

Bad Fiction and the Brain. The Effect of Intentionally Bad Written Fiction on the Brain

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3. Introduction

How does the human brain react to reading intentionally poorly written fiction? This question is to be explored within this thesis, both theoretical inquiries and empirical data are used to answer the question. For this purpose, a simultaneous eye-tracking and electroencephalography experiment is conducted to measure the reception of bad fiction on readers.

First, a theoretical overview of the topic of fanfiction is given, i.e. what kind of texts are written by fans and can be found in large quantities on the internet. In the context of this thesis, the fandom related to *Harry Potter* plays an essential role, which is why the subject of *Harry Potter* is explained in this chapter as well. Chapter 5 then introduces the internal fanfiction genre of bad fiction. This forms the object of investigation of this thesis, and in chapter 5 the theoretical background to bad fiction is presented. Although bad fiction is a category of its own, parallels to other genres can be drawn to a certain degree, and these parallels will be explained in chapter 5 as well.

Chapters 6 and 7 focus on the measurement procedures used in the empirical experiment. The first measurement method records eye movements with the help of an eye tracker and uses this data for analysis. To enable a better understanding of the data obtained, a detailed explanation is given of the parameters to be considered in an eye-tracking experiment, which eye movements can be measured and to what extent these provide information about reception. In chapter 7, the focus is on the second measurement method used, namely electroencephalography. Here, the neuronal activity in the brain of the test subject is measured with the help of electrodes. This chapter provides an overview of the measurement procedure, i.e. which parameters need to be taken into account. It also explains in detail what can be measured with the help of electroencephalography and what the limitations are.

In preparation for this thesis, a pilot study of the experiment has already been conducted and subsequently changes in the experiment setup were made. The results of the pilot study are therefore briefly explained in chapter 8, as are the changes that were implemented.

Chapter 9 focuses on presenting and explaining the final experiment design. In addition, a questionnaire was designed for the experiment, which is also presented in this chapter along with the hypotheses.

In chapter 10 the procedure of the experiment is presented, i.e. how the working time of the experimenters is distributed and what should be considered when working with subjects in a simultaneous eye-tracking and EEG experiment. This is followed by the analysis of the recorded data. In chapter 11, the focus is on evaluating the questionnaire, so that metadata and experiment-specific questions are summarized and analysed.

Before the EEG data can be analysed, it first must be cleaned and transferred to a time-frequency domain. These steps are explained in detail in chapter 12. After the data is cleaned, in chapter 13 the investigation of previously established hypotheses takes place with the inclusion of EEG data and the questionnaire. Chapter 14, on the other hand, presents the analysis of the eye-tracking data in relation to the hypotheses created. Subsequently, the results are discussed in Chapter 15 and possible interpretations are given. Finally, everything is summarized in the conclusion and an outlook for potential further data evaluation and future investigation options is given.

4. Fanfiction

4.1. Fanfiction: A Definition

The term *fanfiction* is a compound of the word *fan* and the literary genre *fiction*. *Fan*, derives from the Latin word *fanatic*, an expression that nowadays has a negative connotation and refers to people who devote themselves to a subject (Jenkins, 2012, p. 12). The subject could be anything from sports teams, literary texts, media, actors or musicians, just to name a few examples. However, in this thesis the focus will be solely on fanfictions that are devoted to literary works.

One of the first popular fanfictions to be published is the *Star Trek* fanzine. The fanzine is a journal that was first produced by fans for other fans in 1967. *Star Trek* was very successful during that period of time and the original movie was rewritten and changed in a literary manner by fans. Especially female fans desire a homoerotic love relationship between the protagonists and as a result, a fanzine entitled “*Naked Times*” was published for the first time in 1978. The magazine contains primarily slash stories, meaning homoerotic love narratives mainly between two male characters (Coppa, 2006, p. 48 ff).

However, it is strongly debatable if the fanzines can be considered as the first example of fanfiction or if fanfiction is in fact several thousand years old. As Abigail Derecho states, fanfictions are either described as a new phenomenon, which originates around the time *Star Trek* fanzines were first published, or as a phenomenon that cannot be distinguished from fiction:

(1) fan fiction originated several millennia ago, with myth stories, and continues today, encompassing works both by authors who identify themselves as fans and those who do not write from within fandoms [...] (2) fan fiction should be understood as a product of fan cultures, which began either in the late 1960s, with Star Trek fanzines, or, at the earliest, in the 1920s, with Austen and Holmes societies (Derecho, 2006, p. 62).

