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User-Centered Categorization of Mood in Fiction

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User-Centered Categorization of Mood in Fiction

Abstract

- **Purpose:** Readers articulate mood in deeply subjective ways, yet the underlying structure of users' understanding of the media they consume has important implications for retrieval and access. User articulations might at first seem too idiosyncratic, but organizing them meaningfully has considerable potential to provide a better searching experience for all involved. The current study develops mood categories inductively for fiction organization and retrieval in information systems.
- **Design/methodology/approach:** We developed and distributed an open-ended survey to 76 fiction readers to understand their preferences with regard to the affective elements in fiction. From the fiction reader responses, the research team identified 161 mood terms and used them for further categorization.
- **Findings:** Our inductive approach resulted in 30 categories, including *angry*, *cozy*, *dark*, and *nostalgic*. Results include three overlapping mood families: *Emotion*, *Tone/Narrative*, and *Atmosphere/Setting*, which in turn relate to structures that connect reader-generated data with conceptual frameworks in previous studies.
- **Originality:** The inherent complexity of "mood" should not dissuade us from carefully investigating users' preferences in this regard. Adding to the existing efforts of classifying moods conducted by experts, the current study presents mood terms provided by actual end-users when describing different moods in fiction. This study offers a useful roadmap for creating taxonomies for retrieval and description, as well as structures derived from user-provided terms that ultimately have the potential to improve user experience.

Keywords: fiction, categories, user warrant, mood, affective information needs, pleasure reading, card sorting, metadata

Introduction

Mood is a deep and complex notion. It refers to various concepts across different domains, such as *affect* in psychology (Bartsch and Oliver, 2011), *emotions* and *tones* in literature (Hogan, 2011), and *mood* in music information retrieval (MIR) as well as other user studies in information science (Cho *et al.*, 2021a; Hu, 2010). Mood has been understood in various ways, but even with the variances in specific meaning across different domains, existing literature agrees on one thing: Mood is an important element for media information users, especially for the ones who seek leisure materials (Hogan, 2011; Vorderer and Reinecke, 2015). Several search and media recommendation systems have implemented mood as one of the primary access points for their resources, including music streaming and recommending services, such as *Spotify*¹ and *Pandora*², and films and TV show recommendation systems like *Netflix*³.

Researchers in literature and psychology domains have tried to collect and categorize *emotions*, *tones*, or *affect* (Clore *et al.*, 1987; Crocker, 2013; Laurier *et al.*, 2010; Ortony *et al.*, 1988) to understand the diversity of human emotions. However, the authors of this study find there is a need to organize and understand the *moods*, particularly for fiction readers from the information science perspective. Fiction books in libraries and other relevant information systems support browsing by subjects (such as the *Library of Congress Subject Headings (LCSH)* search) and known-item searches (e.g., search by title or author). Often, subjects listed for fiction do not describe the narrative efficiently or inclusively, and get mixed up with “genre” terms, as seen in *Figure 1*. In other situations, when subject terms describe the narrative of a fiction book too specifically, it might potentially spoil the fun part of pleasure reading. Utilizing mood terms (e.g., depressing, light-hearted, dark, funny) can both address this problem by focusing on enriching the description of the aboutness of a work of fiction without simply describing the plot, and potentially reduce the ambiguity of the genre term usage in describing different fiction works.

For example, when searching fiction by genre alone, different nuances and elements of each fiction work can easily be lost by being grouped into one genre term like “mystery,” or “romance.” Jana Deleon’s Louisiana Longshot and Edgar Allan Poe’s The Tell-Tale Heart may be both “mystery” novels in the genre-based organization and recommendation systems. However, by adding the mood element in describing these works, Jana Deleon’s work can be described as *light-hearted*, *hilarious*, and *mysterious*, and Edgar Allan Poe’s work can be described as *dark*, *eerie*, and *mysterious*, providing additional in-depth nuances to users who want to search for fiction works they like.

Currently, fiction search and recommendation services that provide mood-related results are limited. Although there has been a noteworthy project of recommending fiction books based on mood and emotion by *Whichbook*⁴, their current mood and emotion categories contain not only affect-related terms but also other concepts, such as subjects, certain scenes, and the length of fiction, all provided with mood and emotion terms at the same level (*Figure 2*). Another effort to recommend and classify fiction books, *NoveList*’s Guide to Story Elements (EBSCO, 2021), covers multiple aspects of the works of fiction, including tone, storyline, and character. *NoveList*’s tone category, particularly, contains terms that are about emotions and/or relevant to

¹ <https://www.spotify.com/us/>

² <https://www.pandora.com/>

³ <https://www.netflix.com>

⁴ <https://www.whichbook.net/mood-emotion/>

emotional elements of fiction, such as the intensity of emotion (e.g., *emotionally intense*), plot/topic (e.g., *chaste*), and even setting (e.g., *strong sense of place*⁵).

Hard-boiled wonderland and the end of the world : a novel / Haruki Murakami ; translated by Alfred Birnbaum.


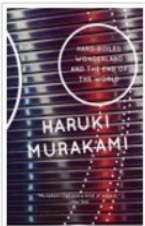
| | | |
|---|---|--|
|  | <p>Language: English</p> <p>Authors: Murakami, Haruki, 1949-</p> <p>Publication Information: New York : Vintage Books, 1993.</p> <p>Edition: 1st Vintage international ed.</p> <p>Publication Date: 1993</p> <p>Physical Description: 400 pages : illustrations, map ; 21 cm</p> <p>Publication Type: Book</p> <p>Document Type: Fiction</p> <p>Subject Terms: Japanese fiction -- Translations into English Fantasy fiction Translations Fiction</p> <p>Abstract: Summary: The last surviving victim of an experiment that implanted the subjects' heads with electrodes that decipher coded messages is the unnamed narrator. Half the chapters are set in Tokyo, where the narrator negotiates underground worlds populated by INKlings, dodges opponents of both sides of a raging high-tech infowar, and engages in an affair with a beautiful librarian with a gargantuan appetite. In alternating chapters he tries to reunite with his mind and his shadow, from which he has been severed by the grim, dark "replacement" consciousness implanted in him by a dotty neurophysiologist. Both worlds share the unearthly theme of unicorn skulls that moan and glow.</p> |  |
|---|---|--|

Figure 1. A bibliographic record of the fiction book, *Hard-Boiled Wonderland and the End of the World*

These efforts have improved the notion of how leisure materials, such as fiction items, should be recommended to users by emphasizing the importance of subject elements rather than expecting users to find what they want based on a simple known-item search. Still, we should note that these efforts of identifying and categorizing different moods of fiction (or readers, sometimes) were primarily led by experts like librarians. The authors understand that librarians and other experts involved in the aforementioned efforts have a developed sense of fiction readers' needs based on their communications. However, this study questions if the user-centered approach of identifying different moods of fiction, rather than the experts-led approach, may contribute to the existing findings by highlighting actual fiction readers' needs.

Adkins and Bossaller (2007) shared a similar perspective in their previous research of comparing different fiction search systems, such as OPACs, *NoveList*, and bookstores. Based on their analysis, the authors suggested that the emotional experience of reading a book may be better captured in user reviews than in the library's subject headings. Similarly, in other leisure material studies (such as Lee *et al.*, 2015; Winoto and Tang, 2010), too, the importance of understanding users' affective needs has been highly emphasized. By including fiction readers'

⁵ Notably, *NoveList* defines this as "powerfully depicted locales — real or imaginary — come alive and give a good sense of what makes a place unique," emphasizing the spatial aspect of a "place," more so than the feeling of belonging.

own perceptions of fiction moods and considering *user warrant*⁶, future fiction organizations and recommendation systems may be able to provide more user-friendly information services.

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|------------------------|-------------------------------------|-------------------------|
| Happy | <input type="checkbox"/> | Sad |
| Funny | <input type="checkbox"/> | Serious |
| Safe | <input type="checkbox"/> | Disturbing |
| Expected | <input type="checkbox"/> | Unpredictable |
| Larger than life | <input type="checkbox"/> | Down to earth |
| Beautiful | <input type="checkbox"/> | Disgusting |
| Gentle | <input type="checkbox"/> | Violent |
| Easy | <input type="checkbox"/> | Demanding |
| No sexual content | <input checked="" type="checkbox"/> | Explicit sexual content |
| <input type="range"/> | | |
| Conventional | <input checked="" type="checkbox"/> | Unusual |
| <input type="range"/> | | |
| Optimistic | <input type="checkbox"/> | Bleak |
| Short | <input checked="" type="checkbox"/> | Long |
| <input type="range"/> | | |
| Select up to 4 sliders | | |

Figure 2. Emotion and Mood Category from Whichbook

Additionally, readers from historically marginalized populations who have become alienated from institutional structures may have reading patterns that are unfamiliar to librarians working within those institutions due to the documented lack of diversity within the profession of librarianship (Gulati, 2010). More input from users in this regard would benefit both knowledge organization and the profession that typically passes on these recommendations to users.

