Fanfiction R-rated – A Quantitative Study of Sensitive Topics in German Fanfiction

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1 Introduction

The internet has brought on a variety of new forms of literary expression: from self-published novels, over complex hyperfiction forms or automatically generated texts, to large forums of variegated fanfiction. A removal of authorities ("Wegfall der Kontrollinstanzen" (Simanowski 2005)) allows writers to release texts which due to their style or content most probably would not work in a traditional book setting. This can reach from curiosities like the mid-2020 release of the Kindle eBook *Kissing the Coronavirus*, which became an internet sensation and has been deemed as a "masterpiece of bad erotica" by a Reddit user (see ParadoxicallyItWas 2020), to the complex system of fanfiction writing. Systemic approaches to digital literature, especially in German studies, are rare (see Ries 2021), though studying the commonalities of literature on the internet may give valuable insights on readers and writers interests. "Fanfiction R-rated[1] - A Quantitative Study of Sensitive Topics in German Fanfiction", deals with fanfiction by setting it into the context of literary writing on the internet and describing the effects of the previously mentioned low boundaries for publication.

Fanfictions are literary texts of appropriative-derivative or transformative nature that are produced in a fandom by fans and are based on e.g. novels, films or TV-Series (see Stemberger 2021, p. 10). Due to their fannish nature, fanfiction writers operate from a standpoint of adoration of and frustration with a specific source material (see Jenkins 1992). This results in a variety of stories that try to expand the source material and/or seek to rework it to reflect authors' needs. Apparently, artistic freedom is used to full capacity, particularly, as Catherine Tosenberger describes it, "with regard to non-normative and

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[1]A nod towards rating systems such as the one by the US-American Motion Picture Association or the ones on fanfiction platforms (see Chapter 6).

taboo forms and representations of sexuality" (Tosenberger 2014, p. 17). The research objective of this thesis is thus to study the effects of the especially low boundaries for publication in fanfiction and what role more sensitive topics play in contemporary fanfiction. The study at hand will look at how to examine these phenomena on a corpus of German fanfiction written between the beginning of 2020 and the end of 2021, which has been collected by the LitLab of the TU Darmstadt. To manage the size of this corpus, examine trends, and integrate the rich metadata the data set offers, quantitative approaches are most suitable. The project therefore will include metadata analysis as well as quantitative textual analyses.

Theoretical background will be laid out in chapters 2 and 3, setting this study in the context of wider studies of literature on the internet and describing the mechanisms underlying the process of fanfiction writing. Following this, the two key hypotheses will be explained in chapter 4. Thereby the first hypothesis says that in the fanfiction corpus at hand trends reflect the use of sensitive topics and the second hypothesis says that word meaning is altered in a way that blurs the difference between sensitive and non-sensitive topics. As a first analytical method, the metadata will be evaluated statistically in order to create a useful cut of the corpus and to describe how age restriction and genre tags hint at the discussion of sensitive topics (see chapter 6). Then, chapter 7 will describe how word embedding models can be created and used to examine the use of certain keywords in a corpus. An exemplary analysis will show how certain keywords express sensitive and non-sensitive topics and how the difference between these areas can become blurry. The results will be evaluated (chapter 8) and concluded with an outlook (chapter 9).

2 Background: Defining Literature on the Web

In their introduction to the second special edition of *TEXT+KRITIK* on digital literature, Bajohr and Gilbert highlight how even in a postdigital era, where printed books are also manufactured with the help of digital tools, digital literature can be defined separately from printed literature and has specific needs regarding literary studies. Digital literature, according to Bajohr and Gilbert, integrates a special way of literary behaviour in the digital age and reflects digitization as basic requirement for contemporary literary production and reception (see Bajohr and Gilbert 2021).[1] They distinguish between three types of digital literature: literature reflecting the digital in terms of content, literature where production and reception are located in a digital environment, and literature based on programming code (e.g. generated literature) (see Bajohr and Gilbert 2021). Fanfiction can be categorized under the second type of digital literature. Bajohr and Gilbert describe for this category a new paradigm ("digitalsoziologisches Paradigma" (Bajohr and Gilbert 2021, p. 13)), where affordances and social dynamics create new forms of participation and literary writing. Important aspects defining it as digital literature are the specific surface, contexts and sites of publication and reception as well as the exponential growth in distribution and visibility (see Bajohr and Gilbert 2021).

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[1]Simanowski, too, defines digital literature as a separate group following elemental changes in the literary system (see Simanowski 2005). He further defines three characteristics for digital literature, interactivity, intermediality, and staging (see Simanowski 2005), though they are deemed by Bajohr and Gilbert as less clear for current forms of digital literature and more applicable for the specific *hyper fiction* (see Bajohr and Gilbert 2021).

As mentioned previously, Thorsten Ries calls a systematic approach to digital literature a desideratum and urges German literary studies to further deal with it as a research area (see Ries 2021). The importance of introducing a differentiated view on digital literature, in contrast to analogue printed books, is also highlighted by Bajohr and Gilbert. This becomes apparent when looking at fundamental changes in e.g. the definition of publicity and literary criticism. Through profound digitization, the borders between public and private have become blurry. Though publication of literature on the internet has become easy and for certain forms (e.g. fanfiction) is the standard, publication on e.g. internet forums differs greatly from the publication of printed books. In fact, publication on the internet often means publication in a certain bubble. This requires new views, considering low boundaries of production and publication, as well as the new strategies, practices and institutions of literary publication (see Bajohr and Gilbert 2021). Also concepts in literary criticism have to be re-evaluated: digital literature is less/not bound by the usual gatekeepers and in its condition is not on the same level as traditional literature (see Bajohr and Gilbert 2021). [2]

How setting fanfiction in context to digital literature can be beneficial is demonstrated by Niels Penke in his comparison of fanfiction and *Instapoetry*. Penke shows how both forms, which are largely defined by their popularity, are an expression of literature in a participatory culture (as publication of and discussion about literature has become easily accessible) and both point out shortfalls in the traditional literary sphere. As such, both e.g. demonstrate how readers wish for a higher identification potential in literature (see Penke 2021).

In summary, fanfiction, though its tradition reaches back to a time before the internet (see chapter 3), can be subsumed under digital literature and literary studies have to deal with the specific needs and re-conceptualisations of digital literature. This also makes findings on other forms of digital literature applicable to fanfiction and possibly findings on fanfiction generalizable to digital literature. This study may enable the latter. Studying fanfiction is able to give information on how novel forms of literary production work and

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[2]Idiosyncrasies of digital literature: "[K]einer etablierten Ästhetik folgend, nicht in klassischer Buchform publiziert und damit weder >werkfähig< noch als Forschungsgegenstand legitim" (Bajohr and Gilbert 2021, p. 16).

how they are shaped by the internet. How fanfiction can be defined individually and what can be said about common topics in fanfiction will be discussed in the following chapter.

3 Background: Analyzing Topics in Fanfiction

The aim of the following chapter will be to clearly define fanfiction and to outline the typical creation process of a fanfiction. Looking and the process of fanfiction writing may allow to explain how the authors choose topics in their fanfictions or how they are influenced by the choice of topics in other authors' fanfictions. Main criteria for a text to be considered fanfiction, according to Martina Stemberger, are (a) the text is of appropriative-derivative or rather transformative nature (more on this distinction in the following paragraphs), (b) produced in a fandom (oftentimes in the form of an online community), (c) by fans and (d) is based on, among others, novels, plays, films or TV-series (see Stemberger 2021, p. 10). While the surrounding conditions of the published text, it being published by fans for fans in an online community, are simple and distinct criteria, looking at the literary criteria is what will uncover the specific relation to a source text the authors find themselves in.

Abigail Derecho outlines the different ways of defining this relation. Fanfiction could be defined by saying it is (1) all literature based upon other literature, which would set the starting point of a fanfiction tradition to millennia ago. Or it is (2) the literature that came out of the first proper fan communities, of which the fandom that developed in the 1960s around *Star Trek* is of note. Or, which is the route Derecho takes herself, (3) a literary genre with own distinct characteristics (see Derecho 2006, p. 62). Derecho rejects the more traditional terms 'derivative' or 'appropriative', as they presuppose a hierarchical notion, rather she prefers to use the term 'archontic' literature. Archontic literature is literature that follows Derrida's 'archontic principle', which stands for a "tendency toward enlargement and accretion that all archives possess" (Derecho 2006, p. 64). Setting

fanfiction in this context allows to view fanfiction writing not as a hierarchical process, an original text does not get overwritten in a sense. With this view, fanfictions "do not violate the boundaries of the source text; rather, they only add to that text's archive" (Derecho 2006, p. 65). Derecho describes the mechanics behind archontic literature as a process of finding items in the archive (which starts out as the source text) and creating new artifacts out of these items which then can be considered additions to the archive. The aforementioned items in the archive can be e.g. certain characters, locations or the language of the original text or time period the text has been written in (Derecho uses here the example of Jane Austen's *Pride and Prejudice*) (see Derecho 2006, 63f.). Furthermore, archontic literary texts can be differentiated from other definitions of intertextuality as they "explicitly announce themselves as variations" (Derecho 2006, p. 65), e.g. in headers or by the identifying location in a Web forum (see Derecho 2006, 65f.).

This theory though does not replace a definition of fanfiction, which, as mentioned above, does need to include the surrounding factors of the fans and the fandom community. Also because, as Derecho shows, the early archontic literature has to be dated to at least a few centuries ago (see Derecho 2006, 66f.). But viewing fanfiction in this context allows to highlight the special connection we can see between fanfictions and their authors, which also influences strongly the topics we see discussed in contemporary fanfiction. In her analysis, Derecho highlights under earlier archontic literature a selection of the first published female writers in the 17th century, who based their works on a text by Sir Philip Sidney. They used the force of archontic literature as a form of criticism as they where "possibly sensing an opportunity to highlight the inqualities of women's and men' situation in their culture" (Derecho 2006, p. 68) by adopting genres uncommon for female writers and ridiculing the upper-class English society (see Derecho 2006, 67f.). By expanding this observation to more contemporary, e.g. postcolonial and feminist, texts, Derecho argues that all archontic literature as it "undermines conventional notions of authority, boundaries, and property" (Derecho 2006, p. 72) is "intrinsically against 'cultures of the dominant'" (Derecho 2006, 72f.). The archontic principle, demonstrated by e.g. the first published female writers in the 17th century, "seeks to empower and elevate what is subordinate" (Derecho 2006, p. 76). This concept may become clearer when looking at what motivations we can see in fanfiction authors.