Derecho criticises the first definition as too broad as it encompasses a wide spectrum of genres, whereas the second definition is too narrow and does not include literature that could be seen as fanfiction, for instance fanfiction that was published before the 1920s. She suggests a new definition of fanfiction, the idea of *archontic literature*, which describes literature relating to an archon. According to Derecho this depicts the intertextual and dynamic characteristics of fanfiction. The archive of a certain text is inseparably

connected to the text and constantly enlarged, which makes it dynamic in the sense that it is continuously growing and never finalized.

Catherine Tosenberger strongly agrees with Derecho's concept of fanfiction, however, she does not find the term *archontic literature* suitable (Tosenberger, 2014, p. 14). Instead, Tosenberger proposes the idea of *recursive literature*, insisting that a fanfiction is always recursive to another text or medium. It is therefore possible for fanfiction to take over existing figures or other elements of a text or medium and reuse it in a fanfiction (Tosenberger, 2014, p. 15). Tosenberger further explains that intertextual relations of fanfiction and its recursive text are important to understand all aspects of a fanfiction. Hence, fanfictions are written within a constraint of the recursive text but it is exactly that constraint that makes the fanfiction pleasurable. Fans get the impression of being in a community that is able to understand the intertextual references and since fanfiction is written outside of commercial literature, it can freely choose which elements to include and which not, even if the included elements are rather socially unacceptable. Tosenberger thus sees the usually negative connotations of the word 'constraint' in a more positive sense and describes this idea as *aesthetics of constraint* (Tosenberger, 2014, p. 22).

Since the concept of intertextuality plays an essential role in the definitions introduced, it is discussed in more detail at this point. The best known definition of intertextuality derives from the French literary theorist Gérard Genette, who describes the concept first in 1982 in his well-known work *Palimpsests: Literature in the Second Degree*. Genette argues that intertextuality is used in a broad context, which needs to be more specified, as the term is referring to several concepts at once (Genette, 1993, p. 9 ff). He argues that instead of the expression *intertextuality*, one should use the term *transtextuality*, when referring to a broader context. The expression *transtextuality* then can be divided into five subgroups, which provide more narrow definitions of *transtextuality*; these are *intertextuality*, *paratextuality*, *metatextuality*, *architextuality* and *hypertextuality*. The term *intertextuality*, which is used in most definitions of fanfiction, is defined by Genette as: “*restrektiver als Beziehung der Kopräsenz zweier oder mehrerer Texte, d.h. in den meisten Fällen, eidetisch gesprochen, als effektive Präsenz eines Textes in einem anderen Text (Genette, 1993, p. 10)*”. Genette thus argues that *intertextuality* refers to an active presence of one text in another text. This active presence can occur in various forms, for instance as citation, plagiarism or allusion. In the context of fanfiction, however, the idea of *hypertextuality* seems suitable. Genette describes this concept as a relationship between two texts, where text B could not exist without text A:

“darunter verstehe ich jede Beziehung zwischen einem Text B (den ich als Hypertext bezeichne) und einem Text A (den ich, wie zu erwarten, als Hypotext bezeichne), wobei Text B Text A auf eine Art und Weise überlagert, die nicht die des Kommentars ist. [...] sie kann aber auch ganz anders geartet sein, wenn B zwar nicht von A spricht, aber in dieser Form ohne A gar nicht existieren könnte, aus dem er mit Hilfe einer Operation entstanden ist, die ich, wiederum provisorisch, als Transformation bezeichnen möchte, und auf den er sich auf eine mehr oder weniger offensichtliche Weise bezieht, ohne ihn unbedingt zu erwähnen oder zu zitieren. (Genette, 1993, p. 15)”

He argues that the hypertext transforms a hypotext, while it does not have to mention or cite the hypotext explicitly. Fanfiction can be seen as a hypertext that would not be able to exist in the same way without the original medium, the hypotext. The fanfiction (hypertext) does not necessarily have to mention or cite the original text (hypotext) but it is obvious to some degree that it directly refers to it. A fanfiction cannot be properly understood or enjoyed without the understanding of the relationship between a hypertext and its hypotext and therefore it could be argued that the term ‘hypertextuality’ is more suitable in the concept of fanfiction than the idea of intertextuality.