By identifying and categorizing the mood terms provided by fiction readers, this study proposes a user-centered fiction mood categorization that can be implemented in different information systems for enhanced retrieval and recommendation services. Specifically, we address how moods of fiction can be organized with reader-generated descriptors. Our research questions are:

- **RQ1:** What mood descriptors do fiction readers use to describe the mood of fiction they like?
- **RQ2:** What would be a reasonable way of organizing fiction mood terms that can be helpful for future fiction search and recommendation services?

⁶ International Society for Knowledge Organization (ISKO) describes user warrant as citing Lancaster (1977): "the maker of a controlled vocabulary must know a considerable amount about the potential users of his system and about the types of requests they are likely to make," and therefore, Lancaster suggests that user warrant should be considered more significant than literary warrant. See also: https://www.isko.org/cyclo/literary_warrant#ref

Our contributions are two-fold: first, by adopting fiction readers' own language to describe different moods of fiction, this study develops a user-centered categorization of fiction moods. The categorization can be used for 1) organizing and recording fiction materials and 2) further enhancing the search experiences of fiction readers. In addition, we record and present each step of the decision-making process to create the fiction mood **categories** in a rigorous and detailed manner. Affective elements can be perceived subjectively depending on individuals, which creates another challenge to organize mood terms in a way that can work universally. By sharing our collaborative step-by-step procedures to categorize moods, the documentation of our efforts might provide methodological landmarks for future researchers in a similar field.

Literature Review

Research in the affect context

Human affect has been widely studied. As pointed out by Lopatovska and Arapakis (2011), distinguishing terms under the umbrella of affect, such as mood, emotion, feeling, and attitude, is often imprecise. Usually, the term "mood" refers to an affective state that lasts for a period of time, and is "*objectless and free-floating*" (Oatley *et al.*, 2006, p. 30). Mood research in this sense aims to investigate participants' responses to a physical activity (Ekkekakis and Russell, 2013). The mood of an individual may impact information behaviors, particularly when involved with leisure material usage. For example, users' moods may affect their rating on movie recommendation systems (Winoto and Tang, 2010) and story quality evaluation (Mori *et al.*, 2019). A substantial body of mood-related studies has emerged over the past decade. In a review of scholarly publications from ACM and IEEE databases, Torkamaan and Ziegler (2017) analyzed 1,264 articles published between 2006 and 2017. They found the largest cluster of the application domains is multimedia, which includes music, movies, images and games. In these studies, the mood is investigated through media content analysis, classification, and system design.

Through the lens of reading and literature, Jacobs (2015) explains a neurological framework in which different areas of the brain pick up the task of reading based on the cognitive and affective state of the reader during the act of reading. For example, in some cases, there may be what Jacobs calls the "formalist contract" with the author, wherein the reader is examining the book actively (critically) rather than receiving it passively (as with works read casually or mostly for pleasure). Reading actively in this way causes a particular area of the brain associated with facial recognition, the fusiform gyrus (FG), to become active (Jacobs, 2015).

Though what activity levels in certain parts mean is not necessarily settled scientifically, research does demonstrate that readers think about works of fiction differently under different contexts, as reflected in their observed levels and locations of neurological activity (Jacobs, 2015). The same reader may interact with works of literature in different ways and for different reasons over time, and the same author may at different points in a work invoke different kinds of cognitive and affective activity within the reader through their writing. These phenomena must in turn be incorporated into frameworks or theories of how mood functions and may be represented in taxonomies.

Miall (2006) suggests that fiction is experienced by readers both intellectually and emotionally, which means that purely cognitive models are not sufficient to catalog or contextualize fiction. Works of fiction activate both our feelings and our thoughts, and even incorporate how we interpret the feelings and thoughts of the characters and the author. The

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3 intended “mood” the author wishes to instill is also variable, shifting according to the plot, the
4 characters, and the context in which the author writes. Thus, empirical research of literature must
5 account for this in some regard (Miall, 2006).
6

7 Within the Library Science community, several studies have addressed the critical role of
8 mood in reading needs and behaviors. Based on interviews with 194 participants, Ross (1999)
9 found that readers’ current mood status may link to different needs regarding book selection; for
10 example, a stressful mood may lead to a choice of old favorites. Similarly, Miesen (2003)
11 surveyed 522 participants and found that a positively oriented mood after reading a book may
12 strengthen readers’ motivation for future reading, such as “*experience feelings of beauty*” or
13 “*become surprised*.” And Cho and colleagues (2021b) argued that fiction reading helps readers
14 alleviate their moods, especially during stressful times like the COVID-19 pandemic.
15

16 Having a historically significant role in readers’ advisory service, Saricks (2005)
17 proposed the term “appeal element” for librarians to better respond to readers’ tastes in books. In
18 her book “The Readers Advisory Guide to Genre Fiction,” Saricks (2009) introduced six
19 elements of “appeal,” one of them being “mood and tone.” Saricks (2009) provided various
20 examples of mood terms for 15 different fiction genres; for example, the dark mood is commonly
21 seen in *Adventure, Thriller, Horror, Fantasy, Historical, and Westerns*, while the optimistic
22 mood can be observed in *Gentle Read, Women’s Lives and Relationships, and Fantasy*. Authors
23 are dedicated to creating a strong emotional pull in each work of fiction. Therefore, Saricks
24 (2009) suggested librarians should continually expand reading beyond the genre boundaries and
25 help readers discover books that currently correspond to their moods to read. She also
26 emphasized the role of mood in fiction: “Since these tone and mood terms are so effective when
27 we talk with readers, we need to be aware of mood as we read and include these adjectives in our
28 oral and written descriptions” (p. 294).
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31 How, then, can these ideas be applied? Saarinen and Vakkari (2013) point to the
32 relatively rudimentary structure for fiction retrieval based on their study of readers in public
33 libraries. They describe “categories of readers” that reflect the aforementioned theorists’ ideas
34 about how fiction activates thresholds for different ranges of cognitive activity, as well as
35 different affective/emotional activities within the reader (Jacobs, 2015; Miall, 2006; Saarinen
36 and Vakkari, 2013). Although the categories they created are perhaps overly reductive, they
37 reflect the purposes users describe for choosing certain works over others, and that different
38 reader intentions will correspond to general sets of expectations and preferences when locating a
39 “good book” (Saarinen and Vakkari, 2013).
40

41 The work of Adkins and Bossaller (2007) also uses the term “good book” and describes
42 difficulties users encounter in the process of searching. As the authors compare the retrieval and
43 RA functions in library OPACs, *NoveList*, and bookstores, they note that the “emotional
44 experience” of a particular book is better captured at present in user and critical reviews than in
45 subject headings, which is an argument both for including reviews in OPAC records and having
46 more detailed and specific accounts of mood available for catalogers to describe the works in
47 more conventional MARC fields (Adkins and Bossaller, 2007). In more recent studies,
48 Moulaison-Sandy *et al.* (2021) emphasize the need of identifying and recording “affect”
49 information in libraries’ fiction book collections as a means of applying text-mining to identify
50 different moods from professional book reviews.
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Mood classification

Scholars have indicated that mood is a prominent characteristic for searching fiction books (Cho *et al.*, 2021b; Mikkonen and Vakkari, 2016; Moulaison-Sandy *et al.*, 2021) and books in general (Ross, 1999). To incorporate mood as a search filter in an information system, a classification module or a taxonomy of mood is needed. In this section, we review existing mood classifications from various research domains. Among research of mood or emotion, 1) the Dimensional Theory and 2) the Basic Emotion Theory have been widely applied as theoretical foundations of mood classification.

Dimensional theories of emotion date as far back as Darwin's 1872 work *The Expression of the Emotions in Man and Animals*. More recently, through a series of empirical investigations, Russell (1980) proposed a circumplex (or subdivided circle) model and classified 28 affect terms into two dimensions: the horizontal axis represents valence (pleasure-displeasure), and the vertical axis represents arousal (activation-deactivation). This model has been successfully applied to mood research about music (e.g., Laurier *et al.*, 2010). On the other hand, the Basic Emotion Theory was introduced in Darwin's aforementioned work and developed in the psychology field. According to Ekman (1984), humans biologically and psychologically experience six basic emotions and then perform associated behavioral patterns. These six emotions are anger, fear, sadness, happiness, disgust, and surprise.

In addition to these models, another notable model in the literature is the *Structure of the affective lexicon*, which was first introduced by Clore *et al.* (1987). It includes 22 emotion types distinguished by the valenced reactions. In this model, emotion terms that focus on the Mental element (Affect-Focal, Behavioral-Focal, and Cognition-Focal) are considered better representations of emotions (*Figure 3*).

