presentation, Point of view)	Anime/animations; Video games; Comic books/graphic novels/manga	The visual features and/or artistic design of media objects	Cho, Donovan, & Lee (manuscript under review); Morozumi et al., (2009); Lee, Clarke, & Perti (2015)
Source/Platform (Format, Publication styles, System	Anime/animations; Comic books/graphic	Sources of media objects and different types of platforms for viewing or playing (e.g., DVD, PS4,	Cho et al., (2017); Morozumi et al., (2009); Lee, Clarke,

requirements, Online capabilities, Special hardware)	novels/manga; Video games	streaming)	& Perti (2015)
Creators (Developers, Game credits)	Anime/animations; Comic books/graphic novels/manga; Video games	Individuals and Corporate Bodies responsible for creating media objects	Cho et al., (2017); Morozumi et al., (2009); Lee, Clarke, & Perti (2015)
Audio Style (Music, Voice actors, Sound effects)	Anime/animations;	The Sound effects, music, or voices in media objects	Cho et al., (2017)
Language (Subtitles, Dubbing)	Anime/animations; Video games	Language of media objects, including whether it is dubbed or has subtitles	Cho et al., (2017); Lee, Clarke, & Perti (2015)
Release Date (On-air date)	Anime/animations; Video games	The timeframe of the media object's release	Cho et al., (2017); Lee, Clarke, & Perti (2015)
Length (Running time, Number of episodes, Estimated time of completion)	Anime/animations;	Running time, number of episodes	Cho et al., (2017)
Popularity (Popular in this season)	Anime/animations;	Popularity of media objects at certain time	Cho et al., (2017)
Completeness (Ending, Type of ending)	Anime/animations; Video games	Whether a media object has an ending or ongoing episodes, and what type of ending it has	Cho et al., (2017); Lee, Clarke, & Perti (2015)

Setting **(Temporal aspect, Place)**	Comic books/graphic novels/manga; Video games	The location, time frame, and/or cultural context	Morozumi et al., (2009); Lee, Clarke, & Perti (2015)
Series	Video games	"Proper names of a set of related games, often indicated by consecutive numbering, continuing narrative, or similarities in gameplay and themes, to which the game being described belongs" (p. 2620)	Lee, Clarke, & Perti (2015)
Trailers **(Gameplay videos)**	Video games	"Video footage released and/or endorsed by the developer/publisher of the game for promotional purposes" (p. 2620)	Lee, Clarke, & Perti (2015)
Franchise/universe	Video games	"A commonly used name referring to the intellectual property, related data, and content shared among a group of cultural objects to which the game being described belongs" (p. 2620)	Lee, Clarke, & Perti (2015)
Number of players	Video games	"The number or range of the number of players the game can accommodate either separately or concurrently" (p. 2620)	Lee, Clarke, & Perti (2015)
Corporate body **(Distributor, Publisher)**	Video games	"An individual, organization, or group of individuals or organizations responsible for creation, realization,	Lee, Clarke, & Perti (2015)

		manufacture, marketing, and/or distribution of a game" (p. 2620)	
Customization options (Difficulty levels)	Video games	"The in-game options for difficulty level and characters which can be modified by the player for personalized experience" (p. 2620)	Lee, Clarke, & Perti (2015)
Screenshots	Video games	"Still images taken during the gameplay" (p. 2620)	Lee, Clarke, & Perti (2015)
Official website	Video games	"A URL of the website for the game from the companies officially associated with the game" (p. 2620)	Lee, Clarke, & Perti (2015)

Table 2. Identified information features from visual media studies

2.1.4. What is missing in the current literature of visual materials and user studies

Relevant studies on three different types of visual narrative media (printed visual narrative, moving images, and interactive visual narrative) have been discussed in this *Visual media materials and user studies* section, so far. What we could learn from the existing literature in this field is that there are enough studies on why these materials are of artistic, academic, or literary importance. The discourses are oftentimes from cultural studies or literary critiques.

A handful of studies in comics attempted to understand the user groups, but mostly their data focused merely on user groups' demographic information, rather than what users need. It was similar to the user studies in anime and animations, as well. Existing user studies in anime and animations concentrated on understanding cultural characteristics of a specific fan community, which was not able to let us know what users need when they look for these types of information. Despite many studies from the library and information science that emphasize the importance of

providing these materials to users, the current literature review reveals that we do not have firm groundings that explain what users need when searching for recommendations of visual narrative objects. This study will attempt to fill this gap by investigating visual material users' information seeking needs. In particular, this study will explore the necessary information features that users need when they search visual narrative materials or look for recommendations.

2.2. Motivations of consuming multimedia materials

As explained in *1.6. Definitions of key concepts used*, similar concepts that attempt to describe motivations of consuming media information existed in several domains including communication, media, and library and information science studies. Depending on the types of studies, motivations tend to be called differently as well, such as appeals or appeal factors (especially in information science, e.g., Lee, Windleharth, and Cho, 2017), doorways (especially in readers' advisory services, created by Pearl, 2012), gratifications (especially in communication and media studies, e.g., Katz, Blumler, & Gurevitch, 1973; Shade, Kornfield, & Oliver, 2015), dimensions (Kilmt, 2003), aesthetics (Hunicke, LeBlanc, & Zubek, 2004), and motivations (Yee, 2006).

Two primary topics that need to be understood are the concept of appeals from the readers' advisory services and the uses and gratification theories from communication studies. In libraries, RA services are generally based on the idea of appeals. Understanding "different types of appeals and identifying which appeals matter to different users is widely recognized as a critical process for the success of RA work" (Lee, Clarke, Cho, & Windleharth, 2017), thus recommendation guide should be able to satisfy users who seek various experiences when interacting with media materials.

2.2.1. Readers' advisory services and appeals

The concept of *appeals* was developed and applied to RA by Saricks (2001). As explaining appeal as the elements of books to which a reader relates, the author introduced 6 elements of appeals: *Pacing, Characterization, Story Line, Tone/Mood, Style/Language,* and *Frame/Setting*. Similarly, Pearl (2012) uses the term *doorways* to describe appeals of fiction; she states that librarians should consider "what it is about a book that draws us in, rather than what the book is about," listing *Story, Character, Setting*, and *Language* as main doorways.

Although the discussions on appeals started with books and fictions (Saricks, 2001; Saricks, 2005; Ross, 2001; Pearl, 2012), more recent studies emphasize visual media sources like graphic novels (Goldsmith, 2010). The author states that there are appeals specific to the graphic novel format.

> "The most obvious is format itself: graphic novels are necessarily visual as well as necessarily verbal. Not all graphic novel readers are primarily visual by nature, however. One can be wired to prefer auditory perception and still be an ardent graphic novel reader. However, it is likely that someone who is primarily auditory in orientation will be drawn to graphic novels with which auditory preference is harmonious: more linearity, fewer intricate images, and so on" (p. 6).

Goldsmith (2010) argues that the appeals that graphic novels share with traditional format narratives include: *Plot, Language (visual as well as verbal language), Character, Style, Length, Subject, Difficulty, Predictability, Outlook,* and *Conventionality*, while *Visceral effect* is something that would be unique to graphic novels.

> "The visceral effect also takes place when we watch a film, listen to an audiobook or

> professional storyteller, and, on occasion, attend a staged play. […] When we watch a filmed scene—whether it is beautiful or hideous, the unfolding of a magnificent event or the record of a violent encounter—we may find the occlusion of aesthetic space plays to our gut; we feel that which we see, and we feel it personally. Similarly, listening to well-produced aural literature collapses distance between the verbal content and our inner sense of space" (pp. 6-7).

In the uses and gratifications theories, the viewer sees the media as a utility in a self-confirmatory manner; "certain items are selected from the media, either because they provide gratification for entertainment, or full utility needs" (Sardar, 2015, p. 30). This approach identifies media use as an activity that is performed based on users' felt needs and the gratifications that are expected to be satisfied when the needs are met (Oliver, 2009). Here, the *needs* are broadly conceptualized, thus the types of uses and gratifications examined from this perspective include "more than affect-related variables, but also social, cognitive, and temporal variables as well (e.g., passing the time, habit, learning)" (p. 168).

Despite that there have been several uses and gratification studies on different media, existing research has not settled on a single typology of audience gratification. In fact, one of the criticisms that uses and gratification research has received was having different clusters of gratifications or functions (Martin, 1982). For example, McQuail, Blumler, and Brown (1972) describe 4 types of media-person interactions in their British radio and television program study: *Diversion* (Escape from the constraints of routine, Escape from the burdens of problems, Emotional release), *Personal relationship* (Companionship, Social Utility), *Personal Identity* (Personal reference, Reality exploration, Value reinforcement), and *Surveillance*. Greenberg (1974), whose findings influenced

the instrument of the current study, identifies 8 gratifications of television viewing: *To pass time, To forget, as a means of diversion, To learn about things, To learn about myself, For arousal, For relaxation, For companionship,* and *As a habit*.

To understand and organize the scattered concept of appeals, gratifications, and motivations, a comprehensive literature review has been conducted (*Table 3*). It is an important step to design the appropriate research instrument that can thoroughly reflect the motivations of cross-media materials. The table is the revised and updated version of my previous study with Lee and Windleharth (2017), where we reviewed bodies of literature related to various types of motivations in multiple domains, including library and information science, psychology, marketing, communication and media studies. Any relevant online resources including websites, bibliographies, indexes, and databases that employed motivations or similar concepts for providing access to media materials were reviewed, as well. In this current revision, literature from the whole-collection (also referred to as whole library) discourses have been added along with more recent uses and gratification studies on various types of media information.

Similar to the concept of cross-media motivations, the importance of considering whole-collection in RA services has been emphasized (Wyatt, 2007; Saricks, 2011; McArdle, 2014). McArdle (2014) states that the purpose of whole collection readers' advisory is "to draw the connections between materials from all over our libraries for patrons," and Saricks (2013) mentions that good librarians have always practiced whole-collection readers' advisory services by directing patrons seamlessly from section to section in the library as sharing the diversity of their collections (Saricks, 2013).

	Motivations	Description	Literature
Content-based	Characters (Characterization, Actors)	People in a story with whom readers have an emotional connection	Saricks (2005); Pearl (2012); Goldsmith (2010); Williamson (2011); McArdle (2014)
	Setting (Frame, Background)	The world in which a story takes place	Saricks (2005); Trott & Williamson (2011); Williamson (2011); Pearl (2012)
	Language (Style)	Writing style, grammar, and word use in a piece of literature	Mooney & Roy (2000); Saricks (2005); Goldsmith (2010); Williamson, (2011); Pearl (2012)
	Narrative (Story, Storyline)	Plot and events that media take the reader through	Hunicke, LeBlanc, & Zubek (2004); Saricks (2005); Wyatt (2007); Goldsmith (2010); Pearl (2012); McArdle (2014)
	Pacing	How the story unfolds	Saricks (2005)
	Genre (Style, Types, Format)	A style or form of content	Wyatt (2007); Trott & Williamson (2011); Williamson (2011); McArdle (2014)
	Theme (Subject, Topic)	Main subject of the media	Saricks (2005); Wyatt (2007); Goldsmith (2010); Trott & Williamson (2011); McArdle (2014)
Experiential	Accomplishment (Achievement, Completion, Reward structures, Satisfaction, Monetary incentives, Financial rewards)	Feeling the satisfaction of acquiring and/or accomplishing something;	Wigand, Borstelmann, & Boster (1985); Bartle (1990); Compeau, Higgins, & Huff (1999);Korgaonkar & Wolin (1999); Papacharissi & Rubin (2000); Dimmick, Kline, & Stafford (2000); Charney & Greenberg (2001); Flanagin & Metzger (2001); Klimmt (2003); Yee (2006); King &Defarbo (2009); Tocci (2012)

	Arousal (Excitation, Stimulation, Adrenaline, Exhilaration)	Feeling excited and/or stimulated	Wigand, Borstelmann, & Boster (1985); Griffiths (1991); Kaye (1998); Perse & Greenberg-Dunn (1998); Eighmey & McCord (1998); Lin (1999); Korgaonkar & Wolin (1999); Parker & Plank (2000); Dimmick, Kline, & Stafford (2000); Ferguson & Perse (2000); Papacharissi & Rubin (2000); Charney & Greenberg (2001); Flanagin & Metzger (2001); Vorderer, Hartmann, & Klimmt (2003); Klimmt (2003); Hunicke, LeBlanc, & Zubek (2004); Sherry et al. (2006); Abbott (2010); Greenberg et al. (2010)
	Sensation (Sense-pleasure, Audiovisuality, Graphics, Sound, Visual style, Visceral effect)	Appreciating the visual and/or auditory content	Eighmey & McCord (1998); Charney & Greenberg (2001); Klimmt (2003); Hunicke, LeBlanc, & Zubek (2004); Ermi & Mäyrä (2005); Abbott (2010); Goldsmith (2010); Williamson (2011)
	Fantasy (Imaginative fiction, Make-believe)	Immersing oneself in a fantasy world, and thus being able to do things not possible in real life	Malone (1981); Myers (1990); Hunicke, LeBlanc, & Zubek (2004); Ermi & Mäyrä (2005); Tocci (2012); Choi et al. (2013); McArdle (2014)
	Mood (Tone, Feel, Emotion, Outlook)	Achieving a particular emotional state, and/or immersing oneself in media	Goldberg & Gorn (1987); Nell (1988); Ross & Chelton (2001); Saricks (2005); Banerjee et al. (2008); Hollands (2006); Goldsmith

		expressing a particular mood	(2010); Rossi, Lee, & Clarke (2014); McArdle (2014)
	Challenge (Obstacle course)	Feeling the joy of overcoming obstacles or challenges	Malone (1981); Vorderer, Hartmann, & Klimmt (2003); Csikszentmihalyi (1990); Hunicke, LeBlanc, & Zubek (2004); Ermi & Mäyrä (2005)
	Fellowship (Social framework, Cooperation, Teamwork, Social rewards)	Enjoying the company of others	Griffiths (1991); Kaye (1998); Perse & Greenberg-Dunn (1998); Lin (1999); Compeau, Higgins, & Huff (1999); Korgaonkar & Wolin (1999); Parker & Plank (2000); Dimmick, Kline, & Stafford (2000); Papacharissi & Rubin (2000); Ferguson & Perse (2000); Charney & Greenberg (2001); Flanagin & Metzger (2001); Hunicke, LeBlanc, & Zubek (2004); Jansz & Tanis (2007); Greenberg et al. (2010)
	Discovery (Exploration, Uncharted territory, Curiosity)	Feeling of exploring uncharted territory	Malone (1981); Bartle (1990); Myers (1990); Hunicke, LeBlanc, & Zubek (2004); Abbott (2010)
	Expression (Self-discovery, Ego)	Self-discovery/actualization	Hunicke, LeBlanc, & Zubek (2004); Sherry et al. (2006)
	Cognitive (Thinking, Knowledge, Learning, Information seeking)	Learning and/or thinking about something	Kaye (1998); Perse & Greenberg-Dunn (1998); Korgaonkar & Wolin (1999); Lin (1999); Parker & Plank (2000); Papacharissi & Rubin (2000); Ferguson & Perse (2000); Dimmick, Kline, & Stafford (2000); Charney

			& Greenberg (2001); Flanagin & Metzger (2001); Ermi & Mäyrä (2005); Goldsmith (2010); Stewart (2011)
	Submission (Pastime, Recreation, Abnegation, Self-reactive)	Passing time, "turning off one's brain" and/or unwinding/relaxing	Kaye (1998); Eighmey & McCord (1998); Perse & Greenberg-Dunn (1998); Lin (1999); Compeau, Higgins, & Huff (1999);Korgaonkar & Wolin (1999); Parker & Plank (2000); Papacharissi & Rubin (2000); Ferguson & Perse (2000); Charney & Greenberg (2001); Flanagin & Metzger (2001); Hunicke, LeBlanc, & Zubek (2004); Schuurmaan et al. (2008)
	Interactivity (Interactions between user and game elements, Social interaction)	Selecting and/or modifying elements to which users are exposed	Selnow (1984); Bartle (1990); Myers (1990); Sherry et al. (2006); Tocci (2012)

Table 3. Updated media motivations table (revised from Lee, Windleharth, & Cho, 2017)

2.2.2. What is missing in the current literature of multimedia consumption motivations

Sardar (2015) claims that current statistics about the audience gathered by various media organizations do not really reflect audiences' perception of what they watch; they are criticized for reflecting the habits of people who are already hooked on that media (television shows, in this case), so the occasional or critical viewers who seek out particular programs tend to be excluded in the research. The current study will investigate various scenarios of seeking and consuming visual materials, which will be able to thoroughly organize scattered typologies and concepts of the motivations. As shown in *Table 3*, many of the motivations identified thus far are not only the

submissive or pastime type, but also active, information seeking type as well. This can address the limitation that uses and gratification theories have had: focusing too much on affective gratifications. Especially by understanding users' information seeking needs together, it is expected to explore more diverse layers of needs and motivations together.

In addition, except for the latest study that the researcher conducted with Lee and Windleharth (2017)—an exploratory study which investigated 5 appeal factors of cross-media materials (*Mood, Setting, Complexity, Character*, and *Theme*)—there are no studies that attempt to comprehensively understand the motivations across different formats of multimedia information. By attempting to find the common, unifying motivations of different visual materials, this study is expected to fill this gap and provide theoretical and empirical groundings for future cross-media advisory services and recommendation services.

Chapter 3. Methods

This chapter will describe the research methods selected for this study. *3.1. Data collection* will present the reasons why self-reporting diary completed with a follow-up interview and content analysis were chosen and how they were conducted. How data was coded and how intercoder reliability was measured will be described in chapter *3.2. Data coding* and *3.3. Intercoder reliability*. The analytical measures chosen for this study will be described in *3.4. Data analysis*. Lastly, efforts made to maintain the reliability and validity of this study will be discussed in *3.5. Reliability of the study*.

3.1. Data collection

The objective of this study is to understand users of different types of visual materials through a two-pronged approach: a self-reporting diary study complemented by a follow-up interview and a larger-scale content analysis of natural language queries collected from online fan communities.

Both of the data collected from the diary study complemented by a follow-up interview and the content analysis are combined and used together to answer all research questions. The primary focus of the self-reporting diary is to identify different contexts of visual material consumption and why the participants are attracted to certain material more than another; especially paying particular attention to **RQ1** ("What are users' motivations for consuming visual materials?") and **RQ2** ("What are the contexts or situations for consuming visual materials? Do motivations for consuming visual materials differ depending on different situations, and if so, how?"). In the follow-up interview, more general questions about participants' visual material information

seeking needs and behavior were asked, such as; how they searched for the materials, what kinds of information sources they used, if there were any difficulties they faced while searching, and what they expect from the visual material related information search and recommendation systems. In this first phase of data collection, **RQ3** ("What information features are typically needed to obtain visual material recommendations?") and **RQ4** ("Are associations present in certain combinations of themes, specifically among motivation, context, and information features?") were able to be addressed. RQ3 was answered by participants' diary responses and part of the follow-up interview questions, and RQ4 was mainly addressed by the cross-tabulation and cluster analysis later based on this data.

Along with the self-reporting diary and interview methods, the content analysis was used to support and validate the findings from the previous methods with a larger sample size. The content analysis focused more on addressing RQ3, by collecting natural language queries from 5 online fan communities where users asked for recommendations. It aimed to address RQ1 and RQ2 as well since forum users often describe their motivations and contexts of consuming visual materials while asking for recommendations.

3.1.1. Self-reporting diary and a follow-up interview

Participants who are interested in or enjoy more than one narrative-heavy visual material (i.e. someone who reads comic books and watches anime or who plays video games, watches cartoons, and reads graphic novels) were recruited for this study. Targeted participants were 18 years or older, based on statistics that the main demographics of the comic books, anime, and video games are between 18 and 29. The data collection was conducted from February 2018 to April 2018, through venues such as social media, online visual material related fan communities,

libraries, and snowball sampling when possible. Recruitment and data collection were ceased once the researcher reached theoretical saturation (when it is "assumed that further data collection will not bring incremental benefit to the theory-development process" (Robinson, 2014, p. 6; Strauss & Corbin, 1998)), which yielded 26 participants overall. Specifically, in order to decide when the data was saturated, this study followed the guidelines of Guest, Bumce, and Johnson (2006). The researcher documented the progression of theme identification and monitored any newly identified codes and also any changes in the existing codes' definitions to decide the saturation point.

There were not particular exclusion criteria for recruiting participants in this study based on their social, economic, or educational backgrounds. All genders of the participants 1) who are 18 years or older, 2) interested in more than one type of visual narrative material, and 3) who have a near native proficiency in English could participate in this study. It should also be noted that since this study aimed to recruit people who enjoy more than one type of visual narrative materials and were willing to participate in this study, the sample may only represent a particular demographic.

From U&G perspectives, it is understood and adopted that audiences are active in their media selection and use (Oliver, 2009; Katz, Blumler, & Gurevitch, 1974; Rubin, 2002). Katz, Blumler, and Gurevitch (1974), especially emphasizing that people are "sufficiently self-aware to be able to report their interests and motives in particular cases, or at least to recognize them when confronted with them in an intelligible and familiar verbal formulation" (p. 511). Thus, methodologically, U&G theories consider that data for most media related studies can be derived from and supplied by individual audience members themselves (Katz, Blumler, & Gurevitch,

1974). Based on this perspective, the self-reporting diary method and content analysis were selected for this study in order to let participants/users freely express their motivations and visual media needs with their own words. Later in *3.1.2. Content analysis* section, it will be further discussed how the content analysis was conducted in this study. Diary method is also referred to as: "media diaries," "viewing logs," or "media logs," especially within media studies. Traditionally, diary methods have been classified into two categories: time-based and event-based protocols (Iida et al., 2012). Time-based design is suitable for studies that focus on ongoing processes occurring over a certain period. It is again divided into two different protocols, which are "fixed-interval schedules, where participants report on their experiences or events at predetermined intervals, and variable-interval schedules where signals prompt participants to report at either random intervals or some more complicated temporal-based pattern" (p. 280).

The adopted design for this study is closer to event-based diary, which emphasizes the events rather than the temporal aspects of ongoing process. Iida et al. (2012) states that this method is used when researchers are interested in rare events, such as conflicts in couples who are generally intimate and satisfied. It might not be necessarily true to call the ignition of cross-media information seeking needs "rare," but the fact that participants of the event-based diary will report every time an event meets the investigators' pre-established criterion (Iida et al., 2012) is the same as the current study's research design.

Using diary method has been common in media research, but the procedures vary widely. Some researchers provide participants with program grids, which display name and time information so that the participants can mark the shows they recall watching. In other cases, participants receive

an empty grid where they write in names of programs that they watched (Vandewater and Lee, 2009). The time period varies as well, from 24-hour time diaries (U.S. Department of Labor, Bureau of Labor Statistics, 2004), to full week (Kaiser Family Foundation, 1999; 2005), or 10-day diaries (Anderson et al., 1985).

Most of the diary methods used in the media and audience studies emphasized the temporal aspects of media consumption; the question of how many hours users spend consuming media materials has been one of the primary concerns. Although participants were asked the estimated time of the media consumption, this particular temporal aspect (e.g., "how many hours did you spend watching the show?") of information or the time interval between the media consumption were not the most primary questions this research design attempted to answer; the focus were the context and situation of the moment when participants "feel" the need and want to start searching or consuming the media object. When this event occurred, participants filled out the template that was provided in advance via e-mail. The main features of this template included: 1) which features of cross-media materials that a participant was looking for, 2) which sources did the participant use to search and/or consume cross-media, 3) why did the participant want to search and/or consume particular cross-media, 4) when did these information seeking needs/motivations occur, and 5) why did they like/dislike the media object. It is differentiated from the time-based protocols in that time-based protocols ask participants to record certain behavior every hour or so to observe the changes, progress, or frequency over time. However, this study focuses on the contexts of the events that happened and asked participants to record the event only when it occurred.

There are several advantages to using a self-reporting diary in this study:

- Participants are not forced to recall: Oftentimes, it is challenging for participants to recall the moments when information seeking needs occurred. The self-reporting diary allows participants to write down their thoughts and experiences when they are still fresh. Even when it is not recorded right at that moment, it is expected that the incident will be recorded in the same day, or at least in a nearly present future while the study lasts. This could provide more accurate data with more detailed descriptions.

- It can capture better contextual data: The motivations of searching for media materials in the middle of the day, during the weekdays, or at night on weekends might differ. What participants look for or what kinds of sources they use might differ as well. In this study, participants were asked to write a diary entry on one working day and one off-day, so that it could capture the potentially differing needs throughout different times. Knowing when the needs are initiated and letting participants describe the situation could yield rich contextual data about the different information situations and needs.

- The responses are written in participants' own words: since participants freely write about their seeking experience without a strict control, there may be some serendipitous discovery of themes and terms.

The eight motivations identified in Greenberg's (1974) study (*to pass time, to forget, as a means of diversion, to learn about things, to learn about myself, for arousal, for relaxation, for companionship,* and *as a habit*) and the recent study conducted to understand the appeal factors of cross-media information (Lee, Windleharth, & Cho, 2017), were adapted to design the self-reporting diary template (*Appendix C*) and interview questions (*Appendix D*). Also, studies of

information seeking behavior (Wilson, 1999; Savolainen, 1995; Bates, 2002) and more recent information needs studies that focus on different types of multimedia information (Lee, Clarke, & Kim, 2015; Chung, 2010) were also adapted to design the instruments. The period of the self-reporting diary was two days, one working/school day and one off/weekend/vacation day in the period of 10-days. In other words, participants had 10 days to complete the diary and select two different days in that period. The decision to record two days was based on the pilot study. The pilot study of self-reporting diary lasted for three days in the first week of November 2017 (except for one participant who kept her diary for four days), with three participants to see if the design of this instrument works well in a real-life setting. Findings from the pilot study were as follows:

- Participants stated that they wished they could have done it when they had more time such as vacation, weekends, or holidays, since they tend to consume more visual materials when they have more free time: thus, to capture different contexts of consuming visual materials, it would be better to have a regular (working/school) day behavior vs. an off-day (weekend/vacation/holiday) behavior for comparison instead of collecting certain number of dates' diary data which does not assure both regular and off-days contexts.
- A three-day diary was very time consuming for some of the participants. Participants expressed strong fatigue, mentioning that they wished it would be less time-consuming: in order to ease the workload of participants, participants were asked to write a two-day diary instead of a week-long diary that had been originally planned.
- Each participant tended to have similar motivations and contexts throughout the study,

although the actual visual materials that they consumed might be different: thus, instead of having each participant write a longer period diary, it would be more efficient to recruit more participants and have them write a diary over a shorter period.

- Most participants' responses were information-rich, but some of the wording of the questions needed to be revised for participants to understand the intention of the question more clearly (e.g., "context" → "situations").

Once the diary template and the interview questions were ready, the recruitment started (see *Appendix A* for recruiting language). For social media sites and online fan communities, the recruiting language including the objective of this study, tasks the participants are expected to complete, the estimated committed time to participate in this study, and the amount of fiscal compensation ($50), provided with a Google Forms[14] survey URL. Potential participants could click it and fill out the survey questions to join the study. This survey asked their name, email address, if they are 18 years or older, and the types of primary visual materials they are interested. Flyers were distributed to recruit participants, as well, to the bulletin boards of University of Washington Odegaard Undergraduate Library and Seattle Public Library. The flyers included a QR code that potential participants could use to access the participation survey. Forty visual material users contacted me via Google Forms survey showing their interests in participating in the study; after contacting them individually to confirm their interests and give participation instructions, 26 participants decided to remain.

After recruitment, 26 participants started to keep track of events relevant to visual material

[14] https://www.google.com/forms/about/

seeking needs or consumption. Each participant was given 2 separate individually created diary templates URLs using Google Forms—one for a regular day, and the other for an off-day. Because their diary responses were automatically recorded via Google Forms, it was possible to track their achievements. When a participant did not complete their diaries in 10 days, a check-in message was sent to communicate.

When a participant completed the two-day diary, a follow-up interview was scheduled accordingly. Interview has been one of the primary methods broadly used by many researchers who investigate information seeking behavior and needs (i.e., Lee, Clarke, & Perti, 2015; Bates, 2004; Meho, 2006; Foster, 2004; Cobbledick, 1996). The belief that interviewing participants is a desirable method in studying information seeking behavior has been common since the 1990s, especially after Wilson (1990) argued that qualitative research seems particularly appropriate to investigate information seeking needs due to the following reasons:

- Our concern is with uncovering the facts of everyday life of the people being investigated;
- By uncovering these facts we aim to understand the needs that exist which press the individual towards information-seeking behavior;
- By better understanding those needs we are able better to understand what meaning information has in the everyday life of people;
- And by all of the foregoing we should have a better understanding of the user and be able to design more effective information systems (p. 11).

Bates (2004) again emphasized the importance of a person-centered approach to research information behavior, suggesting that the narrative and episodic interviewing techniques are the qualitative research methods that sustain a person-centered paradigm of information behavior. The author adds that it is a particularly useful methodological framework for studies of everyday life information seeking behavior. The interview method selected for this study is the semi-structured interview, which is a set of conversations where the researcher knows what she wants to "find out about—and so have a set of questions to ask and a good idea of what topics will be covered—but the conversation is free to vary, and is likely to change substantially between participants" (Fylan, 2005. P. 65). The semi-structured interview in this study contained open questions that are conceptually similar to Bates' "narrative and episodic interviewing approach" in the sense that it was allowed for participants to relate "their experiences, bringing in whatever they consider to be relevant" (Bates, 2004, p. 16) and encourage interviewees to describe an event(s) in their own language (Bates, 2004).

A semi-structured interview was conducted to complement a diary method due to the following reasons:

- There may be some instances in which the researcher does not fully understand what participants meant after reading their written responses in the self-reporting diary. In order to avoid the event that the researcher misunderstands participants' true intentions and clarify anything that was not perfectly clear in the collected data, follow-up interviews would play an important role. Also, based on participants' responses, if there are any questions that need to be explored further, this is a good chance to do so.

- Semi-structured interviews have been well-known for finding out why rather than how many or how much (Fylan, 2005). Since the objective of this study is to understand why participants seek cross-media materials and what kinds of information needs they have when they look for them, utilizing the interview method can benefit this study. It also provides extra security to the research by using a method that has been proven to be effective.

While scheduling the follow-up interview, each participant could choose the most comfortable communication method for them, such as in-person interview, phone call, or video call. Most participants chose either a phone interview or video interview. One participant chose an in-person interview (for this interview, one room in the University Washington's Mary Gates Hall was reserved), and one participant chose an online-chat interview. In case of in-person, phone call, and video call interviews, with participants' permission, audio of the interview session was digitally recorded as an MP3 format. The interview lasted approximately 30 minutes on average. Participants received 50 US dollars as compensation, an amount that was chosen based on previous studies that used diary method (Paletta et al., 2017; Bartlett & Milligan, 2015; Mort et al., 2005; Bass, Linney, Butler, & Grzywacz, 2007; Graham et al., 2003; Boone et al., 2013; Minnis & Padian, 2001). All of the interviews were transcribed in Microsoft Word and transferred to NVivo 12, a software for qualitative data analysis, for coding and analysis.

3.1.2. Content analysis

Content analysis is a "research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use" (Krippendorff, 2004, p. 18). It provides new insights, increases a researcher's understanding of particular phenomena, and informs

practical actions (Krippendorff, 2004). Considering that there have been only a handful of visual material related studies specific to user perspectives, seeking data from online visual material communities using content analysis is an appropriate method to collect larger scale data. This method also corresponds to the U&G perspectives that media users are not a passive, but an active audience. Skalski, Neuendorf, and Cajigas (2016) explains why it is particularly relevant in the Web 2.0 era and analyzing online user content is appropriate for studies that investigate via interactive media:

> "In order to content analyze interactive media content, it's important to understand that interactive media users are more than just receivers or consumers, as they were with earlier media. They have an active role in adapting, altering, and even producing content. The interactive media revolution that began with video games in the 1970s, continuing with home computers in the 1980s and the Internet in the 1990s, has grown and evolved in the early 21st century into what has been dubbed the Web 2.0 revolution (p. 202)."

The authors state that it is important to note that Web 2.0 can be broken into several subcategories when discussing content acquisition. Apart from Mazur's (2010) point of view that distinguishes between social networking sites and blogs, Neuendorf (2016) divides Web 2.0 content into two primary types: social network sites (SNS) and those that are not SNS (non-SNS), considering that blogs are just one of many other types of social media. When acquiring content from non-social network Web 2.0 sites, since the majority of these sites are completely public due to their nature, the real challenge in content acquisition is sampling (Skalski, Neuendort, & Cajigas, 2016). Therefore, in order to adequately sample websites in this study, particularly with online forums, the researcher must successfully navigate the potential pitfalls

such as spam, abandoned, access-restricted, and nontraditional content suggested by Li and Walejko (2008).

In media studies, there has been some criticism towards U&G theories that question whether the audience was regarded as being too active or rational in its behavior. The researchers also questioned if they relied too much on self-report data methodologically (Rubin, 2002). Therefore, this study aims to fill this methodological gap by using a self-reporting diary complemented with a follow-up semi-structured interview and content analysis altogether. The researcher will carefully examine if 1) the data collected from these methods shows any significant differences, 2) whether one method is more "appropriate" for this type of study over the other, and 3) if two different combined approaches affect the overall study and findings. Also, by using two different methods, it aims to triangulate the data for the reliability and validity of this study.

For the content analysis of this study, 5 online fan community forums were selected based on if 1) their posts are completely public, 2) they are either popular or well-known forums in visual material communities, 3) they are still recently active, 4) and the topic and scope of the forum fit this study. The second criteria, popularity or representativeness of the website was decided based on the web search ranking, the number of forum threads and users, and the web traffic (only when necessary).

Communities of comic books, animations, and video games do not necessarily share the same members. Because of this reason, there is hardly a single online forum board that covers all kinds of visual materials together; instead, each medium tends to have its own forum board. Thus, each

online forum board for each visual material was selected. The reason printed visual materials and visual materials with a moving image format had two different forums assigned was due to their separate communities; there is a divide between Western comics and cartoons vs. the rest, mainly Japanese manga and anime. Since selecting one particular fan community might bias the results, the researcher decided to assign two forums with different cultures for the analysis of this study. Selected forum boards are as follows:

- [Printed] Comics: Comic Book Resources

http://community.comicbookresources.com/forumdisplay.php?4-Comics

- [Printed] Manga: Anime News Network

https://www.animenewsnetwork.com/bbs/phpBB2/viewforum.php?f=14

- [Moving image] Anime: Anime News Network

https://www.animenewsnetwork.com/bbs/phpBB2/viewforum.php?f=1

- [Moving image] Animation: The Toonzone

http://www.toonzone.net/forums/forums/general-animation/

- [Interactive] Video games: Gamespot

https://www.gamespot.com/forums/games-discussion-1000000/

Data collection was performed in 2018 March. A ruby script was used to scrape data from selected forums' publicly available online message boards. The data scraped from these message boards included topic, URL, user ID, screen name, number of views, and posted date and time.

The scraped data was then filtered using a second script, extracting data that matched the terms "recommend" or "suggest" to select the threads that looked for recommendations. All forum threads fitting the scope of this study were collected, without limiting any dates. In other words, the collected dataset from each forum contained every recommendation thread from the beginning of the forum's creation to 2018 March. This process resulted in 7,045 online forum threads overall; 1,058 anime recommendation threads, 322 manga recommendation threads, 1,465 comics recommendation threads, 3,890 game recommendation threads, and 310 cartoon recommendation threads.

Once all the data was scraped, 50 threads from each forum (250 overall) were randomly selected using an open software, PickMe[15], for initial coding. Each forum thread was well scrutinized before being coded in this stage. Any erroneous or irrelevant data was cleaned, and new threads that were again randomly selected filled the gap. This process was performed iteratively until it reached the complete data cleaning. Since the data saturation was observed in the initial 250 threads, additional threads were not added to the initial dataset for additional data collection. Coding process of this dataset will be further discussed in *3.2. Data coding*.

[15] http://www.donationcoder.com/forum/index.php?topic=17316.msg153630

3.2. Data coding

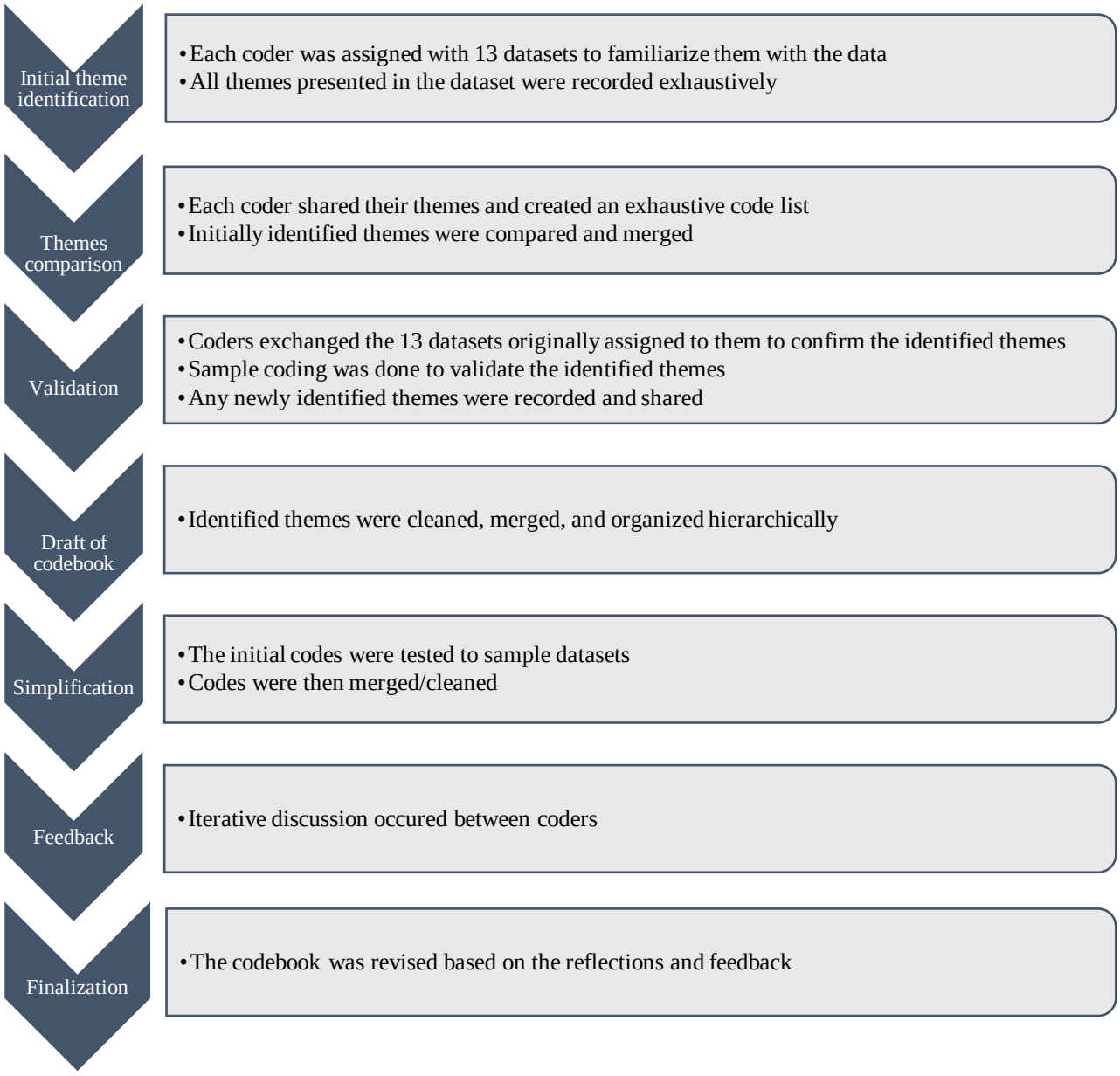


Figure 2. Codebook creation process

Existing concepts were adapted from the previous studies to identify themes and create a new codebook; however, any new themes that occurred during the study were reviewed and analyzed using the thematic analysis that incorporates a hybrid approach of inductive and deductive

approach (Fereday & Muir-Cochrane, 2006). With some themes identified from the previous studies, the analysis that allows the researcher to have a set of theory-driven codes for the initial guidance and to add data-driven newly appeared themes was a good fit for this study.

For the identification of codes, the researcher worked with an MLIS (Master of Library and Information Science) student volunteer who was interested in working on this research and learning how qualitative research is conducted. *Figure 1* shows the overview of the codebook creation process.

Firstly, each coder was assigned with 13 data sets. One set of data included one participant's 2-day diaries and a follow-up interview. Coders reviewed the whole dataset to familiarize themselves with the data. While reviewing the data and conducting an initial sample coding, each coder created a list of themes discovered and compared them with the existing themes from the previous studies. All themes appeared in the dataset were exhaustively recorded in this stage.

After the initial theme identification, each coder shared their themes and created an exhaustive code list. Identified themes were compared, and redundant themes were merged. Then, coders exchanged the 13 datasets that they were originally assigned to see if there were any themes that had not been discovered by the other coder. When there were new themes identified, they were recorded and shared to be reflected in the revision. Sample coding was also conducted in this step to validate the identified themes; coders focused more on finding any challenging or difficult coding cases in this phase and shared their reflections.

Through several iterative processes of cleaning, merging, and organizing the codes, the initial codebook was created. In this stage, each code was assigned with definitions, and the researcher

made sure that all codes are mutually exclusive. By performing more sample coding with the new codebook, the researcher attempted to merge similar codes and removed any codes that were outliers or miscellaneous.

The finalized codebook reflected the iterative discussions between the coders. The process of creating a codebook, from the initial sample coding and identification of the emerged themes from raw data to the finalization, took approximately 5 months. *Table 4* shows the finalized codebook with term definitions.

Codebook Term Definitions	
Auxiliary Codes	
Dislike	when a participant presents dislike or even hostility towards a feature.
Like	when a participant presents like towards a media item or its features.
Media Specific	when a participant's discussion is focused on a specific type of media material; this code is used when some aspects can be applied to only a particular type of visual material, not to others.
Overarching	when a participant's comment is applied to all kinds of visual media materials.
Related to	when a participant wants to identify influences or relationships among anime, works, or elements.
Similar to	when a participant seeks media materials with similar elements to a particular work (e.g., similar character personality, similar trope, similar artistic style, etc.).
Context	
Activities_Situations	when a participant identifies any tasks/activities that they were doing at that moment (e.g. during chores, taking lectures, procrastinating, time between classes, right before going to sleep, etc.).
Context_Other	

Place	location information; This includes comments about public/private space.
Time	temporal aspects such as; in the mornings, at night before going to sleep, and during the summer vacation. The comments about the amount of time that a participant had (e.g. less time due to the finals) and also time spent to consume media materials (different from time spent to search).
Information Features	
Artistic_Visual Style	the visual features and/or artistic design and techniques, as well as comments about colors.
Audience_Rating	Intended audience and rating information regarding media objects (e.g., R-rated), as well as descriptions about the audience.
Audio Style	the sound effects, music, or voices in media objects.
Characters	specific characters (a character from a media object mentioned by their names) or types of characters.
Completeness	whether a media material has an ending or ongoing volumes/episodes/etc.
Creators	individuals and corporate bodies responsible for creating media objects
Franchise_Universe	A commonly used name referring to the intellectual property, related data, and content shared among a group of cultural objects to which the game being described belongs to (Lee, Clarke, & Perti, 2015, p. 2620)
Gameplay_Mechanics	constructs of rules/methods to interact mainly with the games along with the scoring system.
Genre	categories of media objects characterized by similarities in form, style, or subject matter, including typical genre labels that are commonly used by users
Information Features_Other	
Language	language of media objects, including whether it is dubbed or has subtitles.
Length	number of episodes/chapters, running time, etc.