4.2. The *Harry Potter* Fandom

Since the internet has become easily accessible to most people of all age groups, fanfiction is one of the fastest growing productions of literary texts. They are usually published in online forums, such as [Archive of Our Own](#), which alone obtains more than 8 Million fanfictions (*Home | Archive of Our Own*, 2021). The focus of this work, however, is on the website [fanfiktion.de](#), which is a place for fanfiction authors to publish their work in German. Currently there are more than 415.000 fanfictions published on [fanfiktion.de](#), most of them focusing on anime or books (*FanFiktion.de - Das Fanfiction Archiv*, 2021). This website structures published fanfictions into various categories, such as books, movies, cartoons, musicals or anime. These categories are then divided into multiple subgroups, the so-called fandoms.

The focus of this thesis will be on the fandom of *Harry Potter*, where 54.073 fanfictions are published on the website [fanfiktion.de](#) (*Bücher - Fanfiction*, 2021). This fandom was chosen for multiple reasons for this study, one of them being its size. It is by far the biggest fandom, followed by the fandom *Twilight* with 13.956 books and the fandom *Die Tribute von Panem* with 4.375 books (*Bücher - Fanfiction*, 2021). The large amount of data from the fandom *Harry Potter* thus provides a variety of different subgenres, writing styles and indicates a certain relevance of this fandom. Another reason why the present study focuses on this fandom is the popularity of the *Harry Potter* book series in general (Rowling, 2018e, 2018f, 2018b, 2018a, 2018d, 2018c, 2018g). In total, more than 500 billion *Harry Potter* books have been sold, making it the top bestselling book series in history. The first book of the series, *Harry Potter and the Sorcerer’s Stone*, has been sold more than 120 million times (*The Top Selling Book Series of All Time*, 2021). Therefore, it can be assumed that a large number of possible subjects has read at least one *Harry Potter* book, seen one or multiple movie adaptations or is familiar with the term ‘*Harry Potter*’ in general. As Tosenberger states, the participation in the *Harry Potter* fandom has a wide demographic range, which is conspicuously present in pop culture (Tosenberger, 2014, p. 5).

Fanfiction can additionally be classified in genres, such as romance, horror, comedy or drama. Furthermore, categories specific to fanfictions are created that do not exist within the canonical literary market, such as

the category drabble, which indicates that a fanfiction has to be exactly 100 words long. This study focuses on one of those specific categories, namely *bad fiction*, which is described in more detail in the following chapter.

5. Bad Fiction

5.1. Bad Fiction: A Definition

Bad fiction, as the expression already suggests, is badly written fiction. Since the term is unique in the sense that it is used exclusively in the context of fanfiction, definitions of that category have only been written within the fan community. The [fanfiktion glossar](#) describes *bad fiction* as “*Eine wirklich mies geschriebene Geschichte, meist so vom Autor beabsichtigt (Glossar, 2021).*” This definition indicates that a bad fiction can be written as such intentionally, which seems to be mostly the case, or unintentionally. In the latter case, a fanfiction is described as bad by other users, which is a strong form of critique against other texts. Within this work only bad fictions are used, which are intentionally written as such.

Bad fiction can be defined by various characteristics, such as poor writing style, an illogical story line or because of including a so-called Mary Sue character (*Badfiction*, 2021). A Mary Sue character is a nearly perfect character, which stands out negatively, due to its flat and exclusively positive features (*Mary Sue*, 2021). Additionally to the characteristics mentioned above, the website [PPC Fandom](#) names “*horrible writing overall*” and “*out of character canon characters*” as possible features used in bad fiction (*Badfic*, 2021). The latter describes a character that is behaving contrary or atypical in a fanfiction compared to the same character in the hypotext.