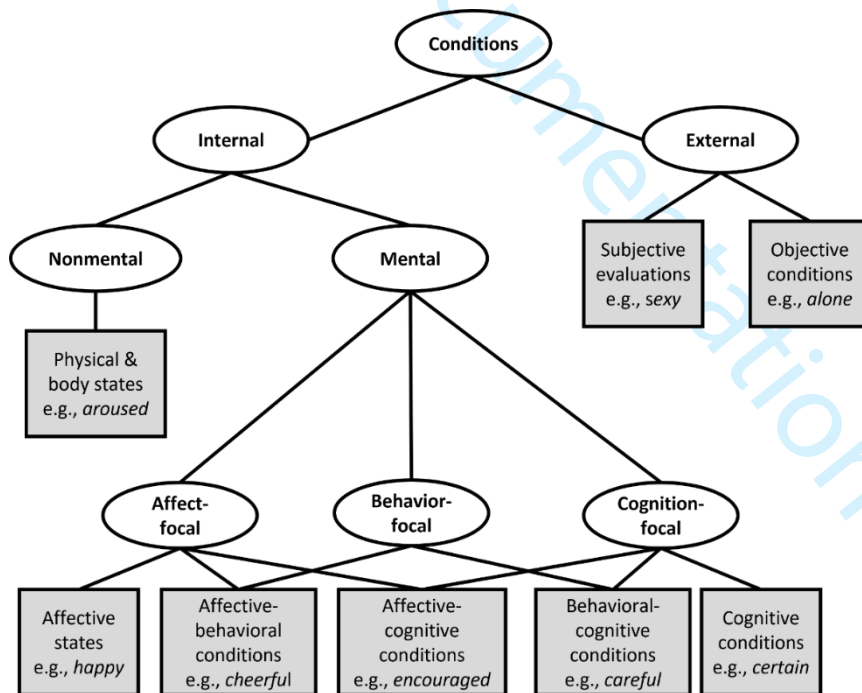


Figure 1. Structure of the affective lexicon (Image reproduced from Clore *et al.*, 1987, p.349)

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Scholars have been debating the number of basic emotions starting in the 20th century through measurement and investigation from neuro-physiological, physical, and mental viewpoints (Lopatovska and Arapakis, 2011). Most existing mood classification and taxonomy studies view mood through the mental lens and apply the self-reported approach for classification.

From the domain of psychology, Shaver *et al.* (1987) had 112 students collect mood terms from literature, and then another 100 students sorted the identified mood terms into clusters. They proposed a hierarchical structure that included 213 emotions under six clusters: love, joy, surprise, anger, sadness, and fear. Applying a similar approach, Storm and Storm (1987) had 61 students sort 72 emotion terms selected from the literature. The final categorization includes three main clusters, positive, negative, and neutral, and is followed by seven sub-clusters: 1) shame, sadness, and pain; 2) anxiety and fear; 3) anger, hostility, and disgust; 4) love and liking; 5) contentment, happiness, and pride; 6) sleepy, apathetic and contemplative; 7) arousal, interest, surprise, and understanding. In a later study, Thomson and Crocker (2013) extracted 544 emotion and feeling lexicons from literature and translated the terms into Italian, French, and German. Then they recruited 1,499 participants from four countries to sort the terms, resulting in 55 clusters. Later, 70 university students who spoke English were asked to group the 55 clusters into fewer categories. The final categorization results in 12 feelings: caring, excited, sociable, self-confident, angry, judgmental, inadequate, surprised, detached, sad, fearful, and fatigued.

In information science, scholars tend to apply basic emotions from literature to develop automated tagging tools. Francisco *et al.* (2012) collected 1,389 sentences from 18 folk tales. They recruited 36 annotators to identify emotion features of **given** sentences and assign descriptors by applying nine basic emotions from the literature: sadness, happiness, surprise, fear, anger, affection, bravery, disgust, and, to be noted, they used “neutral” to represent the absence of emotion in a folk tale sentence. The annotated results were further developed as EmoTag, a tool for automated mark-up of texts with emotional labels, to assign tags to digitized documents. In another study, Baldoni *et al.* (2012) created OntoEmotion, an ontology aimed at artwork that can be categorized as documents on the Semantic Web. OntoEmotion has 87 emotion types under five basic emotions: sadness, happiness, surprise, fear, and anger. Using relevant taxonomies and resources identified from their literature review, Spiteri and Pecoskie (2018) developed an affect taxonomy that includes three facets: emotion, tone, and association. Their taxonomy includes nine basic emotions (anger, disgust, engagement, fear, happiness, love, sadness, surprise, and uncategorized), eleven basic tones (cerebral, charming, complex, conventional, dramatic, frightening, humorous, imaginative, optimistic, realistic, and sad), and seven basic associations (agent, activity, event, experience, period, place, and object).

Although scholars from various disciplines have contributed to emotion classification, scarce studies were from the perspective of addressing reading needs and behavior. In the reviewed studies, we observe that the sources of emotion terms were extracted from dictionaries or literature, which **represent** a scholar-oriented rather than a reader-oriented approach. Thus, we aim to fill this gap by employing reader-generated terms to develop a mood categorization.

Method

To develop fiction mood categories, we collected reader-provided descriptors through an open-ended online survey, followed by card sorting. After the Institutional Review Board approved this study, we conducted a pilot study and revised survey questions for clarity. In

1
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3 August 2020, we finalized and distributed the survey to an online social reading community, *Goodreads*⁷, and social media platforms (e.g., *Facebook* and *Twitter*). We also applied a snowballing technique that encouraged participants to share survey URLs with other fiction readers to invite broader participation. The online survey asked participants to provide mood descriptions for their favorite fiction, the latest fiction book they read, and their typical fiction reading situation. Recognizing the multiple aspects of mood, as shown in the *Structure of the affective lexicon* (Clore et al., 1987), we encouraged participants to provide mood descriptions that cover different aspects and in a variety of expressions. The following questions collected mood descriptions in both single-word and narrative forms.

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- 15 ● *Let's think about the last fiction book you read (or the fiction book that you are currently reading). Could you tell us about the moods of that fiction book? If you were to add short terms/keywords/phrases to describe the mood of the book, what terms would you assign?*
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- 19 ● *Could you tell us about your current favorite fiction book(s) and why you like it (them)?*⁸
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- 22 ● *What would be the moods of that (those) book(s)? (For example, "sad," "suspenseful," "light-hearted," "dark"). Could you tell us the feelings or emotions that the book(s) evokes to [in] you, personally?*
- 23
- 24
- 25 ● *Are there any moods that you generally look for in that particular situation (Could you tell us about a typical time, situation, or location when you read a fiction book?)?*
- 26
- 27

28 After two leading authors observed data saturation (Corbin and Strauss, 2014; Robinson, 2014), meaning we did not discover any new themes from participants' responses, we ceased participant recruitment and data collection. This process resulted in 76 responses. All of the participants who joined our study were self-identified fiction readers and 18 years old or older. Additionally, the self-reported number of fiction books read by participants in a year was 1-5 (13.16%, n=10), 6-10 (10.53%, n=8), 11-15 (9.21%, n=7), 16-20 (13.16%, n=10), 21-25 (9.21%, n=7), and 26 or more (47.37%, n=36).

36 The current study adopted the *Structure of the affective lexicon* model (Clore et al., 1987) as a theoretical foundation to categorize the identified mood terms. The model proposes a psychological constructivist view of emotions. This perspective frames emotion as "*embodied, enacted, and experienced representations of situations*" (Clore and Ortony, 2013, p.337). Emotions in this framework emerge from the co-occurrence of multiple evaluative representations of a situation. Hence, emotions should be distinguished by the situations they represent rather than based on the variant reactions and behaviors that are triggered by those situations, such as heart rate or facial expressions. Context is an indispensable component in fiction reading; fiction readers' motivations are tied to pursuing particular reading experiences and situations in which mood plays an important role. Considering the nature of leisure reading, instead of focusing on readers' overt behavioral responses, we explore readers' mental reactions and the relationship between moods and fiction reading.

51 ⁷ <https://www.goodreads.com/>

52 ⁸ Several questions included examples to help participants' understanding and communicate our expectations. For example, for this question, we included this following example: "*My favorite fiction is Harry Potter series. I grew up with this series, so it kind of formed my youth, I feel like. It's nostalgic. I enjoy the author's creativity a lot, and all the magical world setting and whatnot appeal to me so much. The character development in this book is really impressive, too.*"

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3 Using a qualitative data analysis tool, NVivo 12⁹, the research team extracted all the
4 terms from the responses, which distinctively provided a list of 3,181 terms. Then, based on the
5 *Structure of the affective lexicon* model for emotions (Clore *et al.*, 1987), the four authors went
6 through the entire set of collected terms and referenced the contexts in the responses to identify
7 mood descriptors. In this process, the research team also referenced the affect taxonomy
8 suggested by Spiteri and Pecoskie (2018), one of the few studies in information science that
9 endeavored to organize mood information for books. Spiteri and Pecoskie's taxonomy provided
10 a reference for our term selections, especially when it was unclear whether the presented term
11 should be considered a mood term. Eventually, the research team identified 161 mood terms and
12 used them for further categorization.