Mood	1) feelings and atmospheres evoked by media materials or 2) how participants feel about the media material.
Pacing	how fast/slow the story or the play unfolds.
Package	price, different versions, region code, special features available.
Platforms_Sources	sources of media objects and different types of platforms for viewing, including different types of devices (DVD, PS4, XBOX), applications, streaming websites, etc.
Plot_Narrative	how the main events are presented as interrelated sequence, including types of endings.
Popularity	popularity of media materials during certain time.
Release Date	the timeframe of a media object's release.
Reviews	how it is reviewed/evaluated by other people. NOTE: not associated with Audience/Rating.
Series_Volumes	Proper names of a set of related media objects, often indicated by consecutive numbering, continuing narrative, or similarities in the narrative, themes, or gameplay, to which the media object being described belongs (modified definition of Lee, Clarke, & Perti, 2015).
Setting	The location, time frame, and/or cultural context (modified definition of Lee, Clarke, & Perti, 2015).
Subjects	frequently recurring subjects/topics/themes. Include tropes (significant or recurrent motifs, relating or described by specific scenes or events, including media or literary cliché) as well.
Work	when a participant describes or discusses a specific media material with its title.
Motivation (Experiential_Intended Use)	

Achievement	collecting daily rewards, long-term goals, etc.; it may also include challenging aspects of media.
Companionship_ Fellowship_Fandom	1) To get a feeling of fellowship or friendship, 2) And in opposite, to get a feeling of solitude, and 3) to have background noise
Discovery_Exploration	to get the feeling of exploring uncharted territory.
Expression	self-discovery, actualization. When participants consume media materials to express themselves as well as when there is a comment about customization.
Loyalty	to a brand, franchise/universe, artists, studios, etc. as well as nostalgic consumption.
Mental_Intellectual Engagement	1) different levels of mental/intellectual engagement (e.g. difficulty understanding the story or taking a steep learning curve to play) 2) complex plots/narratives, simple game plays, etc. NOTE: This code can be used together with other codes, e.g., when a participant discusses multilayered characters or many characters in the story (Mental_Intellectual Engagement + Characters + Plot_Narrative). 3) when a participant wants to learn something (cognitive or educational purposes). 4) to disengage from something/escape: including physical or mental symptoms or pains, situations that they are in, activities that they are doing, etc. 5) to forget about reality momentarily 6) to relax 7) mindless consumption (e.g. "I was bored.").
Motivation_Other	
Search-related Information	
Ideal Search System Features	when a participant discusses what search features an ideal search system should have.
Information_ Recommendation Sources	including people, library, search engines, streaming services, relevant websites, advertisements, social media, personal blogs, off-line stores, trailers, etc.

	Search Problems	any difficulties participants had while searching for media materials/media related information. Also, when there is any comment about the search dissatisfaction.
	Search Strategies	when a participant describes their search process in detail, including serendipitous discovery and aimless browsing; when a participant describes how long it took or how much effort they contribute to find a particular media item or media-related information.
	Search-related Information_Other	
Values		
	Health	discussions related to mental and physical health.
	Personal Beliefs_Values	appropriateness of the work and the ideologies, virtues, or social issues represented in a media material. It also includes whether a certain work is worth spending time to participants.
	Relatability	when a participant prefers something relatable to themselves or familiar.
	Uniqueness_Creativity	when a participant expresses their appreciation towards the work's uniqueness or creativity. It may also be used when participants appreciate the "quality" of work but described in a rather vague way, as well.
	Values_Other	

Table 4. Finalized codebook with term definitions

The created codebook was used to code data from both phases: the first phase involved diary and interview data, and the second phase involved online forum threads. Diary and interview data were coded together first followed by online form threads to 1) confirm if the developed coding schema is appropriate to cover emerging themes in a larger dataset and 2) decide the data saturation point of the online forum threads. As briefly noted in the previous section, since the

data saturation was observed and no new additional themes appeared in the initial 250 forum threads, the researcher stopped adding more data to this dataset.

Coding was performed using NVivo 12. In the coding process, the researcher identified the themes at a semantic level, following the suggested steps of thematic analysis by Braun and Clarke (2006) and Fereday & Muir-Cochrane (2006).

> "With a semantic approach, the themes are identified within the explicit or surface meanings of the data and the analyst is not looking for anything beyond what a participant has said or what has been written. Ideally, the analytic process involves a progression from description, where the data have simply been organised to show patterns in semantic content, and summarized, to interpretation, where there is an attempt to theorise the significance of the patterns and their broader meanings and implications (Patton, 1990), often in relation to previous literature" (Braun & Clarke, 2006, p. 13).

3.3. Intercoder reliability

In order to evaluate the reliability of the developed coding schema and the coding performance, intercoder reliability was measured. Intercoder reliability is "the widely used term for the extent to which independent coders evaluate a characteristic of a message or artifact and reach the same conclusion" (Lombard, Snyder-Duch, Bracken, 2002, p. 589). It is especially important in qualitative studies as systematically different patterns of coding might result in substantial bias in research results (MacPhail et al., 2016). Lombard et al. (2002) state that although it does not ensure validity, when intercoder reliability is not established, the data and interpretations of the

data can never be considered valid. Similarly, Kolbe and Burnett (1991) also argue that "interjudge reliability is often perceived as the standard measure of research quality. High levels of disagreement among judges suggest weaknesses in research methods, including the possibility of poor operational definitions, categories, and judge training" (p. 248). Although it is not a sufficient method to give validity to a study (Neuendorf, 2002), it is a critical calculation to a qualitative study to increase the comprehensibility of analysis and provide sound interpretation of data (MacPhail et al., 2016).

Among the existing measures or indices of intercoder reliability, Cohen's kappa coefficient ($\boldsymbol{\kappa}$) (1960, 1968) was selected for this study. Kappa and related kappa variants are commonly used for measuring intercoder reliability for nominal (categorical) variables (Hallgren, 2012). It measures the agreement between two coders and is considered as a more rigorous statistical method to evaluate intercoder reliability among existing measures because it considers the amount of agreement that could be expected to occur by chance. In the equation of kappa, the "degree of observed agreement is determined by cross-tabulating ratings for two coders, and the agreement expected by chance is determined by the marginal frequencies of each coder's ratings" (Hallgren, 2012, p. 5). Kappa is calculated as follows,

$$k = \frac{P(a) - P(e)}{1 - P(e)}$$

where $P(a)$ is the observed percentage of agreement, and $P(e)$ is the probability of expected agreement due to chance (Hallgren, 2012).

Hallgren (2012) notes that possible values for kappa statistics range from -1 to 1, with 1 indicating perfect agreement, 0 indicating completely random agreement, and -1 indicating

"perfect" disagreement. There have been several different guidelines to interpret the kappa coefficient, such as Landis and Koch (1997) or Lombard, Snyder-Duch, and Bracken (2005). Landis and Koch (1977) note that for interpreting kappa values, values from 0 to 0.2 indicate slight agreement, 0.21 to 0.40 indicate fair agreement, 0.41 to 0.60 indicate moderate agreement, 0.61 to 0.80 indicate substantial agreement, and 0.81 to 1.0 indicate almost perfect or perfect agreement. Meanwhile, Lombard, Snyder-Duch, and Bracken (2005) argue that "coefficients of 0.90 or greater are nearly always acceptable, .80 or greater is acceptable in most situations, and .70 may be appropriate in some exploratory studies for some indices" (p. 3). However, it should be noted that the use of these guidelines is still debated, and as Krippendorff (2004) recognizes, acceptable intercoder reliability may vary depending on the study methods and the research questions (Hallgren, 2012). In this study, the results of intercoder reliability measure will be presented with the kappa values and percent agreement together to calculate and report two different indices, following the guidelines of Lombard et al. (2005). Lombard et al. (2005) state that higher criteria should be used for liberal indices such as percent agreement, and lower criteria can be used for more conservative measures, such as Cohen's kappa.

Two coders (coder A and coder B) were recruited as a second coder of this study. The recruited coders satisfied the criteria of 1) being knowledgeable about the information science domain and 2) being either knowledgeable or interested in user studies and qualitative methods. After a session of training, the coder familiarized themselves with the definitions of each code and how to use NVivo software to code the data. The first coder A was given five randomly selected sets of participants' interview and diary data; each set of the participant data included one regular day diary, one off-day diary, and a follow-up interview. Thus, overall, the coder A coded 15 sources

of data. The second coder B was assigned with 50 online forum threads for the measure. Ten threads were randomly selected from each different forum, hence, 50 threads overall. Both sample data were approximately 20% of the whole dataset (coder A: 19.23%, coder B: 20%). Intercoder reliability results will be discussed in *Chapter 4. Results*.

3.4. Data analysis

Cluster analysis and tabulation/cross-tabulation analysis were selected for this study to examine the patterns of identified motivations, contexts, and information features and the co-occurrences of these elements. Tabulation and cross-tabulation analysis were performed to observe the frequencies and co-occurrences of certain codes. Pearson's correlation coefficient, Jaccard index, and Sørensen–Dice coefficient were used for cluster analysis; Pearson's correlation coefficient was used to measure the word similarity, and Jaccard index and Sørensen–Dice coefficient were used to calculate the coding similarity. When presenting the results, complete linkage (farthest neighbor) hierarchical dendrogram will be presented together for a better understanding.

3.4.1. Tabulation and cross-tabulation analysis

Tabulation and cross-tabulation analysis will be performed to present the overall frequencies of identified codes and co-occurrences of codes. Tabulation refers to "collecting the same or similar recording units in categories and presenting the counts of how many instances are found in each category in tables and bar charts" (Lee, 2008, p. 49), and cross-tabulation (also known as crosstabs or contingency table) shows associations among categorical variables by presenting their co-occurrence counts.

> "The standard of *chance* is probably most common in statistical accounts of content analysis findings. It arises from analysts' efforts to cross-tabulate the frequencies of several variables and to observe the frequencies of co-occurrences of values or categories rather than of simple categories" (Krippendorff, 2004, p. 192).

In this study, on top of presenting the co-occurrence observations among motivations, contexts, and information features, cross-tabulation analysis was also used to reveal any associations between different types of visual materials and identified codes in the section *4.2. Results from content analysis method*.

3.4.2. Cluster analysis

Cluster analysis presents data in clearly defined clusters in two-dimensional space, rendering a quick and easy visual tool for interpretation (Guest & McLellan, 2003). It is particularly a useful tool to visualize "the overall relationship among a multitude of codes and themes and to corroborate interpretation based on other analytical strategies such as code frequencies and isolated pairs of co-occurrence" (Guest & McLellan, 2003, p. 187). Cluster analysis is used in this study primarily to observe the patterns and potential relationships among parent and child codes, which is to investigate useful conceptual schemes for grouping entities (Aldenderfer & Blashfield, 1984). Particularly in this study, it is to investigate conceptual schemes for grouping visual material users' information seeking needs/relevant information features, motivations, and contexts.

Hierarchical cluster analysis is "an agglomerative methodology that identifies clusters of observations in a data set" (Guest & McLellan, 2003, p. 194; Aldenderfer & Blashfield, 1984).

Among the three most commonly used algorithms—single linkage, complete linkage, and average linkage—complete linkage will be used for this study. The dendrograms created corresponding to this method will be presented with findings in *Chapter 4. Results*. The differences between these linkage methods are as follows (Johnson & Wichern, 2002):

- Single linkage: Groups are formed from the individual entities by merging nearest neighbors, where the term nearest neighbor connotes the smallest distance or largest similarity (p. 681).
- Complete linkage: At each stage, the distance (similarity) between clusters is determined by the distance between the two elements, one from each cluster, that are most distant (p. 685).
- Average linkage: Average linkage treats the distance between two clusters as the average distance between all pairs of items where one member of a pair belongs to each cluster (p. 689).

In this study, 3 statistical indexes (Pearson's correlation coefficient, Jaccard index, and Sørensen–Dice coefficient) were calculated to investigate the similarities between words and coding using the qualitative analytic software, NVivo 12. Firstly, how these similarities are measured is described below ("How Are Cluster Analysis Diagrams Generated?", n.d.).

1. To measure the similarity between each pair of items that appear in a cluster diagram, NVivo first builds a table where the rows are the sources, nodes or words that will appear in the diagram. The columns and cells depend on which characteristic the researcher has chosen to cluster by.

2. Then it calculates a similarity index between each pair of items (each pair of rows in the table) using the similarity metric the researcher has selected.

Therefore, in this study, the table rows and columns to measure the similarity will be:

Table rows	Clustered by	Table columns	Table cells
Nodes (codes)	Word similarity	Each different word that appears in the text of the nodes	The number of times the column's word appears in the row's node
	Coding similarity	Each source coded by the row's node	1 if the column's source is coded by the row's node, 0 otherwise

Table 5. How word similarity and coding similarity are measured in NVivo 12

Pearson's correlation coefficient

To measure the word similarity, Pearson's correlation coefficient was selected. Pearson's correlation coefficient, sometimes called the *Pearson product-moment correlation coefficient*, is symbolized as r. The Pearson coefficient provides "a numerical value ranging from 0 to 1, which describes the extent to which the variables are related. It also provides a sign, + or -, which tells us if the relationship is positive or negative" (Kiess & Green, 2010, p. 377). It is defined as

$$r = \frac{\sum(X - \bar{X})(Y - \bar{Y})}{\sqrt{[\sum(X - \bar{X})^2][\sum(Y - -\bar{Y})^2]}}$$

where X = score of a subject on the X variable, $\bar{X}$ = mean of all scores on the X variable, Y = score of a subject on the Y variable, and $\bar{Y}$ = mean of all scores on the Y variable (Kiess & Green, 2010, p. 377). The Pearson coefficient is considered as a more sophisticated approach to finding

similarity. Since it is the measure of the linear relationship between the *attributes* of two objects (Bakos, 2010), it is an appropriate tool to calculate the word similarity in this study.

Jaccard index and Sørensen–Dice coefficient

Unlike Pearson's correlation coefficient, Jaccard index and Sørensen–Dice coefficient are metrics that only measure the similarity between objects of purely binary attributes (Bakos, 2010). In this study, data would be compared by presence or absence of codes. Thus, to measure the coding similarity where the presence or absence of a code is compared the presence or absence of another code, these two indexes are more effective.

Jaccard index and Sørensen–Dice coefficient are two classic and most widely used similarity indices based on presence and absence (incidence) data (Chao et al., 2006). Jaccard coefficient can be measured as

$$\mathrm{J} = \frac{M_{11}}{M_{01} + M_{10} + M_{11}}$$

where "M_{11} represents the total number of attributes where both data objects have a 1. The M_{10} and M_{01} represent the total number of attributes where one data object has a 1 and the other has a 0. The total matching attributes are then divided by the total non-matching attributes plus the matching ones" (Bakos, 2010). In this measure, a value of 0 would be the least similar, and 1 would be the most similar. Sørensen–Dice coefficient's equation is quite similar to Jaccard's and considered as a semimetric version of Jaccard:

$$\mathrm{S} = \frac{2a}{2a + b + c}$$

This index weights matches between the two samples more heavily than mismatches. The following example describes the differences between Jaccard's index and Sørensen–Dice coefficient well.

> "Whether or not one thinks this weighting is desirable will depend on the quality of the data. If many species are present in a community but not present in a sample from that community, it may be useful to use Sorensen's coefficient rather than Jaccard's" (Krebs, 1989, p. 488).

Although Jaccard and Sørensen–Dice coefficient are closely correlated, this study will use both indices together to thoroughly present the results in different perspectives, considering their potential differences. The findings will be further discussed in *Chapter 4. Results*.

3.5. Reliability of the study

In order to maintain the reliability and validity of the study, research methods for this study followed Shenton's (2004) suggestions as a guide. Golafshanti (2003) states that when "quantitative researchers speak of research validity and reliability, they are usually referring to a research that is credible while the credibility of a qualitative research depends on the ability and effort of the researcher" (p. 600). Due to this, although reliability and validity are treated separately in quantitative research, Golafshanti (2003) argues that these terms are not considered separately in qualitative research, and the terms that can encompass both concepts, such as credibility, transferability, and trustworthiness, should be used instead.

In a similar vein, Shenton (2004) suggests possible provisions for the qualitative researcher that can satisfy four quality criteria for "trustworthiness" of the study: credibility, transferability, dependability, and confirmability.

- Credibility: As a qualitative investigator's equivalent concept of internal validity, credibility deals with the question of how congruent the findings are with reality. Some of the suggestions to satisfy this criterion include: the adoption of well-established research methods, triangulation, and peer scrutiny of the research project. This study adopted self-reporting diaries, semi-structured interviews, and content analysis together. These methods are well established in the domain of media studies and information seeking behavior studies, and by using these different methods, the researcher was able to triangulate the data. Also, in the whole process of this study, feedback from the advisor, committee members, and fellow researchers was sought out and reflected to the study design, data collection, and data analysis to make sure there were opportunities for scrutiny of the project.

- Transferability: In quantitative studies, external validity "is concerned with the extent to which the findings of one study can be applied to other situations" (Shenton, 2004, p. 69; Merriam, 1998). Since it is difficult for qualitative studies to generate the findings that are applicable to other situations or populations due to the small number of participants or specific situations, external validity should be evaluated in a different way. What a qualitative researcher can and should do is to convey to the reader the boundaries of the study. Thus, the researcher made sure the following information has been accurately presented in this study: 1) the number of organizations taking part in the study and where

they are based, 2) any restrictions in the type of people who contributed data, 3) the number of participants involved in the fieldwork (since this study did not include any fieldwork, it only clearly identified the number of diary and interview data participants), 4) the data collection methods that were employed, 5) the number and length of the data collection sessions, and 6) the time period over which the data was collected (p. 70).

- Dependability: This term refers to reliability in quantitative studies. "In order to address the dependability issue more directly, the process within the study should be reported in detail, thereby enabling a future researcher to repeat the work" (p. 71). To satisfy this criterion, *Chapter 3. Methods* was written accordingly. This chapter includes sections that are devoted to the research design and its implementation and the operational detail of data gathering. Reflective appraisal of the project will be discussed further in *Chapter 6. Conclusion and Future Work.*

- Confirmability: To address the concern of "objectivity" better, triangulation is recommended and emphasized in qualitative studies, along with detailed methodological descriptions, as the "audit trail." This study's conducting triangulation and detailed methodological descriptions are discussed above.

Chapter 4. Results

There are two main phases in this study: phase I, diary and interview study, and phase II, content analysis. Findings from the phase I will be presented in *4.1. Results from diary and interview methods*, and the findings from the content analysis will be presented in *4.2. Results from content analysis method*. Results from the both phases will be discussed together in *Chapter 5. Discussion*.

4.1. Results from diary and interview methods

For the first phase of this research, the diary and interview study, 26 participants who are generally interested in more than one type of visual materials were recruited. In this section, participants' visual material consumption behaviors will be presented along with their demographic information, frequently discussed themes with examples, and the results of cross-tabulation analysis and cluster analysis. At the end of this section, intercoder reliability results between two coders will be presented.

4.1.1. Demographic information

Among 26 participants, 13 identified themselves as male, 11 identified themselves as female, two identified themselves *other* (7.7%: "*I identify as female, genderqueer, genderfluid, and transfeminine*," "*Nonbinary*"). Overall, gender was quite evenly distributed in this study.

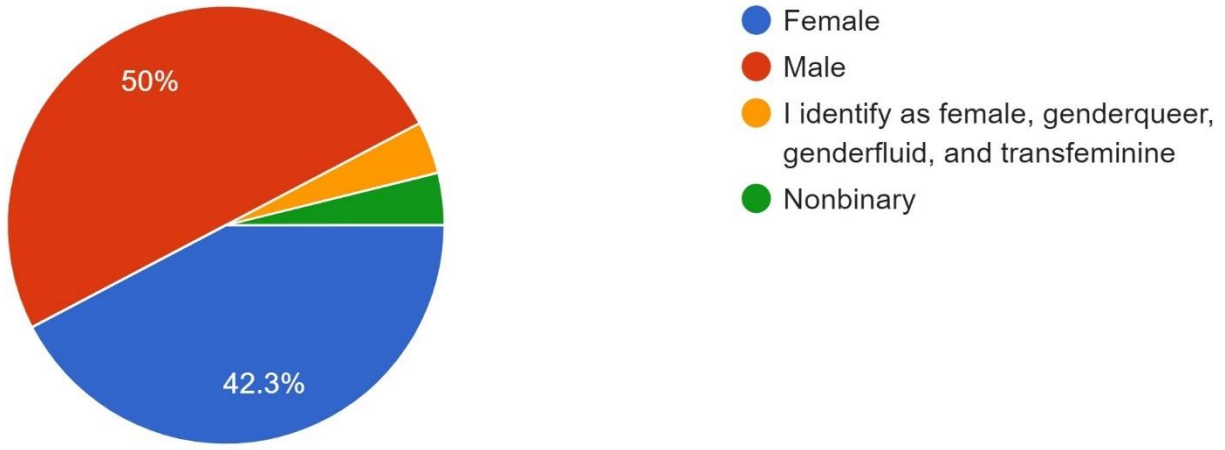


Figure 3. Gender distribution

Participants' ages range approximately from 21 to 40, but half of the participants were concentrated in their early to mid-20s. The rest of them were evenly distributed.

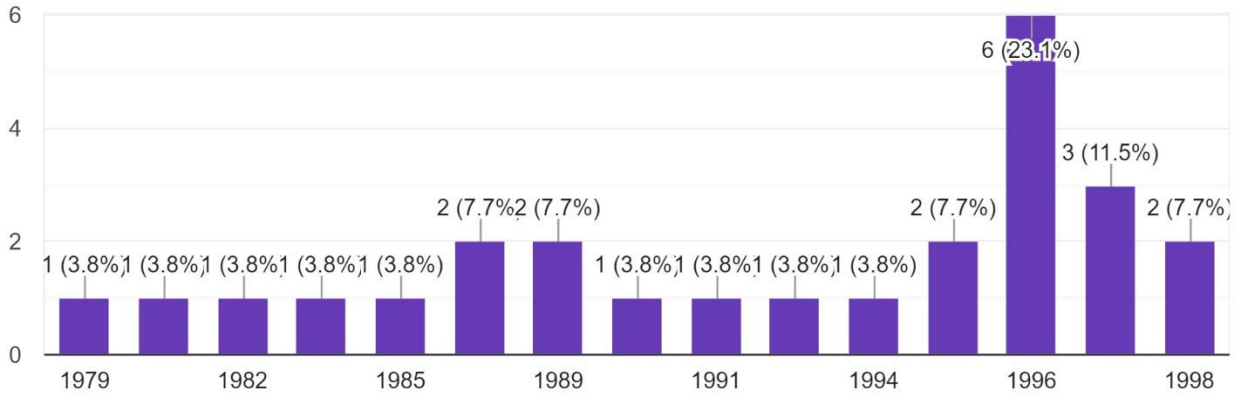


Figure 4. Participants' year of birth

Seventeen participants (65.4%) were either Asian or Pacific Islander in this study. Eight (30.8%) were white or Caucasian, and one was Hispanic or Latino (3.8%). There were no black or

African American participants in this study. Also, there were no Native Americans or First Nations participants in this study. Having a higher percentile of Asian population was unintentional and an unexpected result. In addition to the fact that 7.7% of the participants identified themselves as *other* gender, the majority of the participants' being ethnic minority in this study could indicate that the population of this study may not be fully representative.

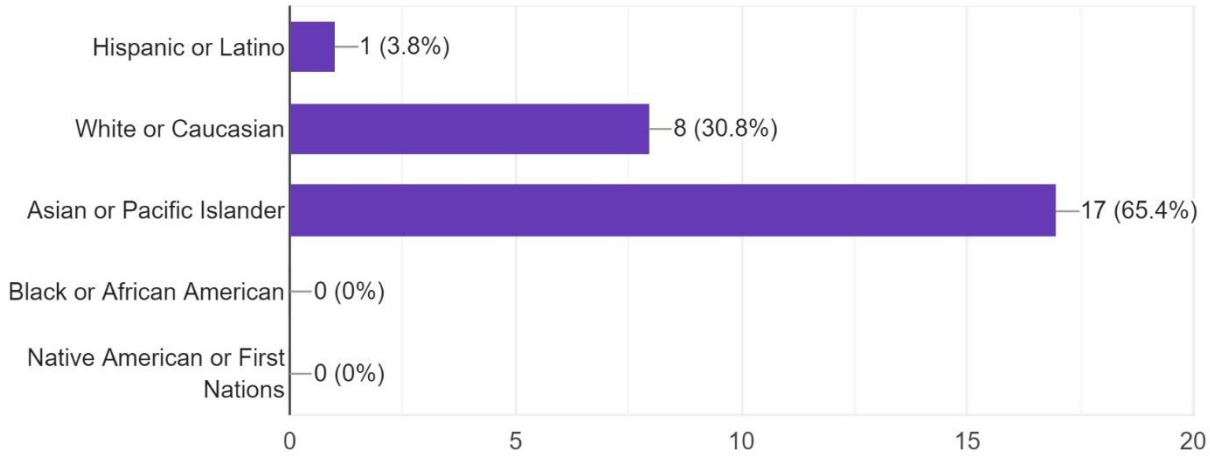


Figure 5. Ethnicity distribution

Educational backgrounds of the participants in this study tended to be higher. According to the 2019 reports created by the United States Census Bureau on *Educational Attainment in the United States: 2018*[16], when age 25 and over, 29% of the population attained high school graduate diploma or the equivalent, 22% attained bachelor's degree, 16% attained some college and no degree, 10% attained associate's degree, another 10% attained master's degree, 6% attained 9th - 11th grade, 4% attained none – 8th grade, 2% attained doctoral degree, and 1% attained professional degree.

[16] https://www.census.gov/data/tables/2018/demo/education-attainment/cps-detailed-tables.html

However, 61% of the participants in this study either attained or were currently enrolled in bachelor's degree (the question was "*What is your educational background? If currently enrolled, answer the highest degree that you're enrolled in*." The full demographic information survey questionnaire can be found in *Appendix E*.), 11% of the participants either attained a master's degree or enrolled in a master's degree program, and one participant each attained a professional degree or enrolled in a professional (3.8%) or doctoral (3.8%) degree program. This result shows that the participants of this study have much higher education level compared to the average populations, which again, raises the question as the previous argument on ethnicity; do visual material users tend to have different demographic characteristics?

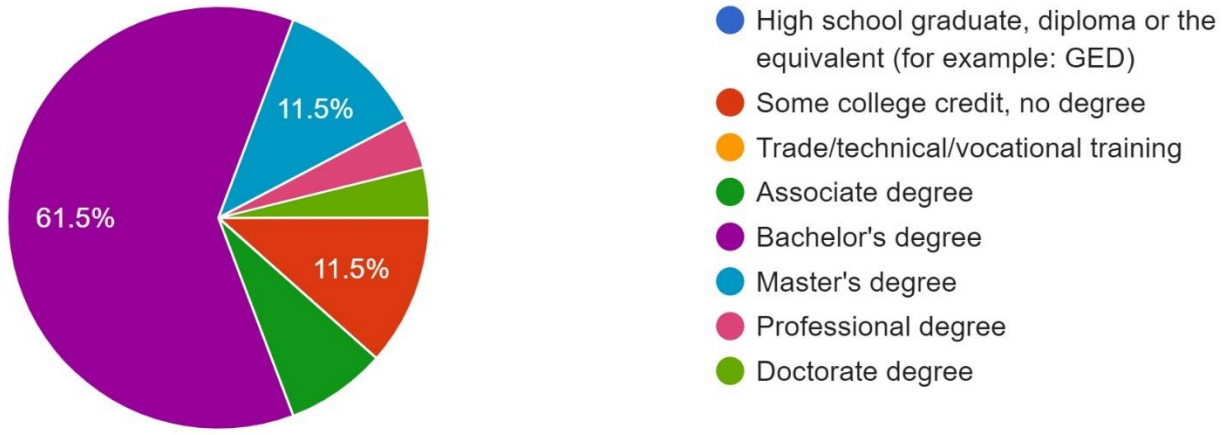


Figure 6. Participants' educational background

It is uncertain at this point if general visual media fans tend to be distinguished from other populations, or this study happened to recruit people who tend to be sexually and ethnically diverse, and more educated. In fact, the recruitment process avoided using venues such as school e-mail listservs to avoid recruiting mainly campus populations, and the researcher did not reach

out to certain ethnic centered populations. Future studies will need to be done to determine if certain audience populations tend to enjoy visual materials more.

For the question "*Do you have a visual media (comic books/graphic novels/manga, anime/animations, video games) related job or a hobby creating visual media?*," 69.2% of participants answered *No*, and 30.8% answered *Yes*.

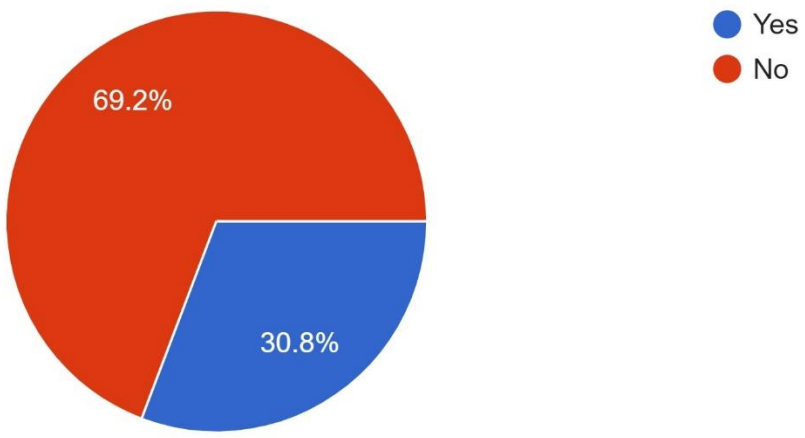


Figure 7. Participants' answer to the question, "Do you have a visual media related job or hobby?"

Among the participants who answered *Yes*, six participants (23.1%) answered they are amateur artists, four participants (15.4%) answered that they are librarians, three (11.5%) answered they are designers, and one person each responded that they are writer (3.8%), editor (3.8%), and art/visual media related student (3.8%). It is noteworthy that among different occupations of the participants, four of them were visual media librarians. This might have been resulted because recruitment flyers were distributed on the bulletin boards of Seattle Public Library and University of Washington's Odegaard Library.

4.1.2. Overview of the identified themes

Table 6 shows the overall counts of the identified codes. Five parent themes identified were: *Context, Information Features, Motivations (Experiential_Intended Use), Search-related Information,* and *Values*. Each theme had child codes, and when the data was coded, it was only coded to the child codes, not to parent codes. In this table, *Files* refer to the number of data sources that contained the particular code. Since there were 26 participants, and each participant had one regular day diary data, one off-day diary data, and one follow-up interview data, one participant created 3 data "files." Thus, there were overall 26 * 3 = 78 data sources. References refer to the overall frequency of each code applied to data. One file can have multiple counts of the same code if that code was mentioned several times.

Auxiliary Codes were added to the codebook to represent any relationships among codes. For example, "*The only thing I didn't like is some of the character development (P27)*" was coded with *Characters (Information Features)* and *+Dislike (Auxiliary Codes)* together to show the sentiment attached to the code.

Direct quotations from participants will be presented as exactly they were said (or written), without corrections. Any specific titles and foreign names mentioned will be italicized. Code names will be italicized as well for a clear distinction. Definitions of each code will be described again whenever needed, but for the complete list of code definitions, see *Table 4. Finalized codebook with term definitions* in *3.2. Data coding*.

Name	Files	References*
Auxiliary Codes	78 (100%)	939

+Media Specific	78 (100%)	492
+Like	68 (87.18%)	188
+Dislike	49 (62.82%)	160
+Similar to	27 (34.62%)	45
+Related to	18 (23.08%)	28
+Overarching	18 (23.08%)	26
Context	78 (100%)	971
Time	78 (100%)	569
Activities_Situations	77 (98.72%)	274
Place	55 (70.51%)	107
Context_Other	12 (15.38%)	21
Information Features	78 (100%)	3335
Work	74 (94.87%)	458
Plot_Narrative	73 (93.59%)	350
Characters	69 (88.46%)	309
Mood	67 (85.90%)	304
Artistic_Visual Style	66 (84.62%)	253
Platforms_Sources	68 (87.18%)	239
Subjects	60 (76.92%)	218
Genre	54 (69.23%)	173
Audience_Rating	52 (66.67%)	159
Gameplay_Mechanics	47 (60.26%)	115
Audio Style	44 (56.41%)	105
Setting	39 (50.00%)	94
Creators	35 (44.87%)	90
Release Date	40 (51.28%)	84

Length	29 (37.18%)	65
Package	36 (46.15%)	62
Language	23 (29.49%)	53
Series_Volumes	25 (32.05%)	45
Reviews	22 (28.21%)	40
Franchise_Universe	15 (19.23%)	31
Completeness	13 (16.67%)	29
Pacing	17 (21.79%)	24
Information Features_Other	12 (15.38%)	18
Popularity	15 (19.23%)	17
Motivation (Experiential_Intended Use)	76 (97.44%)	786
Mental_Intellectual Engagement	72 (92.31%)	343
Companionship_Fellowship_Fandom	57 (73.08%)	195
Loyalty	41 (52.56%)	94
Achievement	37 (47.44%)	82
Motivation_Other	14 (17.95%)	26
Expression	18 (23.08%)	25
Discovery_Exploration	12 (15.38%)	21
Search-related Information	77 (98.72%)	501
Information_Recommendation Sources	76 (97.44%)	291
Search Strategies	44 (56.41%)	116
Ideal Search System Features	27 (34.62%)	51
Search Problems	26 (33.33%)	42
Search-related Information_Other	1 (1.28%)	1
Values	44 (56.41%)	145
Personal Beliefs_Values	22 (28.21%)	45

Relatability	20 (25.64%)	41
Health	10 (12.82%)	29
Uniqueness_Creativity	17 (21.79%)	26
Values_Other	3 (3.85%)	4

Table 6. Overall frequencies of identified codes (diary and interview)

** Multiple codes were applied for one data source.*

Context

In *Context*, *Time* (569 references, 78 files (100%)) was the most frequently mentioned code, followed by *Activities_Situations* (274 references, 77 files (98.72%)) and *Place* (107 references, 55 files (70.51%)). *Time* included any comments or discussions on temporal aspects of visual material consumption such as, in the mornings, at night before going to sleep, and during the summer vacation. When a participant made a comment about the time that she/he had (e.g., "*where I'm getting close to the end of a quarter and I'm studying for tests and finals, so I feel like it, what I consumed was very limited* (P20)"), or about time spent to consume media materials (e.g., "*I like to check on the game at least once a day to receive daily login rewards. It doesn't take very long, and I'm not at a point in the game where I can proceed with the story so it's easy to login quickly to play the reward-collecting games* (P10)"), *Time* code was used.

Activities_Situations is defined as "when a participant identifies any tasks/activities that they were doing at that moment (e.g., during chores, taking lectures, procrastinating, time between classes, right before going to sleep, etc.)" in this study. For example, having a short break while cleaning the house, waiting for the ride to come, and trying to disengage from the stressful situation after a fight were considered as different types of activities and situations.

"***Cleaning the house and want a little break, check on those kitties. Don't want to get super invested or sucked into a whole long thing****, but takes almost no time and energy for the little dose of enjoyment*." (P12)

"***I was hanging out with some friends*** *and they decided to watch Fullmetal Alchemist.* ***I was waiting for my ride to come pick me up,*** *so I sat down to watch with them while I was waiting*." (P14)

"***I had a fight with my husband because he got home late the night before*** *and it messed up my evening plans. I went to the bedroom and closed the door,* ***and I wanted to do something where I could disconnect from the world***." (P26)

Place was coded when a participant mentioned about any location information. It included any information about where they read/watched/played or where they were planning to consume visual materials. *Place* could be either outside and public or inside and private. Depending on where they were, participants tended to prefer different types of platforms for the convenience reasons. Several participants also mentioned that when they are in public, they are more careful about whey they read or play.

"***I'm in line at Costco buying food. The line is quite long so I figure I might kill some time reading some manga.*** *I like reading because I can stop and resume at any time."* (P19)

"*Mario Kart is always a fun casual multiplayer experience and* ***it's really handy to have it on a 3ds so we can play anytime we're away from home****."* (P23, while being at a hospital)

> "***I was relaxing in my room***. *It was nice and warm and I was still in my pijamas [sic]. I looked outside my window and saw my car. I was to lacy [sic] to go outside and actually sit in it and drive it that I desided [sic] to turn on my PlayStation and play a little grand turismo. I have the same car in the video game and I decided to practice a little of my drifting skills*." (P28)

Codes for context information were often described together. The activities that participants were doing or the situations that they were in tended to be naturally relevant to a particular time of the day or a place.

Information features

Work (458 references, 74 files (94.87%)), *Plot_Narrative* (350 references, 73 files (93.59%), *Characters* (309 references, 69 files (88.46%)), *Mood* (304 references, 67 files (85.90%)), and *Artistic_Visual Style* (253 references, 66 files (84.62%)) were the five most frequently discussed codes in *Information Features*. In previous studies, too, *Work* was one of the most frequently discussed elements by users (Cho et al., 2018; Cho et al., 2017). Users who were looking for visual media recommendations tended to list what they had enjoyed so far (or what they had disliked) hoping that others could possibly understand their personal "taste" and give them better recommendations. The results show that this tendency remains the same in this study. However, due to the nature of diary study and interview where participants could be more narrative about their preferences, *Work* was often used by participants to describe something similar to specific work or aspects, which is still in a similar vein to listing what they like in terms of searching for "unknown item." For example, participants used particular visual material works as examples of

the plot they like, appropriate audience age ratings and overall mood, and the visual style they prefer.

> "*As far as, as far as, um, you know, like, really long anime's, I guess, I* ***guess it has to revolve around some sort of conflict, in order for it to be an ongoing, you know, like the IMF***." (P11)

> "*Yes!* ***It's like Sesame Street, so clearly for little kiddos, but cute and great, entertaining practice***." (P12)

> "*I prefer,* ***I guess I like stylish anime, yeah. I watched Devil Man recently****. That was real nice. It's kind of like dark, a dark story****. I like surreal, like, you ever watched Atlanta?****"* (P13)

How the main events are presented as interrelated sequence (*Plot_Narrative*) was an important aspect of visual materials to most participants. Participants generally had specific preferences on how the story unfolds, but sometimes this also differed depending on the types of visual materials, such as P17.

> "*Um,* ***when I'm playing video games that generally go for like fantasy plots instead of like realistic things.*** *I don't like Call of Duty, I like Zelda or Fire Emblem Heroes. Oh yeah.* ***The writing has to be really good or otherwise I've kind of dropped it.***" (P14)

> "*Um, for games like a lot of the games I've played, uh, I played them a lot and so the plot stops mattering after a certain point because you've already played through it a few times. For the other media,* ***like in manga I tend to like more romantic comedy type plots, or they may even be more serious, but like kind of warm, fuzzy feminine***

romances for manga. *It kind of varies. I think more drama type stuff appeals to me more*." (P17)

Some participants also provided very detailed descriptions of the storyline they prefer:

"*But um, I like the stories where there are multiple characters to follow, like the protagonist and the antagonist characters, the stories where it developed more than one character. So like not just the main character but also like his friends and sidekicks I guess. And even the antagonists. Like, um, one thing I found surprising is, they don't make the antagonists look completely evil, like they go over their own reasons for doing stuff for you as a viewer, I can develop sympathy or sometimes empathy to the antagonist because maybe they want to take over the world for what they think is a good reason. For example, salvation of humanity. It sounds cliché, but like you kind of understand his reason. Their paths. So I like, I like stories that don't focus too much on action. I like an even split of action, character development and um, you know, stuff like that. Lessons to be learned and yeah*." (P18)

Characters refer to specific characters from a media mentioned by their names, types of characters, and any discussion on character development in this study. Since a character from a specific media work is closely related to its plot, *Plot_Narrative* and *Characters* were often mentioned together by participants. Participants had different preferences on characters, such as their personality, occupation, age, gender, and look. However, in video games, participants often preferred certain characters because of their "functions/roles." For example, P21 stated that she enjoyed the designs of characters and their different outfits, and P9 especially appreciated the

personality of the main female character. P19 discussed how he enjoyed the characters in the game due to their own functionality.

> "***I love all of the character designs, the cute outfit changes*** *(sometimes magical girl animes keep having the magical girl outfit stay the same, but Card Captor is known for giving the magical girl different outfits all the time)*." (P21)

> "***I like this game for the characters. It has nearly all the characters from the Dragon Ball Z anime. Also, every character has their own functionality*** *which is why it is appealing to me*." (P19)

> "***One of the things I think I appreciate about Batman as a character is that he has been around for such a long time that there are many different interpretations that people can use and enjoy****. So, you have the darker version that is present in those video games, but you also have for example like the Adam Wes TV show from the '60s that I also enjoy but it is a very different feel*." (P2)

> "*Yeah, and like, I,* ***I like it because the main female character, like, she's very hard working and she is smart and she tries and her personality's not something you typically see in, like, manga and stuff****. So it's, like, yeah I, I really like it because she's an interesting character*." (P9)

Mood is a feature that has been proved important in previous studies on various types of multimedia information such as music and video games, and it was the same in this study, as well. In this study, *Mood* is defined as "1) feelings and atmospheres evoked by media materials, or 2) how participants feel about the media material." Thus, this code was used for both when

participants described the mood of visual materials and/or how they felt by consuming visual materials. Some of the frequently used adjectives that participants used to describe the mood of visual materials were: lighthearted, relaxing, calm, funny, humorous, happy, cute, serious, intense, dark, scary, and sad.

> "*I'm currently disabled with PTSD. My symptom intensity varies, but it's been a trickier week than ordinary. On those kinds of days when I'm alone I find it helpful to play games, which seem to help alleviate my symptoms by distracting me from negative trains of thought. My girlfriend was at work,* ***so I needed to keep my brain safe and happy while I'm alone****."* (P17)

How participants described *Artistic_Visual Style* was exceptionally specific and detailed in this study. Some of the participants mentioned that even when the story of the media is interesting, if they cannot appreciate the visual style, they have difficult times enjoying the media.

> "*Yeah it's definitely important to me, um, if like, uh****, if a game or an anime doesn't have good animation, or the art is something that I don't like, it's harder for me to really get into it, um, it's definitely harder for me to get over, to get past that, even if it has like a really good story****, just because it's, like, kind of hard for me to watch, or play*." (P10)

It was noteworthy that colors and lightings were especially discussed frequently, and passionately, by participants, such as P6, P21, P4, and P10. P6 enjoyed the color scheme of the material, which incorporated purples, blues, oranges, and yellows, using digital line drawing and water color styles, and P21 particularly enjoyed the lighting and painterly feel that the visual material item had.