Derecho describes fanfiction as "resistant artistic practice" of "women [who] write *against* the media corporations whose products they consume" (Derecho 2006, 71f. original emphasis). She sets this in context with the romance novel, where "women writers tend to supply for women readers, allowing readers to experience vicariously through narrative what they do not experience in sufficient quantities" (Derecho 2006, p. 72). Just as the romance novel, fanfiction is motivated by a lack of certain topics in the mainstream texts. Derecho also quotes Jenkins on this, who in *Textual Poachers* analyzes fan motivations at large: fans are motivated by two competing forces, which are "fascination or adoration but also frustration and antagonism" (Jenkins 1992, p. 24). The fascination with the media product drives them to engage themselves further with it, intensely dealing with the canon and possibly continuing with fanfiction. But resulting from in their view insufficient topics, story lines, characters, etc. "fans must struggle with them, to try to articulate to themselves and others unrealized possibilities within the original works" (Jenkins 1992, p. 24). Interestingly the adoration is that strong, that it often does not drive fans away from the product, even with high levels of frustration fans feel like they "must try to find ways to salvage them for their interests" (Jenkins 1992, p. 24).

With having set fanfiction in relation to the typical romance novel and with the main motivation for fanfiction writing being an interplay between adoration and frustration, the next paragraphs will look at how the writing process can be outlined explicitly and what topics are prevalent in fanfiction.

Catherine Tosenberger uses the term 'recursive' from the field of fantasy studies to describe the relation between source texts and fanfiction, which describes a text "that partakes explicitly and extensively of a specific, identifiable, preexisting story" (Tosenberger 2014, p. 14). While being similar to the previous description of archontic literature, Tosenberger highlights the "specific, and active, relationship between texts" and a "greater assumption of agency [...] for the activities of fans" (Tosenberger 2014, p. 15). This comes to play in Tosenberger's depiction of the artistic freedom in fanfiction communities: While orienting their writing along so-called constraints ("rules of the source text's universe, accepted characterizations, genre expectations" (Tosenberger 2014, p. 15)), fans also actively operate in a strong contrasting way to the source texts. Fanfiction writers take advantage

of not being limited by commercial values and are "not being restricted to institutionalized discourses" (Tosenberger 2014, p. 16). Tosenberger discerns here between three levels of differences, namely format, style, and substance. The substance, what is here called topics, is especially distant to most source texts. She further underlines how artistic freedom is "especially felt with regard to non-normative and taboo forms and representations of sexuality" (Tosenberger 2014, p. 17) and how it is perceived as particularly valuable for fanfictions based on the "heavily policed" (Tosenberger 2014, p. 17) Children's and Young Adult literature. Tosenberger further connects this freedom in general to the study of said source texts as fanfictions give an "actual response of actual audience members" (Tosenberger 2014, p. 22) of these types of literature.

Coming now from a standpoint of frustration and adoration and meeting with a text form that, within set but broad boundaries, allows innumerable stories, fanfiction authors are free to write about topics they desire and/or see missing in mainstream literature. Thereby, they engage with the source text in a unique way and thus respond to it.

But there is another aspect of note at play here which are the textual triggers writers see as a starting point for their texts. In her description of the *Harry Potter* book series, Vera Cuntz-Leng describes a juxtaposition between original text and (especially slash[1]) fanfiction: While the book series caters towards a conservative audience who like to see their gender norms reaffirmed and like to identify with the characters, a certain "polysemy of the text has provided slash fans and writers of slash fan fiction with an open space of possibilities in which to articulate queer desires" (Cuntz-Leng 2017, p. 94). Cuntz-Leng explains this polysemy in connection to Wolfgang Iser's concept of *Leerstellen* (see Iser 1994), as there are "actual markers for the reader to make meaning, as points of entry into the text, and as invitations to fill in the narrative gaps with one's own imagination" (Cuntz-Leng 2017, p. 94). Brottrager et al., whose study builds upon a subsection of the corpus of the present study, operationalize this concept to demonstrate how character's conceptualization changes from source text to fanfiction. By looking at frequencies of character names, central character pairings and emotional profiles,

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[1]Slash is defined by her as "a 'fannish' concept in which fictional characters are removed from their preferred heteronormative exegesis and transferred into self-made homoerotic utopias" (Cuntz-Leng 2017, p. 93).

they demonstrate how certain circumstances, e.g. underrepresentation of characters or undisclosed characteristics like sexuality, can be seen as a trigger for trends in fanfiction (see Brottrager et al. 2022).

Among the resulting fanfictions, Tosenberger refers to a distinction between two major types of fanfiction which differ in distance to the source material: affirmational fanfictions follow closely the canonical material, whereas transformational fanfiction is more loosely connected to the canon, e.g. introducing entirely new topics (see Tosenberger 2014). Looking now at the most reviewed fanfictions in the *Harry Potter* sub corpus of the present study, the most famous text is extremely transformational. In KrissyNightwish's *Das Schweigen der Schlangen* (1.211 Reviews over 31 chapters), the author not only deviates from the original story as the plot starts in a last school year of Harry where Albus Dumbledore is still alive and nobody knows that Harry can speak the snake language of parsel tongue, they also introduce entirely new mechanics: The plot is built around the revelation of Harry's power to speak parsel tongue, which apparently can be used as way for the sexual arousal of (former) Slytherin members (one of the four houses students get sorted in upon arrival at the magic school), but also renders Harry by law into a slave. The plot then revolves around Harry getting accustomed to his status as slave and him being taken advantage of in various occasions. The fanfiction expands the topic of slavery, which does get discussed in the originals, to human slavery, is filled with detailed descriptions of Harry being tortured as well as him engaging in sexual acts. Though most of these most famous texts in the corpus are largely transformative, of KrissyNightwish alone four texts are in the top 10,[2] obviously not all texts introduce these kinds of new tropes. In MilasMagie's *Dramione- Über dem Horizont* (with 778 Reviews over 39 chapters, the fourth-most reviewed fanfiction on the sub corpus), the author tells a story that starts long after the book series. A successful and single Hermione, the female main character of the original story, meets Draco, one of the originals' antagonists, again and starts and enters into a romantic relationship with him. Though this text is not strictly affirmational, it twists a few parameters, the most striking being Hermiones career and love life, it seeks out to maintain a closer relationship to the canon. The author abstains from strong

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[2]For more information on the importance of this and similar authors see Weitin et al. Forthcoming.

language and a focus on explicit sexual content and demonstrates the awareness of the canon by listing past events or details of characters' description from the books (e.g. Hermione's striking front teeth). These examples show how new topics and tropes are being introduced in fanfiction. They also show how both vicinity to and deviation from the canon are appreciated among readers.

This chapter has demonstrated how fanfictions are texts with a special intertextual relationship (be it archontic or recursive) to its source material by fans for fans. The texts are driven by not having to abide to commercial literary values and stem from a culture of adoration for a fandom and frustration with the canonized material of said fandom. These motivations meet a configurable and accessible genre, though they are often linked to textual triggers. Previous researchers have shown how certain topics are prevalent in fanfictions, resulting e.g. from novel character pairings (see Brottrager et al. 2022) or the depiction of sexuality (see the two examples and Tosenberger 2014), which is mostly absent in the source material (Children's and Young Adult literature). One last note on generalizing phenomena in fanfiction: Tosenberger introduces the phenomenon of microfandoms, which are sub fandoms, e.g. around certain character pairings, where "the most specific desires can be shared and fulfilled, with no concern about general audience appeal or community standards" (Tosenberger 2014, p. 9). Whether phenomena described in the following study are generalizable to all fanfictions or fanfiction trends or if they are just symptoms of microfandoms has to be kept in mind.

4 Hypotheses: Quantities and Qualities of Sensitive Topics in Fanfiction

In the following, the reasoning for the two hypotheses guiding the present study will be presented and the hypotheses themselves will be introduced. While the first hypothesis considers quantitative aspects, the second one considers more qualitative aspects of the inclusion of sensitive topics in German fanfictions based on popular source material and published between 2020 and 2021. The present study thus especially aims at finding out to what extent and in what form sensitive topics are included in fanfiction.

The previous chapter has shown how fascination and frustration drive the authors to profoundly alter the source materials' substance to satisfy their needs. In practice, e.g. Brottrager et al. 2022 have already shown the effects of this regarding the proliferation of slashes in *Harry Potter* and the example fanfiction of KrissyNightwish demonstrates the range of these alterations. Those topics that are excluded in the source material and that are demonstratively introduced by fanfiction writers (most commonly extreme violence and sexual content) are hereby considered as sensitive topics.

As all larger fandoms are based on similar western mainstream Young Adult or Children's novel series we can expect similar observations for the different fandoms (more on what counts as larger fandoms in chapter 6). It is expected that the effects of fascination and frustration are similar across the different series and thus that they are expressed in similar ways. A first hypothesis, focusing on quantitative aspects, therefore states that the possibility of touching upon more sensitive topics (in regard to the source material) is

important for many fanfiction writers and is thus reflected and measurable in fanfiction trends.

H1: In German fanfiction published in 2020 and 2021, trends reflect the use of sensitive topics. (Quantities of sensitive topics)

While the proliferation of sensitive topics will be part of the first step of this project, a second step will look at the actual words fanfictions writers use when writing about these sensitive topics. Methods from the field of quantitative semantics (e.g. word embedding models) are able to capture word meaning based on the use of the word in a corpus (see chapter 7). This makes words comparable by their meaning, e.g. by calculating a similarity value of two words. Furthermore, looking at what groups of words are similar also challenges a conventional perception of word meaning and makes the idiosyncratic and mutated meaning of a word in a specific corpus visible. It should therefore be possible to see how sensitive topics in fanfiction shape word meaning and if a conventional word meaning is noticeably changed to the extent that it is less clear which words indicate sensitive and which less sensitive topics. The second part of the analysis in this thesis will thus be based on the hypothesis that word meaning is altered in a way where the difference between sensitive and non-sensitive (general) topics becomes blurry.