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15 After this step, the authors used a card sorting method to explore categorizations of the
16 mood terms and observe any associations between mood categories. Card sorting allows
17 researchers to explore different data structures and identify terms that are either difficult to
18 categorize or do not serve the intended purpose of improving the data structure (Martin and
19 Hanington, 2012). Each unique reader-generated mood term was presented on a digital sticky
20 note using a visual collaboration platform, MURAL¹⁰. The four authors sorted all terms into as
21 many categories as needed based on their definitions in Google's English dictionary, which is
22 sourced from the Oxford Languages (2022). When a term has multiple meanings, the authors
23 reviewed the participants' free-text responses together and considered the context to determine
24 the meaning of a term. For example, the term *blue* was one of the 3,181 terms. Since it could
25 refer to the feeling of sadness, the authors reviewed the participants' responses and determined if
26 it was a mood term or not (in some responses, *Blue* was the last name of a character in a book).
27 Reviewing/checking the original participant responses was conducted by all of the authors
28 together throughout the process to reach a consensus.

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31 Following this initial categorization phase, the authors 1) examined the relationships
32 between terms in the same category. While mood terms are grouped by the similarity of their
33 meanings, we also observe if there are other relationships (e.g., co-occurrence) between terms in
34 the same category. The authors also 2) identified synonyms and near-synonyms using Google
35 English dictionary, and 3) merged variant forms of the same word. The preferred form of a word
36 and the representative category names were determined by term frequency. For example, for the
37 terms *dark*, *darker*, and *darkness*, participants used *dark* 44 times, *darker* twice, and *darkness*
38 once; in this case, *dark* was selected as the preferred form of a mood term. Similarly, when
39 several terms were grouped in the same category, such as *cynical*, *ironic*, *sarcastic*, *sardonic*,
40 *satirical*, and *wry*, the research team chose *cynical* as the representative category name since
41 *cynical* was used most frequently by the participants. When two or more terms had the same
42 frequency in the same category, the research team used Google Ngram Viewer¹¹ to select the
43 term with a higher occurrence rate in the English book corpus to select a preferred form. For
44 instance, *hectic* and *crazy* were in the same category, and both were used two times by
45 participants. Since the use of *crazy* was much more common than *hectic* in recent English
46 literature (Figure 4), the authors selected *crazy* over *hectic* as the category name. Using Google
47 Ngram Viewer points to common usages, which shares the emphasis on users with our data
48 collection approach.

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54 ⁹ <https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software>

55 ¹⁰ <https://www.mural.co/>

56 ¹¹ <https://books.google.com/ngrams>

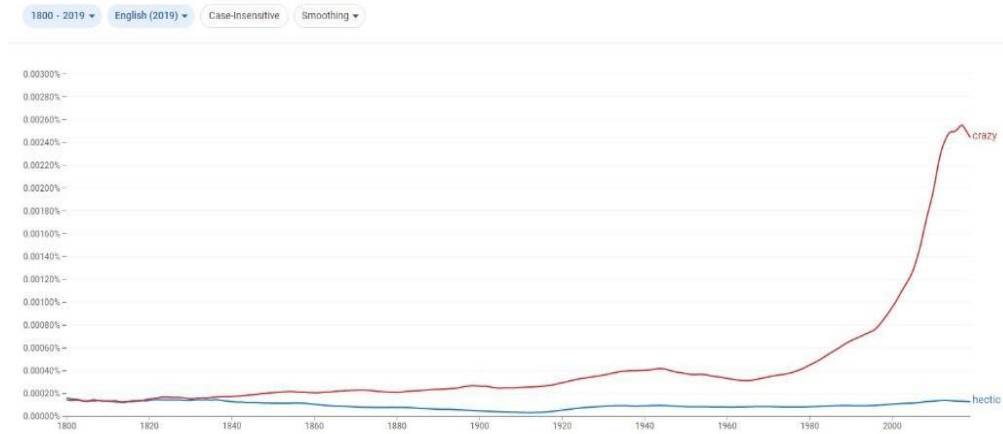


Figure 2. Google Books Ngram Viewer search results of crazy and hectic

The entire process of 1) selecting mood descriptors, 2) cross-referencing with participants' responses, 3) creating initial categories, 4) selecting preferred forms of terms and category names, and 5) finalizing the categories and term assignment was completed in approximately ten months, from February 2021 to November 2021.

Findings

Overview of the identified fiction mood categories

Based on the participants' responses and card sorting activity, our research team identified 30 fiction mood categories (*Table I*). Each category consists of similar mood terms that were assigned during the card sorting activity. For example, the Angry category includes the terms, *angry*, *annoying*, *mad*, and *wrath*. Mood terms included in this study are derived from fiction readers' responses. In other words, the research team did not alter the form of terms or replace them with synonyms. Our intention is to identify and categorize the mood terms that fiction readers use as they are used organically and established through an inductive approach.

The goal is not to create a finalized metadata schema, such as a taxonomy, but to provide categorizations of the identified/collected fiction moods terms from users. As such, the forms of mood terms vary; some are active adjectives (e.g., *empowering*), some are passive adjectives (e.g., *excited*), and some are nouns (e.g., *levity*).

Three families of fiction mood categories

Previous literature from diverse scientific domains such as psychology, literature, and information retrieval tended to focus primarily on one or two aspects of *mood*. For example, psychology studies highlight human emotions, *affect* (Bartsch and Oliver, 2011), and literature studies look at *emotions* and *tones* (Hogan, 2011) together from either writers' or characters' perspectives. Information retrieval studies focus on the users of information who consume different types of media materials, such as books, music, and video games; thus, the *mood* in these studies (Cho *et al.*, 2021a; Hu, 2010) can refer to either users' moods (how information users feel) or the mood of materials that users seek for.

Table I
Identified Fiction Mood Categories and Mood Terms

| Category | Terms |
|-------------|---|
| Angry | angry, annoying, mad, wrath |
| Boring | boring, dry, ennui, monotonous, mundane, sleepy, uninteresting |
| Complex | complex, complicated |
| Cozy | caring, comfortable, cozy, sweet, thoughtful, warm |
| Crazy | crazy, chaotic, frenetic, hectic |
| Cynical | cynical, ironic, sarcastic, sardonic, satirical, wry |
| Dangerous | dangerous, violent |
| Dark | cold, dark, gritty |
| Deep | cerebral, curious, deep, imaginative, intellectual, introspective, philosophical, provoking, realistic, witty |
| Dystopian | apocalyptic, dystopian |
| Evil | evil, ominous, sinister |
| Excited | adventurous, excited, passionate, thrilling |
| Funny | amusing, comical, funny, humor, levity, silly |
| Happy | cheerful, content, happy, joy, pleasant, satisfying, uplifting |
| Hate | aversion, disgusting, hate |
| Hopeful | empowering, encouraging, enlightening, grateful, hopeful, motivated, optimistic, positive, resilient |
| Light | light, lighthearted, whimsical |
| Nostalgic | evocative, longing, nostalgic, wistful |
| Pessimistic | bleak, despair, hopeless, pessimistic |
| Relatable | compassionate, connected, empathetic, relatable |
| Relaxing | calming, comforting, contemplative, dreamy, hypnotic, meditative, peaceful, relaxing, relief, soothing |
| Romantic | love, romantic, sensual, sexy |
| Sad | bittersweet, depressing, elegiac, grief, melancholy, miserable, morbid, mournful, sad, sentimental, soulful, tragic |
| Scary | creeped out, dread, eerie, fear, horrible, scary |
| Solitary | loneliness, solitary |
| Stressful | exhausting, frustration, hurt, painful, stressful, overwhelmed, traumatic |
| Suspenseful | mysterious, suspenseful |
| Tense | angst, anxious, concerned, embarrassment, heavy, paranoid, restless, tense, uncertain, unsettling, worrying |
| Touched | heartfelt, moving, mushy, touched |
| Weird | geeky, nerdy, odd, offbeat, peculiar, quirky, strange, uncanny, wackiness, weird |

Based on our findings, the authors believe that *Mood of fiction* should consider all of these aspects to encapsulate the different affective nuances of fiction works that fiction readers look for. Fiction readers do not only describe one type of affective family when discussing *Mood of fiction*; one or more than one affective family were discussed simultaneously (e.g., looking for fiction books with a light-hearted mysterious atmosphere when the reader wants to feel cozy). This may indicate that the mood of fiction results from various combinations of the reader's

emotions, the overall atmosphere of fiction, and the author's tone. In other words, a fiction mood can be determined by combining one or more than one affective families together. Therefore, we suggest that *Mood of fiction* incorporates three relevant families of affective concepts in fiction reading: Atmosphere/Setting, Emotion, and Tone/Narrative.