Therefore, bad fiction is defined as a poorly written fanfiction, which can be due to a high number of orthographical or syntactical mistakes, because of an illogical story line or due to characters that are behaving either out of character or that show personality traits of a Mary Sue character.

Moreover, it is interesting to note that bad fiction seems to evoke strong emotions in recipients. When bad fictions were first introduced in the context of a seminar given at TU Darmstadt, students replied to reading bad fictions with “*Ich hatte Schmerzen beim Lesen*” or “*Das Lesen des Textes war schrecklich*”. Similarly, the website [PPC Fandom](#) describes reading bad fictions as a “*painful experience*” and even gives a warning to new readers not to read any bad fictions, as they are “*not safe for [the] brain (Legendary Badfic, 2021)*”. It is remarkable that bad fictions are described with such strong emotional words, which makes them an interesting object of investigation on an emotional level of the recipient.

5.2. Bad Fictions as a Form of Critique

It could be argued that fanfiction can be seen as a form of critique on the hypotext, since some aspects of the text are changed or stories about individual characters are expanded. Neha Hazra calls this act ‘fix-it’, as aspects disliked by fans are corrected in the sense that they are changed (Hazra, 2021). The act of fix-it could have multiple reasons, one of them being an underrepresentation of different racial identities, women or queer love stories. A remarkably high number of texts nowadays still focuses on white heteronormative relationships and fans critique this non-diversity by changing these aspects.

However, fanfictions themselves seem to receive nearly no critique at all. Readers can write reviews about fanfictions and it is striking that nearly all of these reviews are positive. In the fanfiction glossary there is even a term describing this phenomena:

“Don't like don't read: Wenn du es nicht magst, dann lies es nicht. Oder mit anderen Worten: hinterlasse rein positive Reviews oder gar keine. Auf FanFiktion.de geduldet, jedoch nicht gern gesehen. Wer etwas veröffentlicht, muss auch damit rechnen, dass er kritisiert wird. (Glossar, 2021)”.

This clearly shows that it is a common practice to only write positive reviews, even if the website [FanFiktion](#) does not encourage this behaviour.

In her book *Loving Fanfiction* Brit Kelley conducted a survey with fans who have a clear opinion on not writing negative reviews on fanfictions. For instance, one reviewer states in the survey:

“Life is too short to waste on fic I'm not enjoying, and leaving a negative review is just spiteful. Reviews on Fanfiction aren't like on Amazon, they're not there to advise other potential readers, they're just to let the author know how you feel (Kelley, 2021, p. 51)”.

According to this statement it is not accepted to leave negative feedback at all. It is interesting that the participant states that reviews have the purpose of explaining the reader's emotions, however, these emotions have to be exclusively positive. The statement is questionable, as it is very unlikely that any fanfiction will evoke solely positive emotions in a reader. In conclusion, it seems as if critique is not accepted on fanfiction platforms, even though fanfictions can be seen as a critique on the hypotext.

It seems like fanfiction websites are trying to provide a safe space for users, where they can practice their writing skills, without worrying about negative feedback. In an investigation by Evans et al. reviews of *Harry Potter*, *Doctor Who* and *My Little Pony* fandoms from the website [Fanfiction.net](#) were annotated and analysed (Evans et al., 2017, p. 262). One of the results of this study was that reviews can be grouped into thirteen different categories, where the most common review type is ‘shallow positive’, which makes up 35.1 % of all reviews. In this group, reviews are exclusively positive and do not give any valuable feedback for the author about possible improvements or certain aspects that stood out in a positive way. They are simply positive comments that do not indicate that a user has read the story. The second most common review type is ‘targeted positive’ and applies to 30 % of all reviews. Here, reviews are again solely positive but specific parts of the text are picked out and commented on in a positive way. Therefore, around 65 %

of all reviews analysed in this study are solely positive and only 1 % of reviews is categorised as exclusively negative (Evans et al., 2017, p. 264). The results of this study show clearly that reviews are mostly encouraging and critique or negative feedback seem to be unacceptable in the fanfiction community.