H2: In German fanfiction published in 2020 and 2021, word meaning is altered in a way that blurs the difference between sensitive and non-sensitive topics. (Qualities of sensitive topics)

5 Corpus

The corpus used for this study originates from a scraping effort of the platform fanfik-tion.de by the *LitLab* of the Technical University of Darmstadt (see Weitin 2022). Since the beginning of 2020 all fanfictions (from all categories and fandoms) published on fanfiktion.de have been scraped, adding on a monthly basis all new fanfictions or comple-tions and alterations of fanfictions. Besides the full text of fanfictions, the scraping also covers important metadata on the authors (though the amount of information authors give up in their profile varies strongly), certain tags added to the story by the users or the platform's moderators (namely genre, age restriction, pairing type) and the reviews posted by other users. The team at the *LitLab* have made the corpus accessible by a graphical user interface which allows to select a subsection of the corpus based on, among others, the first publication date of a story, genre, fandom or length. As this study is set in the field of literary studies, only fanfictions from the book category (other categories include anime & manga, comics, video games, movies or even celebrities) and as a further limitation only the largest fandoms have been selected (see chapter 6 for the identification of the largest fandoms). The time span covers all fanfictions that have been first published between the beginning of 2020 and the end of 2021. In total, the corpus for this study contains over eight thousand texts, for detailed information see table 5.1.

Having obtained the corpus from one platform only, all fanfictions here are subject to the platforms regulations which the platform has based on official regulations for child-welfare (in this case the *Jugendmedienschutz-Staatsvertrag*). Authors have to agree to these regulations before publishing a story. Though fanfiktion.de also highlights how, contrary to other platforms, certain types of stories are allowed if they can be considered

Corpus	Text Count	Word Count
Harry Potter	5.946	92.615.705
Twilight	390	7.879.972
Warriors	332	2.323.804
The Three Investigators	358	4.213.801
Middle-earth	606	10.630.831
Percy Jackson	301	3.082.836
The Hunger Games	159	1.971.107

Table 5.1: Size of Sub Corpora (Word Count Post Preprocessing)

ethically agreeable.[1] Following is a short overview over the regulations touching upon sensitive topics:

Though the platform excludes in their regulations all pornographic stories, a certain amount of sexual content is allowed. Generally, all stories where the sexual content does not cover more than one third of the story is not considered to be pornography. Further, the discussion of sexual violence in a responsible manner ("solange der Umgang mit ihr sensibel und verantwortungsbewusst erfolgt" (fanfiktion.de 2022b)) is allowed, though under restricted access more liberties (e.g. a victim falling in love with a rapist) are permitted. The publication of stories including incestual relations is also allowed, but stories discussing incest that contradicts societal norms without being contextualized have to be restricted.[2] Lastly, the platform's policy include very strict regulations forbidding texts deemed as compromising children ("jugendbeeinträchtigende Texte"). Stories, e.g. about characters who are primarily motivated by murder or stories discussing distorted views on sexuality, are only allowed under restricted access (more on age restriction in chapter 6). We can see hereby how the platform has reacted to an interest into such sensitive topics, trying to balance protection of minors as well as maintaining liberties of authors, though the platform does keep their rules brief and oftentimes vague (see fanfiktion.de 2022b).

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[1]"So sind Geschichten, die beispielsweise Vergewaltigungen und Inzest enthalten, auf FanFiktion.de im Gegensatz zu anderen Seiten nicht kategorisch verboten, jedoch müssen sie trotzdem den allgemein geltenden Grundsätzen der gesellschaftlichen Ethik entsprechen. Das heißt, derartige Praktiken dürfen in den Geschichten nicht gutgeheißen oder gar glorifiziert werden" (fanfiktion.de 2022c).

[2]"Insofern Inzest nicht der im jeweiligen Kontext geltenden gesellschaftlichen Norm entspricht und das Umfeld dementsprechend reagiert, muß ein AVL-Rating gewählt werden" (fanfiktion.de 2022b).

6 Method 1: Descriptive Statistics

The fanfiktion.de 2020/2021 corpus offers a multitude of possible studies besides text analysis. E.g., other research by Weitin et al. have already analyzed the metadata authors share on their profiles (most relevant are authors' gender and age) as well the data resulting from looking at which users leave comments under which other users fanfictions (see Weitin et al. Forthcoming). In this study, metadata will be firstly analyzed to determine the subsection of the corpus for this study. Hereby, the largest fandoms are chosen in order to allow a comparative approach. Secondly, the age restriction and genre tags will be evaluated regarding how they are indicators of the use of sensitive topics. Age restriction is a relatively clear indicator of sensitivity, as it is based on the rules described in chapter 5, which aim at giving readers appropriate content warnings. And genre tags may give information on what stories are about and possibly indicate the discussion of sensitive topics. It has to be noted that in the context of the present thesis, only descriptive analysis is possible here. As an addition, a first foray into a data set of tags published for the fanfiction website Archive of Our Own (AO3) will show how information on sensitive topics can be gained from a platforms with a more complex tag system.

6.1 Segmentation of Corpus and Distribution of Age Restriction/Genre

As mentioned before, fanfiktion.de invites users to share fanfiction not only based on books, but also on a multitude of other sections (among others anime and manga, computer

games, movies, musicals, and celebrities). To focus more on literary adaption in fanfiction the present study will only look at what is collected under the book category, though this category usually comprises all fandoms that started as a book (series), such as *Harry Potter*, but subsequently also have been adapted as movies. Looking now at the top ten of largest book fandoms (see figure 6.1), fanfictions based on the *Harry Potter* book series come out on top with a total of over 7.000 fanfictions having been scraped since the beginning of 2020. With a large gap the second largest fandom is the *Twilight* fandom (in German *Bis(s)*), followed by *Warriors* (in Germany *Warrior Cats*) and *Three Investigators* (which in Germany gained popularity as *Die drei ???*). The positions five to seven reveal a peculiarity of fanfiktion.de: authors who have published multiple noteworthy book series are grouped under the author's name and not as own sections. Therefore, J.R.R. Tolkiens *Lord of the Rings* and *The Hobbit* are summarized under the author's name and come in fifth and seventh respectively. Rick Riordan's *Percy Jackson* is also grouped under the author's name and comes in at sixth place, while the *Hunger Games* series (in German *Die Tribute von Panem*) come in at eight place. On ninth place we find MMFFs for *Harry Potter,* which are participatory fanfictions (*Mitmach-Fanfiktion*) where one person lays out a plot and invites other users to participate by deciding on plot points or introducing own characters (see fanfiktion.de 2022a). On the tenth place we find fanfiction based on George R.R. Martin's *Song of Ice and Fire*.

For the following analysis the eight biggest fandoms will be covered, in order to represent a mix of reference texts with various target audiences. Especially the MMFFs category of the *Harry Potter* fandom will be excluded as it represents a more complex text form than usual fanfictions. Furthermore, for practical reasons Tolkiens *Middle-earth* fandoms will be grouped as one fandom (including also the few fanfictions in the general subcategory as well as fanfictions about the *Silmarillion*). Table 6.1 shows an overview of the selected fandoms as well as their (movie) adaptations. Adaptations have been included to highlight the different access points fans can use to enter a fandom. Note that the genre and target audience are a rough assessment of the book series, as different media outputs have a more complex audience. Different expectations as for the average fandom writer and story type can be formulated based on this information. Though e.g. nearly all fandoms are based on Children's and/or Young Adult books series, there is a difference between
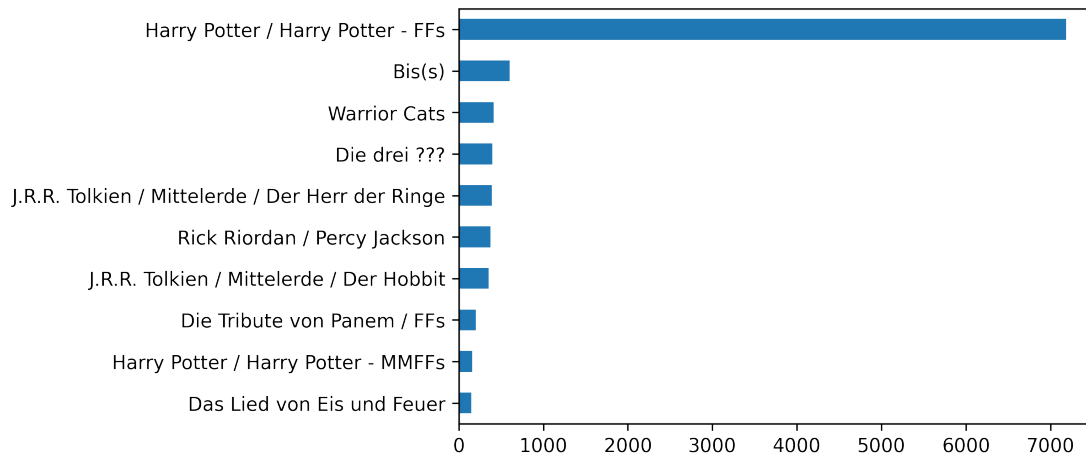
Figure 6.1: Top 10 Fandoms in the Book Category in 2020/2021 (Overall Count)

fandoms explicitly for a younger or a more mature audience. On the one hand we have e.g. *Warriors*, an ongoing series about anthropomorphized cat clans which the German publisher itself categorizes clearly as Children's literature (see Beltz 2022). And on the other hand, the *Hunger Games* series, set in a world where the yearly held hunger games force children from enslaved communities to fight for their lives as entertainment for a small elite, which is targeted at the more mature young adults.

Similarly, the genre differs between the various fandoms and may influence which fanfictions are written based on them. The *Twilight* series can be seen as paradigm of Young Adult romance stories, whereas the *Percy Jackson* series, about the demigod Percy who at the beginning of the series finds out that he's a son of Poseidon and has to subsequently use his powers in the fight against evil, is less romance-centered. Furthermore, the *Three Investigators* series, in Germany most popular known by the newly written German book series and the connected audio drama, and the *Middle-earth* books focus only marginally on love, but through their all-male casts may provoke slash fanfiction (see chapter 3).