The Atmosphere/Setting family includes categories that describe the pervading atmospheric feeling of a fiction book, such as Cozy, Crazy, and Nostalgic. The Emotion family includes categories that describe what readers feel or what readers may expect to feel by reading a fiction book. Examples include categories like Angry and Hate. Finally, the Tone/Narrative family includes categories that describe the tone of a fiction book shown through the author's use of language. Cynical and Deep categories are examples of this family.

Figure 5 shows the three families of the fiction mood categories. As presented, a fiction mood category does not necessarily belong to only one specific family; Excited or Solitary may both describe the overall atmosphere of a fiction book as well as the emotions that readers may expect to feel. Similarly, Dark or Relaxing can both represent the atmosphere of a book or the tone in the narrative. Happy, Hopeful, Pessimistic, and Romantic categories can all be Atmosphere/Setting, Emotion, or Tone/Narrative of a fiction book. For example, readers of one fiction book can feel happy while reading that book, which can also have a happy tone and happy atmosphere.

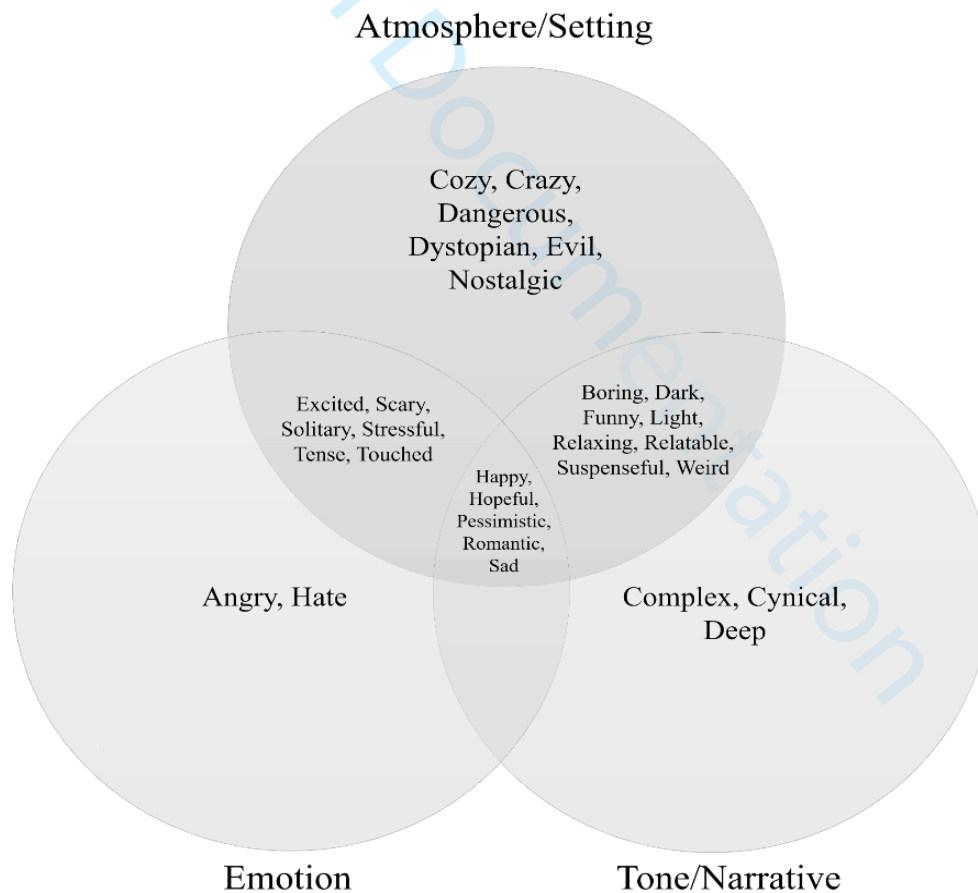


Figure 3. Venn Diagram of Three Families of Fiction Mood Categories

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3 Mood categories in the *Emotion* family are primarily “valenced affective reactions”
4 (Ortony *et al.*, 1988). In their 1988 book, *The Cognitive Structure of Emotion*, Ortony *et al.* claim
5 that emotions are valenced affective reactions; “[I]f some putative emotion can occur in the
6 absence of a valenced reaction, it cannot be a genuine emotion, and this provides us with a
7 principled way of distinguishing genuine emotions from non-emotions” (p. 29). Their example is
8 “abandoned.” While being abandoned is generally considered as a negative state, and one can
9 say that one “feels abandoned” in a certain emotional context, “being abandoned” itself does not
10 indicate any specific feelings (valenced reactions) other than describing the situation.

11
12 Categories in *Tone/Narrative* are aligned with the cognitive conditions presented in Clore
13 *et al.* (1987) and Clore and Ortony’s (2013) more recent development on the same subject, in a
14 sense that mood categories listed under *Tone/Narrative* generally refer to “cognition-focal”
15 conditions, such as “affective-cognitive conditions (e.g., encouraged),” “behavioral-cognitive
16 conditions (e.g., careful),” and “cognitive conditions (e.g., certain).” However, fiction mood
17 categories presented in the current study are not one-to-one applications of their models (Clore
18 and Ortony, 2013; Clore *et al.*, 1987; Ortony *et al.*, 1988). Their models are focused on the realm
19 of psychology and are therefore constructed to describe people’s everyday emotions. Therefore,
20 the models they suggest do not consider *Tone/Narrative* or *Atmosphere/Setting* aspects of fiction
21 moods, which the author intentionally and cognitively creates for readers to make them feel
22 certain ways.
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26 Discussion

27 Suggestions for organizing fiction mood

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30 Over the last couple decades, researchers in the information science domain have
31 investigated emotional information retrieval (EmIR) for various multimedia resources, such as
32 music (Hu and Downie, 2007), images (Schmidt and Stock, 2009), and videos (Knautz and
33 Stock, 2010). We observed from the existing literature and our data that while *Tone/Narrative*
34 plays a vital role in pleasure reading (particularly fiction reading in the current study), we rarely
35 find the application of tone in retrieval and recommendation systems for books.
36
37

38 The current study focuses on a deeper dive into the mood of fiction, a multi-aspect
39 concept. It applies a bottom-up, inductive approach informed by previous studies in
40 interdisciplinary domains and using empirical data from real fiction readers. The authors believe
41 that the findings in this study were able to capture a rich set of mood categories and mood terms
42 from fiction readers, which added unique knowledge to the existing understanding of fiction
43 mood identification and categorization. For example, compared to the existing fiction mood-
44 related organization schema such as *NoveList* tone vocabulary and *Whichbook*’s mood &
45 emotion search, several categories and mood terms from the current study are unique and new,
46 including cozy, dystopian, solitary, tense, dry, cheerful, geeky, and more.
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50 The research team noticed that so-called “fandom jargon” or terms with a more casual
51 tone (but used frequently by readers) tended to be captured more easily with the user-centered
52 approach, like the current study. It indicates that the mood categories and terms generated from a
53 bottom-up approach can complement the existing expert-developed vocabulary and advance our
54 understanding of the affective aspect of fiction. Formal cataloging sometimes misses the nuance
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3 and timeliness of colloquial terminology that can be discovered through user-derived taxonomies
4 (e.g., the preferred LCSH for Tweets is Microblogs, and it has not been changed since March
5 2011, as of the time of writing [Library of Congress, 2011]). Our results align with the
6 conclusions of earlier studies that emphasize the importance of user-centered taxonomies derived
7 from informal language to aid in retrieval that accounts for organic user concepts of fiction and
8 mood (Adkins and Bossaller, 2007; Saarinen and Vakkari, 2013).
9

10
11 Based on the findings in this study, the authors suggest two approaches for future fiction
12 mood organization and provision to enhance current fiction search and recommendation services:
13 1) collecting and utilizing user-centered mood vocabulary and 2) organizing fiction moods from
14 a multi-faceted perspective, such as the three-family approach presented in this study
15 (Atmosphere/Setting, Emotion, and Tone/Narrative). As the mood of fiction can be a complex
16 element to identify objectively, noting its multi-layers and recording and combining information
17 for each layer can potentially create a more universally agreed-upon and rigorous fiction mood
18 classification.
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23 **Challenging terms to categorize**

24 ***Combined meanings***

25
26 Mood terms with combined meanings are difficult to place in a distinct category. Their
27 complexity could conceivably require associations with multiple overarching mood categories
28 simultaneously, even those *seemingly* in conflict. Terms of this type create problems for distinct
29 categorization but also provide an opportunity to account for complex and nuanced human
30 experience.
31

32 The term *bittersweet* represents a category of compound words with ostensibly
33 conflicting yet combined meanings. *Bittersweet* may be thought of as related to melancholy or
34 cultural aesthetic concepts like *mono no aware* (i.e., 物の哀れ in Japanese) but is distinct in that
35 it relates to a positive mood coupled with traces of regret or grief in a more general way that is
36 open to interpretation.
37