It could be argued that bad fictions are a form of critique of certain fanfictions, as the possibilities for negative feedback seem to be limited. Bad fictions focus on features that are frequently used in fanfictions disliked by the authors of bad fiction and then presented in an exaggerated and humoristic way. Bad fictions point out the weaknesses of other texts by exaggerating those aspects and once they become visible, it is hard to ignore them when reading the original work. For instance, the fanfiction *“Die schlimmsten Harry Potter Badfic-Klischees”* lists aspects used by authors who write bad fiction unintentionally, i. e. fanfictions that are classified by others as very bad. The author focuses on certain aspects that are used frequently in *Harry Potter* bad fictions, such as a homoerotic love story between Harry Potter and Draco Malfoy, two characters who strongly dislike each other in the original book series. At the beginning of the text the author questions himself *“welche Drogen einige zu sich nehmen, um bestimmte Ideen zu entwickeln (‘Die schlimmsten Harry Potter Badfic-Klischees’ von -Aska- II | Prosa > Kolumnen, 2021)”*. This form of evaluation is very negative and almost seems insulting. It is striking that this form of critique seems to be accepted on fanfiction websites, whereas negative reviews are not.

It could thus be argued that bad fiction is a form of critique on a platform where open critique, in the form of reviews, is not encouraged. Since leaving negative reviews, regardless of whether the criticism is constructive or not, is not welcomed by the community, a more creative form of criticism has been established in the form of bad fiction.

5.3. Bad Fiction and Kitsch

It could be argued that bad fiction is in some ways reminiscent to the idea of kitsch and therefore a comparison of the two concepts is drawn at this point. Kitsch is frequently described as a form of *“bad taste”* (Illing, 2006, p. 7) or *“the opposite of arts”* (Schulz, 2019, p. 3). It is difficult to give a narrower definition, as the term describes a rather broad concept. From a historical perspective, the term kitsch is used first around 1880 in Munich in order to describe cheap art (*“billige Gemälde, die Schwabinger Maler für Touristen anfertigten”*) and soon is used as a synonym for mass culture (Illing, 2006, p. 219). Nowadays the term is mostly used in the context of bad art and has changed from a solely negative and scandalous perception to a system that is tolerated in our culture (Dettmar, 2007, p. 10).

One definition of kitsch that seems suitable in the context of bad fiction is from Walther Killy, who first published his theory of kitsch in 1962. From Killy’s point of view, kitsch literature uses a remarkably high frequency of adjectives, as well as stereotypical figures and unrealistic plots (Schulz, 2019, p. 336). This

definition strongly correlates with bad fictions, since they repeatedly have unrealistic story lines and if they feature a Mary Sue character, a stereotypical protagonist and a high frequency of adjectives is likely. For example, in the following text excerpt from a bad fiction the protagonist is described as:

“Florinella, die bis eben einfach noch ein wunderschönes, hochintelligentes Mädchen mit goldenem Haar und Augen, die ihre Farbe je nach Stimmung und Wetterlage veränderten [...] (Aramyntha, 2010).”

The concepts of kitsch by Killy are all applicable to this excerpt, however, this statement cannot be generalized. Killy further defines kitsch as a form of literature that is trying to imitate high literature and fools the petit bourgeois into thinking that it is literature consumed by intellectual classes, even though it is not (Schulz, 2019, p. 335). In general, pretending to be of value plays a key role in defining kitsch. This is certainly not true for bad fiction, as it is not trying to fool the reader in any way. Although kitsch and bad fiction show some similarities, clear distinctions between the two terms can be made.

5.4. Bad Fiction and Trash

A term closely related to kitsch is the concept of trash. Unlike kitsch, trash is self-reflective by its very nature and due to that certain aesthetic qualities of this genre become visible (Illing, 2006, p. 231).

The genre trash is especially well known in the movie industry, where trash movies first originated due to the fact that B- or C-grade movies have a low budget and thus no commercial acclaim, which gives the producers more artistic freedom:

“Bei B- und C-Filmen gab es wegen der geringeren kommerziellen Erwartungen oft größere künstlerische Freiheiten, daher ließen sich hier oftmals innovative oder erstmals von der Avantgarde entlehnte Verfahren, wie auch Momente einer (meist unbeabsichtigt) surrealistischen Schockästhetik erkennen (Illing, 2006, p. 232)”

This explanation can be referred to the definition by Tosenberger, as earlier discussed, where she argues that fanfiction has more artistic freedom, since it is written outside of commercial literature and thus no commercial constraints are given.