On fanfiktion.de, age restriction is a mandatory category that has to be filled out before publishing any fanfiction. Fanfiktion.de differentiates between P6, P12, P16, P18 and

Fandom Title (German Title)	Publication Date (in Germany)	Movie Releases	Genre	Target Audience
Harry Potter (Harry Potter)	1997-2007 (1998-2007)	2001-2011	Fantasy	Children/Young Adults
Twilight (Bis(s))	2005-2008 (main tetralogy) (2006-2009)	2008-2012	Fantasy Romance	Young Adults
Warriors (Warrior Cats)	2003 - (2008 -	none	Fantasy	Children/Young Adults
The Three Investigators (Die drei ???)	1964-1987 (original series) (1968-1989 (original series), 1993- (new series))	2007-2009 (two movies) German audio drama: 1979 -	Mystery/Crime	Young Adults
Middle-earth (Mittelerde)	The Hobbit: 1937 (1957) The Lord of the Rings: 1954-1955 (1969-1970)	The Hobbit: 2012-2014 The Lord of the Rings: 2001-2003	Fantasy/ High Fantasy	The Hobbit: Children Lord of the Rings: General
Percy Jackson & the Olympians (Percy Jackson)	2005-2009 (2006-2011)	2010-2013 (two movies)	Fantasy	Young Adults
The Hunger Games (Die Tribute von Panem)	2008-2010 (original trilogy) (2009-2011)	2012-2015	Dystopia/ Science Fiction	Young Adult

Table 6.1: Overview Selected Fandoms and Source Texts

P18-AVL. The metadata in the 2020/2021 corpus further takes into account whether the pairing type of a story has been marked as slash or not resulting in each category being also used as slash-category (e.g. P12 Slash). Fanfiktion.de has their own category system for each level of age restriction which vary on the use of swear words, descriptions of violence or sexual content. The number in each category stands for a appropriate minimum age. The highest level of restriction, P18-AVL, is meant for stories which compromise a readers upbringing ("entwicklungsbeeinträchtigend") and include low to strong use of swear words, low to high levels of violence or graphic depiction of sexual acts. If a story has been flagged once as P18-AVL by a platform moderator, the writer is not able to remove the tag. These stories are also only avaliable to logged-in users between the hours of 11 p.m. and 4 a.m. (fanfiktion.de 2022c). Looking now at the fanfictions in the *Harry Potter* corpus (see Figure 6.2), most fanfictions (46.23%) were tagged as P12 or P12 Slash, 24.44 % were tagged as P16 or P16 Slash, 20.67 % as P18 or P18 slash and, besides 7.18 % P6 fanfictions, a few (1,48 %) where tagged as P18-AVL or P18-AVL Slash. In summary, the

Harry Potter fandom is mostly comprised of P12 fanfiction, for nearly a quarter of P16 fanfiction, a larger amount of P18 fanfiction and overall few slash fanfictions.
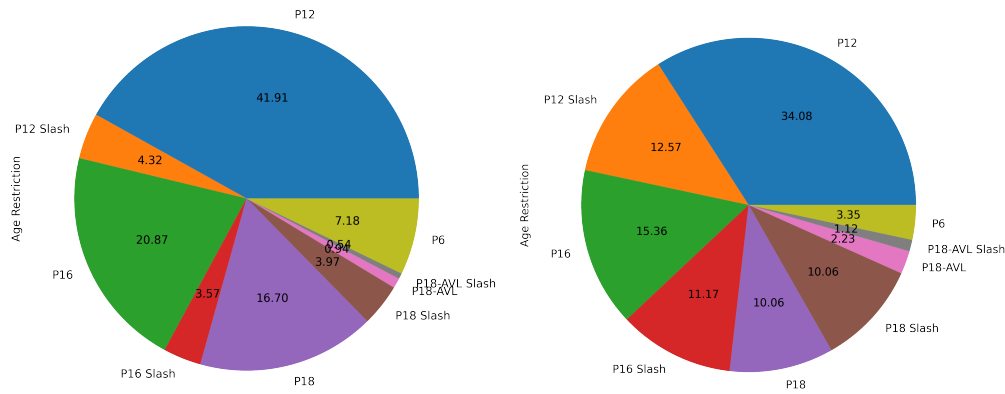

Figure 6.2: Distribution of Age Restriction in the *Harry Potter* Corpus (left) and the *Three Investigators* Corpus (right)

The *Three Investigators* corpus seems to be overall similar to the *Harry Potter* corpus, though larger amounts of slashes become apparent (see Figure 6.2). Among the *Three Investigators* fanfictions, 12.57% fall under P12 Slash, 11.17% P16 Slash, and 10.08% under P18 Slash. A possible explanation could be the all male main cast of the series which probably provokes slashing (Jupiter Jones/ (in German) Justus Jonas, Peter Crenshaw/Peter Shaw, Robert Andrews/Bob Andrews); with mainly Jupiter's aunt Mathilda as recurring female character. The *Warriors* and *Percy Jackson* corpus are very P12 heavy with 78.01% of P12 and P12 Slash fanfictions in the former and 68.77% in the latter fandom, whereas both fandoms have no fanfictions under the P18-AVL (or P18-AVL Slash category). The *Middle-earth* and *Hunger Games* corpora are made up of nearly half P12 (and P12 Slash) and over a quarter P16 fanfictions, as well as some P18 fanfictions. And lastly, the *Twilight* corpus has the largest amount of P18 and P18 Slash fanfictions (in total 25.26%) and nearly same amounts of P12/P12 Slash and P16/P16 Slash fanfictions (aorund 36%).

In summary, some fandoms seem to be clearly less mature regarding the contents of the texts and the resulting age restrictions. This is especially noteworthy for the *Warriors*

corpus, which, as mentioned before, can be most clearly categorized as Children's and not Young Adult literature and is also the only fandom which puts animals in the center of attention. Furthermore, it can be presumed that a large amount of P12 fanfictions rather contain extensions of the original series, as especially the Young Adult novel series (*Harry Potter*, *Percy Jackson*, etc.) all fall into fanfiktion.de's category of a P12 rating (see affirmational fandom in Chapter 3). On the other hand, this data implies that other fandoms are more mature, especially the *Twilight* fandom, which also is the only fandom based on a romance novel series which suggests the discussion of sexual content. Though also the *Three Investigators* corpus is striking with the largest share pf P18-AVL and P18-AVL Slash fanfictions (in total 3.35%). These observations can be used in the further steps of the study as reference points for observations on the usage of sensitive topics.
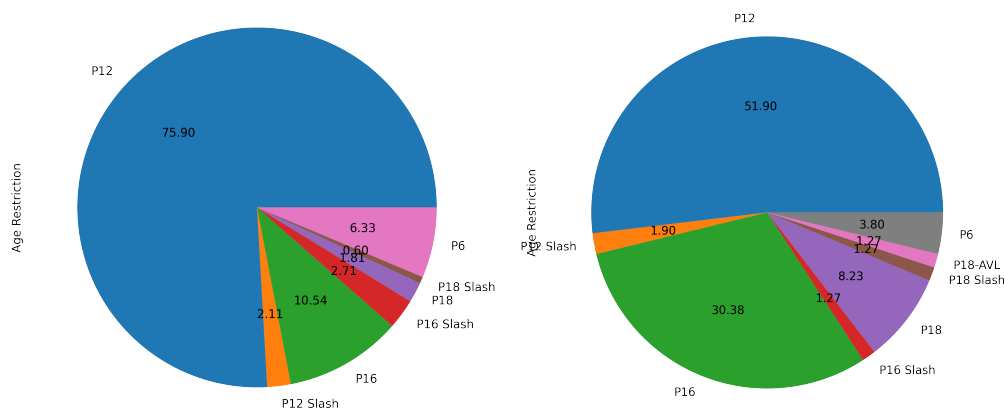

Figure 6.3: Distribution of Age Restriction in the *Warriors* Corpus (left) and the *Hunger Games* Corpus (right)

We have ssen how in regards to the distribution of age restriction, there are clear differences between the fandoms. They seem to cater to more or less mature audiences based on the contents of the source material, whereby gender of the main characters and genre of the source material can be presumed to have an effect. Within the scope of the present study, it is not possible to clearly determine whether these presumed correlations are actually causal relationships.

Another useful metadata category the data set offers are the genre tags, which could be a hint towards the contents of fanfictions in a sub corpus and how these may represent more serious/sensitive or lighter topics, thus helping the investigation of hypothesis 1. Fanfiction writers on fanfiktion.de can choose freely out of 24 genres up to two genre tags for their story. This poses a problem when wanting to look at a genre distribution in a sub corpus, as many writers make use of this possibility and choose a combination of tags for their story. In the following, an overall count of tags has been examined, meaning that tag combinations have been counted separately and the distributions were created based on relative frequency in regards to the total count of tags.

To now give a rough overview over the material in each sub corpus, the most used genre tags will be brought into focus. Some of these could more probably be an indicator of sensitive topics, e.g the tag for explicit sexual interaction (eroticism (*Erotik*)) or drama and grief (*Schmerz/Trost*) (these two are also often paired with the romantic genres). While others genres, such as family, friendship, and humor, are more indicative of less sensitive topics.
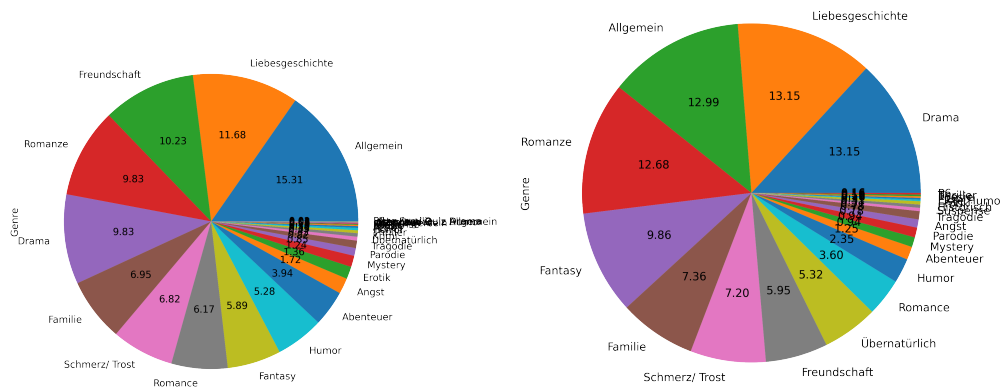

Figure 6.4: Distribution of Genre Tags in the *Harry Potter* Corpus (left) and the *Twilight* Corpus (right)