"***I like the color scheme and the art style (purples, blues, oranges, yellows; digital line drawing/watercolor****); I like the cat in it (she doesn't do much but she's cute)."* (P6)

"*The art style was really important for me. […] What caught my attention to tap on the comic to see more was the cover photo for the comic actually. Normally I choose by art style of the character. This one in particular didn't really show the character art style well. Instead it was the coloring and warm tones of the cover photo that caught my attention. It was a drawing of a scrapbook that looked like a couple's scrapbook in a sunset setting.* ***The golden hour colors of the cover photo made me suspect that there would be warm color tones in this comic and I was right. The comic had beautiful lighting and had a range of deep to sweet/romantic to funny moods. The art style had a painterly feel (painted-on look) to it unlike a lot of comics that are very clean, use cell shading and use line art. It also played with blur like a camera lens which I love when artists play with blur and perspective****."* (P21)

"***When the colors of certain things, even when things look darker, like the color palette's darker, like if the visual language is really drawn tone, usually I like it or if the colors are complementary****, but a lot of cartoons are like, I think in order to make them look more realistic I guess? They just look dirty or unpleasant, and I think that it is to give a sense of like, this is everyday person show, centering it in reality a little bit. So maybe somebody is really weird or unrealistic, the colors will mostly be like beige, like a grey-brown, like green undertones and green and yellow based more than brighter colors with more like pinks or blues."* (P4)

"***The art style doesn't use a lot of thick black lines, which makes all the colors stand out****, which is a style I like in anime*." (P10)

In Cho, Donovan, and Lee's (2018) study on developing a taxonomy for video games' visual styles, the authors suggested to have controlled vocabularies on colors and lightings of video games, such as *black & white*, *bright*, and *colorful* based on user experiments. The results of this study align with their recommendation that different hues and brightness levels of visual materials, especially, are crucial across various types of visual media materials on top of artistic styles (e.g. Western style, watercolor, realistic) that each media conveys.

1. abstract	**7. handicraft**
1.1. psychedelic	**8. Lego**
1.2. text	**9. maplike**
2. black & white	**10. minimalism**
3. bright	**11. pixel art**
4. caricature	**12. realism**
4.1. cel-shaded	12.1. illusionism
4.2. comic book (anime/manga)	12.2. photorealism
4.3. watercolor	12.3. televisualism
5. colorful	**13. silhouette**
6. dark	

Figure 8. Developed taxonomy for video games' visual styles in Cho, Donovan, and Lee (2018)

Motivation

Mental_Intellectual Engagement (343 references, 72 files (92.31%)) and *Companionship_Fellowship_Fandom* (195 references, 57 files (73.08%)) were the two most frequently discussed motivations of consuming visual materials, followed by Loyalty (94

references, 41 files (52.56%)) and Achievement (82 references, 37 files (47.44%)). *Mental_Intellectual Engagement* is defined as follows, including multi-layered concepts relevant to mind, understanding, learning, and perception:

1) Different levels of mental/intellectual engagement (e.g., difficulty understanding the story or taking a steep learning curve to play), like P19:

   "***Well actually I prefer games that you have to think really hard about kind of like chess*** *for example, when you're playing someone, you got to kind of outsmart them in a way."* (P19)

2) Complex and/or simple plots/narratives, gameplays, etc., such as,

   "*Phew! Detoxing from workday with a deep breath and short checkin with some cute kitties.* ***No plot means no complicated thinking or effort to enjoy****!"* (P12)

3) To learn something as cognitive or educational purposes, such as P12 and P2:

   "*So at least two for sure. Well, I don't know****. I have a bunch that I would use for language study because it's way easier to use visual things than like a book to study because of like context clues are a lot more obvious. So like NAVER has all these different web toons and web comics and stuff and you're able to get an idea of what's going on without needing outright subtitles or for it to be translated. Totally****. So since I want to get better at or keep up my Korean then I would use those because it's easier than if I just got like a book and was going through like, oh gosh, I'm going to try and figure out what's going on, or a textbook, which I mean, obviously there's cute and fun textbooks, but it's not the same as if you are enjoying an interesting comic or an*

interesting story and it's got all these hints that even if you don't know some of the vocab, you're like, all right, it looks like they're in a store. So I'm gonna make a guess about what this could mean and move on and still be involved in the story without having to like interrupt my progress, stop and go find a dictionary. Figure out what that one word was. It makes it a lot more enjoyable and I guess easy to learn and study with them." (P12)

"… ***to me, comics are part of my professional life as well as my personal life in that I help organize library-related events at comic book conventions and comic book-related events at library conferences****. And so, there's an element in when I'm reading comics, that I want to read things from… that I've heard of or that from different publishers and stuff, so that I have a good idea of what's going on in the industry. So, I can keep up to date on what titles are coming out and what is popular and a lot of things like that*." (P2)

4) To disengage from something/escape, including physical or mental symptoms or pains, situations that they are in, activities that they are doing, etc., as P17:

"***My girlfriend had a medical appointment that was going to be painful. She finds video games a useful distraction, so we bring our Nintendo 3DS to play in the waiting room, and while she's receiving the treatment. To a lesser extent, her being in pain can trigger my PTSD, so it's helpful for me as well****. Because she's the one undergoing the medical treatment, she picks the game*." (P17)

5) To forget about reality momentarily, such as P5 and P14:

"*The media that I consume, yeah, so…* ***I basically do a lot of binging when it comes to forgetting about, not thinking about all the bad things happening, things going on***." (P5)

"*Most of the visual media I consumed over the study was that* ***it was kind of lighthearted because it was final season and I kind of needed something to distract myself****."* (P14)

6) To relax, like P10:

"*Uh, definitely, like watching video, like playing video games and watching TV, I,* ***I like to do it to relax because whenever I have free time, that's kind of what I like to do.****"* (P10)

7) Mindless consumption, which usually cannot be described clearly by participants, but oftentimes stated such as "I was bored," such as P13:

"*I got bored during breakfast*." (P13)

Companionship_Fellowship_Fandom generally involves social settings and situations. In this study, it refers to

1) To get a feeling of fellowship or friendship, such as P14 and P17:

"***My friend really wanted to "get wrecked" (she was studying for a final, and needed a distraction)****, so we went with episode six of part one. This is infamous for being one of the saddest episodes of FMA.*" (P14)

"*I liked spending time with my friend. I was a bit frustrated with the game in this circumstance, because we spent around six hours looking for a certain piece of loot, and*

*didn't find it**. But more important than the outcome was having that time with my friend, playing together and talking. I suppose the game served more as a vehicle to that social interaction than being enjoyable in and of itself***." (P17)

2) And in opposite, to get a feeling of solitude like P15:

"*Loneliness a little bit more like, yeah, like I said, I enjoy like when you're, when you're watching it you feel a little bit lonely because you kind of feel how the characters felt and, **and for some reason I just feel a little bit of loneliness in there and I kind of like that kind of genre***." (P15)

3) To have background noise while participants were doing something else, like P26:

"***I needed something to play as background noise while I tidied the house, tended to puppy, and played on my ipad.*** *I played episodes until my husband got home*." (P26)

One noticeable aspect in this code was affirming the importance of fan communities and fan created information. Some participants discussed how they search for and enjoy fan arts, fan fictions, or anything that is created by other fans who like the same work, such as P15 and P3. Fan created works are a big part of visual material fan communities. However, since these works are not created by original creators, the current recommendation systems or databases do not support finding these contents.

"*Both Nier and Aldnoah had a sad ending, so I guess i [sic] was just trying to find a feeling of closure through fanarts.* ***There were a lot of good fan-fictions on who could have happened in a different settings with same characters. I guess it made me feel happy when reading these***." (P15)

"*Wanted a distraction while riding in a car to a destination;* ***went to a doujin website to find fan comics featuring my favorite character from one of my favorite manga****, "One Piece".*" (P3)

Search-related information

Information_Recommendation Sources (291 references, 76 files (97.44%)) and *Search Strategies* (116 references, 44 files (56.41%)) were two most frequently mentioned search-related information by participants. To find any relevant visual media information they need, participants used various information and recommendation sources. Social media websites and personal recommendations were two of the predominant *Information_Recommendation Sources* for participants.

"*The show is really popular this season.* ***I see a lot of clips and screencaps on social media. My friends who I talk about anime with also keep recommending it to me****, which ended up convincing me to watch it since I wasn't sure how good it was based on what I saw/read on the internet."* (P10)

"***I follow pages that share anime related news on Facebook and Twitter***." (P21)

"*When* ***my youtuber's for video games, he likes to explore a lot and review them*** *or just play because he has a lot of fans that want to see him, so that's another way that I can see if I liked the game or not*." (P19)

"*I found out about this Tong Vanity after reading Dokgo on my manga app on my phone.* ***I read Tong Vanity on Meraki Scans and use there [sic] discord to keep myself updated*** *on when it is updated*." (P29)

"***I usually ask my friends because we all generally have like, not like super similar to yours**, but like similar enough that like what something they like will probably be something I like as well. **Then my brother also has a pretty good source of recommendations***." (P14)

In terms of seeking visual media information, participants have various search strategies. It varies from using a specific keyword search on search engines to enjoying aimless browsing on a website/application, comic book stores, and libraries. However, regardless of their search strategies, they tend to look for the information features they care about more, such as *Release Date* for P2, *Artistic_Visual Style* for P3, *Work* for P25, and *Reviews* for P27.

"*Yes. **And then there's also the library apps that allow you to read comics and books** as well, like e-versions that I use. So yeah, there's everywhere is where I will get material. […] for example, **last weekend, I spent like two and a half hours in comic book shops looking for old comics, like Paramore comics**. But I enjoy looking through them at the same time. It is something that I enjoy doing."* (P2)

"***I have encountered many fan comic sites before; I usually just enter relevant search terms into Google, possibly using image search too [sic] find panels and covers** from which I like the art*." (P3)

"***I just go on google and type an anime I like and then I go through what they recommend like similar anime** that people recommend*." (P25)

"*So**, like once I've gone to the NAVER, like Webtoon section, there's a bazillion there.** You could click around and be like, oh nope. First page—don't really like. I'll [go] over*

here. Oh, and it has a whole like related recommended for you section. ***So, I don't really have to look too hard. Like the library. I'll just go and wander around.*** *I used to work at the college library and everyone would be fighting on who got to shelve the graphic novel section cause you'd always get to check out like oh what's cool, I'm going to see what I'm going to check out is just browsing there can get you lots of stuff*." (P11)

"***I just go off of the main listing, the ratings page***." (P27)

Values

Some of the newly identified themes in this study were relevant to individual values, perspectives, and social issues. Although the frequencies were not very high, when they were mentioned, participants showed strong passion towards these topics. *Values* included *Personal Beliefs_Values* (45 references, 22 files (28.21%)), *Relatability* (41 references, 20 files (25.64%)), *Health* (29 references, 10 files (12.82%)), and *Uniqueness_Creativity* (26 references, 17 files (21.79%)).

Personal Beliefs_Values generally discusses the appropriateness of the work and the ideologies, virtues, or social issues represented in a media material. In this study, it also includes whether a certain work is worth spending time to participants. Many participants discussed the topics of morality and diversity, among other issues. For example, P14 talked about the importance of respecting other cultures, P18 and P2 discussed their ethical standards, and P26 expressed the strong need of having more multi-dimensional female characters in visual media.

"*I think it's just the characters are really important to me.* ***So, if the characters are like written well and like, especially if they're like portraying like other cultures, if they're like respectfully done****, then that's something I consider."* (P14)

"*I guess another prominent theme among the shows I'm watching, is just, just being good.* ***Like do good to others as you would to yourself, like the golden rule kind of.*** *So like even if you're angry or you know, feeling negative emotions, just remember to be nice to other people****. I mean that's also a common theme and that's something I actually value myself.*** *So that's why I really liked those shows as well*." (P18)

"*It is also, there's an element of things in Superhero comics, where for me personally, I at times,* ***I can appreciate the more black and white morality that exists in them, that I know doesn't exist in real life****. It's like, oh there's a problem, you can just punch that until it is solved. And that doesn't work in real like (laughs). And so, like, seeing characters where that does solve the problem is, yeah I don't know, I can see why there is such a level of appeal there."* (P2)

"*Yes,* ***I think I have mentioned it before that I very strongly gravitate towards shows that have complex female characters*** *and that happens with me over and over again. I have opted out of watching TV shows or anime that weren't very diverse or I felt like the female characters […] weren't very convincing. I think it's why I don't like to watch stuff that is really blatantly fan serviced because none of them characters in the show none of them seem realistic to me none of them seem relatable to me. So, I just don't enjoy watching it*." (P26)

Auxiliary codes

Auxiliary codes do not contain information by themselves, but they were coded together with other codes to reveal any contexts around different codes. *+Media Specific* (492 references, 78 files (100%)), *+Like* (188 references, 68 files (87.18%)), and *+Dislike* (160 references, 49 files (62.82%)) were most frequently used among the *Auxiliary Codes*. When participants talked about one particular type of visual material, such as reading a manga on a mobile phone application or watching anime, *+Media Specific* was used to identify that information:

> "I *was on the bus home, traveling by myself*. ***On this bus ride, I have about an hour of time to kill, and no internet connection, so I tend to play offline games***. *I like to play this game because it doesn't require sound, so I can listen to music and play at the same time. This game also doesn't require a lot of thought, so I like to mindlessly play it while I'm traveling*." (P14)

It should be noted that the reason that *+Media Specific* has a high count is also due to the nature of the diary study. Since participants recorded every visual media object they consumed during the diary study, it naturally had much information about each different work, hence, each different type of visual material.

Many participants also showed their preferences or dislikes on different aspects of visual materials. These sentiments were coded with either *+Like* or *+Dislike*. Both of sentiments were presented approximately the same, with *+Like* having slightly more counts. High counts of *+Like* and *+Dislike* indicate that participants had clear preferences on visual materials they chose and were capable of expressing their opinions on these materials. This finding was similar to the

previous study (Cho, Schmalz, Keating, and Lee, 2018) where the authors found that anime users find it easy to identify what they do not like or want in terms of different information features of anime. For example, P26 expressed how she appreciated the genre of the anime, P6 mentioned that she did not like the user interface and the music used for the game platform due to its repetitive and catchy sounds, and P30 complained about the gameplay style and the micro-transaction aspect of the game.

> "***I love that it is an anthology, so I can rewatch episodes without having to worry about forgetting any of the plot****. I also feel like the horror themes are different from horror stories from Western culture, so the material is new and interesting."* (P26)

> "*I think if the music fits the mood, it's good. Like, you know if it's supposed to be a very calm mood and the music is very happy, but not like in an annoying way, that's good. For example, positive or neutral music I really hate. So, the Wii, the Miiverse menu, so when you're — when you play Nintendo Wii, there's the option of making Mii's. And the Mii menu music drives me up the wall.* ***There's just stuff like — yeah, there's nothing wrong with it, but it's so — it's repetitive, it's a little bit too catchy, and that's just super annoying to me***." (P6)

> "***I do not like this game because it has become a chore to play****. There are not many appealing factors about this game besides the fact that my friends play this game****. I don't enjoy the mirco-transaction aspect of this game. I dislike the artistic style of the game because the characters look very ugly and cartoon-ish. There is not very much progression*** *in this game*." (P30)

4.1.3. Cross-tabulation analysis results

In order to observe co-occurrences of the identified themes, cross-tabulation analysis was performed. The section below will focus on presenting some of the higher co-occurrences and noteworthy associations among codes; the complete set of cross-tabulation results can be found in *Appendix F*.

Activities_Situations X +Media Specific

Context code, *Activities_Situations*, was often mentioned together with the *Auxiliary code*, *Media Specific*, at 88 times specifically. Participants consumed specific types of visual materials depending on what kinds of activities that they are doing or what kinds of situations that they are in.

	A : Dislike	B : Like	C : Media Specific	D : Overarching	E : Related to	F : Similar to
1 : Dislike	160	34	25	3	0	4
2 : Like	34	188	30	4	6	10
3 : Media Specific	25	30	491	2	12	12
4 : Overarching	3	4	2	26	1	0
5 : Related to	0	6	12	1	28	0
6 : Similar to	4	10	12	0	0	45
7 : Activities_Situations	8	10	88	1	1	1
8 : Context_Other	4	0	5	0	0	0
9 : Place	3	3	30	1	1	0
10 : Time	18	21	76	3	1	3

Table 7. Cross-tabulation results: Auxiliary codes (part)

For example, when a participant is outside and waiting in line, mobile games provide a nice distraction while being easy to access:

"***The most obvious example I can think of is Tokyo 2048 when I was in line at the airport and in line for two hours***. *And if I was just standing in the slowest airport line in the world for two hours, I would probably have lost my mind. Like I'm so impatient and you can tell the person was working really slowly and I would be so frustrated, but it was like zoned out and I spent a solid two hours just playing that game. Like, here I am, I'm not in this airport line with the world's slowest checker to this nice world if cute trees*." (P12)

"***I play phone games when a passenger in transit or while waiting for something in the oven***." (P3)

When participants study or work on projects, they often enjoy playing anime in the background. In this case, particular types of *Mood*, *Audio Style*, and *Language* of anime become more important since participants mainly "listen" to this visual media and do not want to be distracted too much by it while they are working on something else.

"*Or you know, if I'm doing something else, if I'm cleaning or whatever, or if I'm making dinner, and I want to entertain myself while I do that, I might watch something****, like even if I'm not looking at it I can still hear it***." (P6)

"*I will probably continue listening to this anime while I work on assignments throughout the quarter. Lastly,* ***I think the overall outlook of the anime is positive and I don't have to worry some crazy horrifying twist will change the genre to horror halfway or some negative and dark ending will happen. For my situation, I needed something positive to listen to while I work***." (P21)

Having a quick break at work is one of the frequently mentioned situations. Participants wanted to enjoy visual materials that could be consumed in a brief time so it would not require too much *Mental_Intellectual Engagement* and *Time*, but at the same time, it should be easily accessible, so *Platforms* became another important factor in this situation. For example, when having a short break at work, reading web comics on the phone became a convenient way to spend time, and having the actual physical copy of graphic novel was also good for a short break since participants could easily put it down and come back to it.

> "*Probably usually on, probably on breaks during work,* ***so when you get the 15 minutes and you're just trying to drink a coffee and not talk to anybody and you want to just turn your brain off. I'll bring up web comics on my phone then****. So, like quick break, or like, when I'm in bed for the night and I just want to read something before sleeping, I'll just bring it up to bed.*" (P4)

> "*Yeah most of the time I read the comic stuff and graphic novels at work during the downtime. I usually…****you know I've played some video games at work, like the handheld systems, but I generally don't really do that so much. I prefer to do that stuff at home. Because at least with the graphic novels though, you know, I don't neglect anybody when they need something. So I can just really easily put that down and come back to it,*** *whereas a video game, sometimes it's like, like I said like that other game…Well I mean most of them have pause, but still it's, it's easier to put down a book than that, you know a video game or something*." (P7)

Mental_Intellectual Engagement X Activities_Situations (109)

Related to the previous section, in different situations and activities, participants preferred particular levels of *Mental_Intellectual Engagement* due to different motivations for consuming visual materials.

	AI : Achievement	AJ : Companionship_Fellowship_ Fandom	AK : Discovery_Exploration	AL : Expression	AM : Loyalty	AN : Mental_Intellectual Engagement	AO : Motivation_Other
1 : Dislike	9	8	2	3	10	17	1
2 : Like	21	20	5	8	14	40	2
3 : Media Specific	25	70	3	5	19	88	12
4 : Overarching	1	1	0	0	3	6	1
5 : Related to	3	5	0	0	2	6	1
6 : Similar to	2	4	1	1	4	7	0
7 : Activities_Situations	24	74	1	0	26	109	6
8 : Context_Other	1	3	1	1	4	5	0
9 : Place	7	29	0	1	5	44	1
10 : Time	20	46	3	5	26	71	4

Table 8. Cross-tabulation results: Motivation (Part)

For example, when participants want to relax or get ready to go to bed, they generally prefer visual materials that do not require too much thinking—less complex plots and easier to play with a calming and relaxing mood. The majority of participants in this study tended to prefer visual materials with low *Mental_Intellectual Engagement*.

> "*Back in bed now as it is getting near the end of the day**. I like to relax in bed before I sleep,** so I'm comfy and playing games*." (P19)

"[…] *when I use this type of media, it is used for relaxing.* ***After studying or working, I like to watch anime, so I [would] rather not think about it too hard.***" (P27)

"***I also tend to play games that do not require a lot of thinking mindlessly when I feel stressed and under pressure***." (P21)

"*Yeah, so when I get up with my main partner Claire [pseudonym], it's like we usually get up and get coffee and then do something together. So in that time period it's like doing something together that doesn't have as much thought it isn't as necessary because we just woke up*." (P23)

"*I'm going to like get into this dystopian world then I want to have time to enjoy the story and think about the characters and uh, if I'm just checking in for like, oh, I have 10 minutes at the gym to distract me from my burning legs on this machine. I'll read this web comic that I don't really at that point want to be bummed out more like, confused or have to think really hard or have serious philosophical thoughts or anything. Like I just want to be like, all right, cool. I'm enjoying some visual media here, but I'm not gonna go cry afterwards*." (P12)

Artistic_Visual Style X Plot_Narrative

Two *Information Features*, *Plot_Narrative* and *Artistic_Visual Style* were often mentioned together by participants, as well. As briefly noted in *4.1.2. Overview of the identified themes*, many participants discussed whether either *Artistic_Visual Style* or *Plot_Narrative* is a more important element to them in choosing visual materials. In addition to this discourse, most participants tended to talk about certain visual material's visual style and story together to

describe why they liked that item or not. Considering that this study focuses on visual narrative materials, it was natural that these two elements were often paired together in participants' comments.

	N : Characters	O : Completeness	P : Creators	Q : Franchise_Universe	R : Gameplay_Mechanics	S : Genre	T : Information Features_Other	U : Language	V : Length	W : Mood	X : Pacing	Y : Package	Z : Platforms_Sources	AA : Plot_Narrative
11 : Artistic_Visual Style	83	10	25	2	21	35	4	8	11	80	3	7	30	99
12 : Audience_Rating	36	9	11	2	8	26	1	7	13	40	1	10	38	30
13 : Audio Style	35	3	8	3	6	14	2	7	3	31	0	1	18	30
14 : Characters	308	10	17	18	17	44	5	5	17	80	7	6	14	150

Table 9. Cross-tabulation results: Information features (part)

"***Something more serious with good art and an interesting plot.*** *I was previously watching a comedy show with comedic art, so I wanted to see something that had more "anime-like" art.*" (P10)

"*I LOVE the story line so far and have enjoyed reading the manga.* ***What the manga lacks in visual effects, it makes up for in furthering the plot***." (P11)

"*And* ***I'm much more likely to follow somebody because of the quality of the story and hopefully — and if the art is terrible then I'm not going to read it anyway.*** *If they are combined, if both of them are good, then I can appreciate it.*" (P2)

"***I really enjoyed the game as the plot is intriguing, and it prompts me to question a lot about my own morality and values.*** *The music matches the game very well that it would remind me the plot or interaction of the characters whenever the music is place. It also builds up the world and atmosphere of the situation.* ***Of course, the artworks are amazing, and every details are so well made.*****"** (P15)

"*I basically Google either stories that make you cry. Because usually if they make you cry there is something inspirational about it and sometimes there are images on social media that get posted of media, and if the art work looks really good I feel like I look into it more.* ***I do get inspired simply by the art in the stories sometimes***." (P21)

Plot_Narrative X Characters

Plot_Narrative and *Characters* were often mentioned together especially to describe the development of characters or particular characters' roles in the plot. Participants expressed their feelings towards particular characters' doing in a story line, which seems to affect how participants evaluate the visual materials.

"*So just generally, I like to have it [intellectual challenge]. When the things I watch or read, or the games I play****, if they have like kind of like a complicated plot, I like it when there's a lot of different characters to keep track of and a lot of different things happening because it's been really interesting to me to see how different things together within the stories***." (P14)

"*That's the plot. The character. Yeah. He's very confident. He's vengeful, but he also wants to do the right thing. He's not like entirely like fucked up by revenge and evil. He*

wants to achieve what he believes is right in his own way. Even though other people might not think the same way. ***So I guess that's a good plot and character without spoiling or revealing too much about it***." (P18)

"***I like that each episode seems to add something to the ongoing plot or the development of the characters***. *I liked that this episode portrayed Sokka as more than just comic relief and the inclusion of a disabled character. Plus it is pretty well animated (apart from the cgi), has good voice actors, etc*." (P2)

One of the *Values* codes, *Relatability*, was also often discussed by participants when they described the plot and characters together. Some participants enjoy *Plot_Narrative* and *Characters* that they can relate to more, while there was a participant, P24, who actively avoided any relatable contents.

"*Though the webcomic isn't finished, I already like it a lot! It's refreshing to read* ***and I enjoy how the comedy makes references to things I currently can relate to***." (P21)

"*Usually when there's a problem or a scenario when their expertise is maybe technology or* ***engineering or something like that, something I relate to, and the problem-solving that they do, the fact how they problem solve is what I'm drawn to.***" (P5)

"***There is an animation that I watch when I felt really bad about myself cause [sic] I can relate to it so much***. *It was about a girl when she was having no friends, or something like that, I just feel really bad, so I stopped watching that kind of animation*." (P24)

Mood X Plot_Narrative

	T : Information Features_Other	U : Language	V : Length	W : Mood	X : Pacing	Y : Package	Z : Platforms_Sources	AA : Plot_Narrative
12 : Audience_Rating	1	7	13	40	1	10	38	30
13 : Audio Style	2	7	3	31	0	1	18	30
14 : Characters	5	5	17	80	7	6	14	150
15 : Completeness	0	1	3	14	0	1	6	15
16 : Creators	1	3	4	15	2	10	18	20
17 : Franchise_Universe	0	1	1	2	1	1	5	6
18 : Gameplay_Mechanics	3	1	5	29	6	10	15	16
19 : Genre	0	4	7	63	1	6	20	55
20 : Information Features_Other	18	0	4	8	0	1	2	3
21 : Language	0	53	1	6	0	7	20	9
22 : Length	4	1	65	23	2	0	7	22
23 : Mood	8	6	23	303	2	4	26	112

Table 10. Cross-tabulation results: Information features (part 2)

Many of the comments made by participants showed that particular "types" of story do not necessarily have particular types of moods. Some participants look for the balanced, mixed moods in stories such as P9, and some participants look for particular moods while simultaneously trying to avoid some moods like P6. *Genre* does not define the mood of visual materials, either. P4 shows that her recent favorite comics are autobiographical comics with lighthearted, young feeling.

"*The characters are really fun and the art style is cartoony and fluid. Although wacky at times,* ***i [sic] enjoy how the story line is going deeper and so i [sic] can watch this show knowing it will continue to get better balancing fun and serious***." (P9)

"*I like the plot,* ***I like how the post-apocalyptic themes in the story are exciting and scary and thought-provoking but without being edgy or nihilistic***." (P6)

"*I feel like for both of the things that I submitted and stuff I've read since, a lot of it's lighthearted for the most part, and lately I've been reading a lot of autobiographical comics where people sort of draw, it's almost like a diary entry.* ***So, it's very lighthearted, and for the most part just, like a really—it's kind of like advice column-y but in a way that's not like, but in a young way I guess.***" (P4)

4.1.4. Cluster analysis

Two types of cluster analyses were performed to observe the patterns and similarities among the identified themes. Firstly, coding similarity was measured with Jaccard index and Sørensen-Dice coefficient, then word similarity was measured with Pearson's correlation coefficient. As noted in *3.4.2. Cluster analysis*, since Jaccard and Sørensen indices are statistically similar, the hierarchical cluster dendrograms created by these indices look equal. Thus, one dendrogram will be presented for both Jaccard and Sørensen together; however, their values will be presented separately and specifically noted when needed. In addition to coding similarity, word similarity measure using Pearson's coefficient provides additional perspective to interpret the coded data.

Coding similarity using Jaccard index and Sørensen-Dice coefficient

The analysis started with 10 clusters. *Figure 9* shows the coding similarity measured using Jaccard and Sørensen indices with 10 clusters. Each number inside of brackets right next to the code name is the cluster ID. In this analysis, the parent nodes (*Context, Information Features, Motivation, Search-related Information, Values,* and *Auxiliary codes*) were also included to observe bigger themes' positions in the hierarchical clustering.

Kaushik (2016) suggests how to decide the number of clusters that could best depict different groups as follows:

> "The decision of the no. of clusters that can best depict different groups can be chosen by observing the dendrogram. The best choice of the no. of clusters is the no. of vertical lines in the dendrogram cut by a horizontal line that can transverse the maximum distance vertically without intersecting a cluster" (Kaushik, 2016).

Based on this method, the initial 10-cluster dendrogram was regrouped as 4-cluster dendrogram, as shown in *Figure 10* and *Figure 11*. The following dendrograms in this study will be presented accordingly, following Kaushik's (2016) suggestions.

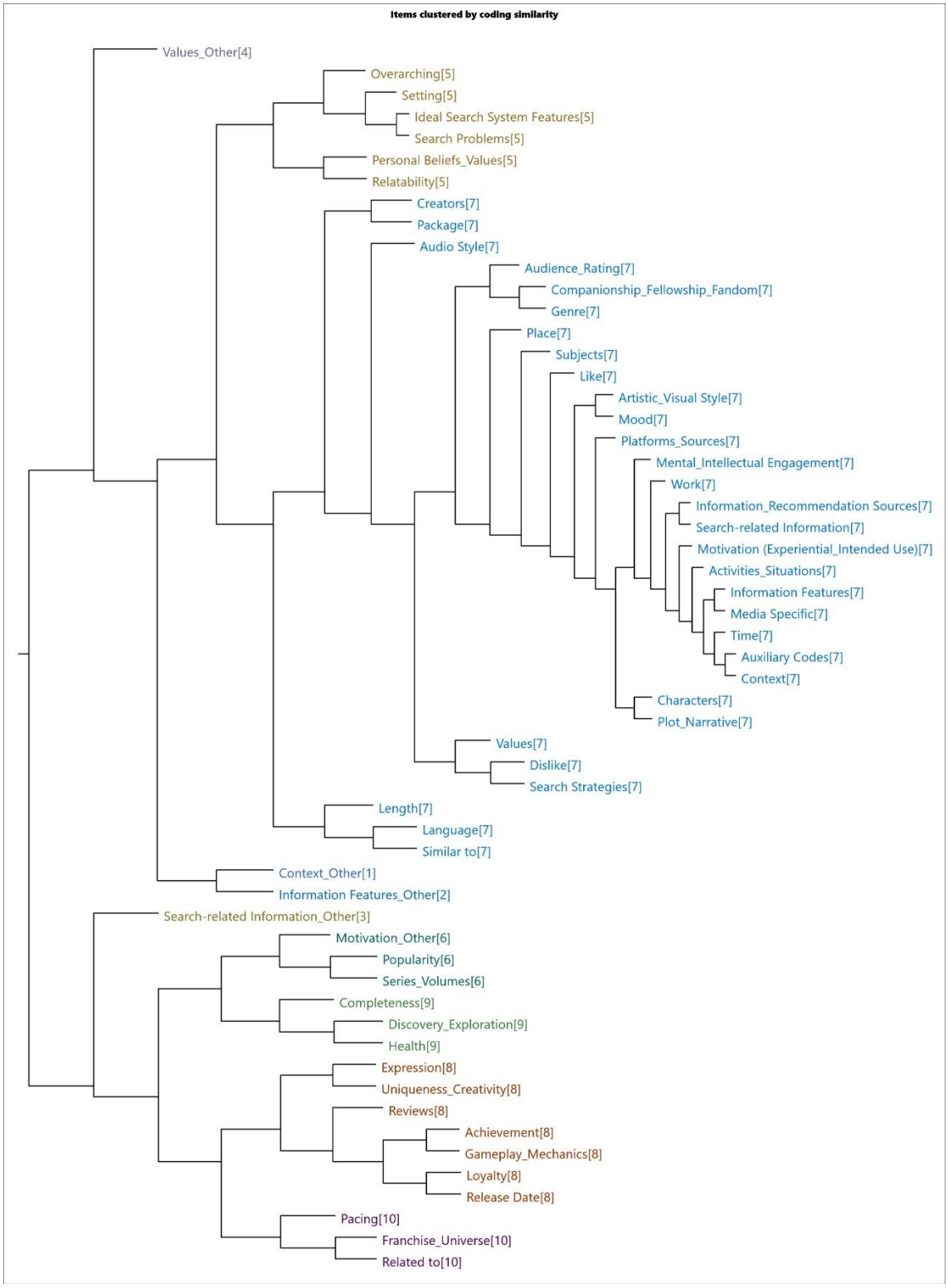


Figure 9. Coding similarity using Jaccard & Sørensen (10 clusters)

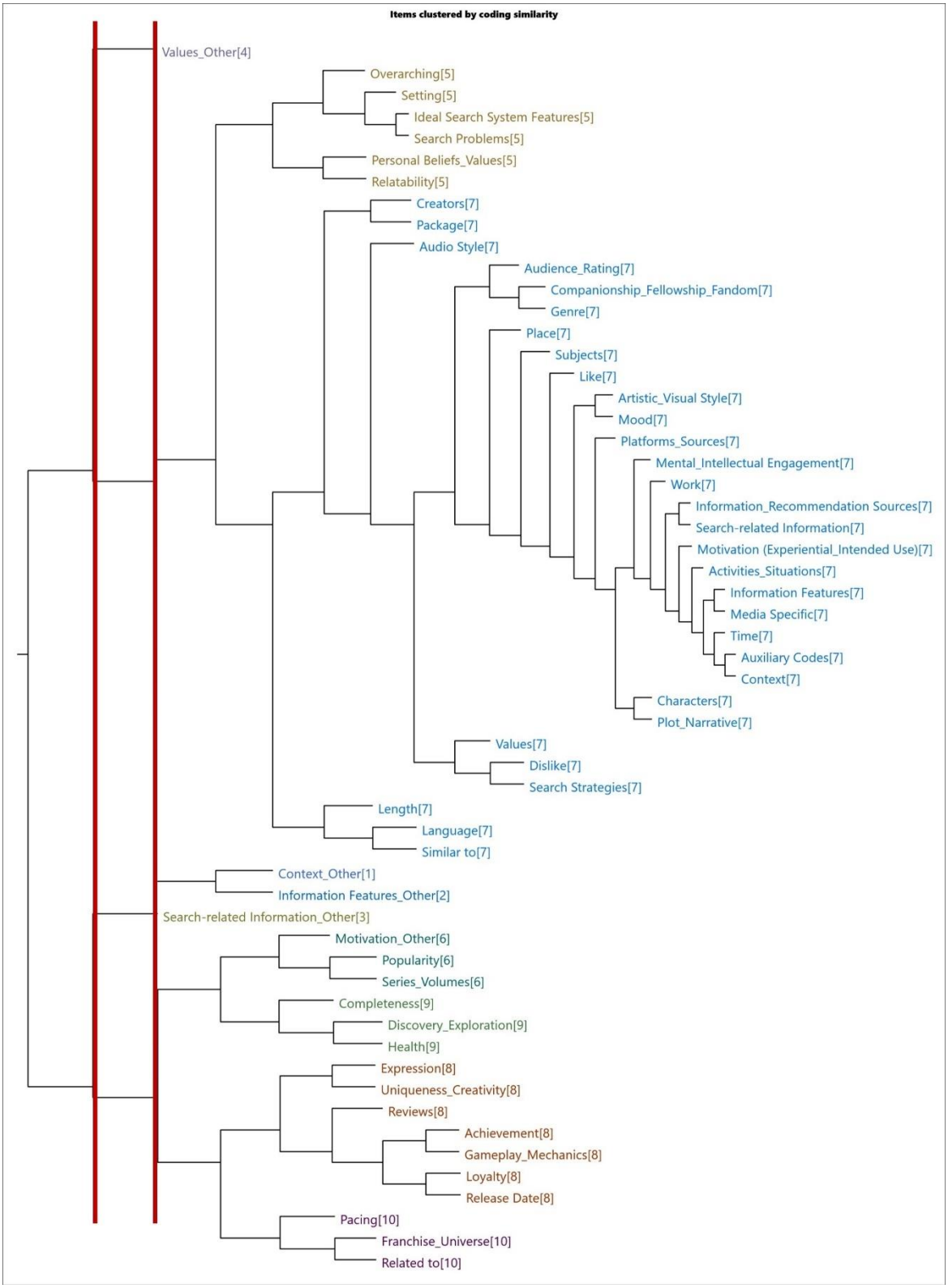


Figure 10. The decision of the number of clusters

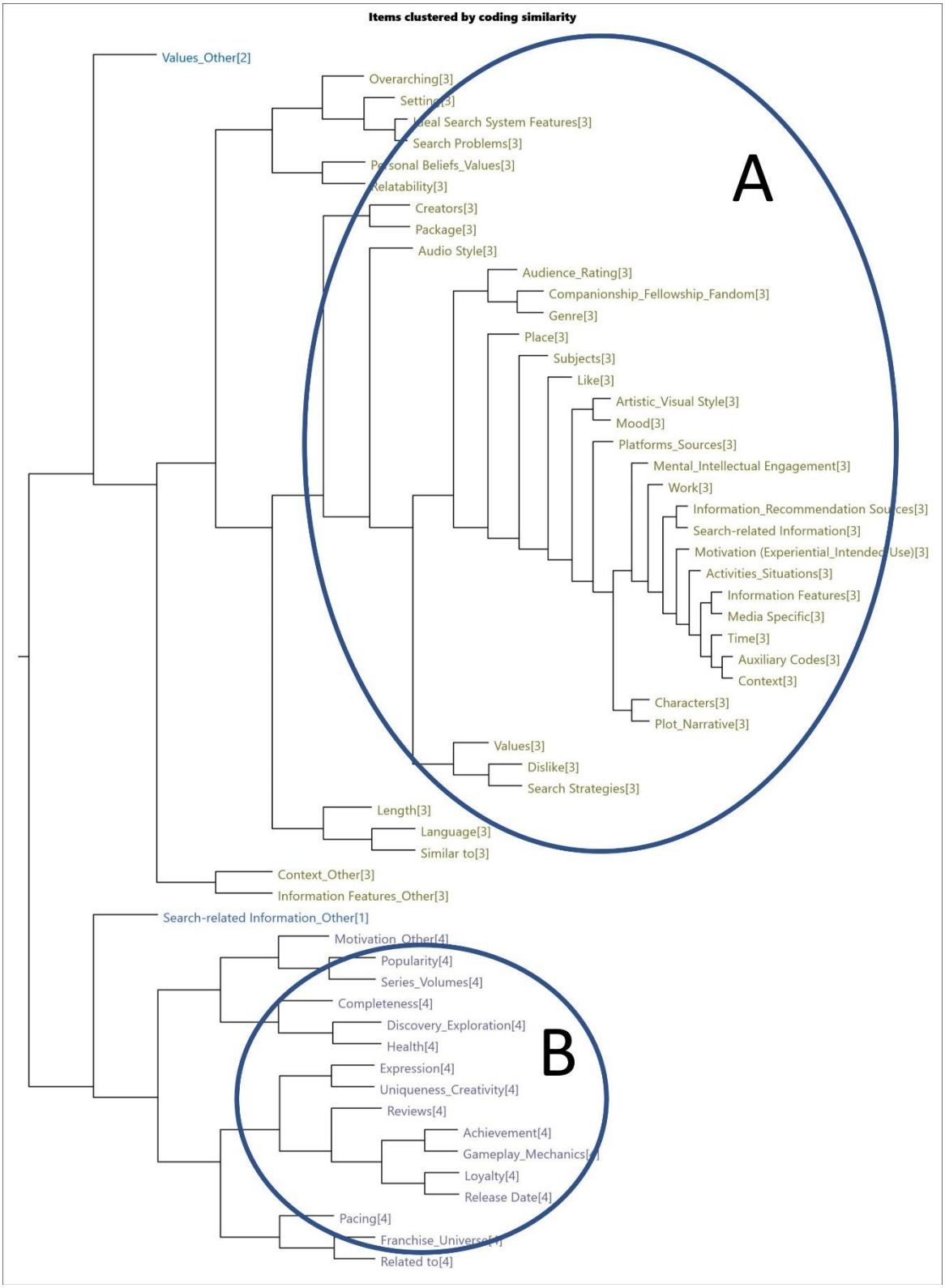


Figure 11. Regrouped clusters

In *Figure 11*, cluster A is primarily composed of *Context*, *Information Features*, and some codes of *Motivation*, and cluster B is mainly composed of the codes from *Motivation* and some *Information Features* codes. Cluster A shows that *Context, Motivation,* and *Information Features* are indeed closely associated with each other. Jaccard and Sørensen values for each pair are: *Context X Information Features* = 0.99 (Jaccard), 1 (Sørensen), *Motivation X Context* = 0.97 (Jaccard), 0.99 (Sørensen), *Information Features X Motivation* = 0.97 (Jaccard), 0.99 (Sørensen), respectively. The results indicate that particular contexts, motivations, and information features are related, thus providing this information together might enhance users' recommendation and search experiences.

In addition to these pairs, *Context X +Media Specific* (Jaccard = 1, Sørensen = 1), *Information Features X +Media Specific* (1, 1, respectively), *Context X Time* (1, 1, respectively), *Information Features X Time* (1, 1, respectively), *Search-related Information X Context* (0.99, 0.99, respectively), and *Information_Recommendation Sources X Context* (0.97, 0.99, respectively) showed the high similarity values. *Table 11* presents the some of the pairs that have highest coding similarity.