Daniel Kulle claims that a B- or C-grade movie that is classified as a trash movie, is revalued by this new definition, since the genre trash is seen as fun and ironic by some consumers, which gives the movie a more positive and mainstream feature (Kulle, 2012, p. 31). As noted earlier, the concept of irony plays a crucial role in receiving trash. Kulle states that irony is not just the opposite of what is explicitly communicated, but describes an illogical co-presence of explicit and implicit features: *“Es ist vielmehr tatsächliche Uneinigkeit, die logisch unmögliche Gleichzeitigkeit von Gesagtem und Nicht-Gesagtem, welches die eigentliche Ironie ausmacht (Kulle, 2012, p. 47).”* This disparity between what is said and what is not said is not resolved in trash, but rather the absurdities that result from it are emphasized. The positive reception of a trash movie or text, according to Kulle, is due to its irony and illogicality (Kulle, 2012, p. 44).

The concept of trash as a genre thus seems to show many similarities with bad fiction. Both are received in an ironic way and feature illogical or absurd story lines. Even though definitions of trash seem to focus on movies, these concepts can be transferred to written texts as well and no key differences between the definitions of trash and bad fiction can be found.

6. Eye-Tracking

6.1. Eye-Tracking Set-Up

Eye-tracking describes a measuring method that is able to track and record movements of the eye. From a historical perspective, a precursor of today's eye-tracking technology was first invented in the 19th century, when Edmund Burke Delabarre applied a solution containing cocaine on the participant's retina, fixated a Paris ring on the eye-ball and connected it to a measuring instrument (Holmqvist, 2015, p. 9). Since then, eye-tracking technologies have improved vastly and various forms of tracking are now possible. While Delabarre's invention is a predecessor of modern eye-tracking with contact lenses and a mounting stalk, this form of eye tracking has not become established, as it is comparatively time-consuming and uncomfortable for the participant (Duchowski, 2007, p. 53).

A more convenient form of tracking eye movements is by using a so-called *Video-Based Combined Corneal Reflection* tracking device. Here, the eye is recorded with a camera lens and the corneal reflection is used to determine the gaze position. In this experiment the [EyeLink 1000 Plus](#) produced by the Canadian company [SR Research](#) is used. This eye-tracker comes with three different types of camera lenses, two of them being suitable for a so-called *head-free* mode tracking, where the head of the participant is not fixed. As this experiment includes simultaneous EEG and eye-tracking measuring, a head fixation seems inconvenient and thus a *head-free* tracking mode is chosen. For this purpose, either the 16mm or 25mm camera lens can be used. The 16mm lens covers a wider range, which is suitable for easily recognizing head movements, whereas the 25mm lens has a comparable stronger zoom and is thus recommended for reading tasks and is used in this experiment (SR Research, 2005).

In order to determine the gaze position accurately, the eye-tracker uses the corneal reflection, which is also known as *Purkinje* reflection. Four Purkinje reflections are known but only the first and fourth Purkinje reflections are of relevance in eye-tracking and most eye-trackers only use the first Purkinje reflection (Duchowski, 2007, p. 56). The first Purkinje reflection can be seen clearly as a reflection of the image in front of the retina of the eye. While the pupil and eyeball may move, which is especially the case during reading, the first Purkinje reflection is relatively stable in its position (Duchowski, 2007, p. 57). Furthermore, the first Purkinje reflection is enhanced by infrared light, which is usually included in the eye-

tracking hardware and thus placed at a stable position in front of the right eye (Holmqvist, 2015, p. 27). The [EyeLink 1000 Plus](#) provides infrared lights up to 910 nm, which is comparably strong, but offers the possibility to manually adapt the illumination power on every subject (SR Research, 2005, p. 114). This is especially important for participants wearing glasses, as they need a higher illumination power compared to participants without glasses. In order to keep the pupil size relatively stable, it is recommended to minimize external light influences as much as possible and to use an overhead lamp with a light distribution as homogeneous as possible.