A large part of the genre tags for the *Harry Potter* corpus are made up of the romantic genres: 11.68% are tagged as love stories, 9.83% as ”*Romanze*”, 6.17% as romance, and

even 1.36% explicitly as eroticism. Further, besides the largest share of 15.31% tagged as "*Allgemein*" (general), the third-most used tag is friendship (10.23%) and the sixth-most used tag family (6.95%). Also, the humor tag makes out 5.28% of all tags. Similarly to the distribution of age restriction, where we saw large parts of P16 and P18 fanfiction, we can expect different types of stories told than in the originals, where romance only plays a minor part in the plot. This may also become apparent comparing the genre distribution of *Harry Potter* fanfiction to the distribution for *Twilight* fanfiction, a series where love stories play a more vital part of the plot. Both *Harry Potter* and *Twilight* fanfiction share a similar amount of tags of the romantic genres (29.04% in total for *Harry Potter* and 29.43% in total for *Twilight* (excluding the minor share of "*Erotik*" tags)).
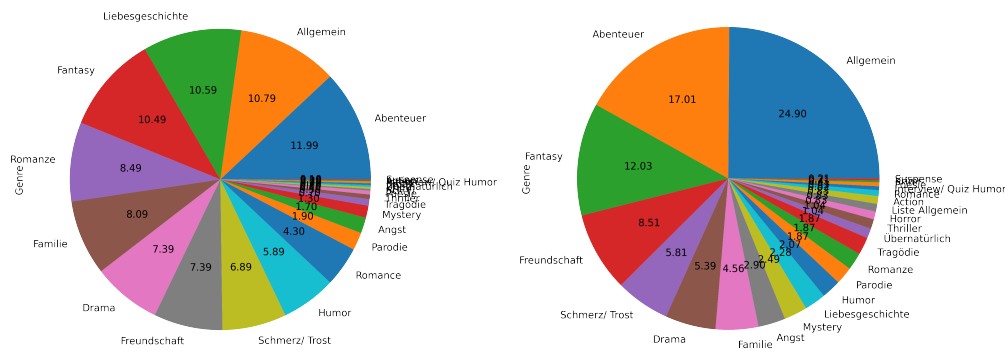

Figure 6.5: Distribution of Genre Tags in the *Middle-earth* Corpus (left) and the *Warriors* Corpus (right)

This focus shift towards romantic genres also is visible in the data for the *Middle-earth* (love story, "*Romanze*", and romance tags account for 23.38%), *Three Investigators* (25,49%, "*Erotik*" included), and *Percy Jackson* (21,23%) corpus. Though the amount of friendship tags is also high. In *Three Investigators* "Freundschaft" is the overall most used tag with 13.63% and in *Percy Jackson* the second-most used with 15.71%. Also here the *Warriors* corpus stands out. The most used genre is general (24.90%), followed by adventure (17.01%), fantasy (12.03%) and the more at the beginning as less sensitive defined friendship genre (8.51%). Only 2.28% of overall tags are love story and 1.87% romance. The *Hunger Games* corpus similarly appears to be less romance centered with the most

tags being "*Allgemein*" with 20.08% and drama with 17.99%. Both romance tags and love story account in sum for 13,39%. Though the tag "*Schmerz/Trost*", deemed as likely indicator for sensitive topics, is quite outstanding, coming out at third place with 10.88%.

In summary, the use of genre tags can give an idea of the textual material in each corpus, though they are a less clear indicator of sensitivity than age restriction. Also the assessment given here for the sensitivity of genres is a rough approximation. Though, the larger amounts of romance tags are most probably a symptom of innovative stories and slashes (the importance of which has been described in chapter 3). Having a clearer picture of what contents are described using each genre, e.g. whether "*Schmerz/Trost*" is used as synonym for drama or whether it hints at violence in stories, will offer deeper insights. On the other hand, looking at very probably less sensitive genres (family, friendship, and humor) does coincide with the previous findings, as e.g. can be seen for the *Warriors* data set. Thus, the data collected here indicates that hypothesis 1 can be confirmed.

6.2 Excursion: Tags on AO3

The fanfiction platform Archive Of Our Own (AO3) has published a data set containing information on a number of texts as well as tags. While the information on the texts (creation date, language, word count, etc.) is irrelevant for this study, the data on the tags (including tag type and "an approximate number of uses" (AO3 2021)) is comparable to the data analyzed in the previous section, though AO3 has not specified the time period this data set covers (see AO3 2021). As AO3 features a more complex tag system, including so-called Freeform tags where users can enter any information not covered by other tag categories, a more fine-grained analysis on how tags describe sensitive topics is possible here (see AO3 2021). The following paragraphs will show how the tag groups Rating and Archive Warning are distributed and how they are comparative to the tags used on fanfiktion.de. Further, a look into the most used Freeform tags will show what other terms are possibly indicative of sensitive topics on this platform.

Figure 6.6 shows a distribution of the Rating tags in the AO3 data set. Rating tags "measure
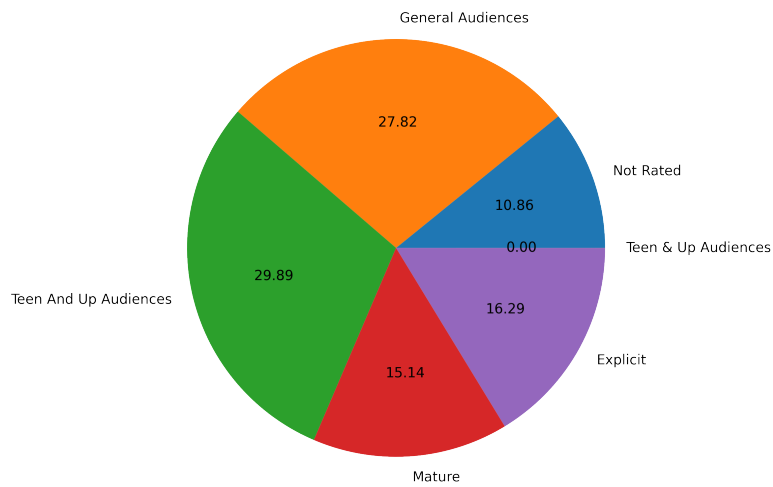
Figure 6.6: Distribution of Rating Tags on AO3

the intensity of a work's content" (AO3 2022) on AO3 and are therefore comparable to the age restriction on fanfiktion.de. Especially indicative of sensitive topics are here the tags Mature ("content contains adult themes (sex, violence, etc.) that aren't as graphic as explicit-rated content") and Explicit ("[t]he content contains explicit adult themes, such as porn, graphic violence, etc." (AO3 2022)). Though the share of Explicit ratings is similar to the amount of e.g. the P18 rating for the Harry Potter corpus (16.29 % on AO3), the different definition of the Explicit tag hints towards more sensitive content on AO3. Especially, as AO3 by the above definition, unlike fanfiktion.de, allows pornographic texts.

Archive Warnings are used on AO3 to inform users before reading a story about possibly triggering topics. According to the platform, these warnings are required for each story, though users can also choose to give a blank warning in order to avoid spoilers (see AO3 2022). Though, looking at the distribution in figure 6.7, more than half of tags in this data set describe a fanfiction where no Archive Warnings applied, Graphic Depiction of Violence (6.56%), Rape/Non-Con (meaning no consent) (2.43%) and Underage (sexual relations with minors) (2.25%) are here measurable phenomena.
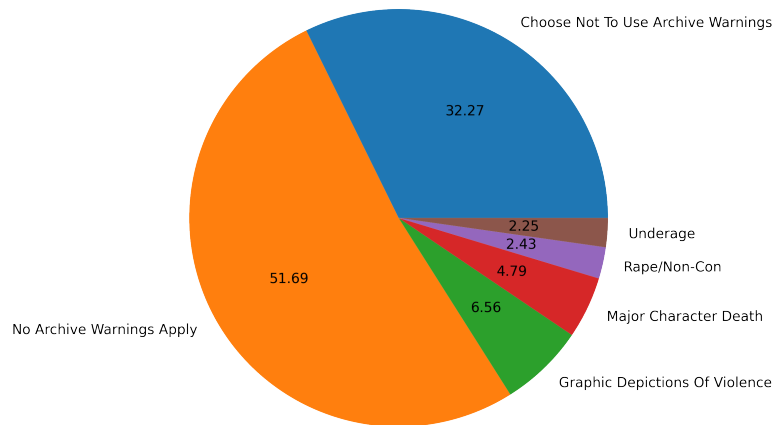
Figure 6.7: Distribution of Archive Warning Tags on AO3

Lastly, the most common Freeform tags (see table 6.2) feature certain tags which could also be indicative of sensitive or not so sensitive topics on AO3. E.g. the most common Freeform tag Fluff commonly refers to extremely light content (defined on fanfiktion.de as "Eine Fluff-Geschichte ist durchtränkt von Harmonie und Idylle im Übermaß, alle haben sich lieb und alles ist Friede, Freude, Eierkuchen." (fanfiktion.de 2022a)). All while the fifth-most tag, Smut, describes clearly explicit content, concurring with the impression given from the evaluation of Rating tags.

In summary, the Rating and Archive Warning tags in the AO3 data set also indicate the discussion of sensitive topics on the platform. Though the Rating tags are not strictly comparable to age restriction on fanfiktion.de, the more sensitive Rating tags are being used here, too. The Archive Warnings and Freeform tags can show clear sensitive topics, though the latter indicate a strong interest in lighter topics, too.

No.	Tag	Count
1	Fluff	1.183.065
2	Angst	813.647
3	To Read	529.014
4	Complete	472.403
5	Smut	444.264
6	Hurt/Comfort	415.318
7	Romance	353.482
8	Read	351.016
9	Established Relationship	308.719
10	Alternate Universe	306.633

Table 6.2: Top 10 Overall Most Used Freeform Tags on AO3

7 Method 2: Word Embedding Models

As outlined in chapter 4, the second part of this thesis will look at word meaning in fanfiction. To do this, the following chapter will firstly describe the type of word embedding model used here (Word2Vec), how the models have been created and how the quality of various models with different parameters is compared to obtain the most beneficial parameter constellation for this analysis. Secondly, the basics of a keyword analysis using Word2Vec will be described, followed by an exemplary comparison of various keywords, examining how their meaning is indicative of a blurriness between sensitive and non-sensitive topics. Lastly, a method to compute the sentiment of a keyword based on a word embedding model will be described and the sentiment of the keywords from the previous step will be examined, also with the aim of proving the hypothesis of a less clear difference between sensitive and non-sensitive topics.

7.1 Creation of Word Embedding Models

Word2Vec stands for a form of static word embedding models developed by Tomáš Mikolov and his team and first published in 2013 (see Mikolov et al. 2013). The word embeddings are created using a neural net by either predicting a target word from a surrounding context window (called Continuous bag-of-words (CBOW)) or predicting a context window from a target word (called Skip-gram) (see Mikolov et al. 2013). The algorithm has been implemented in e.g. the Python library *Gensim* and is therefore easily usable (see Řehůřek 2022b). Most common use cases of Word2Vec are the retrieval of groups of similar

words, though the models can also be included in more complex methods such as a word embedding model based sentiment analysis (e.g. Jacobs 2019). As the word embedding is defined by words in a context window, Word2Vec embeddings are most times interpreted as an operationalization of a Firthian concept of distributional semantics (see Firth 1957). Recently though, also alternative interpretatory approaches have been discussed, e.g. a more Saussurean way of grasping Word2Vec models as an abstract language system, as Word2Vec models define meaning of a word also in relation to all other words in the corpus (see Forster 2022).