Code A	Code B	Jaccard's coefficient	Sørensen's coefficient
Nodes\\Context	Nodes\\Auxiliary Codes	1	1
Nodes\\Information Features	Nodes\\Auxiliary Codes	1	1
Nodes\\Information Features	Nodes\\Context	1	1
Nodes\\Auxiliary Codes\Media Specific	Nodes\\Auxiliary Codes	1	1
Nodes\\Auxiliary Codes\Media Specific	Nodes\\Context	1	1
Nodes\\Auxiliary Codes\Media Specific	Nodes\\Information Features	1	1
Nodes\\Context\Time	Nodes\\Auxiliary Codes	1	1
Nodes\\Context\Time	Nodes\\Context	1	1

Nodes\\Context\Time	Nodes\\Information Features	1	1
Nodes\\Context\Time	Nodes\\Auxiliary Codes\Media Specific	1	1
Nodes\\Auxiliary Codes	Nodes\\Context\Activities_Situations	0.987179	0.993548
Nodes\\Context	Nodes\\Context\Activities_Situations	0.987179	0.993548
Nodes\\Information Features	Nodes\\Context\Activities_Situations	0.987179	0.993548
Nodes\\Auxiliary Codes\Media Specific	Nodes\\Context\Activities_Situations	0.987179	0.993548
Nodes\\Search-related Information	Nodes\\Auxiliary Codes	0.987179	0.993548
Nodes\\Search-related Information	Nodes\\Context	0.987179	0.993548
Nodes\\Search-related Information	Nodes\\Information Features	0.987179	0.993548
Nodes\\Search-related Information	Nodes\\Auxiliary Codes\Media Specific	0.987179	0.993548
Nodes\\Context\Time	Nodes\\Context\Activities_Situations	0.987179	0.993548
Nodes\\Context\Time	Nodes\\Search-related Information	0.987179	0.993548
Nodes\\Search-related Information	Nodes\\Search-related Information\ Information_Recommendation Sources	0.987013	0.993464
Nodes\\Search-related Information\ Information_Recommendation Sources	Nodes\\Auxiliary Codes	0.974359	0.987013
Nodes\\Search-related Information\ Information_Recommendation Sources	Nodes\\Context	0.974359	0.987013
Nodes\\Search-related Information\ Information_Recommendation Sources	Nodes\\Information Features	0.974359	0.987013
Nodes\\Auxiliary Codes\Media Specific	Nodes\\Search-related Information\ Information_Recommendation Sources	0.974359	0.987013
Nodes\\Motivation (Experiential_Intended Use)	Nodes\\Auxiliary Codes	0.974359	0.987013
Nodes\\Motivation (Experiential_Intended Use)	Nodes\\Context	0.974359	0.987013
Nodes\\Motivation (Experiential_Intended Use)	Nodes\\Information Features	0.974359	0.987013
Nodes\\Motivation (Experiential_Intended Use)	Nodes\\Auxiliary Codes\Media Specific	0.974359	0.987013
Nodes\\Search-related Information	Nodes\\Context\Activities_Situations	0.974359	0.987013

Table 11. Coding similarity (highest)

Word similarity using Pearson's correlation coefficient

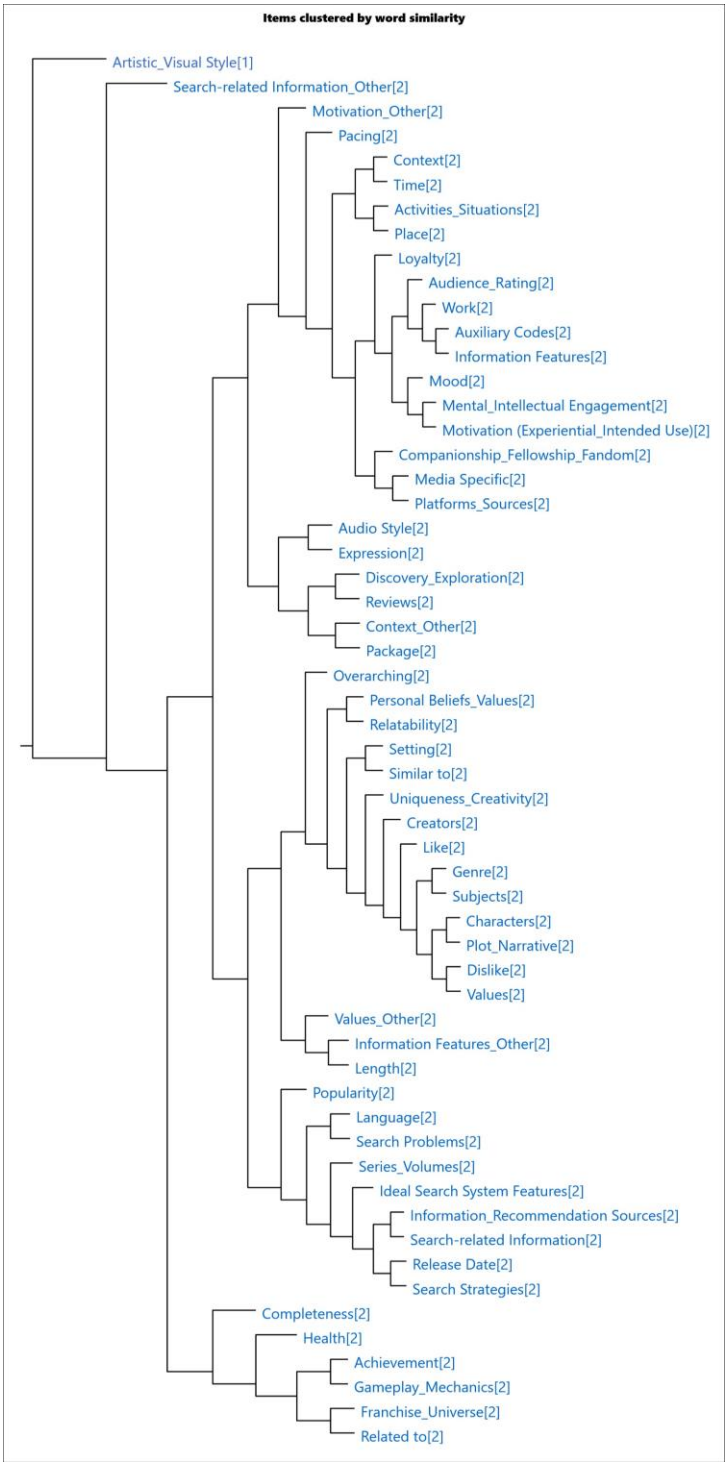


Figure 12. Word similarity using Pearson's coefficient

Word similarity analysis using Pearson's correlation coefficient yielded a dendrogram presented in *Figure 12*. Word similarity analysis still showed that *Context, Motivation,* and *Information Features* are closely related, as Pearson's coefficient values being as 0.94 for *Context X Motivation*, 0.95 for *Motivation X Information Features*, and 0.9 for *Information Features X Context*, respectively.

Some of the pairs with the highest Pearson's coefficient values include *Information Features X Auxiliary Codes* (0.99), *Plot_Narrative X Characters* (0.98), *Information Features X +Dislike* (0.98), *Values X Characters* (0.97), and *Subjects X Plot_Narrative* (0.97). Participants frequently used sentiment codes such as *+Like* and *+Dislike* to express their feelings toward different *Information Features*. Similar to the results of *4.1.3. Cross-tabulation analysis results*, cluster analysis also showed that characters and plots of the visual materials are closely related, indicating that providing both of information together to users may provide better recommendations.

Many of the clusters found in word similarity analysis were similar to the clusters identified in coding similarity analysis, but one noticeable difference was *Value* codes had high Pearson's coefficient numbers. While *Values X Characters* had a Jaccard value of 0.61 and a Sørensen value of 0.76 in coding similarity, word similarity showed that its Pearson's coefficient value is 0.97, showing an even closer relationship. It indicates that measuring word similarity could potentially reveal some of the similar clusters that could not be captured well in coding similarity analysis only.

Code A	Code B	Pearson correlation coefficient
Nodes\\Information Features	Nodes\\Auxiliary Codes	0.989572

Nodes\\Information Features\Work	Nodes\\Information Features	0.988615
Nodes\\Motivation (Experiential_Intended Use)	Nodes\\Motivation (Experiential_Intended Use)\ Mental_Intellectual Engagement	0.985343
Nodes\\Information Features\Work	Nodes\\Auxiliary Codes	0.982013
Nodes\\Search-related Information	Nodes\\Search-related Information\ Information_Recommendation Sources	0.981601
Nodes\\Information Features	Nodes\\Information Features\Genre	0.980322
Nodes\\Information Features\Mood	Nodes\\Information Features	0.979776
Nodes\\Information Features\Plot_Narrative	Nodes\\Information Features	0.979739
Nodes\\Information Features\Plot_Narrative	Nodes\\Information Features\Characters	0.978677
Nodes\\Information Features	Nodes\\Auxiliary Codes\Dislike	0.976624
Nodes\\Context\Time	Nodes\\Context	0.976118
Nodes\\Information Features\Mood	Nodes\\Auxiliary Codes	0.975802
Nodes\\Information Features\Subjects	Nodes\\Information Features	0.975674
Nodes\\Values	Nodes\\Information Features\Characters	0.974031
Nodes\\Information Features	Nodes\\Information Features\Audience_Rating	0.973698
Nodes\\Information Features\Subjects	Nodes\\Information Features\Plot_Narrative	0.973538
Nodes\\Context	Nodes\\Context\Activities_Situations	0.973489
Nodes\\Information Features	Nodes\\Information Features\Characters	0.973136
Nodes\\Information Features\Plot_Narrative	Nodes\\Auxiliary Codes\Dislike	0.972515
Nodes\\Auxiliary Codes\Dislike	Nodes\\Auxiliary Codes	0.972386
Nodes\\Auxiliary Codes\Like	Nodes\\Auxiliary Codes	0.971794
Nodes\\Information Features\Work	Nodes\\Information Features\Genre	0.971582
Nodes\\Values	Nodes\\Information Features	0.969773
Nodes\\Search-related Information	Nodes\\Search-related Information\ Search Strategies	0.969379
Nodes\\Motivation (Experiential_Intended Use)	Nodes\\Motivation (Experiential_Intended Use)\ Companionship_Fellowship_Fandom	0.969114
Nodes\\Motivation (Experiential_Intended Use)	Nodes\\Auxiliary Codes	0.968824

Mental_Intellectual Engagement		
Nodes\\Auxiliary Codes\Media Specific	Nodes\\Auxiliary Codes	0.968701
Nodes\\Information Features\Subjects	Nodes\\Information Features\Genre	0.967382
Nodes\\Auxiliary Codes	Nodes\\Information Features\Audience_Rating	0.967349
Nodes\\Values	Nodes\\Auxiliary Codes\Dislike	0.967293
Nodes\\Values	Nodes\\Information Features\Subjects	0.967203
Nodes\\Motivation (Experiential_Intended Use)	Nodes\\Auxiliary Codes	0.966918
Nodes\\Motivation (Experiential_Intended Use)	Nodes\\Auxiliary Codes\Media Specific	0.966891
Nodes\\Auxiliary Codes\Dislike	Nodes\\Information Features\Characters	0.966532
Nodes\\Information Features\Genre	Nodes\\Auxiliary Codes	0.966003
Nodes\\Auxiliary Codes\Like	Nodes\\Information Features	0.96578
Nodes\\Values	Nodes\\Values\Relatability	0.965239
Nodes\\Values	Nodes\\Information Features\Plot_Narrative	0.964678
Nodes\\Context\Place	Nodes\\Context	0.964484
Nodes\\Motivation (Experiential_Intended Use)\ Mental_Intellectual Engagement	Nodes\\Information Features	0.963921
Nodes\\Information Features\Subjects	Nodes\\Auxiliary Codes\Dislike	0.963859
Nodes\\Information Features\Mood	Nodes\\Auxiliary Codes\Dislike	0.963537

Table 12. Word similarity (highest)

However, word similarity analysis calculated the similarities between *Artistic_Visual Style* code and other codes extremely low, measuring all the pairs associated with *Artistic_Visual Style* code as Pearson's coefficient value of 0, including *Artistic_Visual Style X Mood*. *Artistic_Visual Style X Mood* had a Jaccard index value of 0.87 and Sørensen index value of 0.93 in coding similarity, indicating a high similarity and association. This pair, *Artistic_Visual Style X Mood*, was in fact frequently mentioned by participants in the diary and interview dataset (e.g., "*Wanted to watch a relaxing and beautiful Miyazaki movie on the weekend*." (P11)). It seems that word similarity

measure has its own limitations, not being able to identify some of the important clusters in this study, such as *Artistic_Visual Style*.

4.1.5. Intercoder reliability testing results

The average kappa value of intercoder reliability measure was 0.71, and the average percentage of agreement ratio was 93.64%, indicating *good agreement*[17] between two coders. To be specific, five parent themes (*Context, Information Features, Motivation, Search-related Information,* and *Values*) and *Auxiliary Codes* had following intercoder reliability results:

	Average Kappa	Standard Deviation of Kappa	Average Agreement (%)	Standard Deviation of Agreement (%)
Context	0.67	0.36	91.07	11.44
Information Features	0.71	0.39	93.68	11.28
Motivation	0.70	0.38	93.80	9.18
Search-related Information	0.84	0.28	96.43	8.26
Values	0.77	0.39	97.53	5.08
Auxiliary Codes	0.56	0.43	89.40	13.13
Overall	0.72	0.38	93.83	10.60

Table 13. Intercoder reliability results for parent nodes (diary and interview)

Overall, *Search-related Information* codes had the highest kappa value (0.84) and *Auxiliary Codes* had the lowest kappa value (0.56). The individual codes with the lowest kappa values were: *+Like* (0.44), *+Media Specific* (0.07), *Time* (0.43), and *Genre* (0.3). For *Time* and *Genre* codes, however, it seemed that the intercoder reliability could be improved by conducting a

[17] http://help-nv11.qsrinternational.com/desktop/procedures/run_a_coding_comparison_query.htm

better codebook training, which was noted in the next intercoder reliability testing for online forum study.

	Kappa	Agreement (%)
Auxiliary Codes		
+Dislike	0.73	93.3
+Like	0.44	83.6
+Media Specific	0.07	79.73
+Overarching	0.73	98.25
+Related to	0.87	99.24
+Similar to	0.69	97.8
Context		
Activities_Situations	0.84	95.04
Context_Other	0.83	95.03
Place	0.74	94.14
Time	0.43	87.32
Information Features		
Artistic_Visual Style	0.82	94.86
Audience_Rating	0.72	93.76
Audio Style	0.98	99.45
Characters	0.81	94.52
Completeness	0.8	94.49
Creators	0.79	94.32
Franchise_Universe	0.79	94.23
Gameplay_Mechanics	0.78	94.11
Genre	0.3	81.36
Information Features_Other	0.77	93.87
Language	0.76	93.73
Length	0.75	93.57
Mood	0.74	93.33
Pacing	0.74	93.74
Package	0.73	93.14

Platforms_Sources	0.72	92.95
Plot_Narrative	0.72	92.87
Popularity	0.72	92.8
Release Date	0.65	92.22
Reviews	0.66	92.29
Series_Volumes	0.7	92.28
Setting	0.86	96.27
Subjects	0.62	91.48
Work	0.68	91.73
Motivation (Experiential_Intended Use)		
Achievement	0.67	91.67
Companionship_	0.61	91.4
Fellowship_Fandom	0.62	91.5
Discovery_Exploration	0.65	91.21
Expression	0.65	91.21
Loyalty	0.61	91.1
Mental_Intellectual Engagement	0.63	90.8
Motivation_Other	0.59	90.85
Search-related Information		
Ideal Search System Features	0.93	97.97
Information_Recommendation Sources	0.72	91.4
Search Problems	0.86	96.13
Search Strategies	0.58	89.92
Search-related Information_Other	1	100
Values		
Health	0.55	89.29
Personal Beliefs_Values	0.53	89.01
Relatability	0.51	88.75
Uniqueness_Creativity	0.5	88.57
Values_Other	1	100

Table 14. Intercoder reliability results (diary and interview data)

While *+Dislike* (0.73) had a high kappa value, it was noteworthy that *+Like* (0.44) had a lower kappa value. It seems that it is easier to decide when participants disliked something, but deciding whether a participant liked something or not can be less clear sometimes, especially when a participant did not state it clearly, such as "I like XXX."

+Media Specific (0.07) had the lowest kappa value among all the codes. This particular code may need to have a clearer definition, so that different coders can understand it equally well. For example, for the following quote from P4,

> "*I wanted something familiar but that I could fall in and out of easily. This comic is all about teenage HS friendships/drama*." (P4)

The researcher did not code this comment to *+Media Specific* because the reason P4 selected the comic was that he/she could enjoy something familiar, "teenage HS friendships/drama," and it is not for the comic book medium, only. However, the second coder coded it to *+Media Specific* because P4 was discussing a comic book, particularly. Thus, the intention/definition of this code was updated as: "when a participant's discussion is focused on a specific type of media material; this code is used when some aspects can be applied to only a particular type of visual material, not to others."

4.2. Results from content analysis method

In this section, results from the content analysis study using online forum data will be presented. This study's results help achieve a different perspective to observe and interpret the patterns of the themes identified in the previous study by providing the results from a larger dataset. This is an additional verification step to ensure there are no missing concepts in currently identified

themes and to see if the associations among the identified themes differ from the diary and interview study when the dataset is larger.

Five forums were selected to understand visual material users' behaviors and seeking needs, and 50 forum threads from each forum were randomly selected. Thus, overall 250 online forum threads written by users who were looking for visual material recommendations were collected. The results will be presented in following order: first, the overview of the codes and frequencies of codes will be discussed to see which codes were more frequently discussed among the online visual material communities. Then cross-tabulation analysis and cluster analysis results will be presented to show the observed co-occurrences and patterns of themes to investigate any associations identified. Intercoder reliability results will be discussed at the end of this section.

As in the previous section, direct quotes from users will be presented as they were written without correcting grammar or typos so long as the context is understandable.

4.2.1. Overview of the identified themes

Table 15 shows the overall frequencies of the codes identified in this study. Since users who wrote the forum threads were looking for recommendations from other forum users, the information in these threads tended to focus more on *Information Features* than other themes. Also, instances where users seek for visual material related information (e.g., anime convention tips, statistics on sales, etc.) were more frequently observed compared to the diary and interview study. More detailed discussions on each theme follow.

Name	Files	References*
Auxiliary Codes	134 (53.6%)	213

+Like	76 (30.4%)	94
+Dislike	55 (20 %)	64
+Similar to	44 (17.6%)	47
+Related to	8 (3.2%)	8
+Media Specific	0 (0%)	0
+Overarching	0 (0%)	0
Context	53 (21.2%)	106
Activities_Situations	36 (14.4%)	48
Time	34 (13.6%)	38
Place	12 (4.8%)	20
Context_Other	0 (0%)	0
Information Features	250 (100%)	1684
Work	194 (77.6%)	290
Platforms_Sources	109 (43.6%)	144
Audience_Rating	119 (47.6%)	138
Plot_Narrative	95 (38%)	117
Genre	81 (32.4%)	115
Characters	85 (34%)	113
Subjects	70 (28%)	97
Mood	59 (23.6%)	77
Creators	56 (22.4%)	73
Release Date	59 (23.6%)	71
Reviews	45 (18%)	68
Package	54 (21.6%)	61
Series_Volumes	45 (18%)	51
Artistic_Visual Style	44 (17.6%)	50

Gameplay_Mechanics	25 (10%)	37
Franchise_Universe	26 (10.4%)	35
Length	31 (12.4%)	35
Audio Style	26 (10.4%)	29
Language	18 (7.2%)	21
Popularity	18 (7.2%)	21
Setting	16 (6.4%)	18
Completeness	12 (4.8%)	13
Pacing	6 (2.4%)	6
Information Features_Other	4 (1.6%)	4
Motivation (Experiential_Intended Use)	99 (39.6%)	136
Mental_Intellectual Engagement	59 (23.6%)	69
Expression	24 (9.6%)	28
Companionship_Fellowship_Fandom	18 (7.2%)	22
Loyalty	9 (3.6%)	9
Achievement	4 (1.6%)	4
Discovery_Exploration	4 (1.6%)	4
Motivation_Other	0 (0%)	0
Search-related Information	41 (16.4%)	55
Information_Recommendation Sources	32 (12.8%)	35
Search Problems	11 (4.4%)	11
Search Strategies	8 (3.2%)	8
Ideal Search System Features	1 (0.4%)	1
Search-related Information_Other	0 (0%)	0
Values	31 (12.4%)	36
Uniqueness_Creativity	18 (7.2%)	19

Personal Beliefs_Values	8 (3.2%)	8
Relatability	5 (2%)	5
Health	2 (0.8%)	2
Values_Other	1 (0.4%)	2

Table 15. Overall frequencies of identified codes from the content analysis

** Multiple codes were applied for one data source.*

Context

Activities_Situations (48 references, 36 files (14.4%)) and *Time* (38 references, 34 files (13.6%)) were frequently mentioned by users, and they were often mentioned together in their recommendation requests. Many users tended to describe how much time they will spend to consume visual materials, and in what particular situations they consume in a very detailed manner:

> "*What are your suggestions for comics, stories, arcs, graphic novels, you name it to read/re-read that can eat up time.* ***Could be 2 hour flight or 20 hours. Keep in mind idle time on tarmacs, layovers, sitting around at airports too. I figure at minimum 48 hours of just comic books worth to have on hand.*** *[…] I feel like I can blow through these in just 4-6 hours purposefully stretching my time. The line of thinking is the same, though...lots of long large story comics. Hopefully this can be a continuing list in the future for all travelers*." (T82835)

> "***Searching for a long series to binge-read during the holidays***." (T104705)

> "*Well,* ***I usually try to watch cartoons related to upcoming holidays, and Halloween is in just a few weeks, so... anyone have any suggestions?*** *I've been watching the*

Treehouse of Horror Simpsons episodes all month, and I plan to watch the Home Movies Halloween episode... anything else I should watch?" (T4609591)

"***If you have a two-week break just to play games**, what would you play, or recommend? I considered WoW, but...*" (T26856343)

Information features

Work (290 references, 194 files (77.6%)), *Platforms_Sources* (144 references, 109 files (43.6%)), and *Audience_Rating* (138 references, 119 files (47.6%)) were the most frequently discussed codes in *Information Features*. Similar to the previous study, *Work* was often used by users to describe the similar styles that they generally enjoy. There were mainly three instances of using *Work* information. First, users would list the items that they had enjoyed so far so that other forum community users can hopefully understand their tastes and give appropriate recommendations. Sometimes users linked their online profile page where other users can see the list of items that they had consumed, hoping that would give a better understanding, such as T18861. Secondly, users also used the list of items they consumed so that they could avoid any redundant recommendations from others like T10900. Last, users used *Work* as an example of particular characteristics a visual material has, such as T1204691's request where she/he looks for any items with a single father protagonist.

"*This thread is my request for suggestions from those who have seen anime that I haven't. **I tried to put together a decent list of what I liked and disliked so you can get a decent picture of what I'm most likely to enjoy***." (T18861)

"***I am looking for anime series or films for mature audience.*** *I have already seen Berserk, Samurai Deeper Kyo, Kenshin, Ninja Scroll etc. I think that Berserk mostly identifies what I am looking for. Does anybody have any recommendations in similar style?*" (T10900)

"**What I'm looking for is a series with a single father protagonist**. Not sure if this would fit the "romance" subset even though most series with this element do happen to have some level of romance in them. "Astarotte's Toy", "Listen to me Girls, I am your Father!", "Tiger and Bunny", and "Bunny Drop", I've grown quite fond of single fathers." (T1204691)

In this study, users also showed diverse needs in *Platforms_Sources,* looking for particular types of platforms, such as floppy formats, oversized hard covers, Playstation X, etc. Users also sought for information related to the sources of visual material items, asking where to find them when they are in certain locations, such as T36493 and T25884.

"*I buy all my books* ***so something I can get in floppy format.*****"** (T1638289)

"*Hey guys,* ***I would love some recommendations on some good, dark, gritty Marvel stories.*** *Could be any character as long as the story's good and recommended.* ***Ones that come in these oversized HCs [hard covers****] (Stuff like Fury: My War Gone By, Ennis's Punisher and so on) are a preference, but definitely not a demand*." (T39489)

"*Perhaps slightly different from the usual thread where people request a game to play.* ***I would like someone to suggest a game for me, on either PSX og [sic] SNES (possibly***

NES). *[…] ps - if anyone is curious why, its [sic] because people are saying old console games are way harder than todays [sic] games, so bring it :)*" (T26343331)

"*And where do you buy your comics?* ***Coz [sic] i [sic] cant [sic] seem to find what i [sic] want the titles available here in Singapore seems so limited*** *[/spoiler]*" (T36493)

"***Can anybody recommend good spots in the physical world to look for old comics?*** *In particular I love finding 90's alternative stuff (Fantagraphics etc) and old undergrounds. 70s/80s Kirby does not go amiss either. Here a few spots I like to visit when I can: Lancaster - Outdoor market on Wednesdays and Saturdays. - Oxfam Books - First Age Comics […] Would love to hear any more suggestions*." (T25884)

Audience_Rating was one of the most noteworthy codes in this study. As this code is defined as "intended audience and rating information regarding media objects (e.g., R-rated), including descriptions about the audience," discussions on either users' describing themselves as audience or describing somebody else to find visual materials for them were both recorded with this code. For the users who were looking for recommendations for diverse audiences, online forum communities were the place where they could get personalized reference services/consultations from other fans who are knowledgeable about the medium. In fact, how the online forum users described audiences and sought for recommendations resembled reference service queries in libraries.

"***I am a parent at a progressive all-girls middle school in California.*** *Our family has "adopted" the library, revamped the collection, started a library club, and gotten parents to staff open library hours so the girls have access during the school day. I would like to*

add 5-10 manga series to the collection. Right now we have volume 1 of Sailor Moon, and that's it. We do have a somewhat decent graphic novel collection, so what I'm really interested in is manga. ***[…] Which series' [sic] would you recommend for girls 10-15? Ideally, they'd feature strong girl characters, and NOT a bunch of scantily clad girls. I also don't want to insult their intelligence by offering only children's titles, fluff, or romance. Some of that is fine, just not all. Some profanity, violence and sexual reference is fine, these are middle schoolers, as long as it's not demeaning to girls/women***." (T2907330)

"***My kids, ages 5 (girl) and 8 (boy), are both fans of almost all of miyazaki's films (my son thinks "spirited away" is too scary).*** *i [sic] recall a list on this website somewhere about child friendly anime, but i'd [sic] like to get the views of forum members****. the [sic] films would have to have english [sic] voice-overs as well (unfortunately)****. thank you for any and all suggestions!*" (T16531)

"***I'm just wondering if anyone can recommend a horror/serious manga for an adult. I'm not looking for anything kiddyish or comical****. Something serious with a dark plot or mystery... and not just gory stuff. Obviously it has to be in the English language as well... Could anyone recommend a few? Would make ideal Xmas gifts*." (T30123)

"***[birthday present for 13 year old] my nephews [sic] birthday is in march and im [sic] looking to get him a few games but have no idea what to get!*** *can [sic] anyone recommend a few that would be suitable for his age?*" (T32926374)

Motivation

Mental_Intellectual Engagement (69 references, 59 files (23.6%)) was the most frequently discussed *Motivation* followed by *Expression* (28 references, 24 files (9.6%)) and *Companionship_Fellowship_Fandom* (22 references, 18 files (7.2%)). In this study, when discussing *Mental_Intellectual Engagement*, many users looked for relevant information to satisfy their cognitive and learning motivations, such as T133859 and T14668. The users were preparing a presentation for the course in graphic novels or studying Japanese using visual materials. On top of the cognitive motivations, many users also looked for different levels of difficulty and complexity when looking for recommendations, such as T27172471, who was looking for easy RPG game that lets users save the progress at any time.

> "*Okay, so. Long story short,* ***I'm taking a course in Graphic Novels as literature this semester, and as part of the class we're supposed to give an 8-10 minutes presentation.*** *One of the options for it is to do an author study, so I thought doing my presentation on Osamu Tezuka would be good*." (T133859)

> "***I'm studing [sic] Japanese right now and my college is soon going to have a class where you can learn to translate manga. I want to start out easy,*** *but I'm not sure what kind of manga I should start with*." (T14668)

> "***Can you recommend me a fairly easy RPG*** *that lets you save your progress at any time? I have a PS2, a DreamCast, a PS3, and a PSP*." (T27172471)

Expression was also another code that was strongly present in this study, especially due to online fan forum users' sharing opinions with others. Many users expressed their views on a particular

visual media item, trying to interpret different works with their own perspectives and seeking to discuss it further with other forum users—either to get approval from others, or, simply to vent.

> "***I think this is an awesome article written by a gay person. I support this also btw :P You know, people complain a lot about female sexualisation in all kinds of media, but you see no one complain about the way guys are sexualised.*** *Comic book heroines looking too sexy? Believe me, they're not the only ones! As a gay guy, I've got more of an eye for these things than the straight guys getting demonized, so how about I help even the playing field a little and highlight some extra-hot guys in gaming?*" (T31791067)

> "*[…] The fact that Shinji is being handled incompetently is part of the point. Contrast the fact that Shinji holds the fate of the world in his hands with the fact that he's an extremely emotionally frail person reluctant to take on his heroic role and consider what message the films are poised to deliver. (For that matter, consider what message End of Evangelion did deliver.)* ***Those are my thoughts regarding this review, what are yours****?*" (T132046)

> "***As you know, I've made no secret of my disappointment towards certain episodes, and how they don't feel like a TV series based on the My Little Pony franchise*** *(meanwhile other episodes have been a slightly better reflection of that)*." (T5113301)

Companionship_Fellowship_Fandom was another consistently important theme to users, as it was in the diary and interview study. Considering that the data collection was performed through online fan communities, it is assumed that any forum threads written by users have the motivation of *Companionship_Fellowship_Fandom*. However, the researcher focused on coding

the data that it explicitly discussed the theme inside of the thread to clearly distinguish the motivation. Similar to the diary and interview study, many users asked for recommendations to enjoy visual materials with others, such as T27196336, and also many others wanted to bond with other fans who share similar interests by asking for recommendations to them particularly, like T29320859 and T1729099.

> "***My group of friends and I (probably around 5-10 of us at max) are going to be going off to college this coming fall and we've decided that we all want to find a game that we can play with each other as a means of communicating with each other*** *while still having fun when we get the time. We have no idea where to start, though, so I was looking for some suggestions here. Any thoughts would be appreciated. […] *** would be nice if it had some kind of microphone/in-game chat that makes it easy to talk to any friends online***." (T27196336)
>
> "*HEY! MUSIC FANS!*" (T29320859)
>
> *"**I have absolilutely [sic] no idea where to start. So, that's why I come to this particular forum. I want anime fans advice** on how I would structure this thing at all, what exactly I should put on the show.*" (T1729099)

Search-related information

Information_Recommendation Sources (35 references, 32 files (12.8%)) was the primarily discussed code in *Search-related Information*. Users often asked to each other where they can find information about certain aspects of visual materials to learn something, which was often

coded together with *Mental_Intellectual Engagement.* In addition to that, users also shared how they generally look for visual media related information in different information sources.

> "*Does anyone know if any Macross franchise manga are slated for any kind of release in North Ameican? [sic]* ***I have tried searching the ANN encyclopedia****, but all I have found was the fact that Macross 7 Trash seems to be caught up in a licensing dispute*." (T129177)

> "***I scan Gamepost every day for reveiws [sic] on new games or current games*** *but nothing yet seams [sic] to come out to me*!" (T26941244)

Values

Although *Values* were not mentioned many times in online forum threads, *Uniqueness_Creativity* (19 references, 18 files (7.2%)) was discussed most frequently among the codes. In this study, *Uniqueness_Creativity* is defined as: "when a participant expresses their appreciation towards the work's uniqueness or creativity. It may also be used when participants appreciate the "quality" of work but described in a rather vague way, as well." Thus, any comments on visual material items' being authentic, original, and "top-quality" were coded here.

> "*The characters are colorful and interesting and* ***the story seems to be very original and compelling****."* (T18861)

> "*My favorite has to be Colorful.* ***Like I said I'm not big on "conventional" anime comedy*** *and the dub work on Colorful felt more Americanized to me which really made me laugh. Just simple puns and stuff I could relate too*." (T20997)

> "***Looking for a specific type of anime... maybe a bit unusual***." (T6117)

Auxiliary codes

Similar to the previous diary and interview study, *+Like* (94 references, 76 files (30.4%)), *+Dislike* (64 references, 55 files (20 %)), and *+Similar to* (47 references, 44 files (17.6%)) were most frequently used to add sentiments to other codes. As noted above in *Information features* section, *+Similar* to was often used with *Work* since many forum users used particular visual materials as examples.

> "*I'm looking for a good JRPG for the 360 or PS3.* ***I typically like the more turn-based battle systems like Lost Odyssey, Final Fantasy 1-10, and Xenosaga.*** *I'm not really big on the "everyone attacks all at once" battle system. Also, and this is the real kicker, I'd like to find a game that isn't too childish. For instance, I tried playing Eternal Sonata and it was an absolutely beautiful game with a great battle system, but the overwhelmingly saccharine nature of the story just put a kibosh on my enjoyment. Any help would be appreciated."* (T28972761)

4.2.2. Cross-tabulation analysis results

Most co-occurrences that appeared in this study were aligned with the previous diary and interview study; co-occurrences pairs that had higher counts in the diary and interview study also showed higher counts in the content analysis. The noticeable difference between the diary and interview study and the content analysis was that most of the highest co-occurrences counts appeared around *Work* and *Audience_Rating*, focusing on *Information Features* codes, mainly. The complete list of cross-tabulation analysis results can be found in *Appendix G*.

Based on different types of visual materials

Table 16 shows the results of cross-tabulation analysis among the identified codes and different types of visual materials. Overall, *Work* and *Audience_Rating* were constantly important across all different types of visual materials. When looking at individual types of visual materials, however, there were some differences in which codes were more frequently described by users:

- for **anime**, *+Like*, *Audience_Rating*, *Genre*, *Plot_Narrative*, *Subjects*, and *Work* were more frequently discussed;
- for **cartoons**, *Audience_Rating*, *Characters*, *Creators*, *Platforms_Sources*, *Plot_Narrative*, *Release Dat*, and *Work* were mentioned more.
- For **comics**, *Characters*, *Franchise_Universe*, *Platforms_Sources*, *Plot_Narrative*, *Series_Volumes*, and *Work* were frequently discussed by users;
- and for **manga**, *Audience_Rating*, *Genre*, *Plot_Narrative*, *Subjects*, and *Work* were often more mentioned.
- Lastly, for **games**, *Audience_Rating*, *Gameplay_Mechanics*, *Platforms_Sources*, and *Work* related information were described more often by users.

Visual materials chosen for the scope of this study included printed visual materials such as comic books, graphic novels, manga, and webtoons, visual materials with a format of moving images, such as cartoons and anime, and interactive visual materials, such as video games. While these visual materials share the common characteristics of being expressed and illustrated in visual means with narrative components, appeals and important aspects of each material can differ due to their different formats. For example, printed visual materials do not have auditory components, but it is possible for them to have even more elaborated languages and plots due to

their ability to contain texts right next to images. When necessary, even a full page of text information is presented to readers for more detailed descriptions or background information. Printed visual materials create more immersive reading experience by combining textual information and visual information together and letting readers interpret various structures and symbols of each individual page.

On the other hand, visual materials with a format of moving images can be enjoyed with auditory components. Because of this reason, fluidity of animation as well as the music and voices used in this format become important to users. The importance of music and sound effects used in video games are often discussed by users as well, since they play a significant role in creating certain moods and atmospheres of the setting.

The biggest difference that video games have compared to other types of media is interactivity. Unlike printed visual materials and visual materials with a moving image format, users control how to proceed in games, either narratively or via gameplay. More "active" engagement here creates different appeals and needs for this type of visual material. Each visual material will be further discussed in *5.2.3. Tailored needs for different types of visual materials*.

	Anime	Cartoons	Comics	Manga	Games	Total (250)
+Dislike	16	7	9	12	11	55
+Like	20	15	13	17	11	76
+Media Specific	0	0	0	0	0	0
+Overarching	0	0	0	0	0	0
+Related to	1	3	1	3	0	8
+Similar to	16	8	6	7	7	44
Activities_Situations	5	9	3	7	12	36
Context_Other	0	0	0	0	0	0

Place	2	2	3	2	3	12
Time	1	14	6	2	11	34
Artistic_Visual Style	8	16	9	7	4	44
Audience_Rating	23	20	18	31	27	119
Audio Style	6	18	1	0	1	26
Characters	15	25	24	13	8	85
Completeness	4	2	0	6	0	12
Creators	7	25	13	9	2	56
Franchise_Universe	1	3	20	1	1	26
Gameplay_Mechanics	0	0	0	0	25	25
Genre	22	11	5	25	18	81
Information Features_Other	2	0	0	0	2	4
Language	6	5	1	5	1	18
Length	3	10	6	9	3	31
Mood	15	12	8	19	5	59
Pacing	3	1	1	1	0	6
Package	3	8	13	13	17	54
Platforms_Sources	8	28	24	10	39	109
Plot_Narrative	22	23	23	20	7	95
Popularity	3	8	1	3	3	18
Release Date	6	22	15	10	6	59
Reviews	11	17	5	7	5	45
Series_Volumes	2	5	24	12	2	45
Setting	6	4	0	4	2	16
Subjects	22	17	7	20	4	70
Work	41	39	41	41	32	194
Achievement	0	0	0	0	4	4
Companionship_Fellowship_Fandom	7	1	3	3	4	18
Discovery_Exploration	1	0	1	2	0	4
Expression	8	6	4	2	4	24
Loyalty	1	2	5	1	0	9
Mental_Intellectual Engagement	4	16	15	6	18	59

Motivation_Other	0	0	0	0	0	0
Ideal Search System Features	1	0	0	0	0	1
Information_Recommendation Sources	6	14	2	6	4	32
Search Problems	3	1	1	5	1	11
Search Strategies	4	2	0	1	1	8
Search-related Information_Other	0	0	0	0	0	0
Health	0	1	0	0	1	2
Personal Beliefs_Values	1	4	0	2	1	8
Relatability	3	0	0	2	0	5
Uniqueness_Creativity	7	2	1	6	2	18
Values_Other	0	0	1	0	0	1
Total (unique)	50	50	50	50	50	250

Table 16. Cross-tabulation results (visual material types)

Audience_Rating X Plot_Narrative

	K : Artistic_Visual Style	**L : Audience_Rating**	**M : Audio Style**	**N : Characters**	**O : Completeness**
20 : Information Features_Other	1	1	1	1	0
21 : Language	3	11	6	7	0
22 : Length	12	18	5	11	5
23 : Mood	15	33	10	29	4
24 : Pacing	2	1	1	4	1
25 : Package	9	22	3	11	1
26 : Platforms_Sources	19	49	12	45	6
27 : Plot_Narrative	32	53	15	66	9
28 : Popularity	3	13	3	6	1
29 : Release Date	16	29	15	28	5

Table 17. Cross-tabulation results in content analysis: Information features (part)

Users were looking for visual materials that have certain storylines for different types of audiences. It could be a plot for themselves, as they described their preferences and introduced themselves to the other community members, such as T27058 and T4871, or it could be for others, such as T35644.

> "*Anyway.* ***I'm kind of new to the world of anime compared to some of you, but have so far developed a grave liking for the (as a friend of mine so nicely put it) "evolve and beat the crap out of shit with my newly learned ability"-type of anime.*** *This does by no means limit it to fighting (like Naruto or Bleach), Hikaru no Go is a perfect example of that. Masterpiece*." (T27058)

> "*I gotta give it to Rumiko Takahashi.* ***I'm a guy and I don't usually read this kind of manga but after I read the first 3 chapters I simply couldn't put it down (I read the whole first volume in one day).*** *Maison Ikokku could very well be some of the best and most satisfying manga I've ever read. Why? First of all* ***it's about a poor student (which is something I can relate too) who falls in love with his's [sic] appartements [sic] manger and it's incredibly well written and it's very easy to follow the story*** *even even [sic] with the all twists in the storyline. It's also incredibly funny!*" (T4871)

> "***I have a friend who is fairly into anime (not hardcore, but not a total newbie). He just got married, and I can tell his wife is not likely to eagerly jump into anime on her own without coaxing****. Got any recommendations for good anime that both genders can enjoy that I can pass on to him?* ***He owns Planetes, by the way, which I think is good crossover stuff because, although being sci-fi, it's really about a relationship.*** *Agree,*

disagree? He also owns Crest/Banner of the Stars. I think this might be a good candidate, but it does move pretty slowly and frankly I felt the relationship part was actually pretty weak." (T35644)

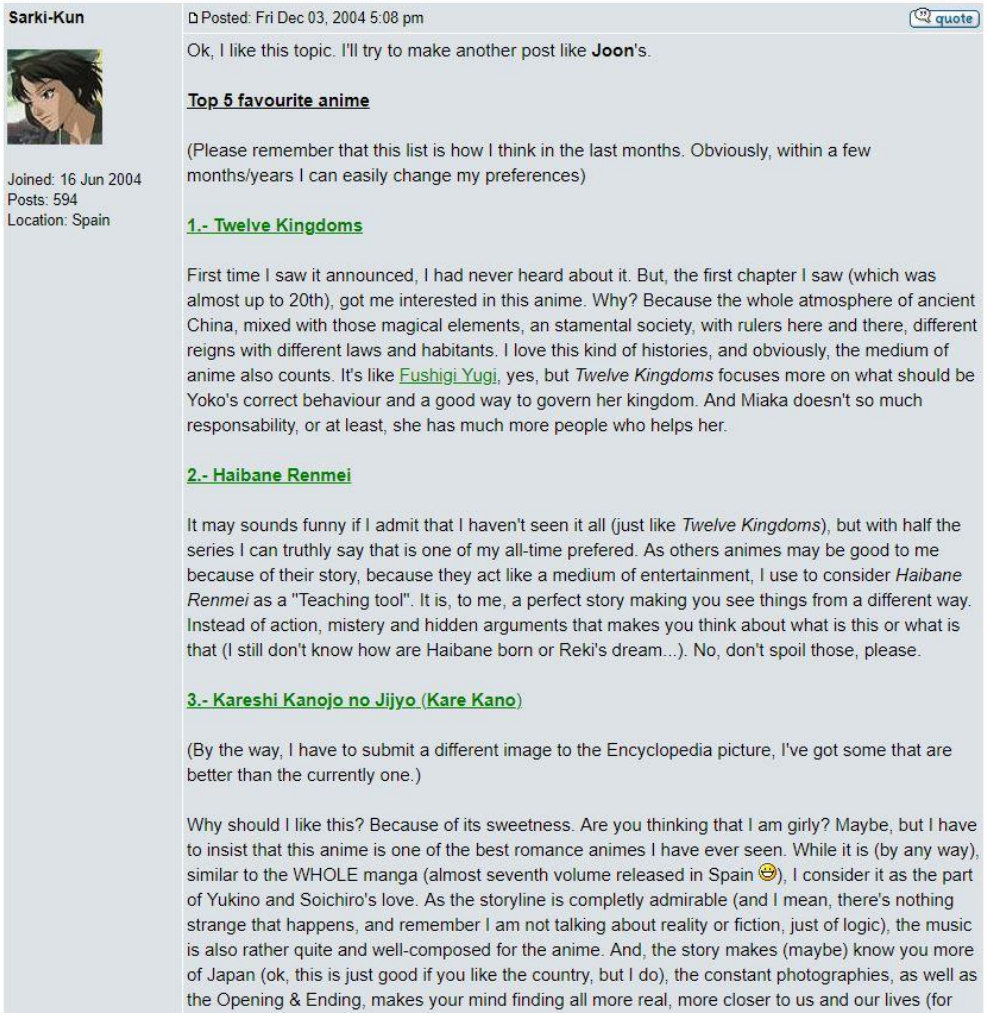
Work X Reviews

Sharing their reviews on visual materials was one of the biggest activities that users tend to do in online forums. In general, more active users (who post more on forums) shared their reviews on a particular episode or volume of manga, cartoon, and anime, or they also reviewed a list of visual materials that they had read/watched/played so far (*Figure 13*) to share their thoughts, which was oftentimes very thorough and detailed.

	AB : Popularity	AC : Release Date	AD : Reviews	AE : Series_Volumes	AF : Setting	AG : Subjects	AH : Work
15 : Completeness	1	5	4	5	0	5	13
16 : Creators	4	21	17	14	4	19	49
17 : Franchise_Universe	2	8	4	11	1	6	24
18 : Gameplay_Mechanics	3	2	3	0	2	4	16
19 : Genre	4	12	18	7	10	45	70
20 : Information Features_Other	1	1	1	0	0	1	2
21 : Language	3	3	7	0	0	6	13
22 : Length	2	9	4	13	4	11	28
23 : Mood	6	16	22	12	9	31	62
24 : Pacing	0	1	4	1	1	4	5
25 : Package	5	16	11	14	2	8	38
26 : Platforms_Sources	7	36	15	21	6	21	89
27 : Plot_Narrative	7	28	39	23	10	49	102

28 : Popularity	21	8	5	3	3	6	14
29 : Release Date	8	71	16	15	2	15	53
30 : Reviews	5	16	68	8	5	28	62

Table 18. Cross-tabulation results in content analysis: Information features (part 2)



Sarki-Kun

Joined: 16 Jun 2004
Posts: 594
Location: Spain

Posted: Fri Dec 03, 2004 5:08 pm — quote

Ok, I like this topic. I'll try to make another post like **Joon**'s.