38 Other terms like *melodramatic* have similarly complex but not conflicting meanings that
39 still allow easy categorization. It should be noted that *melancholy*, *bittersweet*, and *melodramatic*
40 each have specific cultural contexts within the history of English-language drama/literature that
41 may not cross over or translate precisely to other languages and cultural contexts. *Bittersweet*
42 might fit under either the category Sad or Happy, since it can be both at the same time. Given the
43 way *bittersweet* was used by our respondents, we categorized the word under the category Sad.
44 Respondents' use generally included other words related to sadness and melancholy, and
45 sometimes included words like *nostalgia*, which points to a relationship to reminiscence in
46 common use in conjunction with words like *wistful*.
47

48 ***Removed Terms***

49
50 After extracting mood terms from participants' responses that fall under the three families
51 identified in the findings section, we removed some terms during the categorization process.
52 Based on the characteristics of these removed terms, we can roughly divide them into two
53 categories, 1) personalized terms and 2) ambiguous terms. The personalized terms describe how
54 a reader perceives or interacts with a work of fiction. For example, there are terms that express a
55 reader's fondness for a work, such as *interesting*, *intriguing*, and *compelling*. Some terms
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3 describe a reader's level of engagement during the reading process, like *absorbing* and
4 *engrossing*. Others present a reader's perception, such as *confused*. While these terms provide
5 hints to how readers feel in their reading experiences, the content that one reader finds *intriguing*
6 or *absorbing* may not trigger other readers to have the same emotional reactions.
7

8 The other category includes ambiguous terms that 1) only vaguely point to a positive or
9 negative notion without specificity, 2) do not tie to a specific mood, or 3) describe the intensity
10 of emotions. For example, we observed terms that indicate the level of interest and surprise, such
11 as *fascinating* and *enthralled*. Examples of general terms with a positive notion are *amazing*,
12 *fantastic*, *enjoyable*, *entertaining*, and *wonderful*. Terms like *intense* and *emotional* describe the
13 intensity of emotions. While fiction readers may frequently use these terms, the core emotions
14 these terms convey may not be clear to everyone. For example, Merriam-Webster dictionary
15 defines *emotional* as "of or relating to emotion," "dominated by or prone to emotion," "appealing
16 to or arousing emotion," or "markedly aroused or agitated in feeling or sensibilities." Similarly,
17 *intense* is defined as "exhibiting strong feeling or earnestness of purpose" or "deeply felt." While
18 both terms indicate how strongly one may feel, it remains unclear as to what emotion is the term
19 specifically referring to.
20

21 The research team recognizes that there are, to some extent, normative or common
22 understandings of what these descriptors of intensity may indicate among fiction readers. For
23 example, *emotional* might be in line with the Sad mood category. However, due to the ambiguity
24 of *emotional*, it might also overlap with the Touched, Hopeful, or Romantic categories.
25 Therefore, when developing a categorization, having *emotional* as a mood descriptor of a work
26 of fiction might confuse readers or lead them to an unexpected search result, since readers may
27 have different expectations about the concept, *emotional*. The common theme among the
28 removed terms is the lack of connection to a particular mood. The terms may be an enhancement
29 when paired with specific mood terms, but they fall short when standing alone.
30

31 These two categories of terms were removed because their personalized and ambiguous
32 nature makes it challenging to apply them consistently as mood descriptors. Inconsistent term
33 application would cause unsatisfying information retrieval. This is one reason that assigning
34 mood descriptors based on catalogers' judgments is not part of the current cataloging practices in
35 most libraries. Compared to mood, it is relatively practical for catalogers to assign descriptors for
36 genre/form, a critical metadata element for information retrieval. However, the development and
37 application of the Library of Congress Genre/Form Terms provide one example of the enormous
38 time, cost, and continuous support required from key players in the library community if a top-
39 down approach is to be adopted. Recognizing how personalized and ambiguous some mood
40 terms can be, we also observed how often participants used these terms. Hence, we suggest that
41 future studies expand on the findings of this study and explore the possibilities of applying them
42 in information systems from a bottom-up approach.
43

44 Developers of information systems might consider using these removed terms to
45 complement a fiction mood taxonomy and enhance fiction retrieval. To develop a fiction mood
46 taxonomy, *Table I* presents a preliminary categorization of mood terms as a starting point. It
47 requires additional research to populate and refine it into a taxonomy. One potential application
48 of the removed terms is encouraging readers to add personalized terms as tags to describe works
49 of fiction. The system can show the number of times each tag was assigned to a work. This will
50 provide readers who are interested in reading a work a general sense of the subjective views of
51 other readers. One possible application of emotional intensity terms is to have a search feature in
52 a fiction recommendation system that allows users to "gauge" the intensity of fiction moods
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3 (either emotion, tone, or atmosphere) they select. As an example, one may select Sad as their
4 primary emotion category, then mark in the search system how primarily and strongly Sad
5 should be reflected in their search results.
6

7 In the current study, we have not included indirect or related elements that might
8 influence the mood of fiction readers, such as certain memory triggers that individual readers
9 might encounter or topics and themes of fiction books. However, we note that mood is not an
10 independent phenomenon. As an example, contextual situation-wise, readers' current work
11 situations, personal lives, where they are, or even the weather outside can all impact readers'
12 moods, which can influence their reading choice (Cho *et al.*, 2021a). Also, particular scenes or
13 descriptions about places in the fiction book can lead readers to feel certain ways.
14

15 Spiteri and Pecoskie (2018) describe that "*explicit memories involve episodic and*
16 *semantic memories* (p. 390)" that are experiences and specific events in time or facts that we
17 have learned. The authors further state that to identify emotional experiences for recommending
18 reading materials, these "*explicit memories, in the form of episodic and semantic memories,*
19 *appear to be the most appropriate categories*" (p. 391). However, while Spiteri and Pecoskie
20 (2018) attempted to create a taxonomy of associations for this purpose¹², the authors also discuss
21 how challenging the process of conceptualizing an associations taxonomy is. We agree with their
22 perspective.
23

24 Individual readers' life experience and memories vary. While one might feel nostalgic
25 when they read a fiction book with an elementary school setting, others might feel pain or
26 sadness. Due to this, we believe that recommendations and retrieval systems should not make an
27 assumption that certain descriptive elements of fiction are always associated with certain moods
28 of readers. Future fiction recommendation systems would be more powerful if users could
29 actively select the particular Emotion/Tone/Atmosphere they want, with search features that
30 either include or exclude topics or themes separately.
31
32

33 Neighboring Terms

34
35 The research team observed that some terms, which are not necessarily synonyms, tended
36 to co-occur in participants' responses, we refer to these as "neighboring terms". The first
37 example set is *dark* and *cold* under the Dark category. *Dark* and *cold* were initially placed in
38 different categories based on the different definitions of each. However, we noticed that *cold*
39 always co-occurred with *dark* in the participants' responses. Participants used *dark* and *cold*
40 together to describe a mood of fiction they thought of instead of using them separately in
41 different contexts. This led us to wonder if separating these terms might undermine our ability to
42 represent what participants wanted to describe; then, should seemingly different terms like *dark*
43 and *cold* be considered as a set in describing fiction moods?
44

45 Further review of *Google Book Ngram Viewer* search results showed a noteworthy trend
46 of *dark* and *cold* combination. We observed that since 1995, there has been a drastic increase
47 (365%) in the use of this combination. While this may refer to background settings of plot (i.e.,
48 physically dark and cold places), this may also indicate that in the literary communities, *dark and*
49 *cold* together has evolved into such a common mood descriptor that authors and readers naturally
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53 ¹² Spiteri and Pecoskie's (2018) taxonomy of associations include seven "Basic association": Agents,
54 Activities, Events, Experiences, Periods, Places, and Objects. Each "Basic association" has "Related
55 associations." For example, the Agents association has actors, authors, children, corporations, directors,
56 fictitious characters, generations, government, persons, and reviewers as its "Related association."
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3 understand what they generally refer to when used together. We determined that separating *dark*
4 and *cold* might conflict with our user-centered approach of mood categorization, thus we
5 recategorized the terms. We also placed *dangerous* and *violent* together under the Dangerous
6 category for the same reason.
7

8 We hypothesize that there may be additional similar cases where fiction readers use
9 multiple terms to describe particular moods of a fiction book, which cannot easily be described
10 with a single term to capture their nuances fully. Also, *dark* and *funny* fiction books might have
11 completely different feelings than *dark* and *cold* fiction books, although both share the same
12 mood term, *dark*. In this case, which term should be weighed more can significantly affect the
13 quality of search results. To support this nuanced mood information need, future fiction search
14 and recommendation systems may need to consider providing search features that 1) allow using
15 multiple terms to find specific moods and 2) weigh various combinations of mood terms
16 differently based on the selected terms or the order of terms.
17
18