The implementation of Word2Vec used here is that of the Python library *Gensim* (Řehůřek 2022a). With *Gensim* requiring a list of sentences to be passed as corpus and the original data from the fanfiktion.de 2020/2021 being scraped as raw text files, a few preprocessing steps were necessary. To create only vectors for words all punctuation and paragraph markers were removed. Further, the corpus was lowercased so there would be no difference between words in the middle or the beginning of a sentence, as words at the beginning of a sentence start with a capital letter. Similarly the corpus was lemmatized in order to not be limited by inflection. Therefore examining similar words for "lieben" will also cover similar words to "liebte", "geliebt", etc., as this study is concerned with general use of words as stand-in for topics and not e.g. syntactical use of specific word forms.[1]

As customary, *Gensim* defines its own default parameters for training Word2Vec models. The parameters are only briefly explained and only few suggestions are given. E.g. the library suggests that very rare words (with a frequency of one or two) do not provide sufficient data to create meaningful vectors (see Řehůřek 2022b). In order to find an adequate parameter constellation for the analysis of literary texts, Brottrager et al. have chosen to screen previous research and evaluate 17 different parameter combinations (see Brottrager et al. 2022). This is a valuable resource as general indications for the use of Word2Vec models in (literary) text analysis are rare. Lane et al. though state that the architecture is crucial depending on the corpus size. According to them, CBOW is the suitable architecture for larger corpora and a study on high frequent words and Skip-gram for smaller corpora and and interest in low frequent words (see Lane, Howard, and Hapke

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[1]The preprocessing steps were largely taken from Brottrager et al. 2022.

identifier	architecture	epochs
A	CBOW	5
B	CBOW	10
C	CBOW	15
D	CBOW	20
E	CBOW	25
F	Skip-gram	5
G	Skip-gram	10
H	Skip-gram	15
I	Skip-gram	20
J	Skip-gram	25

Table 7.1: Overview Parameters to be Evaluated

2019). And Ben Schmidt (as also cited by Heejoung Shin Heejoung and Underwood 2022) suggests that smaller corpora (< 1 mio. words) require large amounts of iterations (he suggests over one hundred (see Schmidt 2022)). These variables (architecture and number of iteration (or epochs)) will be put in focus here (see table 7.1) in order to prove or disprove these suggestions. Note that the *Harry Potter* corpus is multiple times larger than the other sub corpora, the focus on the iterations therefore shall benefit the smaller sub corpora.

Brottrager et al. have performed model evaluation by testing firstly how accurate data sets with semantic analogies are reproduced in a model. For this, they used a translation of a data set first used by Mikolov et al. (see Mikolov et al. 2013), which will also be the basis here. Secondly, they used a data set of word pairs with their (ideal) similarity score. This data set was used to calculate a correlation score between the results in the data set and the results gained from a model (see Brottrager et al. 2022).

While Brottrager et al. found a Skip-gram model with a vectors size of 300 over 10 iterations to be best in both their corpora (the German *Harry Potter* corpus as well as a 2020 German *Harry Potter* fanfiction corpus) (see Brottrager et al. 2022), reproducing their method for the seven fanfiction corpora here was not as conclusive. Regarding the architecture, overall models built on a Skip-gram architecture performed better (models F

through J). Of the tests measuring the accuracy of the semantic analogies data set four of the seven best models were built on Skip-gram. Of the test calculating the correlation score in regards to the similarities data set five of the seven best models were built on Skip-gram. For models for corpora such as *Three Investigators* and *Middle-earth*, the overall better performance of Skip-gram is clearly visible (see figure 7.1). Which model exactly is the best over all corpora is less clear.
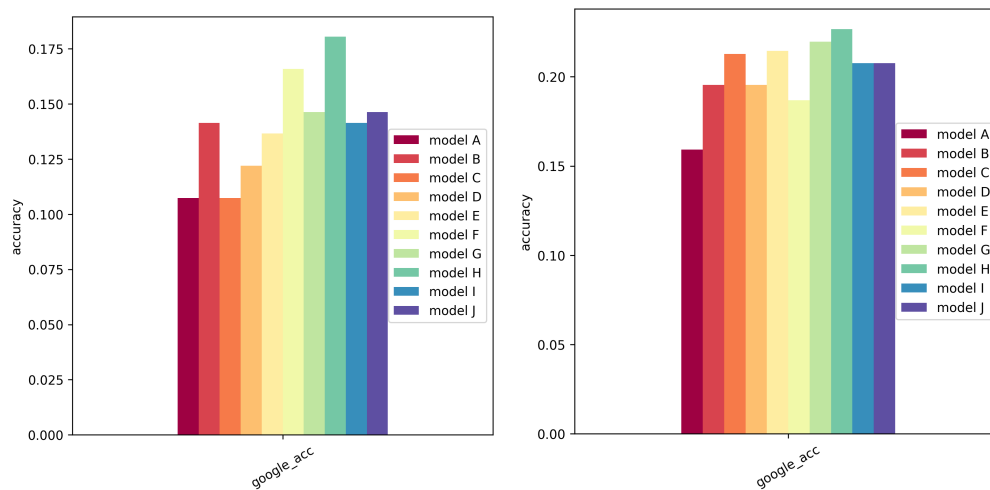

Figure 7.1: Evaluation Results for the Analogy Tests for the *Three Investigators* Corpus (left) and the *Middle-earth* Corpus (right)

To find a parameter constellation that is best suited for this kind of language in general and not for the idiosyncrasies of each sub corpus, the identification of the final parameters shall be the best performing parameters over all corpora. Here model H (Skip-gram, 15 iterations) seems to be the best performing model. For the analogy tests it is the best performing parameter constellation for the models on the *Three Investigators* and *Middle-earth* corpus (see figure 7.1) as well as one of the second-best for the models on *Twilight* and *Warriors*. For the correlation tests, model H was the second-best for the *Harry Potter* corpus, and even the third-best for the *Three Investigators* corpus (see figure 7.2). The final parameter constellation for the fanfiction corpora chosen in this study is therefore: a vector size of 300 (based on the findings by Brottrager et al. 2022), a context

window of 5 (the default parameter), a minimum count of 25 (slightly higher than default, but less than 50 as in Brottrager et al. 2022 who only focus on character names), and the Skip-gram architecture over 15 iterations.
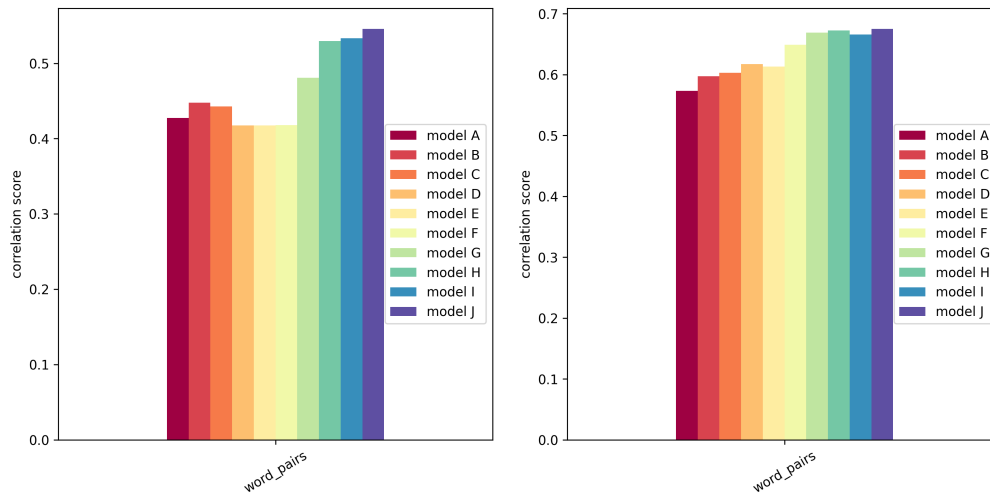

Figure 7.2: Evaluation Results for the Correlation Tests for the *Three Investigators* Corpus (left) and *Harry Potter* Corpus (right)

Regarding the general recommendations for Word2Vec models, the recommendation by Lane et al. for the use of CBOW for larger corpora seems to not hold up using these tests (see Lane, Howard, and Hapke 2019). Though they also specify an interest in high-frequent words, whereas here frequency of the words in the data sets was not explicitly mentioned. Schmidt's recommendation for higher number of iterations was rudimentary followed. Though the most number of iterations here where only 25, possibly a higher number of iterations could be useful (see e.g. figure 7.2). Let it be noted that no corpus here is smaller than one million words.

7.2 Keyword Analysis

As mentioned above, a common application for Word2vec models is the analysis of words similar to a certain keyword. For this study we will need keywords that are in the language or style of the corpora (note that fanfiction is written oftentimes in a more colloquial German), not too infrequent (as the lower limit for words to be included in a model has been set to 25), that specifically reflect a research interest, and, lastly, that are comparable and concurrent to each other (e.g. same part-of-speech so a strong dissimilarities by a fundamental, more syntactic difference, is circumvented). As the research interest of this study is to find out in what form sensitive topics are included in fanfiction, with the assumption that word meaning is altered in a way that blurs the difference between sensitive and non-sensitive topics, keywords that can be representative of the use of both sensitive and less sensitive topics are required. Therefore, two keywords from the area of romantic/sexual interaction, to examine how these areas are defined, and two keywords from the area violence, to see if there is an overlap of similar words to the previous area, were chosen. The keywords are all verbs, expecting to describe certain actions in these areas. Chosen were "*küssen*" (to kiss), "*erregen*" (to arouse), for the former area, and "*angreifen*" (to attack), as well as "*töten*" (to kill) for the latter area. Especially "*küssen*" should hint towards the discussion of non-sensitive topics, whereas the others, especially "*erregen*" and "*töten*" should be indicative of more sensitive topics.

To now easily gain an overview on how these words are represented in the model, a form of 2D visualization has been chosen for this analysis. The projection from the high dimensional (300 dimensions) word vectors to the two dimensions is done by using a t-SNE (T-distributed Stochastic Neighbor Embedding) algorithm. In the following, we will see for each of the four keywords the 30 most similar words and how close all these words are in a model. Especially interesting will be those words that appear two or more times, these are under the top 30 most similar words for multiple keywords. If a group of similar words to a keyword is represented in a distinct cluster, it is overall less similar to other groups of other keywords. And if there is an overlap between groups of words, the corresponding keywords will also be defined more similarly.