Top 5 favourite anime

(Please remember that this list is how I think in the last months. Obviously, within a few months/years I can easily change my preferences)

1.- Twelve Kingdoms

First time I saw it announced, I had never heard about it. But, the first chapter I saw (which was almost up to 20th), got me interested in this anime. Why? Because the whole atmosphere of ancient China, mixed with those magical elements, an stamental society, with rulers here and there, different reigns with different laws and habitants. I love this kind of histories, and obviously, the medium of anime also counts. It's like Fushigi Yugi, yes, but *Twelve Kingdoms* focuses more on what should be Yoko's correct behaviour and a good way to govern her kingdom. And Miaka doesn't so much responsability, or at least, she has much more people who helps her.

2.- Haibane Renmei

It may sounds funny if I admit that I haven't seen it all (just like *Twelve Kingdoms*), but with half the series I can truthly say that is one of my all-time prefered. As others animes may be good to me because of their story, because they act like a medium of entertainment, I use to consider *Haibane Renmei* as a "Teaching tool". It is, to me, a perfect story making you see things from a different way. Instead of action, mistery and hidden arguments that makes you think about what is this or what is that (I still don't know how are Haibane born or Reki's dream...). No, don't spoil those, please.

3.- Kareshi Kanojo no Jijyo (Kare Kano)

(By the way, I have to submit a different image to the Encyclopedia picture, I've got some that are better than the currently one.)

Why should I like this? Because of its sweetness. Are you thinking that I am girly? Maybe, but I have to insist that this anime is one of the best romance animes I have ever seen. While it is (by any way), similar to the WHOLE manga (almost seventh volume released in Spain), I consider it as the part of Yukino and Soichiro's love. As the storyline is completly admirable (and I mean, there's nothing strange that happens, and remember I am not talking about reality or fiction, just of logic), the music is also rather quite and well-composed for the anime. And, the story makes (maybe) know you more of Japan (ok, this is just good if you like the country, but I do), the constant photographies, as well as the Opening & Ending, makes your mind finding all more real, more closer to us and our lives (for

Figure 13. A screen capture of a review example

"***Not Really Good: Blessing of the Campanella.*** *Not agressively [sic] bad but devoid of anything special. I stalled at episode 8 and I believe I'll just leave it there. Characters are boring and cliched, Story is nothing special, setting is a minimally adequate fantasy*

world. Everything about it is bland, bland, bland. Even if they tried to play to it's eroge source material more I don't think there'd be anything to get excited about. Everything is so cheery and pleasant you want to kick that little cat puppet into the sky just so something will make an impact." (T135578)

"*This year ABC ran Happy New Year, Charlie Brown uncut, as they've done with their other specials by expanding it to an hour and padding it with another special. They chose 1979's "She's A Good Skate, Charlie Brown," which is one I'd never seen before. Talkback on the night of airing wasn't possible for obvious reasons. […] Also, a lot of the 80's Peanuts specials were made exclusively for little kids, as opposed to the layered ones of the 60's where words like "big Eastern syndicate" were thrown around. They pick the occasion of New Year's to sing about the game of musical chairs, which feels like it was done for a record and just worked into the special*." (T5067331)

Fan-generated information, such as *Reviews*, has different characteristics compared to other *Information Features*. Reviews generated by fans are subjective, personal, unique, and not easy to provide to other users without getting actual help from the fan populations. However, this information can provide even more in-depth knowledge about the visual material, giving richer interpretations and other relevant information, such as who influenced this author, etc. For example, when users are stuck while playing games, they sometimes get advice on how to proceed from online gamer communities. When users cannot easily understand the symbols or plots of comic books or cartoons, they may seek out help from other fans for clarity. Still, this type of information should be managed carefully. Not every user wants to find this information.

Some users were worried about being exposed to spoilers, while some other users simply were not interested in how other people think about the item.

Work X Creators

Users' often paired *Creators* and their *Work* with examples in this study. Not only discussing each individual artist and their works (such as T116547 and T82373), many forum users also discussed other relevant information about the individual artist (such as T4587661) and different matters about the publishers and distributors of visual materials, as well, usually relevant to licensing issues, new versions/editions, and release date (e.g., T5024301).

> "*I have an irresistible temptation to visit another series with my favorite character designer, but* ***as Gin-iro no Olynssis and Linebarrels of Iron taught me, Mr. Hirai's masterful stroke alone cannot carry the series***." (T116547)

> "*Outside Marvel universe, but published by them, so assume this is right place to post....* ***Came across this in library, not read preceding Alan Moore run yet (I will do) but thought I'd give this a read anyway. There's a summary page at beginning that tells you everything you need to know about preceding story to fully enjoy this one. This is exactly what I'd expect from Neil and Mark.*** *Anyway basically beforehand Miracleman has had a titanic fight for supremacy, lots of people died...but he won it, and has set about establishing a better world. The challenge for Mark and Neil then is to portray what this paradise might look like, and how it might work.*" (T82373)

"***I would like to know how many famous animators are black/African-American?*** *I recall reading and seeing an article about that in Essence Magazine once-****there were animators who worked on Disney's Hercules****.*" (T4587661)

"*So a while back, when* ***Wii was talking about getting into streaming TV, Nintendo suggested that they were working on a new Captain N series intended to be exclusive to the Wii. Later, after DiC was brought by Cookie Jar, some rumors were floated about a new Captain N series coming to a Cookie Jar block****. Since then, it seems like information on this front has all but died off. Has anyone heard anything recent about this?*" (T5024301)

4.2.3. Cluster analysis

In order to observe the patterns and potential relationships among the identified themes, cluster analysis was conducted. Same as the diary and interview data, 1) coding similarity measure using Jaccard index and Sørensen-Dice coefficient and 2) word similarity measure using Pearson's correlation coefficient were both used in order to provide more than a single perspective on cluster analysis results. Clusters identified in this analysis are discussed below.

Coding similarity using Jaccard index and Sørensen-Dice coefficient

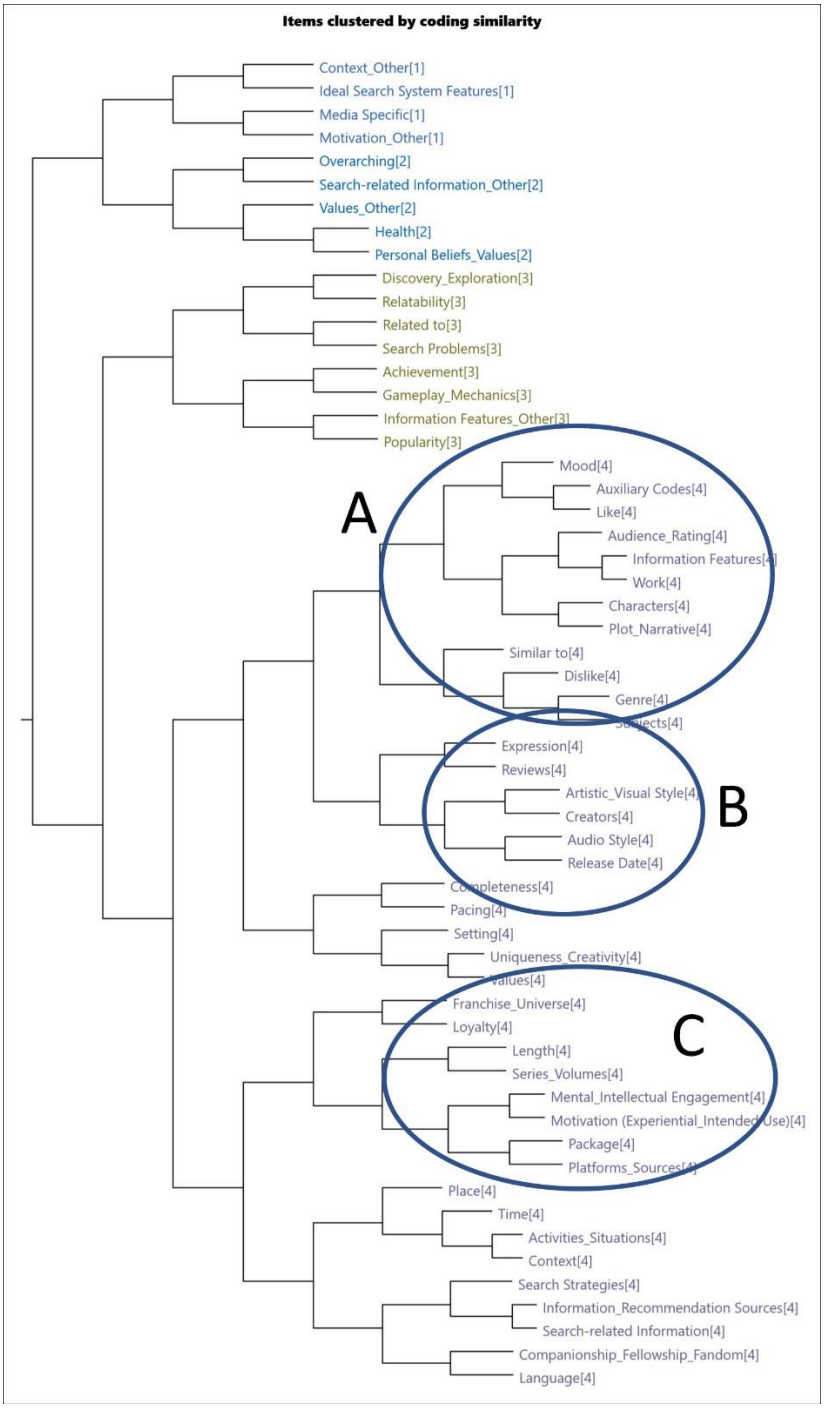


Figure 14. Cluster analysis of online forum data using Jaccard and Sørensen indices

The results of coding similarity using Jaccard and Sørensen indices resulted in the dendrogram presented in *Figure 14*. The biggest cluster, 4, is mostly composed of *Information Features* since most online forum users in this study focused on discussing the elements of *Information Features*. However, when examining the cluster more closely, three trends were observed; cluster A mainly has codes that were more predominantly used for anime and manga, cluster B's codes were more frequently mentioned by cartoon forum users, and cluster C is mostly composed of important codes for comic book users. Codes used for games tended to be more evenly distributed in this dendrogram.

Some of the noticeable pairs in the dendrogram include *Package X Platforms_Sources*, *Franchise_Universe X Loyalty*, and *Expression X Reviews*. Many users wanted to buy a specific format of the visual material, such as hardcover comic books or special edition anime DVD. When discussing purchasing these materials, users often talked about their budget. Users who were more concerned with budget often seemed to be young, in their teens or early 20s. Also, many users expressed their loyalty to certain universes, such as Marvel or DC comics. *Expression* and *Reviews* were often paired together in this dataset. Due to the nature of online fan forums, many users tended to share their review on visual materials as a form of *Expression*.

Some of the codes that had highest Jaccard and Sørensen indices values are presented in *Table 19*. Overall, the pairs that had higher values tend to stay in *Information Features* theme mainly. Since applied/identified codes for the online forum dataset primarily were focused on *Information Features*, no stronger associations across *Context* and *Motivation* were observed in this data set. What to note in this analysis is that some of the codes with very strong relationships tend to be parent-child code associations, such as *Search-related Information X*

Information_Recommendation Sources (Jaccard = 0.78, Sørensen = 0.88), *Work X Information Features* (0.78, 0.87, respectively), *Context X Activities_Situations* (0.68, 0.81, respectively), and *Time X Context* (0.64, 0.78, respectively). It may be interpreted that certain codes were more heavily mentioned by users under each theme and became more representative of the parent theme, such as *Activities_Situations* and *Time* under *Context*.

Code A	Code B	Jaccard's coefficient	Sørensen's coefficient
Nodes\\Search-related Information	Nodes\\Search-related Information\ Information_Recommendation Sources	0.780488	0.876712
Nodes\\Information Features\Work	Nodes\\Information Features	0.776	0.873874
Nodes\\Context	Nodes\\Context\Activities_Situations	0.679245	0.808989
Nodes\\Context\Time	Nodes\\Context	0.641509	0.781609
Nodes\\Information Features\Work	Nodes\\Auxiliary Codes	0.607843	0.756098
Nodes\\Motivation (Experiential_Intended Use)	Nodes\\Motivation (Experiential_Intended Use)\ Mental_Intellectual Engagement	0.59596	0.746835
Nodes\\Values	Nodes\\Values\Uniqueness_Creativity	0.580645	0.734694
Nodes\\Auxiliary Codes\Like	Nodes\\Auxiliary Codes	0.567164	0.72381
Nodes\\Information Features	Nodes\\Auxiliary Codes	0.536	0.697917
Nodes\\Information Features	Nodes\\Information Features\Audience_Rating	0.476	0.644986
Nodes\\Information Features\Work	Nodes\\Information Features\Audience_Rating	0.455814	0.626198
Nodes\\Information Features\Plot_Narrative	Nodes\\Information Features\Characters	0.44	0.611111
Nodes\\Information Features\Platforms_Sources	Nodes\\Information Features	0.436	0.607242
Nodes\\Information Features\Work	Nodes\\Information Features\Plot_Narrative	0.423645	0.595156
Nodes\\Information Features\Plot_Narrative	Nodes\\Auxiliary Codes	0.42236	0.593886

Table 19. Coding similarity of content analysis using Jaccard and Sørensen indices

Some of the relatively lower values of Jaccard and Sørensen indices for this particular analysis compared to the diary/interview study might have been caused by the average size of forum threads. Unlike the diary and interview study where each source had considerably in-depth information, each source of the content analysis data, in other words, a single online forum thread, had a smaller amount of textual information. In general, when a user asked for a recommendation, the query was a couple of sentences to a paragraph. Therefore, the number of codes applied to each forum thread was much smaller than the number of codes applied to each interview and diary data. Considering how the coding similarity is calculated—row (code) X columns (each source coded by the row's code)—Jaccard and Sørensen indices which measure the co-occurrences of codes in this dataset could yield much smaller values than the previous study.

Word similarity using Pearson's correlation coefficient

Word similarity of this study showed high Pearson's coefficient values. *Table 20* shows some of the code pairs that had highest coefficient values. As shown in the table, the highest values of Pearson's coefficient tend to be higher than the ones of Jaccard and Sørensen, indicating statistically significant similarities among codes; such as, *Work X Audience_Rating* (0.97), *Work X Plot_Narrativ*e (0.95), and *Work X Characters* (0.94). Users of online fan communities frequently discussed particular visual materials (*Work*) in their recommendation request threads. They enjoyed reviewing particular work right after the episode had aired, or describing stories, characters, and the good and bad parts of visual material works that they had consumed.

Dendrogram (*Figure 15*) created by the analysis showed that many of the code pairs were either similar or overlapping with the coding similarity clusters, indicating that the results of cluster analyses were consistent in general.

Code A	Code B	Pearson correlation coefficient
Nodes\\Information Features\Work	Nodes\\Information Features	0.987526
Nodes\\Information Features	Nodes\\Information Features\Characters	0.969384
Nodes\\Information Features\Work	Nodes\\Information Features\Audience_Rating	0.966333
Nodes\\Information Features	Nodes\\Information Features\Audience_Rating	0.966069
Nodes\\Auxiliary Codes\Like	Nodes\\Auxiliary Codes	0.965809
Nodes\\Information Features\Plot_Narrative	Nodes\\Information Features	0.960786
Nodes\\Search-related Information	Nodes\\Search-related Information\ Information_Recommendation Sources	0.95857
Nodes\\Information Features\Work	Nodes\\Auxiliary Codes	0.955536
Nodes\\Information Features\Subjects	Nodes\\Information Features	0.953282
Nodes\\Motivation (Experiential_Intended Use)	Nodes\\Information Features	0.951996
Nodes\\Information Features\Work	Nodes\\Information Features\Plot_Narrative	0.951942
Nodes\\Information Features	Nodes\\Auxiliary Codes	0.950666
Nodes\\Information Features\Plot_Narrative	Nodes\\Auxiliary Codes	0.947567
Nodes\\Information Features\Work	Nodes\\Information Features\Characters	0.942682
Nodes\\Context	Nodes\\Context\Activities_Situations	0.942609
Nodes\\Information Features\Subjects	Nodes\\Information Features\Characters	0.941711
Nodes\\Auxiliary Codes\Dislike	Nodes\\Auxiliary Codes	0.940829
Nodes\\Information Features\Work	Nodes\\Motivation (Experiential_Intended Use)	0.938876
Nodes\\Information Features\Plot_Narrative	Nodes\\Information Features\Characters	0.932663
Nodes\\Information Features\Work	Nodes\\Auxiliary Codes\Like	0.931943
Nodes\\Motivation (Experiential_Intended Use)	Nodes\\Information Features\Audience_Rating	0.931924
Nodes\\Information Features\Plot_Narrative	Nodes\\Auxiliary Codes\Like	0.929896
Nodes\\Information Features\Work	Nodes\\Information Features\Subjects	0.928484

Table 20. Word similarity of content analysis using Pearson's coefficient

Despite that 1) the Pearson's coefficient values show significant similarities, and 2) the highly similar pairs appeared in this analysis did not seem to be surprising based on the researcher's coding process, the values themselves might need to be interpreted cautiously.

The researcher and the additional coder noticed that many forum threads tend to "sound" similar, using similar language and wording, presumably due to the fact that users were asking for a particular type of recommendation (although what they were looking for was different) to the other fan community members. As an example, *Table 21* shows the top-count words in this dataset. Some of these words were either colloquial expressions or generous terms that would not convey meaningful themes, necessarily, although the list of word count was already the results of eliminating *stop words*, such as, "a," "is," "about." Therefore, while the researcher thinks that the clusters that appeared in the dendrogram are still reliable, it would be reasonable to interpret the high number of Pearson's coefficient values cautiously, instead of trusting it blindly, considering that it might have been inflated some by the similar language choices of online forum users.

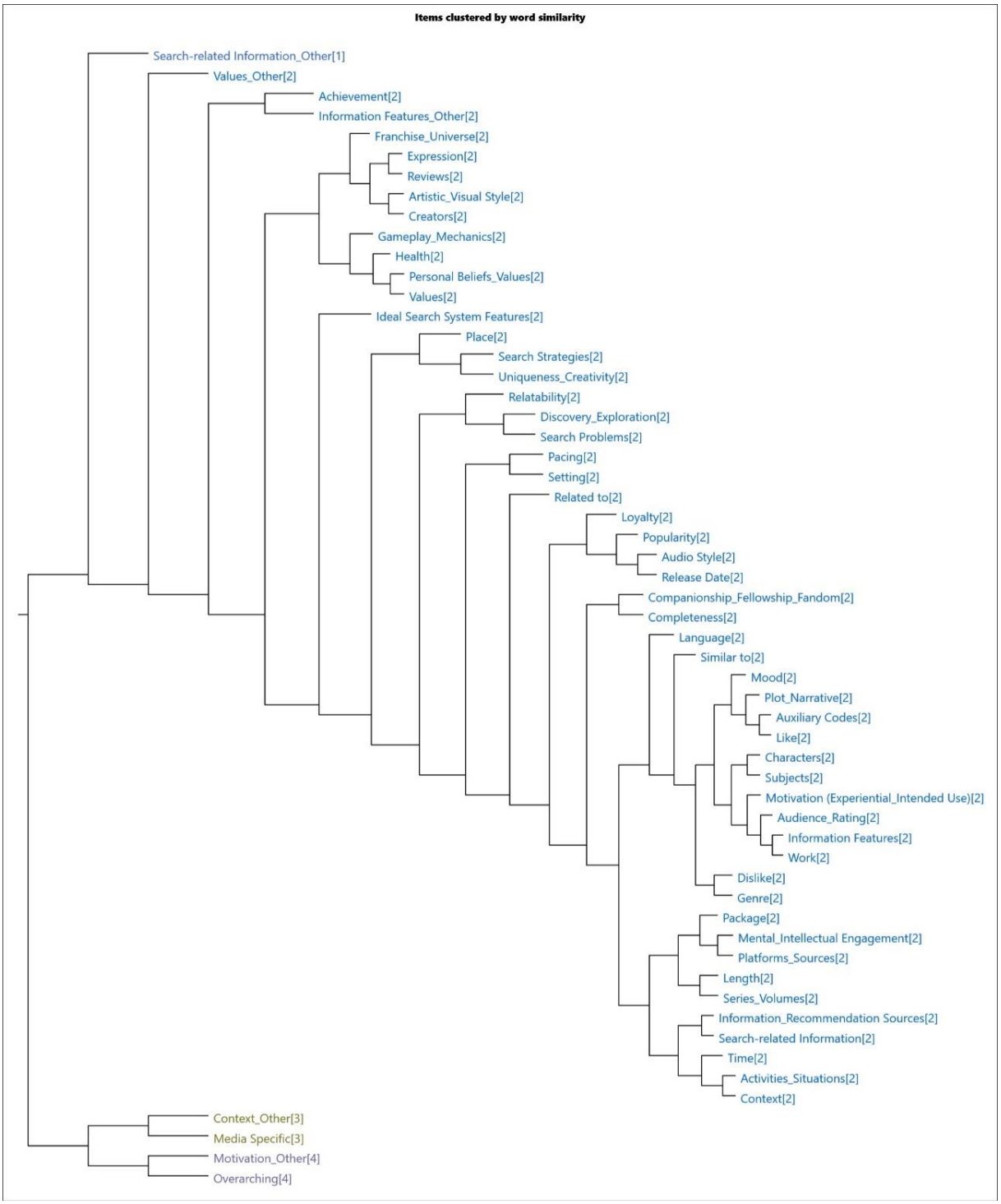


Figure 15. Cluster analysis of online forum data using Pearson's coefficient

Word	Length	Count	Weighted Percentage (%)
like	4	254	1.01
series	6	186	0.74
anime	5	185	0.74
one	3	185	0.74
just	4	177	0.71
good	4	158	0.63
manga	5	136	0.54
read	4	125	0.50
really	6	119	0.47
know	4	111	0.44
show	4	104	0.41
new	3	101	0.40
recommend	9	96	0.38
get	3	92	0.37
story	5	92	0.37
first	5	91	0.36
time	4	91	0.36
looking	7	90	0.36
games	5	87	0.35
also	4	81	0.32
much	4	79	0.32
suggestions	11	79	0.32
anyone	6	78	0.31
great	5	78	0.31
even	4	76	0.30
want	4	76	0.30
think	5	75	0.30

Table 21. Word counts of online forum dataset

4.2.4. Intercoder reliability

The average intercoder reliability of this study showed *excellent agreement*[18] between two coders at kappa value of 0.91 and the agreement ratio of 92.92%. *Table 22* shows the intercoder reliability of parent nodes. *Values* (0.96), *Motivation* (0.95), and *Search-related Information* (0.95) had the highest kappa values, followed by *Context* (0.89), *Information Features* (0.87), and *Auxiliary Codes* (0.83).

	Average Kappa	Standard Deviation of Kappa	Average Agreement (%)	Standard Deviation of Agreement (%)
Auxiliary Codes	0.83	0.37	86.87	29.34
Context	0.89	0.31	91.07	26.14
Information Features	0.87	0.32	90.79	25.49
Motivation	0.95	0.22	96.28	16.96
Search-related Information	0.95	0.21	96.14	17.55
Values	0.96	0.20	96.34	17.67
Overall	0.91	0.27	92.92	22.19

Table 22. Intercoder reliability of parent nodes (content analysis)

Table 23 shows the complete results of intercoder reliability test. Most of codes had exceedingly high kappa values and agreement ratio, and none of these codes showed *poor agreement* between the coders. It should be noted, however, some of the codes with kappa value 1 *(+Media Specific, Context_Other, Achievement, Ideal Search System Features,* and *Search-related Information_Other*) were due to the perfect disagreement; both of coders did not use these codes

[18] http://help-nv11.qsrinternational.com/desktop/procedures/run_a_coding_comparison_query.htm

to code the data, which created 100% of agreement ratio. In case of *+Media Specific*, particularly, the second coder was advised not to use this code for the dataset; because each forum thread was already about specific media considering how they were collected and using the code for a complete dataset would not yield any meaningful findings.

	Kappa	**Agreement (%)**
Auxiliary Codes		
+Dislike	0.81	85.34
+Like	0.72	78.62
+Media Specific	1.00	100.00
+Overarching	0.96	96.91
+Related to	0.96	96.62
+Similar to	0.72	78.38
Context		
Activities_Situations	0.90	93.48
Context_Other	1.00	100.00
Place	0.90	91.03
Time	0.75	79.76
Information Features		
Artistic_Visual Style	0.94	95.67
Audience_Rating	0.59	69.15
Audio Style	0.98	99.31
Characters	0.86	90.57
Completeness	0.96	96.94
Creators	0.91	95.22
Franchise_Universe	0.98	98.06
Gameplay_Mechanics	0.88	90.64
Genre	0.78	82.36
Information Features_Other	0.98	98.75
Language	0.94	95.21
Length	0.93	96.14

Mood	0.88	89.49
Pacing	0.98	98.13
Package	0.86	88.30
Platforms_Sources	0.87	89.35
Plot_Narrative	0.78	82.97
Popularity	0.98	98.43
Release Date	0.86	89.10
Reviews	0.87	91.16
Series_Volumes	0.65	75.33
Setting	0.94	94.76
Subjects	0.72	80.06
Work	0.81	88.09
Motivation (Experiential_Intended Use)		
Achievement	1.00	100.00
Companionship_Fellowship_Fandom	0.92	95.14
Discovery_Exploration	1.00	100.00
Expression	0.92	93.42
Loyalty	0.94	94.85
Mental_Intellectual Engagement	0.85	90.52
Motivation_Other	1.00	100.00
Search-related Information		
Ideal Search System Features	1.00	100.00
Information_Recommendation Sources	0.82	86.12
Search Problems	0.96	96.35
Search Strategies	0.98	98.25
Search-related Information_Other	1.00	100.00
Values		
Health	0.98	98.40
Personal Beliefs_Values	0.98	98.06
Relatability	0.96	96.43
Uniqueness_Creativity	0.91	92.60

Values_Other	0.96	96.20

Table 23. Intercoder reliability results (content analysis)

Although all the codes showed at least *fair* to *excellent agreement*, the code with the lowest kappa value was *Audience_Rating* at 0.59 kappa value with 69.15% agreement ratio. Some of the different judgements on this code were due to phrases like T20981 and T42137:

> "*To start off I'm new to manga*." (T20981)

> "*That's my first topic in this website and it's about one of my favourite manga categories. […] P.S. I am sorry if my english are [sic] bad, I am from Greece and still working on improving them [sic]*." (T42137)

The researcher judged them as *Audience_Rating* information since they were describing themselves, letting the other fan community members know that they are either new to this material or this community. On the other hand, it seems that the second coder did not consider these quotes as *Audience_Rating* information because these phrases were more introductory than descriptive.

Overall, the intercoder reliability of this study showed that the coding in this study is indeed reliable, and similar results would be produced if conducted by different coders.

Chapter 5. Discussion

In this chapter, based on the findings of diary, interview, and content analysis studies, discussions on search problems in current recommendation services will be presented along with what future recommendation services and systems should consider implementing. In addition to search related discourses, some of the new themes emerged in this study will be also discussed to see how they can be helpful to users. Lastly, two additional themes identified in this study, social stigma of popular culture and a different aspect of escapism in visual material use, will be addressed.

5.1. Search problems identified in current recommendation systems

> "A *lot of times if something is not live action,* ***most streaming services that's as far as they get, it'll be like animated section and you're like well OK that's, that could be anything****. Right? So that doesn't really help you. So, something that would narrow down between.* ***Because I mean, it literally could be anything but you can go to nature or a romantic comedy or drama or horror, like you can go through more specifics on other things, but a lot of the times if it's animated content, they don't specify any more than just this is a cartoon****, so something that would specify that."* (P12)

The findings suggest that visual material users want much more rigorous metadata for materials and the search/recommendation services that implement those features. Commonly discussed problems include language of the visual materials and difficulties using filtering and navigation.

5.1.1. Language

Language was the most frequently mentioned problem by users. Most users in this study only spoke English and needed access to materials in English; either via subtitled versions or dubbed versions. In addition to being able to find visual materials with English language support, users had very strong preferences whether they want subtitle versions or dubbed versions since their *Activities_Situations (Context)* was closely related to their *Motivation*. *Activies_Situations* were especially related to *Mental_Intellectual Engagement* when they aim to study foreign languages or *Companionship_Fellowship_Fandom* when they want to play visual materials as background noise while they are working on something else. This discourse was more prominent in manga and anime.

Manga and anime, and sometimes webtoon, are mainly from Japan and Korea, unlike games, comic books, and cartoons. Due to their origin, usually it takes a long time for them to be translated and imported to the US market, which often made many of users in this study frustrated. Besides, even for the materials that had been already translated and legally imported, the search features that help users to filter the sub/dub versions were lacking in many relevant websites and databases.

> "***I was looking for anime that was English dubbed and on a legal anime streaming site because since I was working on something else, I couldn't keep my eyes on the anime the whole time to read the subtitles (I'm only fluent in English)***. *I normally watch things on Crunchyroll, but their site has horrible navigation for finding English dubbed content. You can only search by genre, seasons, updated, simulcasts, alphabetical and popular. I would prefer to be able to search by genre, completed/on-going, and language all at*

once. ***The only way to find dubbed series is to type in the search bar "dubbed"*** *and it gives you all episodes that contain the word dubbed, rather than by series, so that gives you a lot of pages to search through which left me frustrated*." (P21)

Figure 16 and *17* are an OCLC record of an example, *My Hero Academia* (2017). *My Hero Academia* (2017) in this record is an anime DVD published by *Funimation Productions Ltd*. in 2017.

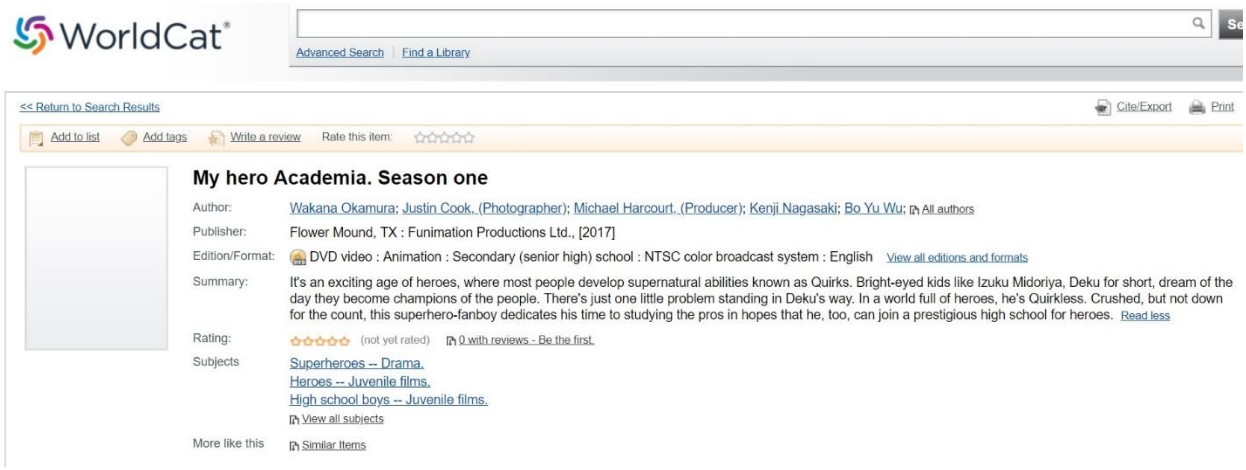


Figure 16. OCLC WorldCat record: My Hero Academia (2017)

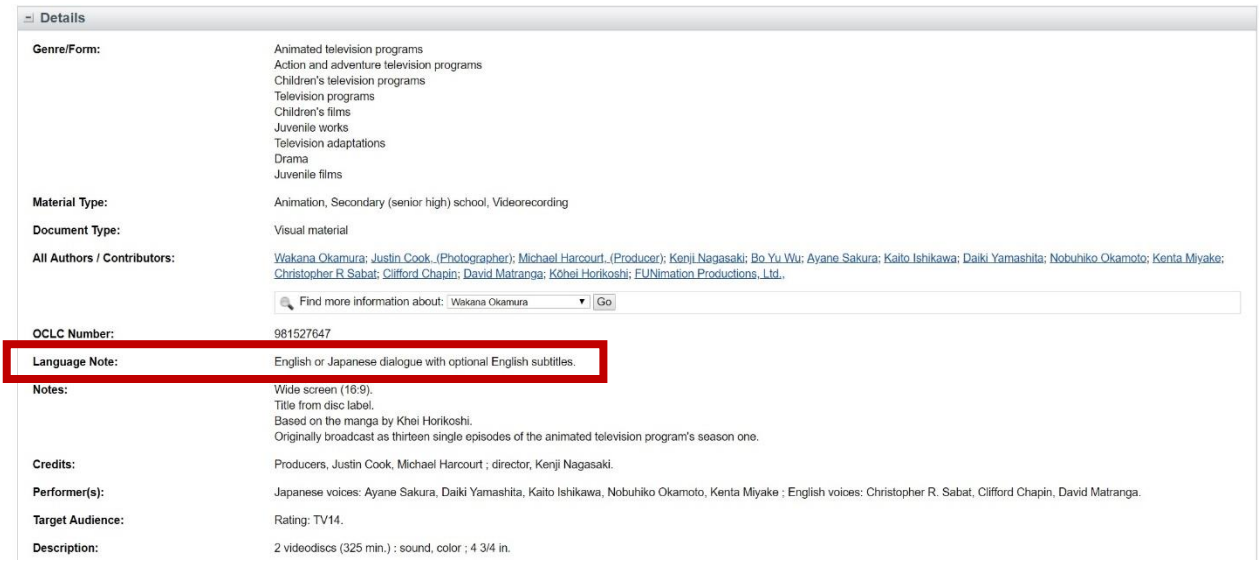


Figure 17. OCLC WorldCat record details: My Hero Academia (2017)

The description of this record only contains *Language Note* (field number: 546) stating, "*English or Japanese dialogue with optional English subtitles*." Since this field is defined as "*textual information on the language or notation system used to convey the content of the described materials. A description of the alphabet, script, or other symbol system (e.g., Arabic alphabet, ASCII, musical notation system, bar code, logarithmic graphing) may also be included*[19]" and an optional input, it is dependent on individual libraries if they decide to adopt this field and provide it to their users. Also, even when a library adopts this field, whether users would be able to find this information through their library database system, and/or how they should find this information is another issue. Users would know if this information is searchable or not in their library systems by trying to seek information on the About page or the Help page of the library

[19] https://www.oclc.org/bibformats/en/5xx/546.html

database or by trying multiple searches including similar keywords and phrases and see if the results indeed contain that information or not.

Figure 18. Product information of Sailor Moon Sailor Stars S5 P1 (DVD, 2019) on Amazon

For libraries, recording a clearer MARC *Language Code* (041) with subfield codes, $d (*Language code of sung or spoken text*) and $j (*Language code of subtitles*), instead of using a note field, could be more helpful for visual material users and even for other language learners, as well. The language information for released DVDs is clearly identified in general (e.g., *Figure 18*), and having this information could tremendously improve many visual material users' search experiences. In relevant databases, streaming services, and recommendation services, a filter menu with that users can search for either subtitle versions or dubbed versions of visual materials would enhance users' search experiences. This leads us to the next issue that users had—filtering and navigation difficulties.

5.1.2. Filtering and navigation difficulties

Filtering and navigation difficulties that visual material users had seemed to be related to the general lack of visual material metadata; it was not only about the lack of a filtering capability, but about various features that users could not find in many systems. These include *Subjects, Genre, Artistic_Visual Style*, and more, such as P17, P26, and P21 below.

> "*Actually, part of the reason I tend to view less [sic] comic books and TV is,* ***it can be very difficult to predict what's going to trigger me in advance****. I have a history of sexual violence, and, so, there's a lot of stuff around sexual consent in media that is really terrible. So,* ***it can be very difficult to figure out how to reliably find something that's not going to trigger me more*** *when I'm already doing really badly."* (P17)

> "*So, the number one feature I would want, and this is something I have complained about with streaming services.* ***It needs to have really good visible metadata because [not having] that annoys me****. That is important and that is one of the reasons I ditched Crunchyroll […] I would also like to see more really well defined,* ***really good, well developed definition for what these genres are because what I see a lot with streaming services and even with write ups of various shows what some people consider as slice of life is a whole lot of very, very different shows***." (P26)

> "***You can never filter by art styles,*** *and art styles are always different*." (P21)

The problems of diversified genre definitions were discussed in Cho, Disher, Lee, Keating, and Lee (2018). The authors, especially focusing on the genre of anime, state that current information systems have shown several limitations in providing anime's genre information. Genre tags

provided online for visual materials tend to be often confusing and ambiguous, and there is little consensus for the definitions of genres even for the same genre term.

> "Anime and manga tend to use genre terms to indicate the target audience, such as *seinen* (young men/youth). Some users use the *seinen* label to describe anime generally made for mature audiences, others use it for anime with complex plots or serious issues regarding life or society, and still others use the term to describe anime with more violent or sexual content. Due to different understandings and ambiguous definitions of the same term, various anime databases commonly show conflicting results when searching for the same genre term" (p. 486).

The findings from Cho et al. (2018) is aligned with the current study. Users in the current study were not satisfied with the current genre classification and searching; they wanted a filter that could also exclude some of the other "genres" from the resulting list. For example, when a user is looking for a comedy graphic novel, but she does not want any romance or mystery aspects from a comedy graphic novel, this filter could become useful. However, as noted in RA and previous studies, genre is not a simple notion to be defined. It is composed of different aspects of a *Work* such as *Characters, Plot_Narrative, Subjects, Mood*, and more. Therefore, it should be noted that when users want "genre" filters, it may indicate that they discuss not only genre but also other features of a visual media item. Cho et al.'s (2018) suggestion on creating a set of anime genre facets is aligned with this argument; the recommended facets of anime genre in that study include *Audience, Setting, Mood, Character, Plot/Narrative, Subjects, Association with Other Works, Feature*, and *Production*, and each facet also has appropriate foci terms assigned based on a domain analysis.

Developing a set of more rigorous visual material metadata could help in satisfying users' seeking needs and designing improved filtering and navigation search features in relevant websites, databases, and recommendation services. Visual material users in this study constantly expressed their dissatisfaction in current recommendation services and systems, asking for more rigorous metadata and diverse access points to an item. Findings suggest that due to the nature of visual materials, providing several subject access points to users may be the key to providing a more satisfying recommendation service. Users generally did not look for only a single genre, a single type of story and character, or a single visual style. What they wanted was the combination of different aspects of the material, such as "comedy *Genre* and lighthearted *Mood* with no violent or gory *Subject*s with a female *Character* with a positive personality." Participants P3 and P17 particularly suggested the following potential solutions:

> *"**Image drop-in searching accessible from mobile, a button that provides recommendations based on your search, Boolean "NOT" support, curated "intention" filters (for removing (or ensuring) the explicitly pornographic from the earnestly artistic, whether titillating details or even nudity are present or not**."* (P3)

> "*That [would] be good if there was something that flag sexual violence that could just tag it if nothing else like warn you that it's coming because sometimes I'll watch to a certain scene and media and it'll trigger me, and then I'll come back to it later and watch again. And because I'm expecting it, it's less bad.* ***But maybe if they could even like in an ideal world we would even have written descriptions of these scenes like detailing precisely what you're getting into,*** *if it's some sort of visual media because reading and writing*

might be a bit less trigger. And so you can look at the flag because I'm deciding whether these scenes are things we want to like see or skip past or whatever." (P17)

While more robust search and navigation features were sought after by the users to obtain even more accurate search results, it may be also worthwhile to question if refined and accurate search should be always preferred. For example, P17 here mentioned that in the ideal search/recommendation systems, she would be able to search visual materials even based on the written descriptions of particular scenes that let her know precisely what she is going to get into. However, would that be something that other visual media users want? How granular should the metadata be, and how much information should be provided?

Unlike P17, several users in this study were worried that they might be exposed to spoilers from visual media related information, such as reviews from other users. These users had general ideas of what types of visual materials they would want to choose, but they did not want to know what is going to happen in the plot in advance because that could reduce their enjoyment of the media. In this perspective, applying all the right filters to the recommendation systems to find the "most accurate" visual material item for oneself might reduce the pleasure of serendipitous discovery or even enjoyment of the visual material item itself.

Users may have different preferences on accurate search, depending on the context and motivations. When a user wants to find something very specific, such as, video games that show 17th century lifestyles and houses for educational purposes, having detailed and accurate metadata implemented in the recommendation systems would be helpful. Similarly, when a user wants to avoid something strongly, such as P17, and if that particular type of character or plot

could result in negative consequences, a system that could yield accurate search results that reflect users' needs precisely would be ideal. However, when a user wants to explore new content, giving the user the same or similar type of visual material recommendation constantly might limit the spectrum of the user's media use. All recommendation systems do not need to be the same. Some could aim for detailed, precise, and advanced search services, and others could aim for providing more simple and casual search experiences where users can sometimes enjoy even some unexpected discoveries. When recommendation systems and services are designed, it would be critical to consider their potential user populations and implement the recommendation/browsing/search features accordingly.

5.2. What users want in future recommendation systems

This section will discuss what should be considered to be adopted in future recommendation services and systems to better serve visual material users' needs based on the findings of the current study. Newly emerged themes of visual material users' needs will be discussed first, then commonly important themes across the media and distinguished needs of different types of visual materials will be explored, respectively.

5.2.1. Personal values and being aware of social issues

> "***Right, so, I did actually quit watching that, and it was the consensual element*** *[that] was the hard pass. Like, it makes me uncomfortable to watch. I don't think the it doesn't seem genuine to me, and I don't think the responses to that level of lack of consent is realistic in my opinion. I don't think it is****. I also was really put off by the very like slut shaming dialogue in it****."* (P26)

Although not the most frequent, some of users showed strong opinions and preferences toward *Values*, especially toward *Personal Beliefs_Values*. In the previous studies that investigated the information needs of anime users (Cho et al., 2017; 2018), the authors found that less mentioned themes do not necessarily indicate less important features for anime users:

> "However, less mentioned features are not necessarily less important. These less mentioned codes are often highly descriptive and specific, for instance, with Artwork/Visual Style (e.g. "well animated, that also pays attention to detailed movement and fluidity" (T125843)), or Audio Style (e.g. "very sophisticated music (i am a classical music fanatic ranging from pre-renaissance to modern and avant-garde music so i can really appreciate the debussian and romantic influences that can be heard in the music)" (T57152)). Specific information is currently highly valued by a small number of requesters, but its incorporation into recommendation systems would likely attract new and untapped audiences" (p. 932).

This argument remains applicable to this study. Many users deeply cared about representation issues in visual media culture, and they were actively avoiding any visual materials that do not satisfy their standards. Female representation problem in the visual media culture was the biggest problem identified by users, and users wanted to get recommendations of the materials that include better female representations and more diverse characters with different sexual orientations and physical abilities. Users also wanted the materials that are more aware of other relevant issues, such as sexual consent.