With some eye-trackers it is possible to track either one or both eyes at the same time. However, usually only one eye is tracked and binocular systems tend to be non-transparent in how they combine measurements from both eyes. Moreover, one eye can be described as dominant, whereas the other eye is non-dominant. For most people the right eye tends to be the dominant eye but this can easily be verified by doing a simple fixation task. Here, the participant has to put one finger an arm's length away in front of an object and close both eyes one after the other. When both eyes are opened again and the finger has moved in the visual perception, the non-dominant eye has been closed before. Around 67 % of people are right eye dominant (*How to Find Your Dominant Eye + Why You'd Want To*, 2021), which is why usually only the right eye is tracked. In the present experiment a monocular tracking system is used as well, which is tracking only the right eye of participants. However, asking the participant to do an eye-dominant test before the experiment might have been useful and will be adapted in future experiments.

The [EyeLink 1000 Plus](#) is a *desktop-mounted* system, which means that the eye-tracker is placed on a flat surface, usually a table, in front of the participant. Unlike a *head-mounted* system the tracking device is thus not placed on the participant's head, which offers more freedom of movement. If a tower mount is used, which means that the head of the participant is fixed in a certain position, sample rates up to 2000 Hz are possible. In *head-free* tracking mode sample rates of up to 1000 Hz are possible (SR Research, 2005, p. 55). In order to have such a high sampling rate without fixating the participant's head, [SR Research](#) recommends using a so-called target sticker. This sticker is placed directly on the participant's forehead and looks, as the name suggests, like a target in black and white colours. Due to the shape and the high contrast of the target sticker, it is comparably easy to be recognized by the eye-tracker and is used as a reference point for the location of the eyes. If the pupil image is lost due to the participant moving or blinking, the eye-tracker will follow the position of the target sticker and locate the eyes more easily.

6.2. Running an Eye-Tracking Experiment

The participant is seated at a distance of approximately 850 mm away from the display screen which is 460 mm wide and 340 mm high. The eye-tracker is placed 210 mm away from the screen so that the participant

can see the whole display screen, while the width is no more than 32° (visual degrees), which is the maximum width for this tracking system. Every participant's distance to the screen is measured before recording and the hardware is not moved throughout the period of time the experiment data is conducted. Therefore, all participants are similar in position to the hardware.

Once the participant is in a comfortable position the eye-tracker needs to be calibrated and validated. As every participant has different points of gaze, these need to be put in relation with the known coordinates on the display screen. Therefore, the participant has to fixate 13 points, so-called *calibration-points*, which are presented one by one on the screen. The calibration-points are distributed equally over the screen, so that as much of the space is covered as possible. Different numbers of calibration-points can be chosen, however, 13 points is a comparably high number and thus covers more coordinates on the display screen and leads to more accurate data (SR Research, 2005, p. 72). During the calibration, the eye-tracker creates a model of the subject's line of sight, which is then verified while doing a validation. The validation looks identical to the calibration for the participant, however, the premise of this operation is not the same. During the validation the eye-tracker calculates the error between the calibration-points and computed gaze positions. The validation should not have an average error greater than 0.35° and the maximum error should not be more than 1° . If these values are exceeded, calibration and validation must be repeated as frequently as necessary.

The time of calibration and validation can further be used to evaluate the participant's position and adjustments can be made if needed. Certain types of glasses can be problematic, so sometimes it is necessary to clean the glasses and put them further up the nose bridge of the participant. It is possible that the reflection of the display screen can be seen on the glasses and they might cover the pupil. If this is the case, the angle of the camera lens should be adjusted. The eye-tracker can work with most glasses, however, if the participant has glasses without an antireflection coating, recording eye data can be problematic.