19 **The Complexity of Weirdness**

20
21 The Weird category (containing mood terms such as *weird*, *nerdy*, and *offbeat*) went
22 through several revisions. The terms within this category describe specific moods, but they also
23 describe particular identities associated with lifestyles and consumption habits. We discussed if
24 these words had inherent meaning or simply were used to either 1) produce a space for the *other*
25 or to 2) identify with a positive shared cultural space outside the norm. Words like *uncanny* and
26 *geeky* have different denotations and connotations, but they share some commonalities, including
27 expressions of the aforementioned *other-ness* quality.
28

29 The common connotation that these words point to is something *unusual* or *counter*
30 *normative*. Within this category, there are subgroupings that might be sorted in future studies.
31 We noted that words like *nerdy*, *geeky*, and *quirky* tend to be used in relation to people rather
32 than things or events, and thus were frequently reclaimed from pejorative connotations, as
33 positive aspects of personal identity. On the other hand, words like *uncanny* and *strange* tend to
34 be used in reference to plots, events, and narratives, and have generally neutral connotations that
35 simply refer to an object or event as being outside of regular experience. Finally, words like
36 *weird*, *odd*, and *peculiar* are intermediary terms that can be used interchangeably in either
37 category. Since the feeling of something being outside of one's experience is subjective, the
38 category associated with personal identity might not be useful to demonstrate a concept in a
39 broader taxonomy unless it can be tied to a generally agreed upon cultural trope.
40
41

42 The research team discussed the ascendancy of geek culture since the beginning of the
43 21st century, in which what was once considered *uncool* has now become a facet of mainstream
44 culture that may cease to be *geeky* by virtue of its popularity (e.g., superhero movies, comic
45 books, manga, anime, video games), if **indeed** *geeky* simply denotes *other-ness*. The question
46 becomes: What are the actual denotations of words like *geeky* and *nerdy* if any? Words
47 expressing a general feeling of unusualness or unfamiliarity could be more useful in describing a
48 mood related to encountering something so unorthodox that we might expect readers to generally
49 describe it as *weird*.
50

51 There is a further relationship between the Weird category and the Funny category,
52 wherein terms like *wackiness* appear. In this instance, users are expressing a mood that relates to
53 something that is both humorous and unfamiliar, and therefore surprising. The unexpected is an
54 element in both humor and unusualness, so the commonality may tie the two together
55 intrinsically. The Weird category demonstrates that descriptions of unorthodoxy may be positive
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3 or negative, describe otherness or group identity, but always point to something that is outside of
4 existing norms. There are further implications here for how users identify themselves or their
5 moods vis-a-vis norms in culture and with regard to conventions of mood in fiction that could be
6 rich veins for future inquiry.
7

8 9 **Conclusion**

10
11 The purpose of this study is to develop user-centered mood categories specifically for
12 fiction materials. We took a bottom-up approach and collected mood terms from fiction readers'
13 open-ended survey responses to highlight the user-centered focus. Based on 76 fiction readers'
14 responses, we identified 161 mood terms and sorted them into 30 categories. We further grouped
15 these fiction mood categories into three overlapping families: the Atmosphere/Setting family, the
16 Emotion family, and the Tone/Narrative family.
17

18 Some themes surfaced from the development of the mood categories, and we identified
19 their implications for the description, retrieval, or recommendation of fiction works. For
20 instance, identifying terms with combined meanings (e.g., *bittersweet*, *melodramatic*) encourages
21 discussions and creative representations of complex mood descriptors that have multiple mood
22 components. Also, future studies can use these terms as examples to investigate the cultural
23 contexts and nuances of translation in fiction mood descriptions.
24

25 The removed terms in this study, while they do not serve as mood terms in the categories,
26 can contribute to information system designs and information retrieval performances in different
27 ways. Some potential applications include 1) asking readers to add personalized terms as tags to
28 complement official metadata, and 2) incorporating emotional intensity terms into a search
29 feature to increase the specificity of fiction searches.
30

31 Descriptions about personal experiences, memories, and particular themes or settings that
32 trigger emotions are subjective and not within the scope of this study. However, these
33 descriptions, such as topics and themes, could complement the application of the mood
34 categories and contribute to theme-based customized fiction retrieval in an information system.
35 That is, when incorporated, a system may allow users to include or exclude topics or themes in
36 addition to searching by moods. Similarly, identifying frequently co-occurred term sets (e.g.,
37 *dark* and *cold*, *violent* and *dangerous*) may help fiction recommendation and retrieval systems
38 present more relevant results. Also, the Weird category highlights the temporal aspect of mood
39 descriptors. The meanings and nuances of terms may change over time. The importance of
40 keeping the mood categories and terms up to date cannot be emphasized enough when it comes
41 to maintaining best performance.
42

43 Besides presenting the mood categories and thematic discussions, we recognize the
44 benefits and disadvantages of taking the bottom-up approach to collect and adopt terms in the
45 form of reader-generated responses. On the one hand, prioritizing fiction readers' use of
46 language allows the mood terms to more closely match readers' needs and search queries in
47 information systems. On the other hand, the choices of category names and forms of terms
48 reflect the readers' preferences at the time of data collection, which is bound to change. Hence,
49 the forms of terms are less consistent. We recognize the trade-off and see these mood categories
50 as a solid starting point that will evolve through continual maintenance and data collection. The
51 authors envision that one way to utilize the user-generated terms would be to incorporate them as
52 variant terms for a controlled vocabulary, enabling more user-friendly mood terms to be utilized
53 to search for fiction items in search and recommendation systems.
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3 The contribution of this study is threefold: 1) the mood families and categories connect
4 reader-generated data with conceptual frameworks in previous studies, 2) developed mood
5 categories and identified terms enrich mood descriptions for fiction materials and improve the
6 retrieval and collocation of fiction, and finally, 3) the application of these categories can inform
7 fiction recommendation features in information systems. In this study, the reader-generated
8 mood terms were first de-contextualized by NVivo 12 and then grouped into categories. The
9 categories constitute one possible way to group the mood terms, but is by no means the only
10 option. For future work, the research team plans to use the mood terms identified in this study
11 and invite fiction readers to conduct a larger scale card sorting activity. The results of reader-
12 conducted card sorts would be able to complement the current categories by introducing
13 perspectives from the broader and more diverse reader population.
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Hard-boiled wonderland and the end of the world : a novel / Haruki Murakami ; translated by Alfred Birnbaum.

Language: English

Authors: [Murakami, Haruki](#), 1949-

Publication Information: New York : Vintage Books, 1993.

Edition: 1st Vintage international ed.

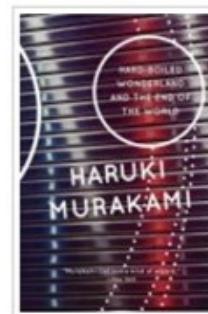
Publication Date: 1993

Physical Description: 400 pages : illustrations, map ; 21 cm

Publication Type: Book

Document Type: Fiction

Subject Terms: [Japanese fiction -- Translations into English](#)
[Fantasy fiction](#)
[Translations](#)
[Fiction](#)



Abstract: Summary: The last surviving victim of an experiment that implanted the subjects' heads with electrodes that decipher coded messages is the unnamed narrator. Half the chapters are set in Tokyo, where the narrator negotiates underground worlds populated by INKlings, dodges opponents of both sides of a raging high-tech infowar, and engages in an affair with a beautiful librarian with a gargantuan appetite. In alternating chapters he tries to reunite with his mind and his shadow, from which he has been severed by the grim, dark "replacement" consciousness implanted in him by a dotty neurophysiologist. Both worlds share the unearthly theme of unicorn skulls that moan and glow.

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A bibliographic record of the fiction book, Hard-Boiled Wonderland and the End of the World