"*I try and go through and find games and media that feature non-male protagonists. I feel like* ***there are so much out there that follows a white male protagonist, and it's kind of boring. It's just nice to see someone like myself reflected in media***." (P23)

"*So far, I've read the first volume of Bleach (which I liked in general, but disqualified itself when Orihime's brother suggested she "just shove those magnificent boobs in his face and let HIM attack YOU") and OnePiece (no major female characters, but at least not demeaning). 15 more on the way from my local branch library but I'm already a little overwhelmed*." (T2907330)

"***I like comics and media written for/by LGBT folks****, and this one in particular is a nice mix of artistic inspiration and feeling connection*." (P4)

The female representation discourse in visual media is not completely new. It has been discussed in games (e.g., Near, 2013; Ivory, 2006), comics (e.g., Danziger-Russell, 2012), and anime (e.g., Jiang Bresnahan, 2006), especially from communication and gender studies' perspectives in the last decade. Despite the fact that this issue has been identified in the visual media community for a long time, it is unideal that the current recommendation/search systems do not fully support *Characters*, *Subjects*, or *Plot_Narrative* search that could enable users to either opt out or include certain topics around this issue. Currently, major streaming services like Netflix offer some combined tags, such as "Action & Adventure Featuring a Strong Female Lead" and "LGBTQ Dramas," for TV shows and movies. However, for visual materials like animation and anime, broad terms like "Anime Series," "Japanese Anime," or "Family Animation" are provided for the further browsing, treating the medium itself as a "genre."

For visual materials in general, it is difficult to search for the ones with more inclusive narratives and better female representations. In currently available relevant websites and recommendation systems, often tags like “sexual content” or “female characters” exist; however, what users wanted in this study was more detailed information. For example, if one item includes any sexual contents, in what context would that narrative unfold? Are female characters well-represented without biased stereotyping, and is the sexual consent clearly represented? Is it geared toward only certain audiences, or is it inclusive? More granular controlled vocabulary that could describe or even warn about particular scenes, character behaviors, stories, themes, and diversity representation would be able to help in satisfying this need.

5.2.2. Commonly important motivation, information features, and context across the media

In order to facilitate cross-media advisory and recommendation services, understanding the commonly important motivations, features, and contexts across different types of visual materials is the first necessary step. When users do not have particular types of visual material to consume in mind or are willing to expand their interests to other types of media, recommendation providers can utilize commonly important information across the media first and ask further questions to users to provide more refined recommendations. Across different types of visual materials, *Mental_Intellectual Engagement* (*Motivation*), *Audience_Rating* (*Information Features*), and *Time* (*Context*) were commonly important elements to visual material users in this study. Thus, by providing these three aspects of information together, users would be able to enjoy more personalized and improved visual material recommendation services. For example, a librarian could ask following questions to a user who looks for visual material recommendations: 1) if the user wants something more intellectually challenging or

simple, 2) what the users' distinctive characteristics would be, and 3) when the material is expected to be consumed and how long the material should be. Each element will be discussed further below.

Motivation: Mental_Intellectual Engagement

Firstly, a recommendation provider (either a librarian or search database) should be able to provide different levels of a visual material's difficulties and complexities. It would be important to understand first if a user is looking for something to simply relax without thinking too much, to mentally commit to fully or get inspired, or even to actively study and learn by consuming that material. Findings show that *Mood* feature especially, is closely related to the motivation of *Mental_Intellectual Engagement*. Users tended to select the degree of *Mental_intellectual Engagement* based on 1) their current moods or 2) the moods they want to feel by consuming the material (e.g., "*I think the primary mood that was like common within all of the, or most of the visual media I consumed over the study was that* ***it was kind of lighthearted because it was final season and I kind of needed something to distract myself***." (P14)). Thus, understanding what users feel like at the moment of consuming the visual material could guide a recommendation provider to suggest a certain degree of *Mental_Intellectual Engagement*.

HIGHEST RATED GAMES

Rank	System	Title	Rating / 5	Difficulty / 5	Length (Hours)
1	N64	The Legend of Zelda: Ocarina of Time	4.61	3.09	42.84
2	VITA	Persona 4 Golden	4.60	3.06	78.66
3	WII	Metroid Prime Trilogy	4.60	3.23	57.67
4	PS	Castlevania: Symphony of the Night	4.60	3.03	33.46
5	PS2	Metal Gear Solid 3: Subsistence	4.60	3.18	29.72
6	GC	The Legend of Zelda Collector's Edition	4.60	3.25	63.53
7	DS	Chrono Trigger	4.60	2.96	44.18
8	WIIU	The Legend of Zelda: Breath of the Wild	4.59	3.26	79.93
9	3DS	Monster Hunter 4 Ultimate	4.59	4.31	80.00+
10	NS	The Legend of Zelda: Breath of the Wild	4.58	3.48	80.00+
11	SNES	The Legend of Zelda: A Link to the Past	4.58	3.15	30.64
12	PS4	Persona 5	4.58	3.08	80.00+
13	SNES	Chrono Trigger	4.58	2.95	46.91
14	WII	Xenoblade Chronicles	4.58	3.16	80.00+
15	PS3	Metal Gear Solid: The Legacy Collection	4.58	3.26	73.66
16	GBA	Mother 3	4.58	3.13	32.90
17	DC	Shenmue II	4.57	3.00	50.23
18	SAT	Panzer Dragoon Saga	4.57	2.88	29.99
19	PS	Metal Gear Solid	4.57	3.28	22.19
20	PS2	Metal Gear Solid 3: Snake Eater	4.57	3.27	29.55
21	GC	Resident Evil 4	4.57	3.23	29.58
22	PS3	Metal Gear Solid HD Collection	4.57	3.32	58.42
23	SNES	Super Mario All-Stars / Super Mario World	4.57	3.13	41.96

Figure 19. Highest Ratings Games from Gamefaqs (https://gamefaqs.gamespot.com/games/rankings)

However, a challenging part of this information is that it can be subjective; “difficult” games could be “easy” to some users, and a comic book with extremely “complex” plots with many characters and side stories can be still considered as a somewhat “simple” narrative to someone who is already familiar with that universe. In the case of games, it can be relatively easy to locate and provide the difficulty ratings information because 1) some games offer difficulty

customization options to users, and 2) there is somewhat agreed upon consensus on games' difficulty levels, based on users' reviews (e.g. *Figure 19*).

However, a recommendation provider would also need to understand what kinds of difficulties that a user is looking for, as well. According to Eberhart (2019), there are five types of difficulties in games: dynamic difficulty, fundamental difficulty, scaling difficulty, artificial difficulty, and designed difficulty:

- "*Dynamic* difficulty adjusts gameplay based on player progress on the fly. If the player is doing "too well" or failing constantly, the game will adjust certain parameters to keep the player in a good state of flow to players quitting out of boredom or frustration."
- "*Fundamental* difficulty requires a minimum amount of skill to complete. Things like Twitch abilities, cognitive abilities, etc."
- *"Scaling* difficulty could overlap with dynamic difficulty but those games can make their games easier on the fly without consulting the player. Scaling difficulty is designed to modify difficulty from the get go."
- *"Artificial* difficulty is when the computer/AI drive the difficulty by changing basic numbers that reside in the code where player's [sic] can't see. Artificial difficulty is found anywhere there is a difficulty menu (easy, medium, hard, etc.)."
- *"Designed* difficulty is when enemies, levels, puzzles, and other interactions are hand-crafted to provide a challenge that requires the player to use learned skills to overcome challenges in new ways. The main focus for designed difficulty is that it should force the player to use the mechanics they already know and use them in different way or learning new ones."

However, in this study, users mainly discussed two types of game difficulties: mentally and intellectually challenging games such as strategy games or puzzle games, or the games that they need to practice to achieve skills, such as first-person shooting games, racing games, or action adventure games. In other words, it was either a mental challenge or a physical challenge. Based on the findings, it seems that it might not be necessary to provide all existing granular levels of game difficulty types to users, but it would be still important to provide the information whether the game is more strategy-based or reflex-based.

It is more challenging to decide the *Mental_Intellectual Engagment* levels of other visual materials with stronger narrative aspects since decision becomes even more subjective. However, based on the findings, there were still some pieces of guidance information that a recommendation provider could utilize to decide what kinds of *Mental_Intellectual Engagement* that a user wants. Sometimes, *Genre* information can help. Some genres, such as slice of life, tend to be simple, which was also mentioned frequently by many visual material users in this study (e.g., "*I usually look for ones with an interesting story and unique/pretty art style or some fun slice-of-life comics that are easy to read and make me laugh*." (P9)) In this sense, historical genre or mystery genre can be relatively complicated, which again indicates that *Mental_Inellectual Engagement* is related to several other elements such as *Subjects* and *Plot_Narrative* (users used terms like "thought-provoking," "depth," or "philosophical" to describe more intellectually committed plots) of a visual material.

When a manga, comic books, cartoons, or anime tend to have narrative arcs that are completed in one episode or a chapter, it is more likely that they are simple. However, when they require many

episodes, chapters, even several *Series_Volume* to complete one narrative arc, with many different *Characters*, it would be more likely to be considered complex.

Information features: Audience_Rating

In addition to *Mental_Intellectual Engagement*, what most visual material users mentioned in this study was a desire for a more personalized recommendation list that understands their individual preferences. Because of this, users frequently described themselves (or the other person for whom they are looking for recommendations) first before requesting recommendations, providing the age range, occupation, gender, location information, whether they are new to this visual material or a seasoned consumer, etc., hoping that providing this type of audience information could yield better recommendation results. It should be also noted that many users wanted to know about what other "similar" users wanted to consume or had already consumed (e.g., "*but maybe they could do something like Amazon where it kind of tracks what you watch and have a recommendation bar based on what other people watch similar to you possibly*." (P25)).

In games, there is currently the Entertainment Software Rating Board (ESRB) system[20]. ESRB ratings have *Rating Categories* that show the age appropriateness, and *Content Descriptors* that suggest any contents that may have triggered a particular rating and/or may be of interest or concern (e.g., "Comic Mischief," "Mild Lyrics"). *Interactive Elements* describes interactive or online features of an item. Similar to game ratings, comic books, graphic novels, and manga also have rating systems mainly suggesting the appropriate age of audiences. The ratings tend to have

[20] https://www.esrb.org/ratings/

slightly different wordings, but generally how they divided the age groups is similar. For example, *DC comics* has E, T, T+, and M:

- *E (Everyone):* Appropriate for readers of all ages. May contain cartoon violence and/or some comic mischief.
- *T (Teen):* Appropriate for readers age 12 and older. May contain mild violence, language and/or suggestive themes.
- *T+ (Teen plus):* Appropriate for readers age 15 and older. May contain moderate violence, mild profanity, graphic imagery and/or suggestive themes.
- *M (Mature):* Appropriate for readers age 17 and older. May contain intense violence, extensive profanity, nudity, sexual themes and other content suitable only for older readers[21].

Current audience ratings information provided to users primarily focuses on audience age. While audience's age is one of the important elements of *Audience_Rating*, it is still limiting in that based on what users described in this study. In the previous study of developing a faceted classification of anime genre information (Cho et al., 2018), the authors identified *Audience* facet which contained six foci terms to describe different audience groups, including age and gender information based on the domain analysis and user warrant:

- *Kodomo (Children)* is for anime intended for children with an upper bound of late elementary school age to junior high school age;

[21] https://www.dccomics.com/ratings

- *Family* is for anime intended for all ages based on a hypothetical family containing young children to adults/elderly;
- *Shōnen (Boys)* is for anime intended for teenage boys;
- *Shōjo (Girls)* is for anime intended for teenage girls;
- *Seinen (Young Men/Youth)* is for anime intended for young men; and,
- *Josei (Women)* is for anime intended for women (p. 491).

Lee and Price (2015) developed seven personas based on interviews and think-aloud sessions to understand the different types of music information retrieval system users. The authors suggest that these personas, created based on the users' personalities and characteristics, offer a deeper understanding of the different types of users and the relative importance of design implications for each user type. In this study, seven developed personas are:

- Active Curator: "This persona takes great pride in their music listening, and enjoys seeking new music and curating music he/she is already familiar with. This may come in the form of playlist creation, "saving" albums in online collections, or light music "research", such as previewing songs or taking recommendations from friends, blogs, and live shows (p. 478)."
- Music Epicurean: "This persona may be considered a "music snob." Music epicureans take an immense amount of pride in the music they collect and listen to, although they may not necessarily own all that music (p. 478)."
- Guided Listener: "The Guided Listener's most prominent quality is the desire to hand over control of the music to someone else. This persona mildly enjoys radio's

serendipitous nature, may have slight preferences over genre or artist, but ultimately just wants to hear something playing (p. 478)."

- Music Recluse: "The primary characteristic of the Music Recluse is that he/she is a very private listener; this persona does not need to discuss his/her music listening habits with many people, and guards his/her privacy when using a music recommendation service (p. 479)."
- Non-believer: "The non-believer is a persona who does not believe that a machine can make adequate music recommendations for a variety of reasons (p. 479)."
- Wanderer: "The Wanderer primarily enjoys serendipitous music discovery, and listens to new music with an open mind (p. 479)."
- Addict: "The Addict exemplifies a known-item searcher and strongly utilizes a service that features search. This persona may listen to the same song multiple times in a row, or for a whole week (p. 479)."

Lee and Price's approach (2015) of creating different types of user personas seems to be applicable to visual material users, as well. For example, several users in the current study also identified themselves as *Active Curator*, stating how they documented the list of visual materials that they had consumed so far, and many also discussed their expertise on the materials, too, indicating that they can be *Epicurean*. Several users also talked about how they hide their visual material consumption from others (which will be further discussed in section *5.3. Social stigma of popular culture and visual media fans*), indicating that they could be *Recluse*.

In addition to the collected user information that most currently available streaming services use to recommend similar items to their users, providing additional audience information that could

be organized and used to retrieve relevant recommendation lists would help in providing a more personalized recommendation services to users. However, as Cho et al. (2018) state, "it is important to note that the actual demographic watching anime can differ from the intended demographic (p. 491)." Expecting stereotypical visual material needs from users might limit the satisfying recommendation services; "generally what other similar users tend to like" should be considered as a guideline, not an absolute rule.

There is another issue to consider in terms of understanding and learning individual user's characteristics: privacy. Knijnenburg et al (2012) state that there are several tradeoffs between system aspects and personal and situational characteristics. For example, "the amount of preference feedback users provide is a tradeoff between perceived system usefulness and privacy concerns" (p. 442). In a similar vein, several participants in the study of Lee and Price (2015) also showed their concerns around music recommendation systems. The authors state that especially "a user who has a higher interest in/believe of a machine's ability, a better understanding of privacy issues, and is more tech savvy, tended to be more concerned about sharing their personal information" (p. 480).

As Knijnenburg et al (2012) mentioned, providing more user information to recommendation systems (or even to a librarian) has a tradeoff. While there is a higher chance of getting even more accurate, personalized recommendations from the system, how much the system knows about the user may be invasive and of concern. In the reference interview, too, some users may feel uncomfortable letting librarians know about themselves, such as their age or media habits. The data collected for the current study did not directly show privacy concerns. However, when recommendation systems would like to utilize users' personal information to provide better

recommendations, in order for users to be completely aware of the system environment, it should be clearly stated and explained to the users what kinds of user information will be used or shared with others. Users should be able to know and decide what they want, instead of getting recommendations that the system assumes are the best for them.

Context: Time

When the user wants to consume the material for a specific duration was another vital element in recommending the right visual material item. The findings suggested that generally visual material users' preferences do not change based on whether it is their regular weekday or weekend day; but particular time contexts, such as holidays, commuting time or in-between class or work short breaks, or during traveling, indeed influence their visual material needs. As being closely related to *Activities_Situations* and *Length* oftentimes, in these cases, one of the most important factors was how long users can enjoy the material and finish it without being abruptly interrupted by the time constraints. Therefore, *the minimum amount of time required to fully enjoy one segment of entertainment* should be provide to users. It could be a mobile game that takes approximately 10 minutes to finish one stage so that users can enjoy it during their breaks, or it could be a webtoon that users could read for 30 minutes on their commute. Or, it could be a series of graphic novels that could be read completely in 11 hours of flight.

In order to support the temporal needs of visual material users, a recommendation provider could provide "when to consume" suggestions such as seasons, particular holidays, time of the day, if possible, with *Activities_Situations* information and *Length* information together. While "when" information and *Activities_Situations* information could be potentially provided and retrieved by metadata, *Length* information has similar issues that *Mental_Intellectual Engagement* has—how

much time one user needs to complete reading a chapter or playing one stage (or one save point) of a game can be difficult to decide. Still, there have been some guided estimates for comic books and games. Usually, for games, the information about the minimum amount of time to complete the whole game or the average time of completing a game tends to be shared online, such as *Figure 18*. For printed visual materials, visual media fan communities have attempted to measure the estimated amount of time, and generally the consensus is that it takes 15 to 40 minutes to finish one volume depending on its complexity[22].

5.2.3. Tailored needs for different types of visual materials

The previous section, 4.*2.2. Cross-tabulation analysis results: Based on different types of visual materials*, presented the results of important motivations, context, information features, and more, depending on different types of visual materials. In this chapter, each visual material will be further discussed based on these findings to consider better ways to provide recommendations to users.

In many aspects, anime and manga shared similar elements that were considered important by users despite their different platforms. Anime and manga shared emphasis on *Subjects*, as well, which aligned with previous studies on anime and manga. The biggest appeal of anime and manga is the diversified themes (Levi, 2013; Brenner, 2007; Davis, 2015).

> "*Kyudo in english literally means the Way of the Bow.* ***I find Japanese Archery to be very interesting but I have not seen a lot of animes with this though****...Anyway I was wondering: 1. Does having Kyudo in an anime make it more interesting or not? 2.*

[22] https://community.cbr.com/showthread.php?2695-How-long-does-it-take-you-to-read-a-comic-book-(the-avg-22-pages-one); https://myanimelist.net/forum/?topicid=387875#msg12953571

Besides the Inuyasha anime and manga whats another anime and/or manga that has Kyudo in it?" (T6700)

"***Once again though what lured me to this series was the food itself. Learning about food, has never been so enjoyable.*** *At the moment though this series falls into a repetitive formula (though enjoyable nonetheless) I impatiently wait for further chapters to be released (as currently it only stands at 53 chapters). I really wish there were more manga about food. Its [sic] pretty sad but* ***both Yakitate! Japan and Addicted to Curry have been more educational about food than the food network***." (T51158)

In addition to *Subjects*, the importance of *Audio Style* in anime was distinctive. *Audio Style* code in this study included any auditory aspects of a visual material, such as soundtracks, voice acting, sound effects, and more. Voice acting, especially information about voice actors for anime, was often mentioned by several users. When users discussed this information, it tended to be an element that was important enough for them to decide if they want to watch this anime or not. Many anime users actively followed information about the voice actors they like, and when there was a new anime with these voice actors, users made it a priority to appreciate their voices and acting.

"*I probably have written down that I have followed a few pages on Facebook about these kinds of anime stuff, and so from time to time when, when new anime came out and then they will list it out all the title, the plot, um, who is acting on it. […]* ***So I'll look into the voice actor list, and then I would just look if there's someone I liked, and probably***

sometimes even though I don't really like the plot, so I'll just give it a try and see if that's something that I want." (P20)

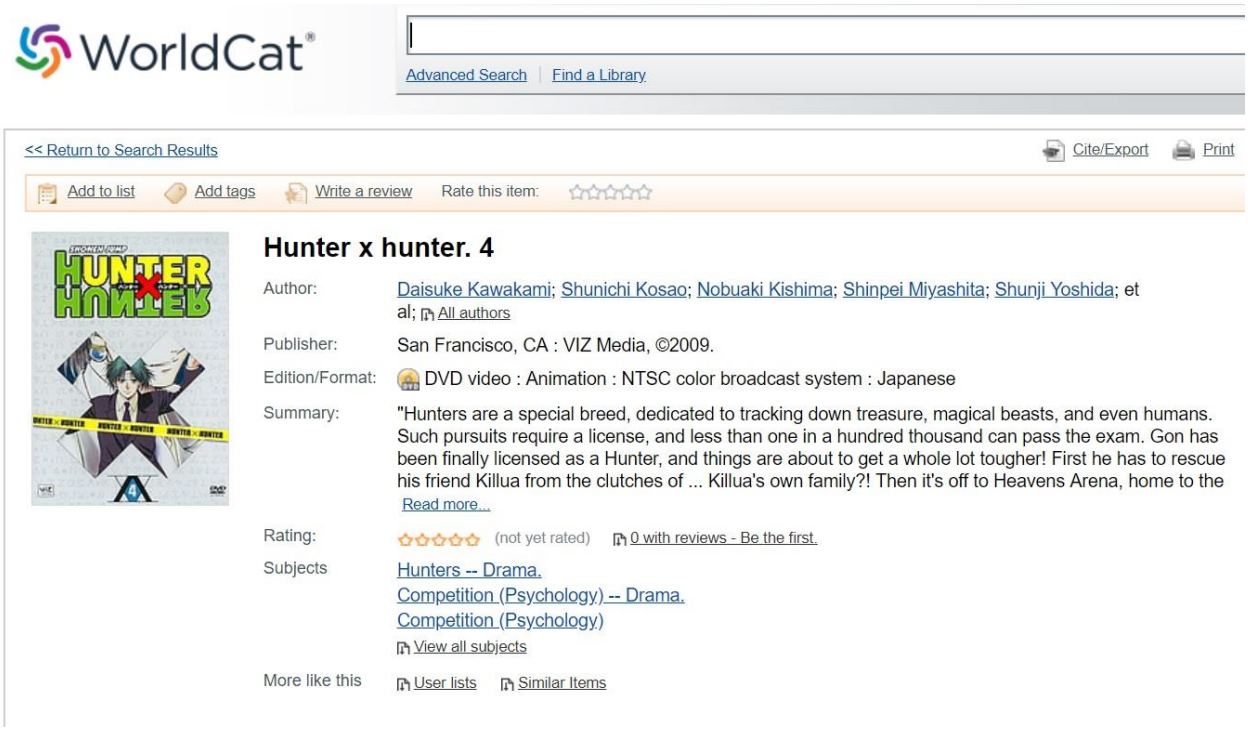


Figure 20. OCLC WordlCat record: Hunter X Hunter 4 (2009)

The current OCLC WorldCat record of an anime DVD, *Hunter X Hunter 4* (2009), lists the author information and other contributors' information, such as producers and studios, but it does not show any information about the voice actors. However, many anime-related online databases have this information and let users search for different anime based on voice actors due to the fan communities' high demand (*Figure 21*). In anime fan communities, voice actors are as important as authors and other contributors of anime.

Figure 21. Characters and voice actors' information on MyAnimeList.net

In cartoons, *Creators* of cartoons were more frequently discussed by users, with more emphasis on the body of creators, such as producing companies or broadcasting companies, than individual artists or directors. It seems that since cartoons are broadcast on particular TV channels, users tend to share information about each producing company and the channel's new cartoons and identify cartoons with the broadcasting companies.

> "***I saw an ad tonight for an ABC Family animated series called "Slacker Cats",*** *coming in August. As the title suggests, it's about two slacker cats. I did a little Google-ing, since I literally found out about it TONIGHT*." (T4384031)

> "***Bohbot Kids Network has a TON of shows that have fallen by the wayside and didn't get the exposure they deserved****. Lots of the time they had crappy early morning time slots where the target audience was asleep*." (T5157361)

For comic books and graphic novels, *Franchise_Universe, Platforms_Sources,* and *Series_Volumes* were much more frequently described by users compared to other visual media. These three *Information Features* tended to be discussed together more so than separately; users often looked for an issue or a series from a certain universe and platform. For example, T87950 is looking for comic books from *Marvel* universe, but also in a hard cover (HC) platform, and T60335 is looking for a particular series of *Supergirl*, which are the seven comic book series published by *DC Comics* since 1970's with different artists and volumes.

> "*Hey guys, I would love some recommendations on some good,* ***dark, gritty Marvel stories. Could be any character as long as the story's good and recommended. Ones that come in these oversized HCs*** *(Stuff like Fury: My War Gone By, Ennis's Punisher and so on) are a preference, but definitely not a demand. Thanks in advance!*" (T87950)

> "***Found a digital sale on Supergirl comics. I've checked out the 2011 volume (New 52), but which one of these other titles would you recommend if you had to choose one?*** *Supergirl (2005) Loeb's run. Should I read the Superman/Batman issues leading up to it? Supergirl (1972) do I need to read her issues of Adventure comics first? The Daring New Adventures of Supergirl (1982), Supergirl (1996) PAD's run, or even her run in Adventure Comics in the late 60s/early 70s?*" (T60335)

Since comic book users tended to have stronger preferences on particular universes, platforms, and publication types (e.g., "*I would prefer single issues over trade*." (T51900)), there were several granular terms that they used to describe their needs more clearly. Plummer (2017) explains the comics terminology as follows:

- "Series: a series of comics consists of consecutively numbered single issues under the same title. […] A series can be an ongoing, meaning it runs until the publisher decides to cancel it, or a miniseries with a set number of issues at the outset.
- One-Shot: a single issue of a comic that is not part of a series.
- Annual: theoretically published on a once-a-year basis. They usually tie into an existing series. […] Annuals are generally longer (and more expensive) than a monthly issue.
- Variant: a comic released with a different cover than the main, "official" cover for the book. Typically a publisher will print significantly fewer issues with the variant cover, with the idea that rarity will increase its desirability to collectors.
- Trade: short for trade paperback (although some trades are also available in hardcover), a trade is a reprinting of anywhere from 4-12 issues of a monthly comic book, though six is the standard. […] They're typically released between one and six months after the story they collect concludes its original run, although DC and Marvel are increasingly publishing much older, never-collected stories as trades as well these days.
- Volume: volume is tricky to define, because it has two meanings in the world of comics. One refers to a comic series, usually an ongoing, and is a way to indicate which series you're talking about when there is more than one by the same name. […] The other definition of "volume" refers to how a publisher numbers its trades.

- Run: a consecutive string of issues of a particular comic series. It generally refers to a creator's tenure on that series. […] Less commonly, "run" might refer to a particular character's tenure as the lead on that title."

What users were looking for was specific: a specific issue number of a comic book series, a paperback or related volume about a character from a universe, or the ones with particular size. They often wanted to know if they "missed" anything from a series or universe, asking for help which issues or volumes they would need to read to catch up with the story and see the full picture (e.g., "*I want to read stories of Legion of Superheroes, mainly the Great Darkness Saga but I am afraid that if I start from these issues I would not understand the story.* ***So what issue must be my start point*** *for the Legion of Superheroes?*" (T20201)). However, the current library databases do not support this granularity of comic books' *Platforms_Sources* and *Series_Volumes* information. There are often *Notes* field or *Descriptions* field indicating the volume number, but the main field that indicates the types of publications, *Document Type*, would only describe it as a "book." Users in this study also expressed their frustrations when their libraries had some missing issues and volumes of comics books and graphic novels. Considering how complicated the types of *Platforms_Sources* can be for comic books, having a more clearly defined record field for comic books and graphic novels might be able to help prevent this problem, as well as help users find specific issues of comics more easily. If that is not possible, adding more granular part information (e.g., the number of issues inside of a volume or trade) would still be able to provide better information experiences to comic book users.

Lastly, for games, *Platforms_Sources* and *Gameplay_Mechanics* information were more predominantly used for recommendations. Because games require different types of devices and configurations, users tended to look for recommendations for the game platforms that they already own, and many users were also looking for information about the ideal device setup to play certain games.

> "*Can you recommend me a fairly easy RPG that lets you save your progress at any time? **I have a PS2, a DreamCast, a PS3, and a PSP***." (T27172471)

> "*I'm looking for **a sniped [sic] based game for PC that contains wind, bullet drop, and stuff like that**. Please do not suggest Sniper Ghost Warrior."* (T29092323)

> "***I'm looking for a good JRPG for the 360 or PS3. I typically like the more turn-based battle systems** like Lost Odyssey, Final Fantasy 1-10, and Xenosaga. I'm not really big on the "everyone attacks all at once" battle system*." (T28972761)

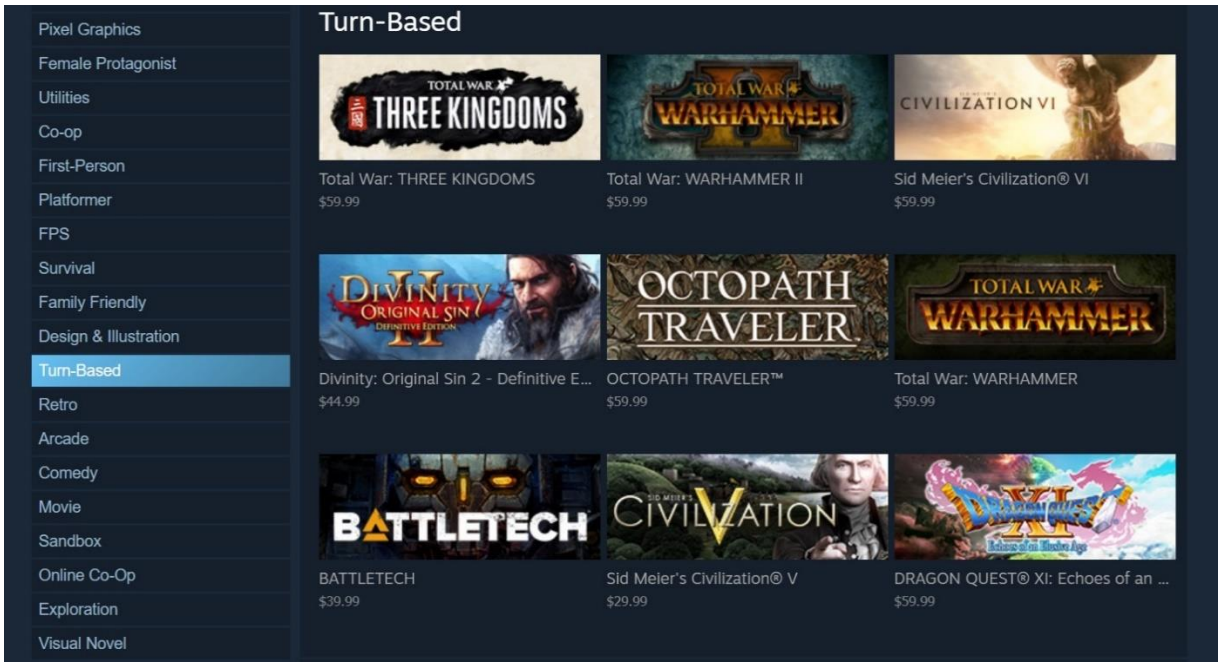
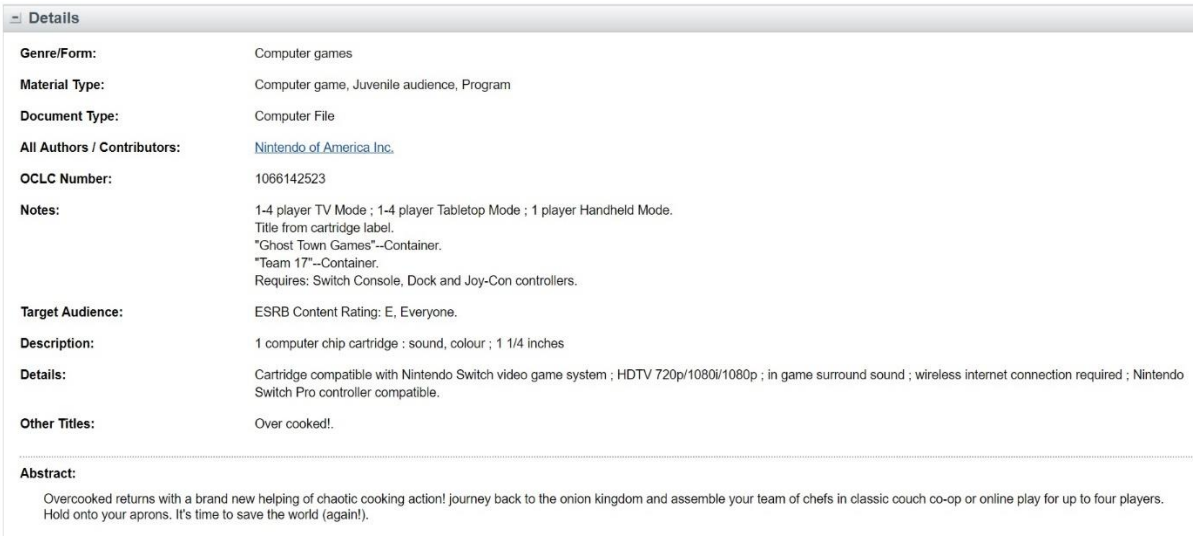


Figure 22. Popular tags on Steam

Generally, commercial online game databases like *Steam* are good at providing game information and recommendations based on *Platforms_Sources*. Also, since users have access to the game sources via their own game devices in many cases, the list of recommendations they get from the *Platforms_Sources* would only show the ones that are available on their individual devices. However, finding a specific type of gameplay style is a bit more challenging. For example, *Figure 22* shows some of the popular tags on *Steam*, an online game database. Although it is technically possible to find games with different gameplay styles with the popular tags provided, users need to browse the long list of tags and try to find the right tag that they need—not the most efficient way of search.



Details

Genre/Form:	Computer games
Material Type:	Computer game, Juvenile audience, Program
Document Type:	Computer File
All Authors / Contributors:	Nintendo of America Inc.
OCLC Number:	1066142523
Notes:	1-4 player TV Mode ; 1-4 player Tabletop Mode ; 1 player Handheld Mode. Title from cartridge label. "Ghost Town Games"--Container. "Team 17"--Container. Requires: Switch Console, Dock and Joy-Con controllers.
Target Audience:	ESRB Content Rating: E, Everyone.
Description:	1 computer chip cartridge : sound, colour ; 1 1/4 inches
Details:	Cartridge compatible with Nintendo Switch video game system ; HDTV 720p/1080i/1080p ; in game surround sound ; wireless internet connection required ; Nintendo Switch Pro controller compatible.
Other Titles:	Over cooked!.

Abstract:

Overcooked returns with a brand new helping of chaotic cooking action! journey back to the onion kingdom and assemble your team of chefs in classic couch co-op or online play for up to four players. Hold onto your aprons. It's time to save the world (again!).

Figure 23. OCLC WorldCat record: OverCooked! 2 (2018)

In library databases, both *Platforms_Sources* information and *Gameplay_Mechanics* information are not really easy to retrieve. Specifically, it would be more challenging to users to find new games based on *Platforms_Sources* and *Gameplay_Mechanics*. *Figure 23* shows the WorldCat record of a *Nintendo Switch* game, *OverCooked! 2* (2018). Specific platform information, *Nintendo Switch*, is provided in *Details* field, and no *Gameplay_Mechanics* information provided. With limited access to the games' platform information and gameplay styles, users may have trouble getting satisfying game recommendations from libraries.

For these two *Information Features* for games, developing a controlled vocabulary may be a good direction to proceed. Both *Platforms_Sources* and *Gameplay_Mechanics* are likely to have a limited number of terms, although *Platforms_Sources* might need to be updated relatively frequently when a new game platform is released. The main problems of finding game information using provided tags are their inefficiency in retrieval and the possibility that users might not know which terms they need to find and use. Conducting a domain analysis by

collecting the terms being used in game communities and relevant databases could help create an exhaustive list of terms that are used for different types of game platforms and gameplay styles; developed sets of controlled vocabulary terms could then be applied to the library databases and other relevant databases, without needing to use *Notes* or *Details* fields that are not search-friendly to users.

With the findings from this study only, it is difficult to determine if certain users prefer particular types of visual materials mainly due to their familiarity with the materials or differentiated appeals and characteristics of the material. However, when a user looks for a certain type of visual material, it would be important for recommendation providers to be aware of which features/aspects of that material may be most important.

5.3. Social stigma of popular culture and visual media fans

> "My interest in popular culture and stigma stems from my research on comic books in America. In reading histories, interviews, columns, and other writings in the subculture of comic books, I found the multiple levels of stigma to be quite remarkable. Comic books have been stigmatized since their introduction in the mid-1930s, and this stigma has affected comic books as well as artists, readers, and fans of comics. I even experienced this stigma in the responses from colleagues when I chose to study comic books, and I found that other comic book scholars in America shared this experience." (Lopes, 2006, p. 388)

One noteworthy phenomenon observed in this study was how some users were ashamed of their visual media consumption and tried to hide it from their family and friends. In fact, the derisive

notion of "geek" or "otaku" has been prevalent in society, and the related social stigma of geek culture has been discussed in previous studies (Lopes, 2006; Roberts et al., 2016; Peeples et al., 2018).

> "*Oh, I don't worry about it too much, but I could imagine if I was like at the gym reading some sort of web comic or something or watching something,* ***and it seemed like super, super anime, I might not be into that because I know there's lots of people who like judge certain styles of art***." (P12)

> "*I was enjoying browsing pages of pictures on this website* ***although I would only do so when I am alone because some of my friends find me looking at anime pictures odd***." (P24)

While some users identify themselves geek or otaku with pride, it is important to note that there are others who are not comfortable discussing their visual material needs with others, being afraid that they might be judged by others. Lopes (2006) claims that stigma and status are closely related social phenomena, and discrediting and problematizing a form of work or the practitioner is not only a matter of a simple dislike or imputing inferior tastes. According to the author, stigma "usually implies that something is inappropriate, wrong, and at the extreme, harmful or pathological" (p. 398). And visual materials, in this particular case, comic books, have been stigmatized and squashed by a successful moral crusade in the late 1940s and 1950s. With this stigmatization, people who enjoy this culture have been also viewed with biased judgement:

> "As the term geek sheds stigma, it can attach to areas of interests previously outside of the geek domain. For instance, a "sports geek" may be hyperfocused on team statistics,

> fantasy sports, or wear flamboyant dress and face paint at a game. This discussion focuses on more traditional geek pursuits. Broadly speaking, these interests fall into science and technology fields, and obscure media, such as genre literature, comic books, and gaming" (Peeples et al., 2018, p. 249).

Discussing popular culture and visual material users from sociological and psychological perspectives is not a scope of this study; however, it is important to be mindful of users who are reluctant to express their visual material information needs freely or publicly. With the findings from this study only, it is difficult to draw any concrete decisions on what the best way would be to provide recommendations to "secluded" visual material users, or if they would want any recommendations from in-person communications/services, either. This topic should be further investigated in a future study.

5.4. A new perspective on escapism in visual material use

One of the themes that was newly discovered in this study was *Health*. For the users who mentioned health-related concerns, *Health* played a significant role in their everyday visual material needs and behaviors, and it was closely related to their motivations for consuming visual materials. For example, P17 has a history of sexual assault, and she has been dealing with PTSD since she was 14. Since she tends to self-harm herself when she is triggered, she plays video games to cope with her PTSD whenever she feels the urge to harm herself. Similarly, P23 also plays portable games when going through painful medical treatment.

> "*like I've been dealing with PTSD since I was 14, and it has been kind of frustrating trying to figure out how to make it better and so I've gathered a data set of what tends to*

make my symptoms better or worse. And so ***a lot of my choices are based on that based on current data, like playing games tends to be the thing that makes my PTSD go away the best. So I do a lot of that, but I also have carpal tunnel and so I need things to do while I'm taking breaks from playing games so I don't destroy my hands.*** *So that tends to be where at other forms of media come in, like anime or Manga or things like that*." (P17)

"***It's extremely important that I have something to distract myself with during electrolysis*** *and I suspect it's of similar importance to my girlfriend who sits in with me during it. Watching me in pain can be stressful for her too so a constant distraction is a good thing*." (P23)

As one of the most frequently reported motivations for engaging in media use, the concept of escapism existing in current media studies has focused on psychological states of media users, such as depression, exhaustion, and poor self-esteem, considering them as the primary reasons for pursuing escapism in media use (Hastall, 2017). Escapism is defined as "avoiding real-life problems by engaging in media such as TV and video games" (Li, Liau, & Khoo, 2011, p. 536). Because media users with escapism motivation attempt to avoid real-life problems as opposed to trying to solve distressing problems, escapism has often been viewed negatively.

However, the motivations of P17 and P23 in this study were different from the conventionally defined escapism. Although the users were trying to disengage with the situation by playing games, which can be still considered as a type of escapism, it was to manage the currently happening, physical and painful situations, instead of simply avoiding the issue. This particular

type of escapism identified in this study was an active coping strategy, not an attitude or emotional state of passively avoiding real-life problems.

Chapter 6. Conclusion

This chapter will summarize the findings of this study and revisit the research questions. In addition, recommendations for libraries will be discussed (*6.3. Suggestions for libraries*), and empirical, theoretical, and methodological contributions of this study will be presented in chapter *6.4. Contributions and evaluations of the research*. Any future work to be done will be discussed at the end.

6.1. Summary of findings

This study investigated the users of different visual materials to understand their needs through a two-pronged approach: a diary study complemented by a follow-up interview and a larger-scale content analysis of natural language queries collected from online fan communities. Specifically, the objective of this study was to understand visual material users' motivations and context of consuming visual materials in order to identify the necessary information features needed for recommendations. It aimed to improve recommendations and reference services for multimedia materials, especially visual narrative materials, and provide an empirical foundation for developing enhanced organization and retrieval systems for different types of visual materials. In this study, visual materials included the following three types: printed visual narrative (e.g., comic books, graphic novels, manga, newspaper comic strips), visual narrative with a moving image format (e.g., animated films, anime, TV cartoons), and interactive visual narrative (e.g., video games).

The first phase of this study, which utilized a diary method complemented with a follow-up interview, was conducted with 26 participants who were interested in more than one type of

visual material. Participants recorded their visual media behaviors for two separate days, one on a regular day, and another on an off-day. Once participants completed recording their diaries, a semi-structured follow-up interview was conducted. The second phase of the study was a content analysis of 250 randomly selected online forum threads from five different visual material fan communities. This method was selected to ensure the themes identified in the diary and interview study are valid and observe potentially more diverse needs from a larger dataset. Using two different methods with a qualitative approach, this study identified five themes: *Context, Information Features, Motivation, Search-related Information,* and *Values*. In addition to the five main themes, the additional parent node, *Auxiliary codes*, was used to record any sentiments or relational information toward other themes. Overall, 50 codes were identified.

Among the identified codes, more frequently and/or strongly mentioned ones from each theme were: 1) temporal information (*Time*) and the activities or situations that users were in (*Activities_Situations*) from *Context*, 2) specific title of visual material (*Work*), how the story unfolds or what types of storyline one work has (*Plot_Narrative*), different types of characters, including appearances, age, personality, occupations, and more (*Characters*), the moods of users or the moods of visual materials (*Mood*), certain visual styles of the work (*Artistic_Visual Style*), and the information or characteristics of a user who is going to use the media material (*Audience_Rating*) from *Information Features*. 3) For *Motivation*, how difficult the visual material is to understand or play, whether it is for learning/educational purposes, and if it is to disengage from the world (*Mental_Intellectual Engagement*) and to have a bonding feeling (*Companionshio_Fellowshio_Fandom*) were the most important codes. There were several newly discovered themes in this study as well, including the importance of visual materials'

appropriately conveying one's values and beliefs, such as diversity and respecting other cultures (*Personal Beliefs_Values*). Lastly, the frequent use of *+Like* and *+Dislike* from *Auxiliary Codes* indicated that visual material users tend to have clear preferences on their media choice.

The cross-tabulation analysis showed the following pairs of codes tend to have higher co-occurrences. In these pairs, *Activities_Situations (Context), Plot_Narrative (Information Features),* and *Work (Information Features)* appeared several times, indicating them being of great significance in visual material recommendations:

- *Activities_Situations X +Media Specific:* Depending on what activities that they were doing or planning to do or the situations that they were in, visual material users chose a type of visual material that was suitable for the situation. For example, for a family gathering event, users would choose video games that family members would enjoy playing together.
- *Mental_Intellectual Engagement X Activities_Situation:* Activities and situations also influenced the level of intellectual engagement that users wanted. For example, when a user wanted to simply relax and de-stress, he/she wanted to enjoy a visual material item that was easy to follow, instead of one that was intellectually challenging.
- *Artistic_Visual Sylte X Plot_Narrative:* Many visual material users discussed the visual style of the material and its plot together. For some users, having a good visual style was even more important than having a good plot in visual materials, indicating the importance of visual style in visual materials.
- *Plot_Narrative X Characters:* Plot of the visual material item and its characters were also often discussed together, as characters play an important role in the overall narrative.