To attain a sense of how the keywords are defined in a non-fanfiction way, a first look will be given at a model for the original *Harry Potter* series. This model was created with the same parameters as the fanfiction models.[2] Though the visualization does not include "*küssen*" as it was not present in the model (probably because it was too infrequent), we can still see how the clusters for "*angreifen*" and "*töten*" are overlapping, demonstrating the closeness of these concepts, and how the cluster for "*erregen*" is more separated. Looking at now what words are most similar to "*erregen*" we find no indicators of a use of the word regarding sexual arousal (see figure 7.3). Interestingly, these findings are very similar for the *Warriors* corpus, as also there "*küssen*" was not present in the model, "*angreifen*" and "*töten*" where overlapping concepts and "*erregen*" was a more distinct concept also with no sexual connotations.
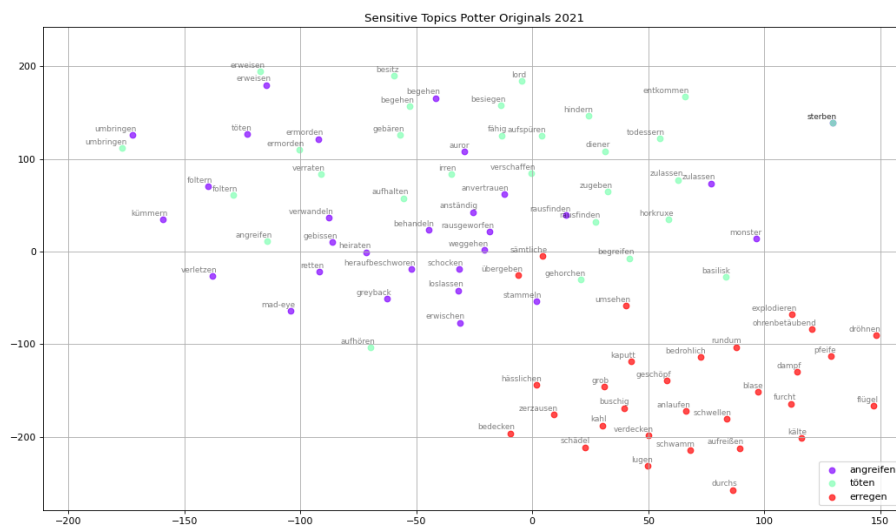

Figure 7.3: Sensitive Topics in the *Harry Potter* Original Series

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[2]These models have also been evaluated as described in the previous section. Overall, too, models using Skip-gram performed better than the models using CBOW. The overall best parameter constellation was in model G, though model H also performed well (second-best for the correlation test).

The visualization for the *Harry Potter* fanfiction corpus now demonstrates, as hypothesized, that the groups around *"angreifen"* and *"töten"* are similar, while also the groups around *"küssen"* and *"erregen"* are similar. Looking at the words in detail, *"erregen"* has a clear sexual connotations, as e.g. body parts can be found under the top 30 most similar words. Further, also *"küssen"* has a sexual connotation with words synonymous for sexual interaction being under the most similar words (see figure 7.4).
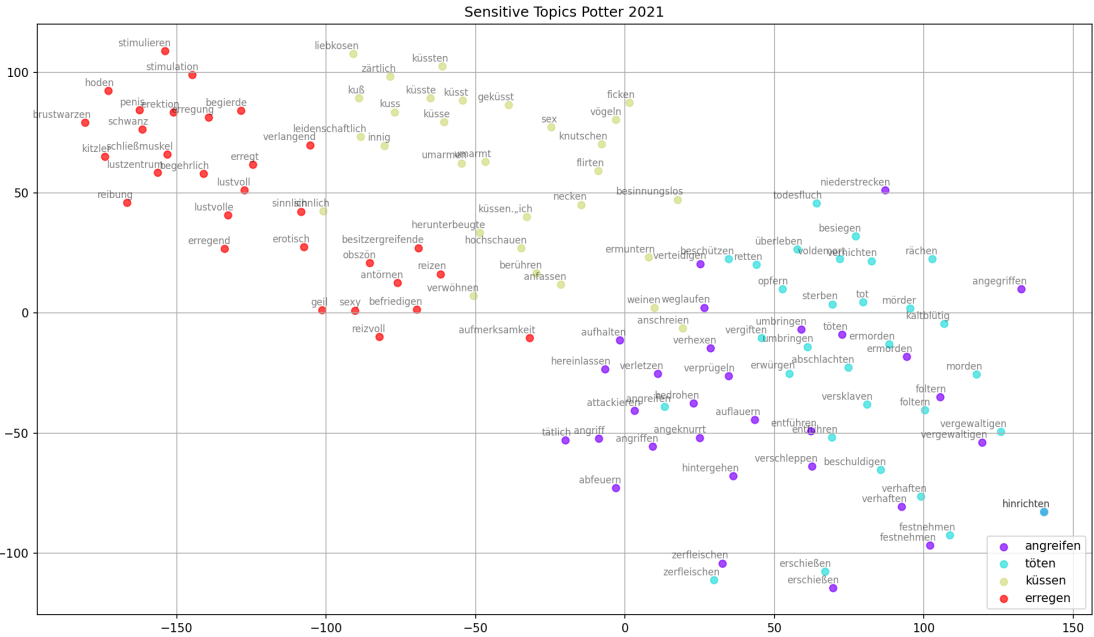

Figure 7.4: Sensitive Topics in the *Harry Potter* Fanfiction Corpus

Other fandoms reflect these findings too. There, *"angreifen"*/*"töten"* as well as *"küssen"*/*"erregen"* overall form two groups. Though they differ by how explicit *"küssen"* and *"erregen"* are defined and in some models there is a striking overlap between the two general areas. In the *Percy Jackson* model the similar words to *"küssen"* are among others *"verprügeln"* (to beat up) and *"wehtun"* (to hurt). Furthermore, some words are also in the top 30 most similar words for *"angreifen"*, namely the aforementioned *"wehtun"*, as well as *"provozieren"* (to provoke), *"anlügen"* (to lie), and *"anfassen"* (to touch) (see figure 7.5). In the *Twilight*

corpus among the similar words to "*küssen*" are "*wehzutun*", "*wehtun*", and "*erobern*" (to conquer), though there are not as many of the same words in the group for "*küssen*" as well as "*angreifen*".
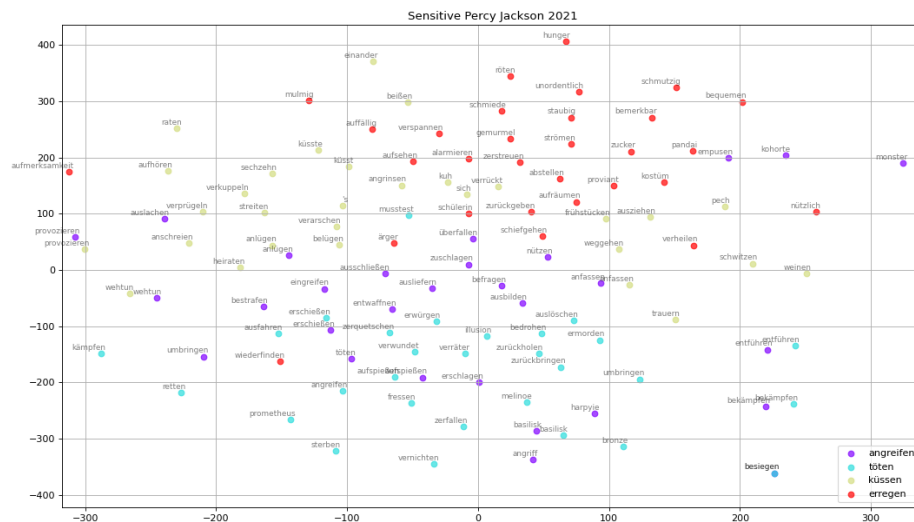

Figure 7.5: Sensitive Topics in the *Percy Jackson* Fanfiction Corpus

In summary, in the models where all four keywords were present, there always were two large groups around the keywords "*angreifen*"/"*töten*" and "*küssen/erregen*", meaning that, as can be expected, these are rather distinct concepts. Looking now in detail at what words are similar to "*erregen*", nearly all fanfiction corpora (besides *Warriors*) use this keyword with a more sexual connotation, though the *Harry Potter* model is strikingly explicit. Further there are also cases where words share both areas (such as in the *Percy Jackson* corpus) and looking at e.g. the similar words for "*küssen*" we can see how throughout most corpora some similar words also indicate violence.

7.3 Word Embedding Model Based Sentiment Analysis

In their study on the comparison of character names in the *Harry Potter* books and corresponding fanfiction, Brottrager et al. have worked with a form of word embedding model based sentiment analysis adapted from a paper by Arthur Jacobs (see Jacobs 2019). While Jacobs 'hard coded' label words representing high and low valence and arousal poles to compute valence and arousal values for words in a word embedding model, Brottrager et al. have advanced this method and based their approach on empirically determined emotion values. They firstly extracted from a list of words with corresponding, empirically obtained, valence and arousal values (the Berlin Affective Word List-Reloaded) all possibly usable words for each of the four poles (fundamentally meaning words with a frequency high enough to be present in a word embedding model). They then used an affinity propagation algorithm to find which of these words from each of the four pole form distinct clusters in a word embedding model. Following, they calculated a specifically defined suggestion value for each possible cluster in the four poles to determine the most suitable ones. Finally, they determined the centroids of the four final polarity clusters as anchor points for the computation of valence and arousal values (see Brottrager et al. 2022). The present thesis reproduces their approach, though a detail in the final calculation of valence and arousal scores has been changed. While Brottrager et al. focused on character names, they normalized the sentiment scores by the scores for the overall 100 most common names (see Brottrager et al. 2022). As here more general keywords and not specific names were used, the values were normalized by the valaues of the 500 most common words in each corpus (stopwords removed).