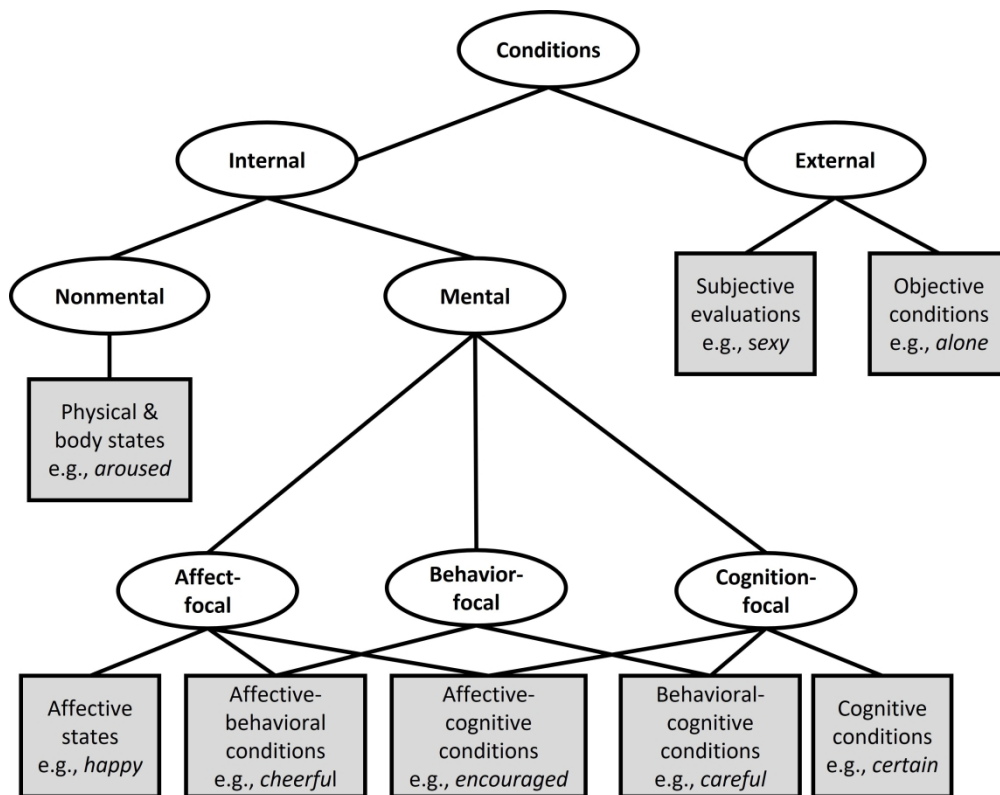
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| Expected | <input type="checkbox"/> | Unpredictable |
| Larger than life | <input type="checkbox"/> | Down to earth |
| Beautiful | <input type="checkbox"/> | Disgusting |
| Gentle | <input type="checkbox"/> | Violent |
| Easy | <input type="checkbox"/> | Demanding |
| No sexual content | <input checked="" type="checkbox"/> | Explicit sexual content |
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| Conventional | <input checked="" type="checkbox"/> | Unusual |
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| Optimistic | <input type="checkbox"/> | Bleak |
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Emotion and Mood Category from Whichbook

101x187mm (96 x 96 DPI)

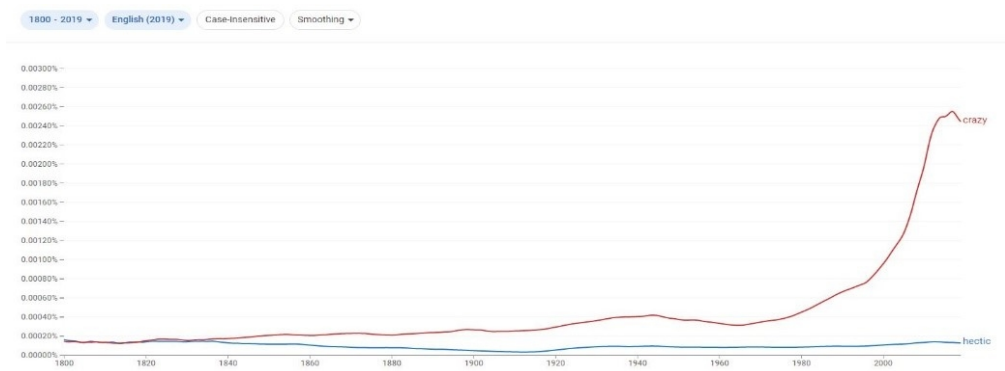


Structure of the affective lexicon (Image reproduced from Clore et al., 1987, p.349)

269x214mm (330 x 330 DPI)

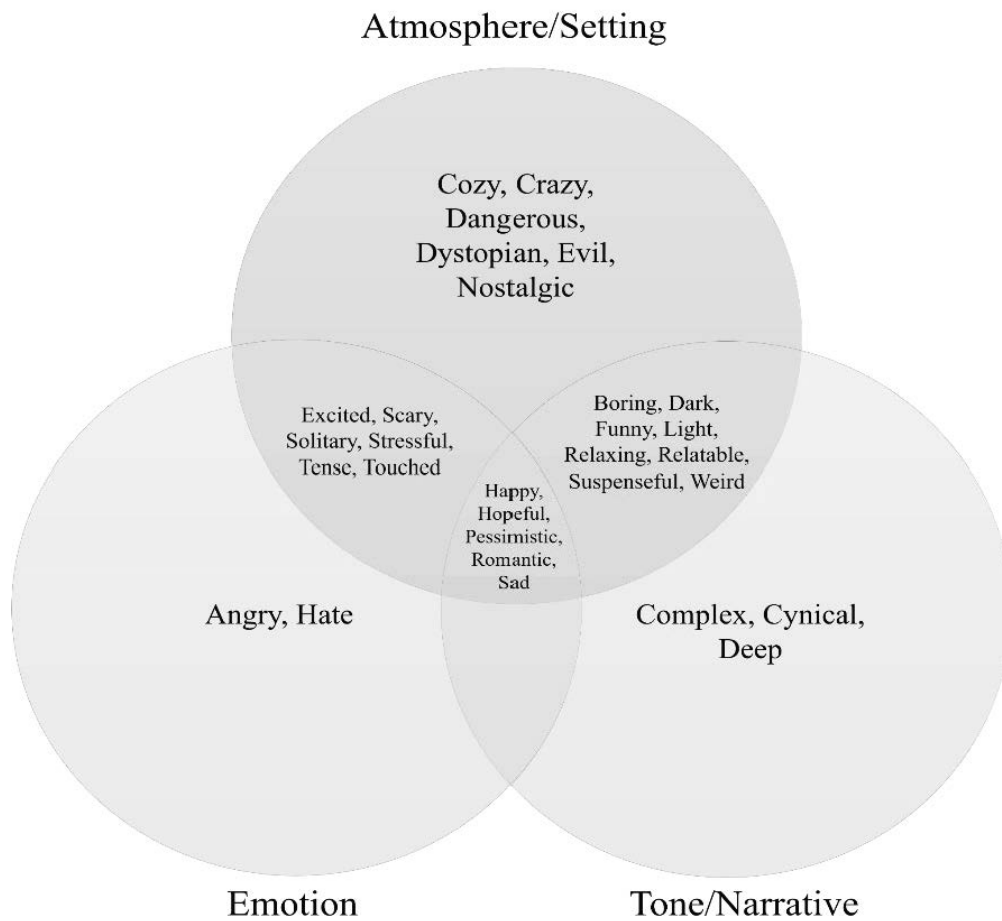
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Google Books Ngram Viewer search results of crazy and hectic

119x44mm (220 x 220 DPI)



Venn Diagram of Three Families of Fiction Mood Categories

102x98mm (220 x 220 DPI)

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Table 1
Identified Fiction Mood Categories and Mood Terms

| Category | Terms |
|-------------|---|
| Angry | angry, annoying, mad, wrath |
| Boring | boring, dry, ennui, monotonous, mundane, sleepy, uninteresting |
| Complex | complex, complicated |
| Cozy | caring, comfortable, cozy, sweet, thoughtful, warm |
| Crazy | crazy, chaotic, frenetic, hectic |
| Cynical | cynical, ironic, sarcastic, sardonic, satirical, wry |
| Dangerous | dangerous, violent |
| Dark | cold, dark, gritty |
| Deep | cerebral, curious, deep, imaginative, intellectual, introspective, philosophical, provoking, realistic, witty |
| Dystopian | apocalyptic, dystopian |
| Evil | evil, ominous, sinister |
| Excited | adventurous, excited, passionate, thrilling |
| Funny | amusing, comical, funny, humor, levity, silly |
| Happy | cheerful, content, happy, joy, pleasant, satisfying, uplifting |
| Hate | aversion, disgusting, hate |
| Hopeful | empowering, encouraging, enlightening, grateful, hopeful, motivated, optimistic, positive, resilient |
| Light | light, lighthearted, whimsical |
| Nostalgic | evocative, longing, nostalgic, wistful |
| Pessimistic | bleak, despair, hopeless, pessimistic |
| Relatable | compassionate, connected, empathetic, relatable |
| Relaxing | calming, comforting, contemplative, dreamy, hypnotic, meditative, peaceful, relaxing, relief, soothing |
| Romantic | love, romantic, sensual, sexy |

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| 4 | Sad | bittersweet, depressing, elegiac, grief, melancholy, miserable, morbid, mournful, |
| 5 | | sad, sentimental, soulful, tragic |
| 6 | | |
| 7 | Scary | creeped out, dread, eerie, fear, horrible, scary |
| 8 | | |
| 9 | Solitary | loneliness, solitary |
| 10 | | |
| 11 | Stressful | exhausting, frustration, hurt, painful, stressful, overwhelmed, traumatic |
| 12 | | |
| 13 | Suspenseful | mysterious, suspenseful |
| 14 | | |
| 15 | Tense | angst, anxious, concerned, embarrassment, heavy, paranoid, restless, tense, |
| 16 | | uncertain, unsettling, worrying |
| 17 | | |
| 18 | Touched | heartfelt, moving, mushy, touched |
| 19 | | |
| 20 | Weird | geeky, nerdy, odd, offbeat, peculiar, quirky, strange, uncanny, wackiness, weird |
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