How characters develop throughout the storyline was another important aspect to visual material users.

- *Audience_Rating X Plot_Narrative:* Users tended to provide audience information in a detailed way to get more personalized plot recommendations. For example, parents of younger children would look for visual materials with stories that are educational and age appropriate, and a user who is new to visual materials would look for something that is generally popular among broad audiences to get into the medium easily.
- *Work X Reviews:* Especially in online visual material fan communities, many users shared their reviews on visual materials. They enjoy sharing their thoughts and asking for others' opinions, thereby fully utilizing the platform of online community. Users of visual materials tended to be opinionated, and many of them enjoyed expressing their expertise with others.
- *Work X Creators:* Users often discussed creators and their works together. They shared information about individual artists and the body of creators, such as publishers, distributors, or production companies. When users discussed creators and their works together, it was often to get the relevant information about the visual material, such as artist's newly coming work and release date.

Cluster analyses of coding similarity and word similarity showed that *Motivation*, *Context*, and *Information Features*, indeed, have strong associations, which were more pronounced especially in the first phase of the study. Some of pairs with the highest coefficient values (indicating high similarity) included context information and the specific type of visual material (*Context X*

Media Specific), plots and characters of the visual materials (*Plot_Narrative X Characters*), certain social and ethical values portrayed by the characters (*Values X Characters*), and more.

Intercoder reliability measures for both phases showed *good* to *excellent agreement*, indicating the high reliability of the created codebook and the coding process.

6.2. Revisiting the research questions

In this section, each of the research questions will be revisited to present how this study addressed them. This study aimed to answer four research questions on visual material users' motivations and contexts for consuming visual materials as well as, information features needed to obtain visual material recommendations, and to discover any associations among the motivations, context, and information features.

- **RQ1: What are users' motivations for consuming visual materials?**

There were six motivations identified in this study: *Mental_Intellectual Engagment*, *Companionship_Fellowship_Fandom*, *Loyalty*, *Achievement*, *Expression*, and *Discovery_Exploration*. Among these motivations of consuming visual materials, *Mental_Intellectual Engagement* and *Companionship_Fellowship_Fandom* were the most frequently discussed by visual material users. *Mental_Intellectual Engagement* was the commonly mentioned motivation across different types of visual materials.

- **RQ2: What are the contexts or situations for consuming visual materials? Do motivations for consuming visual materials differ depending on different situations, and if so, how?**

Time, *Activities_Situations*, and *Place* were the contexts identified. *Time* and *Activities_Situations* had higher counts overall, but these three elements were closely related. Visual material users often mentioned two or three of these codes together to describe their contextual and situational needs. Visual material users had different motivations depending on different activities or situations. For example, mindlessly reading or playing while they were standing in line, playing something as background noise to feel like they were not alone while they were working on something, or trying to find something that could be enjoyed with other people when planning a night event with friends or family. Among the codes in *Context*, *Time* was the most commonly used context information across different types of visual materials.

- **RQ3: What information features are typically needed to obtain visual material recommendations?**

Twenty-three identified *Information Features* include *Work, Plot_Narrative, Characters, Mood, Artistic_Visual Style Platforms_Sources, Subjects, Genre, Audience_Rating, Gameplay_Mechanics, Audio Style, Setting,* and more. *Information Features* were the mostly frequently discussed elements by users when they either discussed visual materials or looked for new recommendations. Among the 23 *identified Information Features*, *Audience_Rating* was mentioned most frequently across the different types of visual materials, indicating the emphasis on users' desire to get more personalized and individualized recommendations from the recommendation services.

- **RQ4: Are associations present in certain combinations of themes, specifically among motivation, context, and information features?**

Based on the cross-tabulation analysis and cluster analysis, co-occurrences of codes and the similarities among the codes were identified. The analyses showed that *Motivation, Context,* and *Information Features* have associated relationships. This was especially evident in particular pairs of the codes among these themes, such as, *Activities_Situations (Context) X Mental_Intellectual Engagement (Motivation), Mood (Information Features) X Mental_Intellectual Engagement (Motivation), Artistic_Visual Style (Information Features) X Plot_Narrative (Information Features)*. These pairs with stronger associations indicated the inter-thematic relationships. In other words, some of the identified codes from different thematic parents indicated higher similarities, suggesting that understanding the motivation and context of visual material users and providing the appropriate search features for the material would provide more enhanced recommendation experiences to users.

6.3. Suggestions for libraries

Findings in this study strongly suggest developing more rigorous and granular metadata for visual materials in the design of enhanced recommendation and reference services. In particular, *Language* features in current search and recommendation systems were not fully supported to satisfy visual material users' needs to find materials with English subtitles or items that are dubbed into English. Users stated that sometimes they would like to search for items with Japanese voice actors and English subtitles to enjoy the original language and their favorite voice actors' performances, but at other times they want to be able to find dubbed materials, to listen without being obligated to focus on the screen constantly.

In addition to the *Language* problem, users also mentioned that they had difficulties in filtering and navigating current recommendation systems. Users wanted search features that could filter out some of the *Subjects, Genre,* or *Artistic_Visual Styles* that they dislike. In order to enable these features, users suggested having a more clearly visible, strengthened metadata on the relevant databases, advanced Boolean search, image drop-in search, and more detailed descriptions of scenes with violence or sexual contents that could mentally prepare them for these scenes or let them skip the materials entirely.

To provide the cross-media recommendation/reference services, results of this study suggest using visual material users': 1) degree of the *Mental_Intellectual Engagement* motivation with their current *Mood*, 2) *Audience_Rating* information, and 3) the relevant contextual information of *Time* with expected *Length* information. These elements were important to users in all types of visual materials and could be a great starting point when providing recommendation services.

For different types of visual materials, recommendation services can provide more tailored search features by understanding the specific needs for each material. For anime and manga, *Subjects* were emphasized due to the various themes in these materials, and for anime, *Audio Style* of the material was an important element, such as soundtracks and voice actors. In cartoons, *Creators* were frequently discussed by users, and users often identified cartoons with their producing companies and distributors together. Individual names of creators were less likely to be mentioned by cartoon users. For comic books and graphic novels, *Franchise_Universe, Platforms_Sources,* and *Series_Volumes* tended to be described more frequently than other codes. Comic books have diverse styles of publication, such as issues, trade, series, volume, one-shot, annual, variant, and run, with different platforms such as hard cover, over-sized hardcover,

or paperback. Comic book users often discussed the universes of comic books as well, such as *Marvel Comics* and *DC Comics*. Lastly, for games, *Platforms_Sources* and *Gameplay_Mechanics* were more frequently discussed compared to other visual materials due to the system requirements to play certain games. Users wanted to find games that work with the platforms and devices that they already have. Style of gameplay (e.g., point and shoot, turn-based) was also an important factor for game users to find new recommendations.

When providing visual material recommendations to users, some users have strong preferences toward *Personal Beliefs_Values*, such as female representation, diversity, ethics, sexual consent, and social issues. By developing taxonomies and controlled vocabulary for relevant *Information Features*, such as *Characters, Plot_Narrative*, and *Subjects*, visual material users would be able to search for materials that include some of the *Personal Beliefs_Values* they are passionate about.

6.4. Contributions and evaluations of the research

This study provides empirical understanding and findings of visual material users' media consumption behaviors and relevant information for recommendations such as information features, motivations, context information, search-related information, and other newly emerged themes in visual materials. Findings of this study are from the user studies of diary and interview and the content analysis of a larger set of natural language queries from online visual material fan communities. The findings have helped fill the gap in the existing literature to further understand visual material users' needs.

In addition to the empirical findings, this study provided theoretical and methodological contributions in library and information science. Theoretically, this study applied theories from two schools—information science and communication and media studies. Implementing information needs and behavior theories from information science and the uses and gratification perspectives from media studies together, is a novel, interdisciplinary approach to better understand visual material users. Considering that the theories of information needs and seeking behaviors tend to focus on the aftereffects of information seeking needs, this study aimed to bridge the gap by utilizing uses and gratification theories from communication and media studies to understand what goes on inside of users' minds before they initiate search. This helps us form a clearer understanding of users' media behaviors. On the other hand, one of the criticisms that uses and gratification theories have received is the lack of a unanimous typology of gratifications among the scholars. The current study organized and utilized all the relevant concepts collected from the interdisciplinary domains, which moves us toward a unanimous typology.

Methodologically, using a diary, interview, and larger scale content analysis method allowed the researcher to address differences among the methods. The diary method has been adopted in several uses and gratification studies due to the belief that the audience is active and perfectly capable of describing what they want. However, it was unclear if using other research instruments may be even more effective in studying users' media consumption. In this study, by using diary method, interview method, and content analysis method altogether, it was possible to compare the processes and the types of data collected from these methods and evaluate their advantages and disadvantages.

The diary method was great at capturing the details of *Motivation* and *Context* information since participants recorded the situations they were in and why they wanted to consume/search for the visual materials whenever a visual material event occurred. It also captured diverse *Information Features* since participants freely discussed why they liked or did not like certain materials. Some of the participants were very thorough in recording their visual media diary, providing considerable in-depth experiences and thoughts. However, since it collected only two separate days of behaviors, it could not ensure if there were more diverse types of motivations and contexts of consuming visual materials that had not been identified.

The follow-up, semi-structured interview helped in addressing this issue by asking more general questions to participants in order to provide a bigger picture of their visual media behaviors. Since the diary could only show two days of media behaviors, the researcher could ask any follow-up questions relating to the specific diary record in order to expand the topic and ask more general questions about participants' media behaviors, preferences, and search strategies. By allowing participants to freely discuss what they felt regarding the visual materials, some of the newly emerged themes such as *Values* could be explored.

The limitation of a diary method paired with the interview method is time commitment. When performed together over a longer period of time, these methods could yield rich, in-depth data about visual material users' needs. However, due to the time constraints, it was difficult to collect a large set of samples. In the pilot study where participants recorded a three-day diary, participants expressed fatigue from recording every visual media event. Considering this, having participants record a diary of an even longer period might increase the participants' perceived burden.

Content analysis was helpful in ameliorating this problem by collecting a larger dataset from online sources. Since the data was collected from five different forums, where each represented a different type of visual material, some of the new information about the identified themes, such as the importance of different types of comic book publications, was explored. However, due to the fact that most of online forum queries tend to be succinct, the expected richness of information was limited compared to diary or interview methods. Still, collecting the larger dataset helped triangulate the data from the previous phase and ensured that no more new themes were discovered.

Limitations of this study were potentially biased demographics and the limited time period for diary data collection. Participants who joined the diary and interview study showed more diverse characteristics in terms of gender, ethnicity, and educational background than average users. The fact that participants were willing to participate in the two-day diary study and interview showed their strong passion toward visual materials, which could be, again, differentiated from average users. Also, as briefly discussed above, data collection for the diary study was conducted over a limited period of time. Data collection over a more extensive period of time may be able to capture even more diverse motivations and contexts of consuming visual materials. Limitations of this study should be carefully considered when making visual material recommendations to users.

6.5. Future work

Findings of this study suggest the need to develop more rigorous metadata for visual materials. As the next step of this study, the researcher plans to develop controlled a vocabulary for codes that showed especially high demand, such as *Mental_Intellectual Engagement, Time, Mood,* and *Subjects*. In this process, domain analysis with a much larger dataset could be helpful. Although there was a much larger dataset available from online, the content analysis used in this current study did not analyze the whole dataset available since the data was manually coded and qualitatively analyzed. In future studies, the researcher plans to apply natural language processing methods to the data collected from online fan communities and relevant databases to exhaustively explore the terms used in visual material domains with a much bigger dataset. Collected and organized terms can be further refined and classified based on the themes identified from the current study.

Several new themes emerged in this study, including *Health, Personal Beliefs_Values,* and a slightly different discourse—social stigma of popular culture and visual material fans. Future studies on these topics could be significantly enhanced with methods and from psychology, sociology, and gender and queer studies to better understand the mindset of users, which, in turn, could inform the design of more enjoyable and easy-to-use information services. Collaborations with other domains and institutions, such as medical communities, health-care providers who treat PTSD patients, non-profit organizations for human rights and minorities, and currently available visual material recommendation providers seem to be a good direction to better understand visual material users with diverse needs.

Finally, the main population of this study, especially the diary and interview study, consisted of young adults. Different generations of users might have different needs for visual materials, and motivations for them might differ, as well. User studies with children and/or senior users should be conducted to help design more inclusive visual material recommendation services.

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Appendix A: Recruiting Language

Greetings! My name is Hyerim Cho, a primary researcher of this study and a Ph.D. candidate at the University of Washington Information School.

Are you a fan of visual media objects including **comic books/graphic novels/manga, anime/animations, and video games?** Do you generally enjoy **more than one type of media** (*e.g., you may like reading comic books and also playing video games, or you may like watching anime, reading graphic novels, and playing video games too*)? Are you 18 years or older? If yes, please consider participating in this study!

The objective of this study is to understand the information needs of multimedia users, which can help, create better information retrieval or recommendation systems for your search experiences. You will be asked to keep a 2-day diary on your visual-media behaviors, logging information such as what you searched for, watched, played and read, and what you liked or disliked. We will wrap up the study with a 30-minute follow-up interview (phone or video interview if you are not in Seattle area) to hear about your overall experience. All participants will receive $50 for participating in this study.

If you are a fan of pop culture and interested in sharing your thoughts by joining this study, please follow this link (https://goo.gl/forms/W0qAT9LXpsZhFJ4l1).

Have a great day!

Appendix B: Participation Instructions

Thank you very much for participating in this study. My name is Hyerim Cho, a primary researcher of this study and a Ph.D. candidate at the University of Washington Information School.

I would like to hear about your motivations for seeking out different visual media materials (comic books, graphic novels, manga, web comics, anime, animations, cartoons, video games, and mobile games), when and where you enjoy them, how you search for them, what matters to you most when you choose what to play, read, or watch, and why you like or dislike about the items you consumed in 2 separate days (one regular/working/school day and one weekend/vacation/off-day). The objectives of this study are to better understand multimedia users like yourself, to improve current multimedia-related information services and to provide better search-and-recommendation experiences.

1. You will have 2 links sent to you: One for regular/working/school day, and the other for weekend/vacation/off-day. You will have 10 days from which to select one regular day and one off-day to describe how you consume visual materials such as comic books/graphic novels/manga/web comics, anime/animations/cartoons, and video games/mobile games throughout the day.

2. You can submit **as many responses as you need** using the links. For example, you may enjoy different media objects 4 times on a regular day (e.g. 2 mobile games, 1 web comic and 1 anime). In that case, you would visit the regular/working/school day link 4 separate times to submit different media consumption experiences. The provided links are created just for you.

3. It would be very helpful if you could describe your situations and opinions in detail rather than a simple word or a sentence, so that the researcher could understand you better. **The more detail, the better!**

4. **Please record your media experiences during those 2 days WHENEVER you have them.** For example, if you read web comics on your phone on the way to school in the morning, played some mobile games between classes, and watched an anime show before you went to sleep, please record all of these occurrences. I understand it's difficult – or sometimes even impossible – to write a diary when you're not home. That's fine! I

recommend you to take short memos on your phone about the time and the title of the media you consumed, so that you'll be able to recall the information more easily when you fill out the form later.

5. Once you submit all the responses to me (2 days in total), I will contact you via email to schedule a time to talk further about your thoughts and experiences, and your visual-material consumption behavior in general.

6. If you have any questions or concerns, please contact me directly anytime: chohr113@uw.edu (Hyerim Cho)

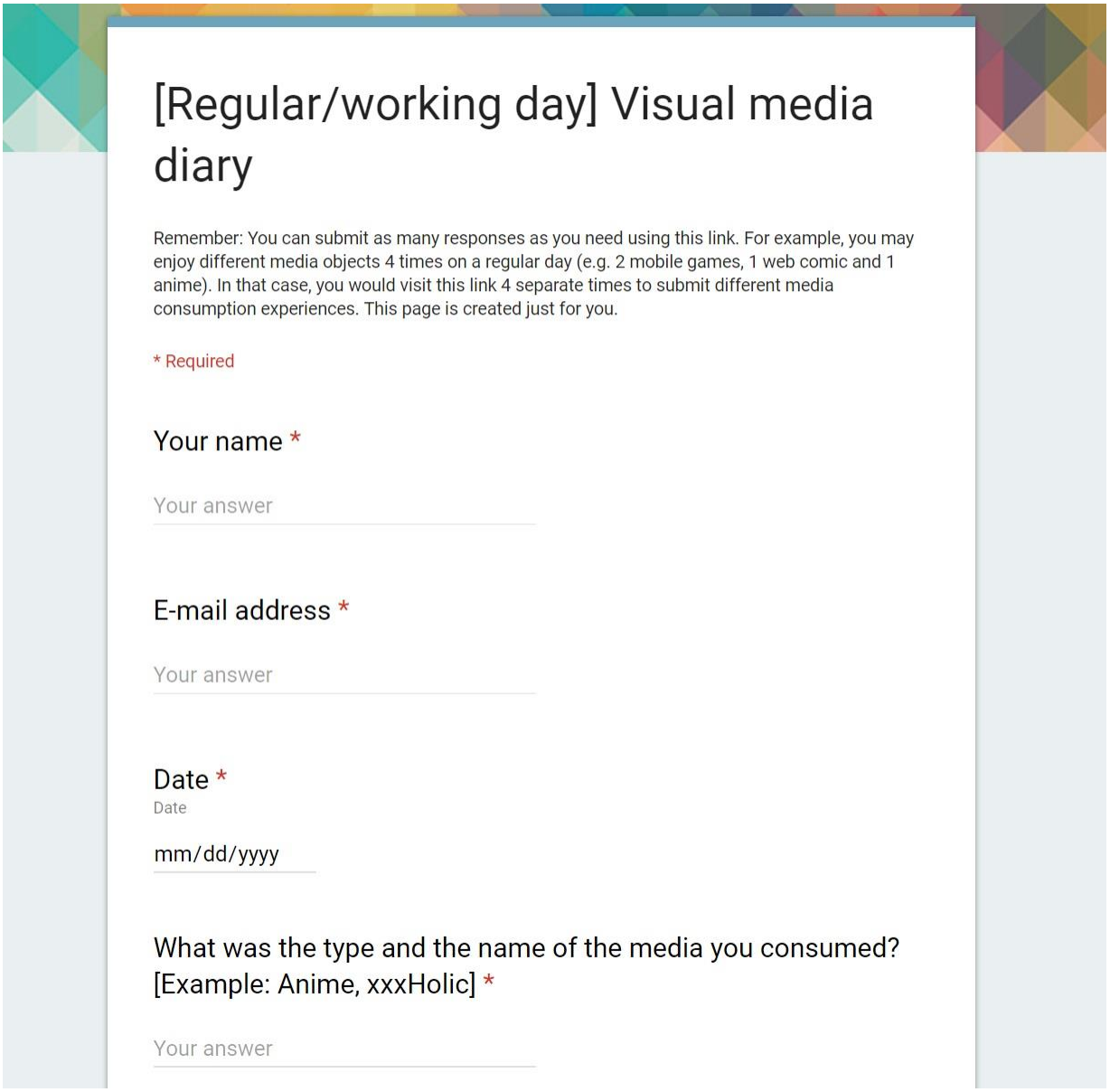
[EXAMPLE]

2017/MM/DD	
1. Time that I searched for [anime: xxxHolic]	7:30 pm
2. Time that I spent to consume [anime: xxxHolic]	2 hours
3. Please describe the situation/occasion when you enjoyed the visual material of your choice. What made you want to consume this particular item? (e.g., how much time you had, your environment, who you were with, other activities you were doing, your mental/physical state, and other contextual aspects)	At that time, I just got back from school. I was too tired to do anything special, so I decided to watch anime while eating dinner. I just like watching something while I'm eating alone, usually, it feels like having a friend or something.
4. What kinds of aspects/features/characteristics of a visual material were you looking for in that particular situation? (e.g., types of plots, themes, characters, mood, music, particular directors, artists, or voice actors)	I wanted to relax at that time. So definitely something relaxing and soothing. Also, I felt like I wanted to watch something that's for grown-ups; something that has a strong plot that is not childish and makes me think about stuff, beautiful and intricate visual style, and with possibly some great music.
5. How did you know about this item and how did you obtain it? (e.g., your search strategies to find this item, who gave you the recommendation, where you purchased/borrowed the	I actually Googled it. I went to Google and typed "seinen anime," hoping to find any good anime for grown-ups. And I was browsing some of the options that Google gave me. Google showed me bunch of anime posters to browse

particular item, the related websites you used for this item)	on the top section of the results page, and the visual style of this anime looked very interesting. It was unique and sort of dark, too, so I was hooked. So I went to Funimation (I subscribe it), searched the title, and then watched it.
6. Did you like this item or not? Please describe in detail why you liked it or disliked it.	I liked it a lot, and that's why I ended up watching this anime for 2 hours without any break. I felt that the story line is really interesting, at first, you feel like it's one of the monster/occult sort of anime, but it can get really dark and depressing by revealing the deepest human desires. And I could learn some Japanese traditions and their superstitions while I was watching this anime, too.

Table 24. Example of response

Appendix C: Self-reporting Diary Template



[Regular/working day] Visual media diary

Remember: You can submit as many responses as you need using this link. For example, you may enjoy different media objects 4 times on a regular day (e.g. 2 mobile games, 1 web comic and 1 anime). In that case, you would visit this link 4 separate times to submit different media consumption experiences. This page is created just for you.

* Required

Your name *

Your answer

E-mail address *

Your answer

Date *

Date

mm/dd/yyyy

What was the type and the name of the media you consumed? [Example: Anime, xxxHolic] *

Your answer

Figure 24. Regular day diary template 1/3

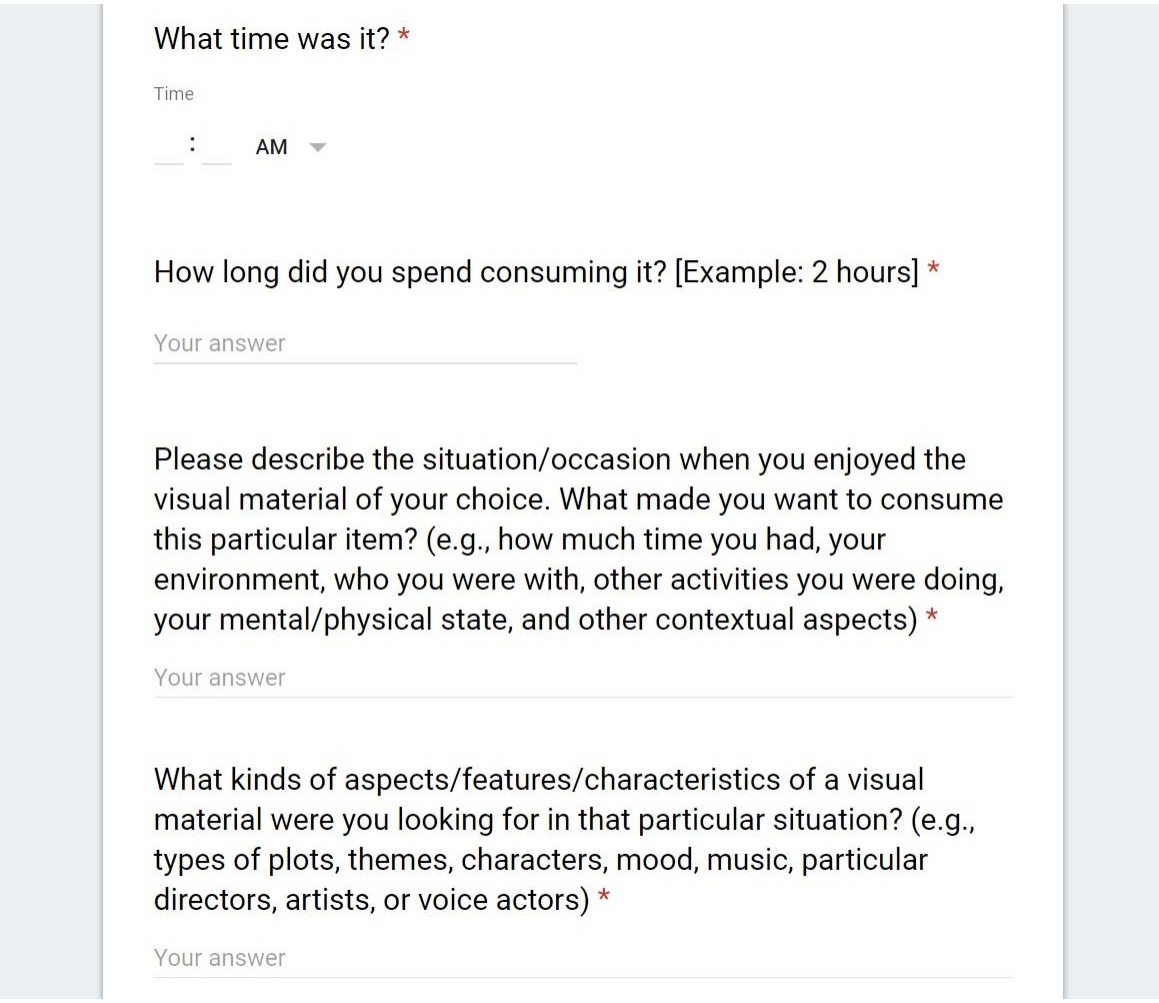


Figure 25. Regular day diary template 2/3

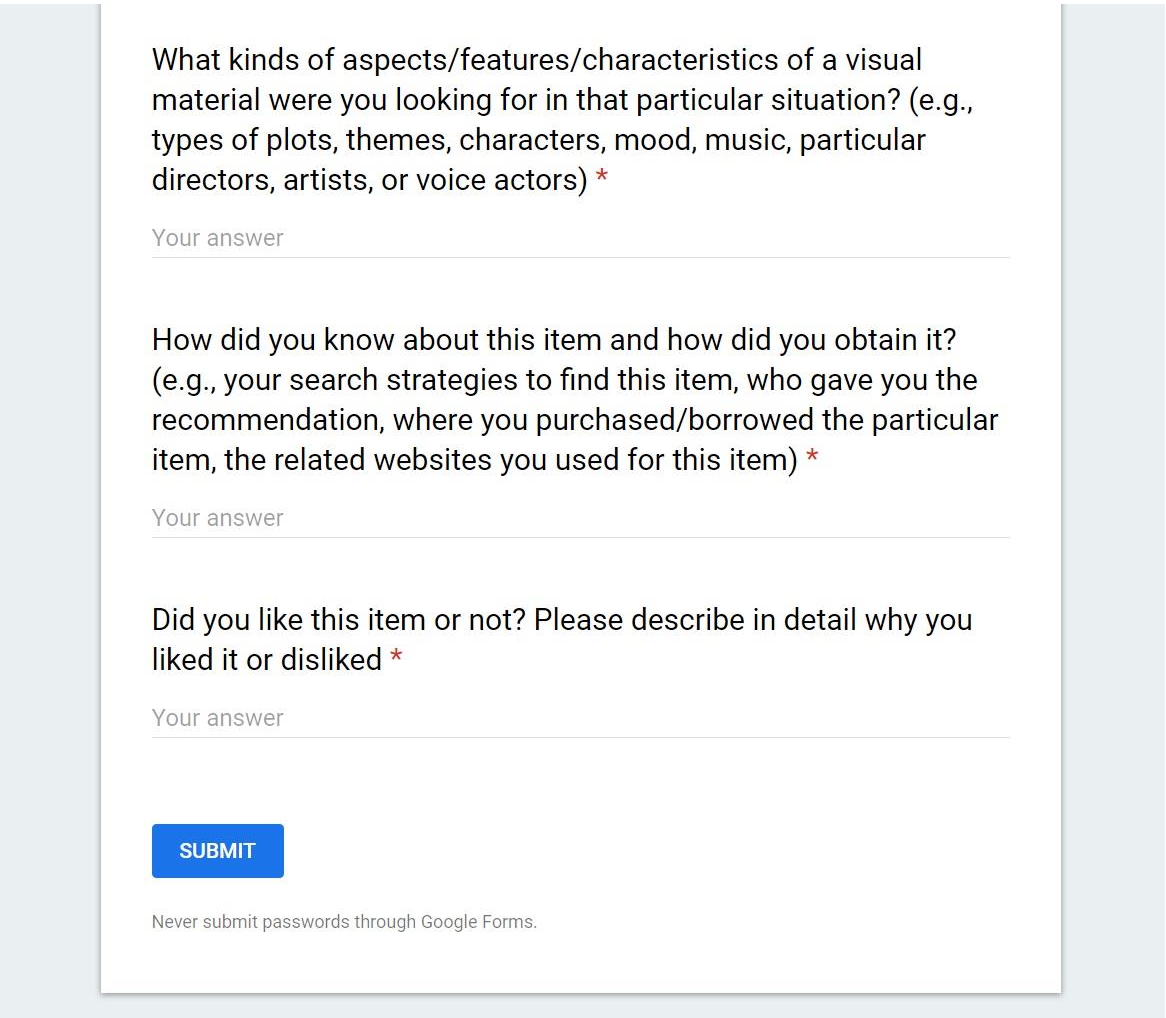
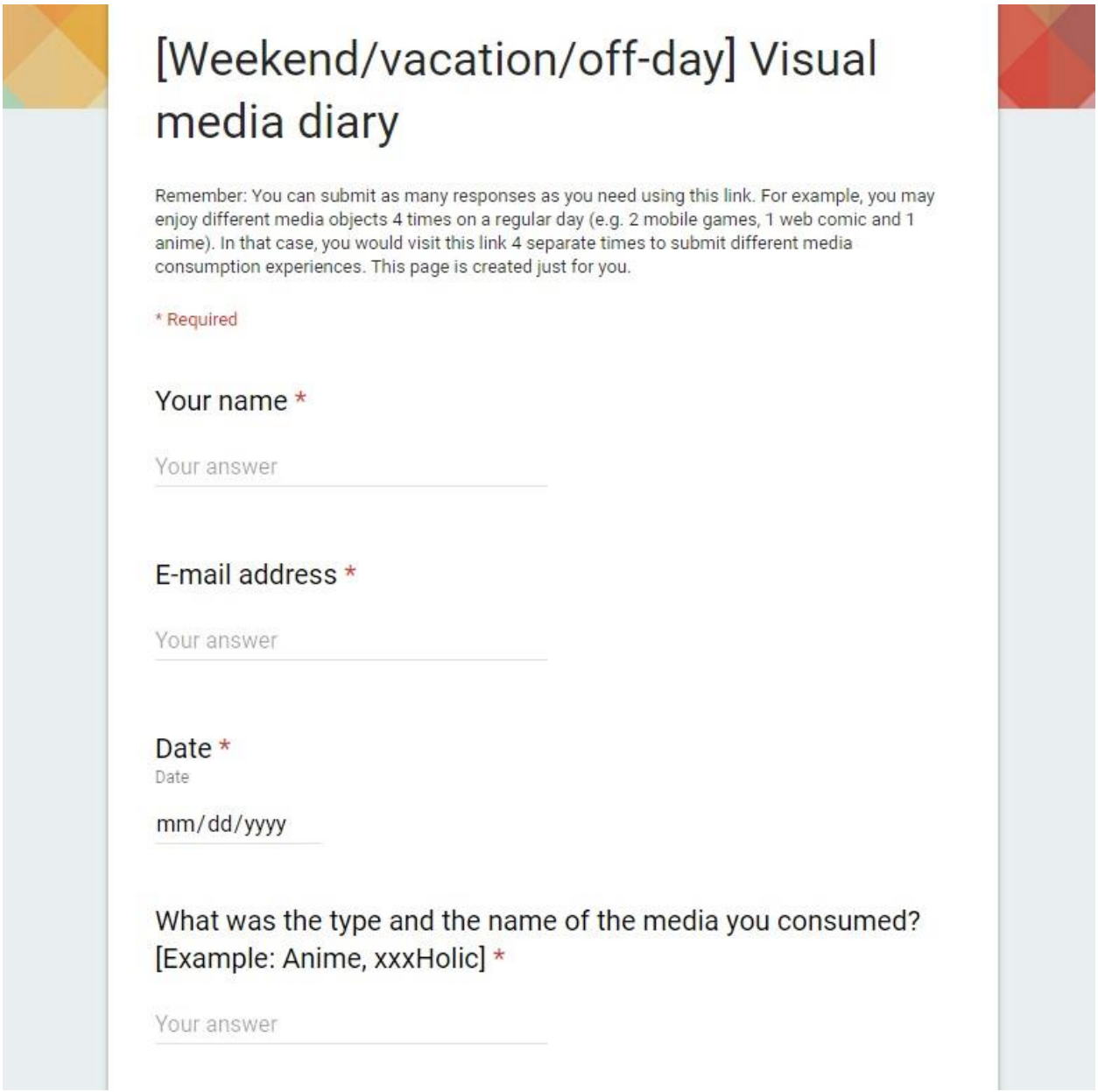


Figure 26. Regular day diary template 3/3



[Weekend/vacation/off-day] Visual media diary

Remember: You can submit as many responses as you need using this link. For example, you may enjoy different media objects 4 times on a regular day (e.g. 2 mobile games, 1 web comic and 1 anime). In that case, you would visit this link 4 separate times to submit different media consumption experiences. This page is created just for you.

* Required

Your name *

Your answer

E-mail address *

Your answer

Date *

Date

mm/dd/yyyy

What was the type and the name of the media you consumed? [Example: Anime, xxxHolic] *

Your answer

Figure 27. Off-day diary template 1/3

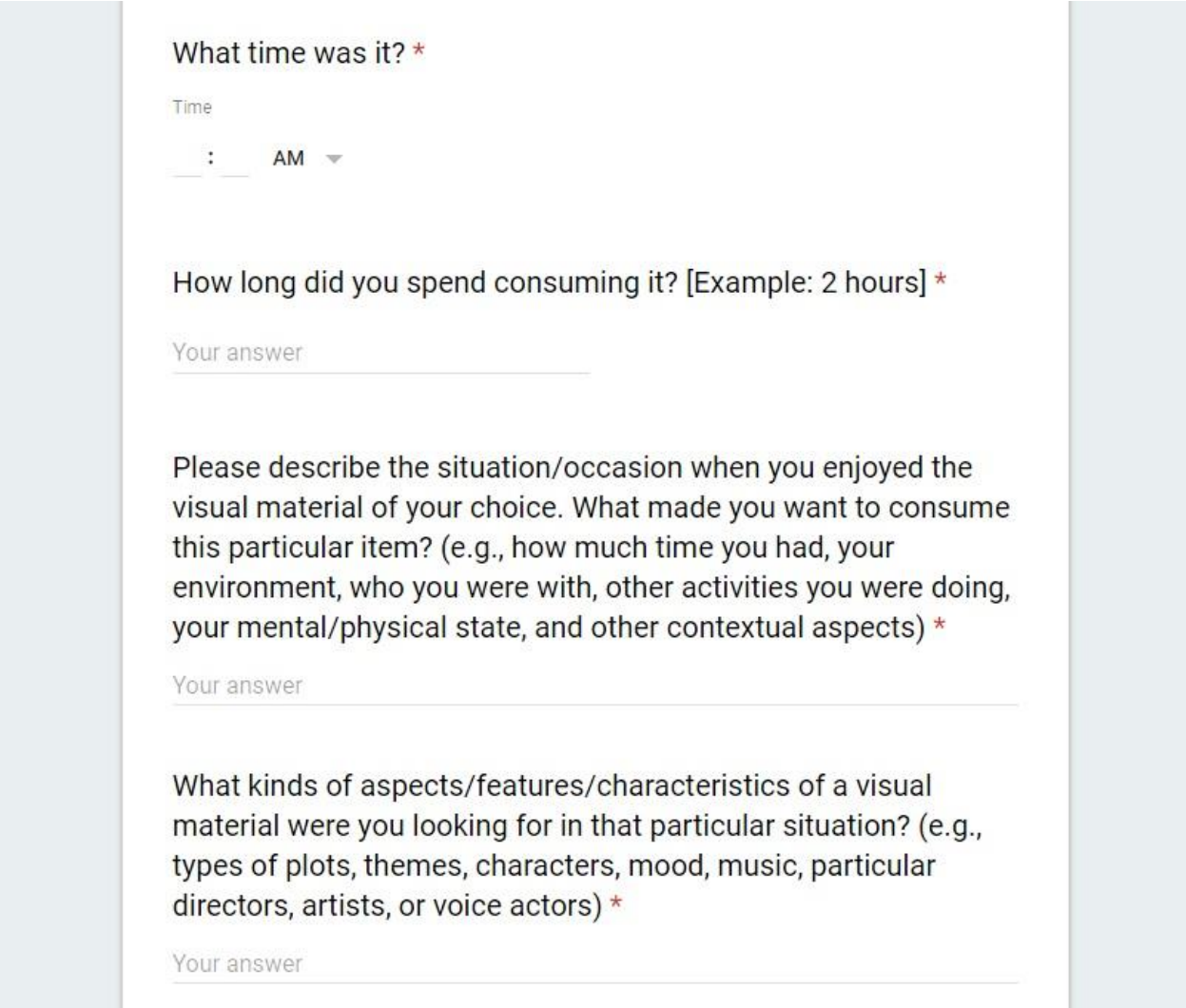


Figure 28. Off-day diary template 2/3

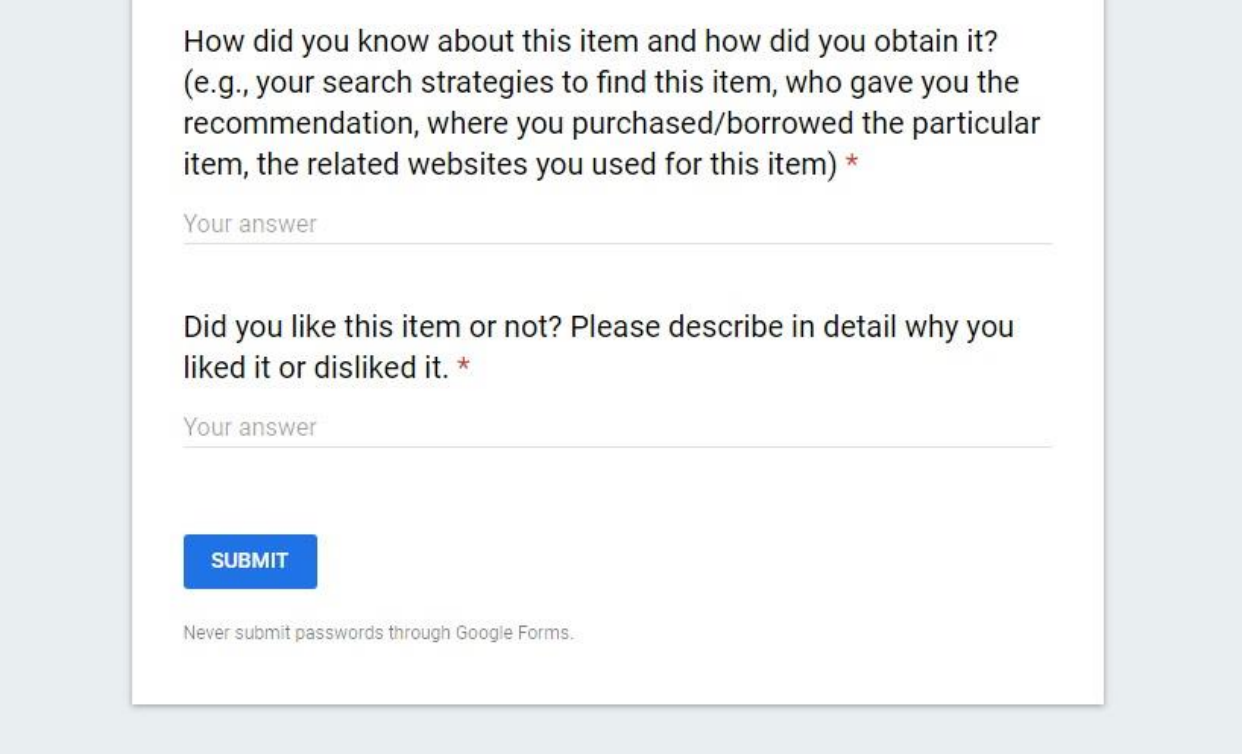


Figure 29. Off-day diary template 3/3

Appendix D: Semi-structured Follow-up Interview Questions

Thank you very much for participating in this study. I really appreciate your time. Firstly, I'm going to ask you some questions about your experiences and thoughts on the visual media items you have consumed and described in your diary, and then we will talk about more general media experiences.

[On participants' diary experience]

First, let's talk about the media items you described in your diary.

1. Please think about the items that you liked in your diary. Do you feel there is a prominent mood among them?
2. Was there any particular setting or a type of world you constantly liked among the media items you consumed? You briefly talked about how you like the world of Batman. Could you explain more about it? For example, do the settings of these media tend to be based on our world or an imaginary world (as in Lord of the Rings)? If our world, is it the world as it is today? Or an alternate version of our world (as in Walking Dead)?
3. Do the media that you enjoyed tend to have complex plots or structures?
4. Do you have a preferred level of mental or intellectual engagement you seek when you choose to use certain media? If so, what is it?
5. Do the media items you liked tend to have similar characters? *(e.g., You noted that the game, batman's supporting characters are interesting. Could you tell me more about it?)*
6. Among the media items you enjoyed, was there any prominent theme?
7. Let's think about what you didn't like. *(e.g., In your case, it was the graphic novel, Prophet, right? You mentioned here that you found it somewhat disappointing. Could you explain it more to me?)*
8. So far, we have mainly talked about mood, setting, complexity, characters, and themes. *(e.g., In your responses, however, I felt like story, artistic style, and the reviews from other people are important for you. Am I understanding you correctly?)*
9. Are there any other elements that are important to you when you choose to consume media that we haven't discussed so far?

[General questions on visual media consumption]

Now, let's talk about more general media consumption.

1. From now on, let's talk about your more general media consumption. In general, do you feel there are a couple of prominent motivations for you to consume them? For example, you may want to play games to escape from the reality and forget about all the stressful things from your work, or you may like watching anime when you eat alone for the feeling of companion.
2. In general, when do you consume media materials? Can you describe the context or situation when you normally enjoy them? For example, you normally watch cartoons or play games on the bed before going to sleep, or you normally read manga on the bus when you commute.
3. Could you tell me in detail the type of media that you generally like? For example, you may want to find a comic book that has a strong female lead around mid-20s, with a slice-of-life plot and less than 10 volumes.
4. How often do you search for media materials, and how much hours do you normally spend a week to consume media?
5. When you look for any media recommendations, where do you go or who do you ask to get recommendations?
6. Have you had any experiences of having difficulties in finding a media item?
7. Let's assume that there is an ideal recommendation or search system which can find anything in any detail you want. Compared to the currently available websites or streaming services that you use, what kinds of features this ideal system would have?
8. Is there anything that you want to discuss before we end this conversation?

_____End of the interview questions

As a last step, I will send a survey link to your email right now. Could you please answer those short demographic questions before we end the conversation?