Figure 7.6 shows the normalized sentiment values for the keywords already used in the previous step for the model based on the *Harry Potter* original series. Valence refers hereby to how positive or negative and arousal to how strong or light the sentiment of a keyword may be perceived. Emotional potential is here, following Jacobs, the product of the absolute valence value and the arousal value (see Jacobs 2019). Comparing this now to the *Harry Potter* fanfiction corpus (where "*küssen*" is also included in the model, see 7.7), we can see how arousal scores are rather similar for the three keywords, though
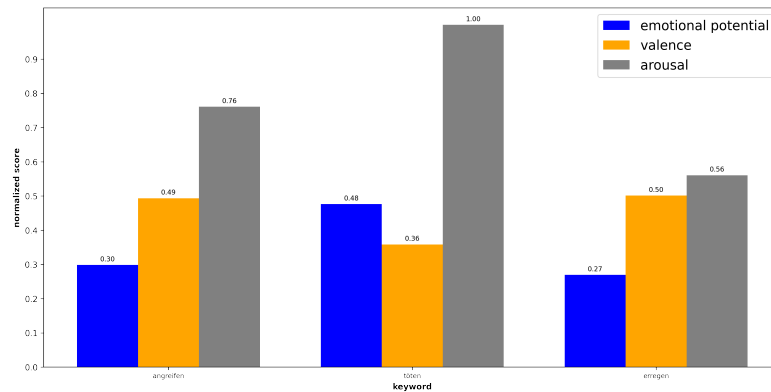
Figure 7.6: Sentiment Values for Sensitive Topics in the *Harry Potter* Original Series

valence scores for "*angreifen*" and "*töten*" are much higher in the originals' models. For the *Harry Potter* fanfiction corpus we can identify the two areas: As valence and arousal for "*küssen*" and "*erregen*" are rather similar, the words "*angreifen*" and "*töten*" exhibit a high arousal and a very low valence value.
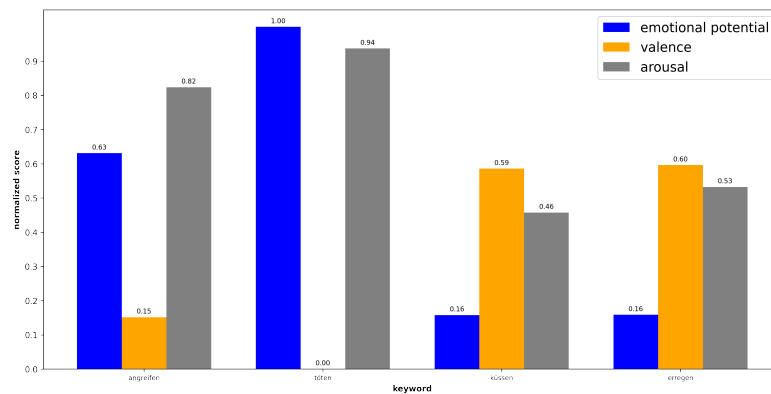

Figure 7.7: Sentiment Values for Sensitive Topics in the *Harry Potter* Fanfiction Corpus

The sentiment values for the models based on the *Harry Potter* fanfiction corpus are rather similar to those for the *Twilight* corpus. But e.g. in the *Three Investigators* model we can see that "*töten*" and "*angreifen*" are in a way less extreme words. The valence score for

"*töten*" is at 0.57 in the *Three Investigators* corpus, whereas it is at 0.94 in the *Harry Potter* fanfiction corpus. Similarly, while the arousal score for *Harry Potter* fanfiction is zero, it is 0.27 for *Three Investigators*. The keyword "*küssen*" though is more positive in the *Three Investigators* corpus with the valence being 0.75, whereas in *Harry Potter* fanfiction it is only 0.59.
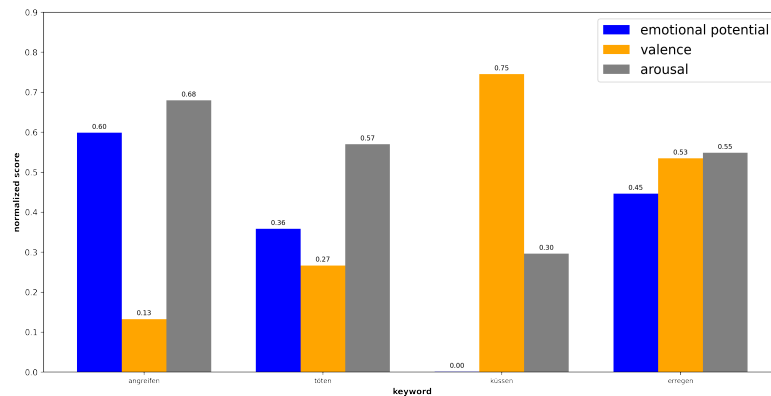
Figure 7.8: Sentiment Values for Sensitive Topics in the *Three Investigators* Fanfiction Corpus

As this is only a very brief survey on sentiment values in the word embedding models, comparing the values to more keywords would give a better picture over how certain topics are valued in the models. An interesting find though is how the distinction between the two areas ("angreifen"/"*töten*" and ""küssen"/"erregen") is rather apparent for e.g. the *Harry Potter* fanfiction model, though e.g. the *Three Investigators* model exhibits a less clear picture of these two areas.

8 Discussion

This thesis aimed at finding out what role sensitive topics play in fanfiction. A first step was able to find out that there are strong, measurable indicators for sensitive topics and that they play an important role in fanfiction. A second step described, for a few examples, how word meaning in fanfiction reflects these sensitive topics.

Based on findings in secondary research, e.g. Jenkins' observation of frustration and adoration (see Jenkins 1992), it was made clear how one can expect that fanfiction is written about a multitude of topics differing from the source material, e.g. the open discussion of sexuality. Built upon this, a first hypothesis stated that this importance of introducing new topics is measurable and reflected in trends. The rich metadata accompanying fanfiction can provide strong indicators for the topics in fanfiction. As was shown, large amounts of fanfiction on fanfiktion.de are tagged with age restriction ratings of P16, P18, and above. As the significance of these ratings are strictly defined by the platform, they show very reliably that topics such as explicit sexuality or violence are of high interest to many readers, though there also less extreme fandoms exist. While the genre tags were not able to clearly differentiate between sensitive and non-sensitive topics, they hinted towards general topics of interest, namely the importance of the various romantic genres. To contextualize and compare, tags on another platform, Archive Of Our Own, were analyzed, also demonstrating how sensitive topics are an important part of fanfiction. Further, also precise sensitive topics could be determined from the AO3 data set. Overall, the first hypothesis of the high prevalence of sensitive topics in fanfiction could be confirmed.

As the information gained from the tags had to rely on how the platforms define and police these tags, a textual analysis extended the findings. Because word embedding models can be used to compare word meaning, the goal of this second step was to find out how word meaning reflects sensitive topics. For the *Harry Potter* fandom it was even possible to compare how word meaning differs between fanfiction and originals, in order to prove if word meaning reflects how sensitive topics have become generally discussed and more common topics. A key finding was that sexual connotations play an important role in fanfiction and that there are some intersections between these connotations and violence, hinting at the discussion of the sensitive topic of sexual violence. In comparing meaning with the originals, how the sexual components are introduced in fanfiction became apparent. Let it be noted though that these are only few exemplary findings and that they are based on the assumptions that the verbs used as keyword are representatives of certain topics. More examples or other conceptualizations of sensitive topics could be useful here. The second hypothesis, that word meaning between sensitive and not-sensitive topics is blurry, could not be clearly proven. But hints pointing at sensitive topics were present and the change in meaning between originals and fanfictions could be shown. A comparison with the originals would be useful for other fandoms, too.

Word embedding models are a complex method and therefore require great care. This study has reproduced a method for model evaluation by Brottrager et al. and therefore a certain validity of the results in regard to how they encode meaning can be expected (see Brottrager et al. 2022). Further evaluation, also over other parameters could be useful though. As the data sets were created for general natural language processing tasks and not fanfiction/internet language in particular, an alternative approach with newly created data sets or an expansion of the data sets covering idiosyncrasies of fanfiction language could be useful. Lastly the implementation of normalization for the word embedding model based sentiment analysis could be reflected upon. Though the approach developed by Brottrager et al. could be reproduced, normalization was performed rather simplistically (over the 500 most frequent non-stopwords).

In the theory chapters two aspects regarding the generalizability of the research results were made. On the one hand, based on Tosenberger, it was put into question whether

research results only reflect microfandoms and not general fanfiction trends (see Tosenberger 2014). This should not be the case here, as the metadata analysis showed how large parts of fanfiction are indicative of the use of sensitive topics and as with word embedding models a method was used that per se abstracts over all particular events in a corpus. Word embedding models describe the meaning of a type and therefore summarize all kinds of meaning. And also with the use of rather common terms as keywords the results should not reflect only a few cases. On the other hand, in describing how fanfiction can be put into the context of digital literature, it was stated that findings on fanfiction possibly are applicable to other forms of digital literature. As this study also discussed general aspects of literary production on the internet, such as the convenience and mass of publications on the internet, similar findings for similar forms of literature could be expected. Just as Penke demonstrated for both *Instapoetry* and fanfiction how they are indicative of shortfalls in literature (see Penke 2021), this study also discussed how fanfiction strongly reflects the wants of the community.

9 Conclusion

The thesis at hand investigated German fanfiction published on fanfiktion.de between 2020 and 2021 especially in regards to the ways they include sensitive topics. Thereby, the study focused on the most popular source materials, which notably come mostly from the fantasy genre and are targeted at either (older) children or young adults.

Based on theoretical considerations and the analysis of example fanfictions, the first hypothesis stated that significantly more sensitive topics are included than in the respective source material. The quantities of sensitive topics were then analyzed by looking at the age restrictions and genre tags, whereby the latter are completely freely chosen by authors. Though only descriptive data could be considered within the context of this study, the results seem to indicate that in fact, sensitive topics seem to come up significantly more often than in the source materials. This in turn indicates that the phenomenon of sensitive topics in fanfictions applies to the genre overall, not just to fanfictions of specific fandoms.

The second hypothesis aimed at the meaning of words and how they reflect sensitive topics. The expectation was that it is less clear in fanfiction to say which words stand for sensitive and which for non-sensitive topics. As only more of an overall impression on how sensitive topics are included in word meaning could be examined, conclusive results confirming the second hypothesis could not be made. Nevertheless, it was shown how word meaning can be compared between fanfiction and originals as well as different fandoms. The latter showed e.g. how different fandoms grasp different concepts to various degrees of explicitness.

Further studies in this area could include a deeper look into what role sensitive topics play in the source material in order to differentiate further between the different fandoms and look into how different sub communities discuss sensitive topics. Furthermore, other forms of the metadata on fanfiktion.de could be examined, such as the popularity of stories or the importance of different combination of tags. Lastly, results from word embedding models could also be compared to findings from other methods of the field of quantitative semantics such as topic modeling.

10 Code Availability

The scripts are avaliable at:
`https://github.com/JulianHaeussler/fanfiction-semantics.`

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