Appendix E: Demographic Information Survey Questions

1. What is your gender?

1) Male

2) Female

3) Prefer not to say

4) Other

2. In what year were you born?

( )

3. What is your country of nationality?

( )

4. Which of the following best describes you?

1) Hispanic or Latino

2) White or Caucasian

3) Asian or Pacific Islander

4) Black or African American

5) Native American or First Nations

6) Other ( )

5. Do you have a visual media (comic books/graphic novels/manga, anime/animations, video games) related job or a hobby creating visual media?

1) Yes

2) No

6. If "Yes," which of the following best describes you? Please check ALL that apply.

1) Professional artist

2) Amateur artist

3) Designer

4) Writer

5) Director/Producer

6) Distributor/Sales

7) Editor

8) Art/visual media related researcher

9) Art/visual media related student (college or university level)

10) Other ( )

7. What is your educational background? If currently enrolled, answer the highest degree that you're enrolled in.

1) High school graduate, diploma or the equivalent (for example: GED)

2) Some college credit, no degree

3) Trade/technical/vocational training

4) Associate degree

5) Bachelor's degree

6) Master's degree

7) Professional degree

8) Doctorate degree

9) Other ( )

Appendix F: Cross-tabulation Analysis Results (Phase I: Diary & Interview Data)

	A : Dislike	B : Like	C : Media Specific	D : Overarching	E : Related to	F : Similar to
1 : Dislike	160	34	25	3	0	4
2 : Like	34	188	30	4	6	10
3 : Media Specific	25	30	491	2	12	12
4 : Overarching	3	4	2	26	1	0
5 : Related to	0	6	12	1	28	0
6 : Similar to	4	10	12	0	0	45
7 : Activities_Situations	8	10	88	1	1	1
8 : Context_Other	4	0	5	0	0	0
9 : Place	3	3	30	1	1	0
10 : Time	18	21	76	3	1	3
11 : Artistic_Visual Style	52	68	40	5	6	13
12 : Audience_Rating	14	10	48	2	8	6
13 : Audio Style	12	21	24	1	5	1
14 : Characters	54	60	54	10	13	14
15 : Completeness	7	7	15	1	1	1
16 : Creators	11	9	22	3	3	3
17 : Franchise_Universe	2	8	9	0	11	0
18 : Gameplay_Mechanics	21	33	38	0	2	7
19 : Genre	24	27	49	0	2	11
20 : Information Features_Other	4	2	1	0	0	0
21 : Language	5	1	12	0	0	0
22 : Length	5	11	17	0	2	2
23 : Mood	37	50	65	6	6	9
24 : Pacing	10	9	6	0	1	1
25 : Package	9	7	13	0	1	2
26 : Platforms_Sources	11	10	70	1	8	6
27 : Plot_Narrative	63	67	70	7	9	12
28 : Popularity	4	2	4	0	0	1
29 : Release Date	9	7	17	0	1	3
30 : Reviews	2	2	4	0	1	3
31 : Series_Volumes	7	12	8	0	4	0
32 : Setting	10	10	18	4	2	6
33 : Subjects	41	47	37	7	4	14
34 : Work	35	35	250	2	10	38
35 : Achievement	9	21	25	1	3	2

36 : Companionship_Fellowship_Fandom	8	20	70	1	5	4
37 : Discovery_Exploration	2	5	3	0	0	1
38 : Expression	3	8	5	0	0	1
39 : Loyalty	10	14	19	3	2	4
40 : Mental_Intellectual Engagement	17	40	88	6	6	7
41 : Motivation_Other	1	2	12	1	1	0
42 : Ideal Search System Features	3	1	3	0	2	5
43 : Information_Recommendation Sources	8	7	35	0	6	7
44 : Search Problems	5	1	8	0	0	0
45 : Search Strategies	7	4	24	0	4	2
46 : Search-related Information_Other	0	0	0	0	0	0
47 : Health	0	1	9	0	0	0
48 : Personal Beliefs_Values	16	10	10	4	2	3
49 : Relatability	9	7	9	2	1	2
50 : Uniqueness_Creativity	3	9	5	0	0	0
51 : Values_Other	1	1	0	0	0	0

Table 25. Cross-tabulation results: Auxiliary codes

	G : Activities_Situations	H : Context_Other	I : Place	J : Time
1 : Dislike	8	4	3	18
2 : Like	10	0	3	21
3 : Media Specific	88	5	30	76
4 : Overarching	1	0	1	3
5 : Related to	1	0	1	1
6 : Similar to	1	0	0	3
7 : Activities_Situations	273	9	93	107
8 : Context_Other	9	21	5	7
9 : Place	93	5	107	44
10 : Time	107	7	44	566
11 : Artistic_Visual Style	14	1	10	24
12 : Audience_Rating	39	8	18	29
13 : Audio Style	19	1	8	14
14 : Characters	12	2	8	19
15 : Completeness	6	0	1	5
16 : Creators	5	2	3	10

17 : Franchise_Universe	1	1	0	0
18 : Gameplay_Mechanics	17	1	6	25
19 : Genre	14	1	6	14
20 : Information Features_Other	2	0	0	4
21 : Language	10	1	1	10
22 : Length	17	2	11	34
23 : Mood	59	5	21	44
24 : Pacing	1	0	0	10
25 : Package	4	4	1	7
26 : Platforms_Sources	66	5	38	43
27 : Plot_Narrative	21	2	7	27
28 : Popularity	2	2	0	2
29 : Release Date	15	2	4	19
30 : Reviews	2	1	1	7
31 : Series_Volumes	6	0	1	7
32 : Setting	3	0	3	6
33 : Subjects	9	3	5	7
34 : Work	43	3	15	44
35 : Achievement	24	1	7	20
36 : Companionship_Fellowship_Fandom	74	3	29	46
37 : Discovery_Exploration	1	1	0	3
38 : Expression	0	1	1	5
39 : Loyalty	26	4	5	26
40 : Mental_Intellectual Engagement	109	5	44	71
41 : Motivation_Other	6	0	1	4
42 : Ideal Search System Features	2	0	0	1
43 : Information_Recommendation Sources	24	10	15	25
44 : Search Problems	2	0	0	3
45 : Search Strategies	10	1	4	29
46 : Search-related Information_Other	0	0	0	0
47 : Health	18	0	3	9
48 : Personal Beliefs_Values	1	2	0	1
49 : Relatability	0	0	0	1
50 : Uniqueness_Creativity	0	0	0	0
51 : Values_Other	0	0	0	0

Table 26. Cross-tabulation results: Context

	K : Artistic_Visual Style	L : Audience_Rating	M : Audio Style	N : Characters	O : Completeness	P : Creators	Q : Franchise_Universe	R : Gameplay_Mechanics	S : Genre	T : Information	U : Language	V : Length	W : Mood	X : Pacing	Y : Package	Z : Platforms_Sources	AA : Plot_Narrative	AB : Popularity	AC : Release Date	AD : Reviews	AE : Series_Volumes	AF : Setting	AG : Subjects	AH : Work
1 : Dislike	52	14	12	54	7	11	2	21	24	4	5	5	37	10	9	11	63	4	9	2	7	10	41	35
2 : Like	68	10	21	60	7	9	8	33	27	2	1	11	50	9	7	10	67	2	7	2	12	10	47	35
3 : Media Specific	40	48	24	54	15	22	9	38	49	1	12	17	65	6	13	70	70	4	17	4	8	18	37	250
4 : Overarching	5	2	1	10	1	3	0	0	0	0	0	0	6	0	0	1	7	0	0	0	0	4	7	2
5 : Related to	6	8	5	13	1	3	11	2	2	0	0	2	6	1	1	8	9	0	1	1	4	2	4	10
6 : Similar to	13	6	1	14	1	3	0	7	11	0	0	2	9	1	2	6	12	1	3	3	0	6	14	38
7 : Activities_Situations	14	39	19	12	6	5	1	17	14	2	10	17	59	1	4	66	21	2	15	2	6	3	9	43
8 : Context_Other	1	8	1	2	0	2	1	1	1	0	1	2	5	0	4	5	2	2	2	1	0	0	3	3
9 : Place	10	18	8	8	1	3	0	6	6	0	1	11	21	0	1	38	7	0	4	1	1	3	5	15
10 : Time	24	29	14	19	5	10	0	25	14	4	10	34	44	10	7	43	27	2	19	7	7	6	7	44
11 : Artistic_Visual Style	253	33	40	83	10	25	2	21	35	4	8	11	80	3	7	30	99	6	15	3	10	18	60	62
12 : Audience_Rating	33	158	10	36	9	11	2	8	26	1	7	13	40	1	10	38	30	7	13	5	8	7	35	53
13 : Audio Style	40	10	105	35	3	8	3	6	14	2	7	3	31	0	1	18	30	2	3	1	3	6	24	21
14 : Characters	83	36	35	308	10	17	18	17	44	5	5	17	80	7	6	14	150	2	10	1	8	38	79	87
15 : Completeness	10	9	3	10	29	1	0	2	8	0	1	3	14	0	1	6	15	1	3	0	3	1	9	10
16 : Creators	25	11	8	17	1	90	1	3	12	1	3	4	15	2	10	18	20	4	10	2	2	2	20	20
17 : Franchise_Universe	2	2	3	18	0	1	31	1	2	0	1	1	2	1	1	5	6	1	1	0	7	4	3	16
18 : Gameplay_Mechanics	21	8	6	17	2	3	1	115	29	3	1	5	29	6	10	15	16	2	1	3	5	4	2	34
19 : Genre	35	26	14	44	8	12	2	29	172	0	4	7	63	1	6	20	55	3	6	6	8	14	58	61
20 : Information Features_Other	4	1	2	5	0	1	0	3	0	18	0	4	8	0	1	2	3	0	1	0	1	2	3	4
21 : Language	8	7	7	5	1	3	1	1	4	0	53	1	6	0	7	20	9	1	8	2	2	0	5	8
22 : Length	11	13	3	17	3	4	1	5	7	4	1	65	23	2	0	7	22	0	6	3	8	1	8	14
23 : Mood	80	40	31	80	14	15	2	29	63	8	6	23	303	2	4	26	112	2	6	1	6	17	61	60
24 : Pacing	3	1	0	7	0	2	1	6	1	0	0	2	2	24	1	1	10	0	3	1	3	1	6	7
25 : Package	7	10	1	6	1	10	1	10	6	1	7	0	4	1	62	32	5	4	10	2	4	1	3	15
26 : Platforms_Sources	30	38	18	14	6	18	5	15	20	2	20	7	26	1	32	239	16	5	22	11	11	4	14	50
27 : Plot_Narrative	99	30	30	150	15	20	6	16	55	3	9	22	112	10	5	16	349	4	19	5	15	29	103	75
28 : Popularity	6	7	2	2	1	4	1	2	3	0	1	0	2	0	4	5	4	17	6	3	1	1	1	7
29 : Release Date	15	13	3	10	3	10	1	1	6	1	8	6	6	3	10	22	19	6	84	4	4	3	10	27
30 : Reviews	3	5	1	1	0	2	0	3	6	0	2	3	1	1	2	11	5	3	4	40	0	4	3	9

31 : Series_Volumes	10	8	3	8	3	2	7	5	8	1	2	8	6	3	4	11	15	1	4	0	45	2	6	20
32 : Setting	18	7	6	38	1	2	4	4	14	2	0	1	17	1	1	4	29	1	3	4	2	94	27	33
33 : Subjects	60	35	24	79	9	20	3	2	58	3	5	8	61	6	3	14	103	1	10	3	6	27	217	68
34 : Work	62	53	21	87	10	20	16	34	61	4	8	14	60	7	15	50	75	7	27	9	20	33	68	457
35 : Achievement	11	8	3	18	1	1	3	25	9	0	0	2	11	0	4	11	7	0	2	0	0	1	2	21
36 : Companionship_Fellowship_Fandom	18	27	19	22	7	11	4	30	24	2	7	9	45	0	5	34	14	3	6	6	5	4	10	50
37 : Discovery_Exploration	5	5	3	5	1	1	0	1	5	0	1	0	2	0	1	1	4	2	1	2	0	5	4	6
38 : Expression	5	2	6	9	0	0	0	9	2	3	0	0	7	1	1	1	3	0	0	1	0	2	3	6
39 : Loyalty	15	20	6	20	2	6	3	8	9	3	5	4	22	3	6	18	24	1	13	2	8	3	15	32
40 : Mental_Intellectual Engagement	41	43	28	60	2	10	2	48	33	2	14	18	79	6	4	53	76	2	9	7	4	14	33	59
41 : Motivation_Other	5	9	4	7	2	3	0	0	0	0	0	0	7	0	0	1	8	0	0	0	0	2	2	3
42 : Ideal Search System Features	8	4	4	5	2	7	1	0	16	0	9	2	6	0	2	10	6	2	7	8	2	1	9	6
43 : Information_Recommendation Sources	24	32	5	17	6	23	6	2	16	2	6	7	13	0	21	88	18	9	28	26	10	2	14	32
44 : Search Problems	4	6	1	2	3	2	0	1	7	0	12	0	2	0	9	12	2	1	4	2	3	0	5	5
45 : Search Strategies	17	15	3	12	5	9	3	1	14	2	3	4	8	1	10	32	14	2	25	6	7	0	9	24
46 : Search-related Information_Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47 : Health	1	13	2	1	1	0	0	4	4	0	0	0	8	0	0	9	2	0	0	1	1	0	3	5
48 : Personal Beliefs_Values	10	10	3	20	1	8	1	1	3	0	1	0	10	0	1	0	20	0	1	0	1	6	22	11
49 : Relatability	11	12	5	33	2	7	0	0	6	0	0	1	18	0	0	0	19	1	0	0	1	5	18	11
50 : Uniqueness_Creativity	12	2	1	9	0	3	0	2	5	0	0	0	4	0	0	1	11	0	0	0	1	1	7	6
51 : Values_Other	1	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0

Table 27. Cross-tabulation results: Information features

	AI : Achievement	AJ : Companionship_Fellowship_Fandom	AK : Discovery_Exploration	AL : Expression	AM : Loyalty	AN : Mental_Intellectual Engagement	AO : Motivation_Other
1 : Dislike	9	8	2	3	10	17	1
2 : Like	21	20	5	8	14	40	2
3 : Media Specific	25	70	3	5	19	88	12
4 : Overarching	1	1	0	0	3	6	1
5 : Related to	3	5	0	0	2	6	1
6 : Similar to	2	4	1	1	4	7	0
7 : Activities_Situations	24	74	1	0	26	109	6
8 : Context_Other	1	3	1	1	4	5	0
9 : Place	7	29	0	1	5	44	1
10 : Time	20	46	3	5	26	71	4
11 : Artistic_Visual Style	11	18	5	5	15	41	5
12 : Audience_Rating	8	27	5	2	20	43	9

13 : Audio Style	3	19	3	6	6	28	4
14 : Characters	18	22	5	9	20	60	7
15 : Completeness	1	7	1	0	2	2	2
16 : Creators	1	11	1	0	6	10	3
17 : Franchise_Universe	3	4	0	0	3	2	0
18 : Gameplay_Mechanics	25	30	1	9	8	48	0
19 : Genre	9	24	5	2	9	33	0
20 : Information Features_Other	0	2	0	3	3	2	0
21 : Language	0	7	1	0	5	14	0
22 : Length	2	9	0	0	4	18	0
23 : Mood	11	45	2	7	22	79	7
24 : Pacing	0	0	0	1	3	6	0
25 : Package	4	5	1	1	6	4	0
26 : Platforms_Sources	11	34	1	1	18	53	1
27 : Plot_Narrative	7	14	4	3	24	76	8
28 : Popularity	0	3	2	0	1	2	0
29 : Release Date	2	6	1	0	13	9	0
30 : Reviews	0	6	2	1	2	7	0
31 : Series_Volumes	0	5	0	0	8	4	0
32 : Setting	1	4	5	2	3	14	2
33 : Subjects	2	10	4	3	15	33	2
34 : Work	21	50	6	6	32	59	3
35 : Achievement	82	24	4	4	7	31	4
36 : Companionship_Fellowship_Fandom	24	195	2	4	11	58	8
37 : Discovery_Exploration	4	2	21	1	2	8	1
38 : Expression	4	4	1	25	0	7	1
39 : Loyalty	7	11	2	0	94	15	1
40 : Mental_Intellectual Engagement	31	58	8	7	15	343	15
41 : Motivation_Other	4	8	1	1	1	15	26
42 : Ideal Search System Features	0	3	0	0	0	0	0
43 : Information_Recommendation Sources	2	21	3	2	11	19	0
44 : Search Problems	0	2	0	0	1	0	0
45 : Search Strategies	0	3	4	2	4	8	1
46 : Search-related Information_Other	0	0	0	0	0	0	0
47 : Health	3	12	0	0	0	13	4
48 : Personal Beliefs_Values	1	4	1	0	1	5	0
49 : Relatability	0	1	0	2	4	7	1
50 : Uniqueness_Creativity	1	1	0	0	3	3	0

51 : Values_Other	0	0	0	0	0	0	0

Table 28. Cross-tabulation results: Motivation

	AP : Ideal Search System Features	AQ : Information_Recommendation Sources	AR : Search Problems	AS : Search Strategies	AT : Search-related Information_Other
1 : Dislike	3	8	5	7	0
2 : Like	1	7	1	4	0
3 : Media Specific	3	35	8	24	0
4 : Overarching	0	0	0	0	0
5 : Related to	2	6	0	4	0
6 : Similar to	5	7	0	2	0
7 : Activities_Situations	2	24	2	10	0
8 : Context_Other	0	10	0	1	0
9 : Place	0	15	0	4	0
10 : Time	1	25	3	29	0
11 : Artistic_Visual Style	8	24	4	17	0
12 : Audience_Rating	4	32	6	15	0
13 : Audio Style	4	5	1	3	0
14 : Characters	5	17	2	12	0
15 : Completeness	2	6	3	5	0
16 : Creators	7	23	2	9	0
17 : Franchise_Universe	1	6	0	3	0
18 : Gameplay_Mechanics	0	2	1	1	0
19 : Genre	16	16	7	14	0
20 : Information Features_Other	0	2	0	2	0
21 : Language	9	6	12	3	0
22 : Length	2	7	0	4	0
23 : Mood	6	13	2	8	0
24 : Pacing	0	0	0	1	0
25 : Package	2	21	9	10	0
26 : Platforms_Sources	10	88	12	32	0
27 : Plot_Narrative	6	18	2	14	0
28 : Popularity	2	9	1	2	0
29 : Release Date	7	28	4	25	0
30 : Reviews	8	26	2	6	0

31 : Series_Volumes	2	10	3	7	0
32 : Setting	1	2	0	0	0
33 : Subjects	9	14	5	9	0
34 : Work	6	32	5	24	0
35 : Achievement	0	2	0	0	0
36 : Companionship_Fellowship_Fandom	3	21	2	3	0
37 : Discovery_Exploration	0	3	0	4	0
38 : Expression	0	2	0	2	0
39 : Loyalty	0	11	1	4	0
40 : Mental_Intellectual Engagement	0	19	0	8	0
41 : Motivation_Other	0	0	0	1	0
42 : Ideal Search System Features	51	13	5	4	0
43 : Information_Recommendation Sources	13	290	8	65	0
44 : Search Problems	5	8	42	3	0
45 : Search Strategies	4	65	3	116	0
46 : Search-related Information_Other	0	0	0	0	1
47 : Health	1	3	1	1	0
48 : Personal Beliefs_Values	0	0	0	0	0
49 : Relatability	0	0	0	0	0
50 : Uniqueness_Creativity	1	2	0	1	0
51 : Values_Other	0	0	0	0	0

Table 29. Cross-tabulation results: Search-related information

	AU : Health	AV : Personal Beliefs_Values	AW : Relatability	AX : Uniqueness_Creativity	AY : Values_Other
1 : Dislike	0	16	9	3	1
2 : Like	1	10	7	9	1
3 : Media Specific	9	10	9	5	0
4 : Overarching	0	4	2	0	0
5 : Related to	0	2	1	0	0
6 : Similar to	0	3	2	0	0

7 : Activities_Situations	18	1	0	0	0
8 : Context_Other	0	2	0	0	0
9 : Place	3	0	0	0	0
10 : Time	9	1	1	0	0
11 : Artistic_Visual Style	1	10	11	12	1
12 : Audience_Rating	13	10	12	2	0
13 : Audio Style	2	3	5	1	0
14 : Characters	1	20	33	9	0
15 : Completeness	1	1	2	0	0
16 : Creators	0	8	7	3	0
17 : Franchise_Universe	0	1	0	0	0
18 : Gameplay_Mechanics	4	1	0	2	1
19 : Genre	4	3	6	5	1
20 : Information Features_Other	0	0	0	0	0
21 : Language	0	1	0	0	0
22 : Length	0	0	1	0	0
23 : Mood	8	10	18	4	1
24 : Pacing	0	0	0	0	0
25 : Package	0	1	0	0	0
26 : Platforms_Sources	9	0	0	1	0
27 : Plot_Narrative	2	20	19	11	0
28 : Popularity	0	0	1	0	0
29 : Release Date	0	1	0	0	1
30 : Reviews	1	0	0	0	0
31 : Series_Volumes	1	1	1	1	0
32 : Setting	0	6	5	1	0
33 : Subjects	3	22	18	7	0
34 : Work	5	11	11	6	0
35 : Achievement	3	1	0	1	0
36 : Companionship_Fellowship_Fandom	12	4	1	1	0
37 : Discovery_Exploration	0	1	0	0	0
38 : Expression	0	0	2	0	0
39 : Loyalty	0	1	4	3	0
40 : Mental_Intellectual Engagement	13	5	7	3	0
41 : Motivation_Other	4	0	1	0	0
42 : Ideal Search System Features	1	0	0	1	0

43 : Information_Recommendation Sources	3	0	0	2	0
44 : Search Problems	1	0	0	0	0
45 : Search Strategies	1	0	0	1	0
46 : Search-related Information_Other	0	0	0	0	0
47 : Health	29	0	1	0	0
48 : Personal Beliefs_Values	0	45	10	0	0
49 : Relatability	1	10	41	1	0
50 : Uniqueness_Creativity	0	0	1	26	1
51 : Values_Other	0	0	0	1	4

Table 30. Cross-tabulation results: Values

Appendix G: Cross-tabulation Analysis Results (Phase II: Content Analysis)

	A : Dislike	B : Like	C : Media Specific	D : Overarching	E : Related to	F : Similar to
1 : Dislike	64	21	0	0	4	15
2 : Like	21	94	0	0	1	15
3 : Media Specific	0	0	0	0	0	0
4 : Overarching	0	0	0	0	0	0
5 : Related to	4	1	0	0	8	0
6 : Similar to	15	15	0	0	0	47
7 : Activities_Situations	7	7	0	0	1	4
8 : Context_Other	0	0	0	0	0	0
9 : Place	1	1	0	0	0	0
10 : Time	7	9	0	0	0	4
11 : Artistic_Visual Style	19	28	0	0	4	10
12 : Audience_Rating	30	42	0	0	5	24
13 : Audio Style	5	11	0	0	1	5
14 : Characters	24	42	0	0	3	19
15 : Completeness	3	7	0	0	1	4
16 : Creators	11	16	0	0	5	10
17 : Franchise_Universe	5	7	0	0	1	6
18 : Gameplay_Mechanics	9	3	0	0	0	5
19 : Genre	31	32	0	0	1	19
20 : Information Features_Other	1	1	0	0	0	0
21 : Language	7	7	0	0	0	4
22 : Length	15	11	0	0	2	9
23 : Mood	25	39	0	0	2	8
24 : Pacing	4	3	0	0	0	1
25 : Package	9	12	0	0	1	4
26 : Platforms_Sources	25	30	0	0	3	16
27 : Plot_Narrative	40	51	0	0	5	20
28 : Popularity	4	6	0	0	2	4
29 : Release Date	9	26	0	0	2	10
30 : Reviews	19	27	0	0	2	7
31 : Series_Volumes	10	17	0	0	3	6
32 : Setting	10	6	0	0	1	4
33 : Subjects	28	34	0	0	2	15
34 : Work	55	89	0	0	8	45
35 : Achievement	1	0	0	0	0	1

36 : Companionship_Fellowship_Fandom	5	8	0	0	0	4
37 : Discovery_Exploration	2	1	0	0	0	0
38 : Expression	8	15	0	0	1	5
39 : Loyalty	2	5	0	0	0	0
40 : Mental_Intellectual Engagement	8	15	0	0	2	11
41 : Motivation_Other	0	0	0	0	0	0
42 : Ideal Search System Features	0	0	0	0	0	0
43 : Information_Recommendation Sources	4	9	0	0	3	6
44 : Search Problems	3	3	0	0	2	0
45 : Search Strategies	1	1	0	0	0	0
46 : Search-related Information_Other	0	0	0	0	0	0
47 : Health	0	0	0	0	0	1
48 : Personal Beliefs_Values	3	3	0	0	0	3
49 : Relatability	2	2	0	0	0	1
50 : Uniqueness_Creativity	6	6	0	0	1	1
51 : Values_Other	0	1	0	0	0	1

Table 31. Cross-tabulation results in content analysis (Auxiliary codes)

	G : Activities_Situations	H : Context_Other	I : Place	J : Time
1 : Dislike	7	0	1	7
2 : Like	7	0	1	9
3 : Media Specific	0	0	0	0
4 : Overarching	0	0	0	0
5 : Related to	1	0	0	0
6 : Similar to	4	0	0	4
7 : Activities_Situations	48	0	14	19
8 : Context_Other	0	0	0	0
9 : Place	14	0	20	7
10 : Time	19	0	7	38
11 : Artistic_Visual Style	3	0	1	6
12 : Audience_Rating	23	0	6	17
13 : Audio Style	5	0	2	9
14 : Characters	8	0	2	13
15 : Completeness	1	0	1	2
16 : Creators	9	0	2	8

17 : Franchise_Universe	0	0	0	0
18 : Gameplay_Mechanics	5	0	1	3
19 : Genre	7	0	2	8
20 : Information Features_Other	0	0	0	1
21 : Language	4	0	1	2
22 : Length	4	0	1	8
23 : Mood	8	0	3	8
24 : Pacing	0	0	0	0
25 : Package	15	0	8	12
26 : Platforms_Sources	21	0	10	20
27 : Plot_Narrative	8	0	4	13
28 : Popularity	3	0	1	4
29 : Release Date	6	0	2	13
30 : Reviews	5	0	2	8
31 : Series_Volumes	3	0	0	5
32 : Setting	1	0	1	5
33 : Subjects	6	0	0	9
34 : Work	24	0	7	28
35 : Achievement	1	0	0	1
36 : Companionship_Fellowship_Fandom	6	0	2	3
37 : Discovery_Exploration	1	0	0	0
38 : Expression	7	0	3	4
39 : Loyalty	0	0	0	2
40 : Mental_Intellectual Engagement	13	0	5	9
41 : Motivation_Other	0	0	0	0
42 : Ideal Search System Features	0	0	0	0
43 : Information_Recommendation Sources	7	0	1	6
44 : Search Problems	1	0	0	1
45 : Search Strategies	1	0	1	3
46 : Search-related Information_Other	0	0	0	0
47 : Health	0	0	0	0
48 : Personal Beliefs_Values	2	0	1	2
49 : Relatability	1	0	1	1
50 : Uniqueness_Creativity	0	0	0	2
51 : Values_Other	0	0	0	0

Table 32. Cross-tabulation results in content analysis (Context)

	K : Artistic_Visual Style	L : Audience_Rating	M : Audio Style	N : Characters	O : Completeness	P : Creators	Q : Franchise_Universe	R : Gameplay_Mechanics	S : Genre	T : Information Features_Other	U : Language	V : Length	W : Mood	X : Pacing	Y : Package	Z : Platforms_Sources	AA : Plot_Narrative	AB : Popularity	AC : Release Date	AD : Reviews	AE : Series_Volumes	AF : Setting	AG : Subjects	AH : Work
1 : Dislike	19	30	5	24	3	11	5	9	31	1	7	15	25	4	9	25	40	4	9	19	10	10	28	55
2 : Like	28	42	11	42	7	16	7	3	32	1	7	11	39	3	12	30	51	6	26	27	17	6	34	89
3 : Media Specific	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 : Overarching	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 : Related to	4	5	1	3	1	5	1	0	1	0	0	2	2	0	1	3	5	2	2	2	3	1	2	8
6 : Similar to	10	24	5	19	4	10	6	5	19	0	4	9	8	1	4	16	20	4	10	7	6	4	15	45
7 : Activities_Situations	3	23	5	8	1	9	0	5	7	0	4	4	8	0	15	21	8	3	6	5	3	1	6	24
8 : Context_Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 : Place	1	6	2	2	1	2	0	1	2	0	1	1	3	0	8	10	4	1	2	2	0	1	0	7
10 : Time	6	17	9	13	2	8	0	3	8	1	2	8	8	0	12	20	13	4	13	8	5	5	9	28
11 : Artistic_Visual Style	50	18	9	26	3	22	7	4	14	1	3	12	15	2	9	19	32	3	16	16	10	4	20	43
12 : Audience_Rating	18	138	11	40	8	22	12	12	48	1	11	18	33	1	22	49	53	13	29	22	18	6	41	100
13 : Audio Style	9	11	29	17	3	16	2	0	10	1	6	5	10	1	3	12	15	3	15	8	1	1	11	24
14 : Characters	26	40	17	113	7	27	16	8	27	1	7	11	29	4	11	45	66	6	28	31	25	9	42	93
15 : Completeness	3	8	3	7	13	3	1	0	5	0	0	5	4	1	1	6	9	1	5	4	5	0	5	13
16 : Creators	22	22	16	27	3	73	15	2	14	1	3	8	18	0	11	23	31	4	21	17	14	4	19	49
17 : Franchise_Universe	7	12	2	16	1	15	35	1	2	0	0	3	4	1	4	14	15	2	8	4	11	1	6	24
18 : Gameplay_Mechanics	4	12	0	8	0	2	1	37	26	1	0	2	4	0	8	25	6	3	2	3	0	2	4	16
19 : Genre	14	48	10	27	5	14	2	26	115	2	7	14	35	4	14	31	35	4	12	18	7	10	45	70
20 : Information Features_Other	1	1	1	1	0	1	0	1	2	4	0	1	1	0	1	1	1	1	1	1	0	0	1	2
21 : Language	3	11	6	7	0	3	0	0	7	0	21	2	10	0	3	6	12	3	3	7	0	0	6	13
22 : Length	12	18	5	11	5	8	3	2	14	1	2	35	9	2	8	16	12	2	9	4	13	4	11	28
23 : Mood	15	33	10	29	4	18	4	4	35	1	10	9	77	4	8	20	45	6	16	22	12	9	31	62
24 : Pacing	2	1	1	4	1	0	1	0	4	0	0	2	4	6	0	1	5	0	1	4	1	1	4	5
25 : Package	9	22	3	11	1	11	4	8	14	1	3	8	8	0	61	38	14	5	16	11	14	2	8	38
26 : Platforms_Sources	19	49	12	45	6	23	14	25	31	1	6	16	20	1	38	144	42	7	36	15	21	6	21	89
27 : Plot_Narrative	32	53	15	66	9	31	15	6	35	1	12	12	45	5	14	42	117	7	28	39	23	10	49	102
28 : Popularity	3	13	3	6	1	4	2	3	4	1	3	2	6	0	5	7	7	21	8	5	3	3	6	14
29 : Release Date	16	29	15	28	5	21	8	2	12	1	3	9	16	1	16	36	28	8	71	16	15	2	15	53
30 : Reviews	16	22	8	31	4	17	4	3	18	1	7	4	22	4	11	15	39	5	16	68	8	5	28	62
31 : Series_Volumes	10	18	1	25	5	14	11	0	7	0	0	13	12	1	14	21	23	3	15	8	51	4	10	43
32 : Setting	4	6	1	9	0	4	1	2	10	0	0	4	9	1	2	6	10	3	2	5	4	18	12	13

33 : Subjects	20	41	11	42	5	19	6	4	45	1	6	11	31	4	8	21	49	6	15	28	10	12	97	63
34 : Work	43	100	24	93	13	49	24	16	70	2	13	28	62	5	38	89	102	14	53	62	43	13	63	290
35 : Achievement	1	2	0	0	0	0	0	3	2	0	0	0	0	0	3	4	0	0	1	0	0	0	0	1
36 : Companionship_Fellowship_Fandom	6	11	3	8	3	10	3	3	4	1	4	3	5	0	5	6	7	2	2	5	3	1	4	18
37 : Discovery_Exploration	1	4	0	0	0	0	1	0	3	0	1	2	2	0	2	2	1	1	1	0	1	0	0	2
38 : Expression	6	11	6	22	3	12	7	3	12	1	2	2	12	2	6	10	21	3	7	20	3	5	13	28
39 : Loyalty	3	7	2	5	0	2	3	0	2	0	0	1	3	1	3	3	6	2	5	3	4	0	5	8
40 : Mental_Intellectual Engagement	11	28	6	19	0	11	7	10	8	0	5	5	10	1	14	38	19	2	17	6	11	3	6	39
41 : Motivation_Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42 : Ideal Search System Features	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0
43 : Information_Recommendation Sources	8	15	6	11	2	14	4	2	2	1	3	4	5	0	6	12	11	3	12	10	4	1	7	25
44 : Search Problems	2	4	0	2	0	2	1	1	3	0	2	1	2	0	3	7	4	2	2	1	2	1	2	6
45 : Search Strategies	1	5	2	2	0	2	1	0	0	1	1	1	2	0	1	2	1	1	3	2	0	2	1	6
46 : Search-related Information_Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47 : Health	2	1	0	1	0	2	1	1	1	0	0	1	0	0	0	0	0	0	0	1	0	0	1	2
48 : Personal Beliefs_Values	3	4	2	5	1	4	2	1	3	0	1	3	3	1	0	2	4	1	2	2	1	1	5	6
49 : Relatability	2	4	0	2	1	2	0	0	2	0	2	1	3	0	0	1	4	1	2	0	1	1	0	5
50 : Uniqueness_Creativity	6	11	2	7	2	3	0	1	12	1	2	4	8	1	2	3	8	2	4	5	0	1	6	15
51 : Values_Other	1	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Table 33. Cross-tabulation restuls in content analysis (Information features)

	AI : Achievement	AJ : Companionship_Fellowship_Fandom	AK : Discovery_Exploration	AL : Expression	AM : Loyalty	AN : Mental_Intellectual Engagement	AO : Motivation_Other
1 : Dislike	1	5	2	8	2	8	0
2 : Like	0	8	1	15	5	15	0
3 : Media Specific	0	0	0	0	0	0	0
4 : Overarching	0	0	0	0	0	0	0
5 : Related to	0	0	0	1	0	2	0

6 : Similar to	1	4	0	5	0	11	0
7 : Activities_Situations	1	6	1	7	0	13	0
8 : Context_Other	0	0	0	0	0	0	0
9 : Place	0	2	0	3	0	5	0
10 : Time	1	3	0	4	2	9	0
11 : Artistic_Visual Style	1	6	1	6	3	11	0
12 : Audience_Rating	2	11	4	11	7	28	0
13 : Audio Style	0	3	0	6	2	6	0
14 : Characters	0	8	0	22	5	19	0
15 : Completeness	0	3	0	3	0	0	0
16 : Creators	0	10	0	12	2	11	0
17 : Franchise_Universe	0	3	1	7	3	7	0
18 : Gameplay_Mechanics	3	3	0	3	0	10	0
19 : Genre	2	4	3	12	2	8	0
20 : Information Features_Other	0	1	0	1	0	0	0
21 : Language	0	4	1	2	0	5	0
22 : Length	0	3	2	2	1	5	0
23 : Mood	0	5	2	12	3	10	0
24 : Pacing	0	0	0	2	1	1	0
25 : Package	3	5	2	6	3	14	0
26 : Platforms_Sources	4	6	2	10	3	38	0
27 : Plot_Narrative	0	7	1	21	6	19	0
28 : Popularity	0	2	1	3	2	2	0
29 : Release Date	1	2	1	7	5	17	0
30 : Reviews	0	5	0	20	3	6	0
31 : Series_Volumes	0	3	1	3	4	11	0
32 : Setting	0	1	0	5	0	3	0
33 : Subjects	0	4	0	13	5	6	0
34 : Work	1	18	2	28	8	39	0
35 : Achievement	4	1	0	0	0	1	0
36 : Companionship_Fellowship_Fandom	1	22	0	5	0	2	0
37 : Discovery_Exploration	0	0	4	0	0	1	0
38 : Expression	0	5	0	28	2	5	0
39 : Loyalty	0	0	0	2	9	2	0
40 : Mental_Intellectual Engagement	1	2	1	5	2	69	0
41 : Motivation_Other	0	0	0	0	0	0	0
42 : Ideal Search System Features	0	0	0	0	0	0	0
43 : Information_Recommendation Sources	0	3	0	5	0	10	0
44 : Search Problems	0	0	1	0	0	2	0
45 : Search Strategies	0	1	0	1	0	1	0
46 : Search-related Information_Other	0	0	0	0	0	0	0

47 : Health	0	0	0	1	0	0	0
48 : Personal Beliefs_Values	0	0	0	3	0	2	0
49 : Relatability	0	2	1	1	0	1	0
50 : Uniqueness_Creativity	0	0	1	1	1	0	0
51 : Values_Other	0	2	0	0	0	0	0

Table 34. Cross-tabulation results in content analysis (Motivation)

	AP : Ideal Search System Features	AQ : Information_Recommendation Sources	AR : Search Problems	AS : Search Strategies	AT : Search-related Information_Other
1 : Dislike	0	4	3	1	0
2 : Like	0	9	3	1	0
3 : Media Specific	0	0	0	0	0
4 : Overarching	0	0	0	0	0
5 : Related to	0	3	2	0	0
6 : Similar to	0	6	0	0	0
7 : Activities_Situations	0	7	1	1	0
8 : Context_Other	0	0	0	0	0
9 : Place	0	1	0	1	0
10 : Time	0	6	1	3	0
11 : Artistic_Visual Style	0	8	2	1	0
12 : Audience_Rating	0	15	4	5	0
13 : Audio Style	0	6	0	2	0
14 : Characters	0	11	2	2	0
15 : Completeness	0	2	0	0	0
16 : Creators	0	14	2	2	0
17 : Franchise_Universe	0	4	1	1	0
18 : Gameplay_Mechanics	0	2	1	0	0
19 : Genre	0	2	3	0	0
20 : Information Features_Other	0	1	0	1	0
21 : Language	1	3	2	1	0
22 : Length	0	4	1	1	0
23 : Mood	0	5	2	2	0
24 : Pacing	0	0	0	0	0
25 : Package	0	6	3	1	0
26 : Platforms_Sources	1	12	7	2	0

27 : Plot_Narrative	0	11	4	1	0
28 : Popularity	0	3	2	1	0
29 : Release Date	0	12	2	3	0
30 : Reviews	1	10	1	2	0
31 : Series_Volumes	0	4	2	0	0
32 : Setting	0	1	1	2	0
33 : Subjects	0	7	2	1	0
34 : Work	0	25	6	6	0
35 : Achievement	0	0	0	0	0
36 : Companionship_Fellowship_Fandom	0	3	0	1	0
37 : Discovery_Exploration	0	0	1	0	0
38 : Expression	0	5	0	1	0
39 : Loyalty	0	0	0	0	0
40 : Mental_Intellectual Engagement	0	10	2	1	0
41 : Motivation_Other	0	0	0	0	0
42 : Ideal Search System Features	1	0	1	0	0
43 : Information_Recommendation Sources	0	35	3	5	0
44 : Search Problems	1	3	11	1	0
45 : Search Strategies	0	5	1	8	0
46 : Search-related Information_Other	0	0	0	0	0
47 : Health	0	1	0	0	0
48 : Personal Beliefs_Values	0	3	1	0	0
49 : Relatability	0	0	0	0	0
50 : Uniqueness_Creativity	0	2	1	2	0
51 : Values_Other	0	1	0	0	0

Table 35. Cross-tabulation results in content analysis (Search-related information)

	AU : Health	AV : Personal Beliefs_Values	AW : Relatability	AX : Uniqueness_Creativity	AY : Values_Other
1 : Dislike	0	3	2	6	0
2 : Like	0	3	2	6	1

3 : Media Specific	0	0	0	0	0
4 : Overarching	0	0	0	0	0
5 : Related to	0	0	0	1	0
6 : Similar to	1	3	1	1	1
7 : Activities_Situations	0	2	1	0	0
8 : Context_Other	0	0	0	0	0
9 : Place	0	1	1	0	0
10 : Time	0	2	1	2	0
11 : Artistic_Visual Style	2	3	2	6	1
12 : Audience_Rating	1	4	4	11	0
13 : Audio Style	0	2	0	2	0
14 : Characters	1	5	2	7	0
15 : Completeness	0	1	1	2	0
16 : Creators	2	4	2	3	2
17 : Franchise_Universe	1	2	0	0	2
18 : Gameplay_Mechanics	1	1	0	1	0
19 : Genre	1	3	2	12	0
20 : Information Features_Other	0	0	0	1	0
21 : Language	0	1	2	2	0
22 : Length	1	3	1	4	0
23 : Mood	0	3	3	8	0
24 : Pacing	0	1	0	1	0
25 : Package	0	0	0	2	0
26 : Platforms_Sources	0	2	1	3	0
27 : Plot_Narrative	0	4	4	8	0
28 : Popularity	0	1	1	2	0
29 : Release Date	0	2	2	4	0
30 : Reviews	1	2	0	5	0
31 : Series_Volumes	0	1	1	0	0
32 : Setting	0	1	1	1	0
33 : Subjects	1	5	0	6	0
34 : Work	2	6	5	15	1
35 : Achievement	0	0	0	0	0
36 : Companionship_Fellowship_Fandom	0	0	2	0	2
37 : Discovery_Exploration	0	0	1	1	0
38 : Expression	1	3	1	1	0
39 : Loyalty	0	0	0	1	0

40 : Mental_Intellectual Engagement	0	2	1	0	0
41 : Motivation_Other	0	0	0	0	0
42 : Ideal Search System Features	0	0	0	0	0
43 : Information_Recommendation Sources	1	3	0	2	1
44 : Search Problems	0	1	0	1	0
45 : Search Strategies	0	0	0	2	0
46 : Search-related Information_Other	0	0	0	0	0
47 : Health	2	2	0	0	0
48 : Personal Beliefs_Values	2	8	0	0	0
49 : Relatability	0	0	5	1	0
50 : Uniqueness_Creativity	0	0	1	19	0
51 : Values_Other	0	0	0	0	2

Table 36. Cross-tabulation results in content analysis (Values)

VITA

Hyerim Cho holds a BA in English literature (2010) and library and information science (2010) and an MA in library and information science (2012) from Ewha Womans University, South Korea. Her research goal is creating better access to diverse types of newly emerging multimedia objects—images, photos, music, popular cultural objects, and cross-media.

With diverse types of information and related services, considerable increase in and demand for multimedia information is an inevitable outcome in everyday life. Still, general understanding of multimedia information users is limited, and existing information systems are often not satisfying users' diverse and granular needs. In order to provide better search experiences to users, there are several important questions to ask: What do users need when they search for multimedia information? Why are users particularly attracted to specific materials? What future recommendations and reference systems should be offered to users? How can we create a more user-friendly interface for organizational, retrieval, and recommendation systems? Her research focuses on answering these questions, using mixed methods including interview, user experiment, diary study, large-scale survey, content analysis, domain analysis, facet analysis, and more.