It is common to include so-called fixation crosses between text stimuli, which has multiple advantages. First, when a participant has read a text stimulus, the eye position will be on the right bottom of the screen where the text has ended, as long as it is not an ideographic language. As the following text stimulus will start again on the top left, the participant has to make a long eye movement, a so-called *saccade*, from the bottom right to the top left of the screen. This saccade is an interference variable and can easily be excluded from the data if a fixation cross is used. In this experiment, a fixation cross is presented after the participant has read a text stimulus and before the next stimulus is presented. The fixation cross is at the same place as the first letter of the next text stimulus and therefore the gaze position is already at the correct location. Another advantage of including a fixation cross between text stimuli is that participants can take a break at this time if needed. It goes without saying that participants should move as little as possible during the

experiment as this will have a negative impact on the data quality. However, if the participant needs to drink some water, or blow their nose etc. it is best if the subject does so during the time the fixation cross is presented, as this part is filtered out of the data anyway. An additional advantage of the [EyeLink 1000 Plus](#) is that the fixation cross can be replaced by a so-called *drift check*. A drift check is basically a single validation point, which has to be accepted manually by the experiment leader. If the computed error is too high, the fixation cannot be accepted and a re-calibration and validation is necessary. This can happen for instance when a participant moves, but since re-calibration is possible at any drift check during the experiment this is not a major issue.

6.3. Eye Movements

Having explained how eye movements can be recorded, it is now necessary to give an overview of the kind of eye movements that can be recorded by the eye-tracker. The first movement that has already been mentioned is the *saccade*. This term originates from an old French maritime expression describing the “*flick of a sail* (Duchowski, 2007, p. 42)”. Saccades are rapid forward movements of the eyes; in fact, they are so fast that it is assumed they are the fastest movement a human body can make (Holmqvist, 2015, p. 23). The duration of a saccade is approximately 10-100 msec. long and since the movement is so fast (around 30-500° per second), one is technically blind during a saccade. Saccades cannot be aborted, thus once a saccade has been initiated, it is always executed and, if necessary, corrected with another saccade (Duchowski, 2007, p. 43). Around 10-15 % of saccades are not forward movements but right to left movements. These movements are called *regressions* and usually occur when something has to be reread (Booth & Weger, 2013).

The time when the eye remains relatively still over a target is called *fixation*. One might assume that the eyes are not moving at all during a fixation, however, that is not the case. In fact, a fixation consists of three micro movements, which are also called *fixational eye movements*, namely *tremor*, *drift* and *micro saccade*. These micro movements are not larger than 5° and can thus be recognized as a fixation from the eye tracker (Duchowski, 2007, p. 46). The smallest of these fixational eye movements is the tremor, a fast movement that is no larger than 1°. The purpose of this movement remains unknown. Drifts, as the name already seems to suggest, describe a small movement, where the eye slowly drifts away from the target. In order to move the eye back to the target, a micro saccade is initiated, which usually has a duration of 10-30 msec. (Holmqvist, 2015, p. 22). All these movements together form a fixation, which on average tends to last 200-250 msec., however a fixation can range from 100-500 msec. (Rayner & Duffy, 1986).

During reading, linear saccades are initiated from one fixation to another¹. The length of a saccade highly depends on the reading skills of the participant. Unskilled readers usually have shorter saccades, longer fixation times and more regressions. An average saccade tends to be eight characters long, however, for very skilled readers a saccade can be as long as 19 characters (Hyönä et al., 2009). As one is technically blind during a saccade, new information is only taken in during a fixation. While the eye fixates on a target, letters are parafoveally identified. The number of letters that can be recognized and the time that is needed for this recognition depend again on the participants' reading skills. An experiment by Hyönä et al. showed that eight-year-old students can approximately identify five characters during a fixation, while adults are able to identify twelve characters to the right from a fixation (Hyönä et al., 2009).

Fixation time does not solely depend on reading skills as other factors can influence fixation time as well, e. g. the frequency of a word. An experiment by Ashby and Rayner demonstrated that high frequency words are read 17 times faster by skilled readers than by average readers. However, regardless of reading skills, a high significance between word frequency and fixation time can be observed. Skilled and average readers need longer fixation times to process low frequency words but average readers have comparably longer fixation times. Furthermore, average readers tend to make more regressions to reread text than does the skilled reader (Ashby et al., 2005).

Moreover, shorter words tend to be skipped, while longer words are usually fixated. Thus, words that are longer and low frequency words might have multiple fixations, longer fixation times and receive regressions more frequently. There is further evidence that the frequency of a word tends to mostly influence fixation time, while the length of a word rather influences the number of fixations (Hyönä et al., 2009).

In addition to that, the Syntax of a sentence might also influence fixation time. In a study by Holmes and O'Regan it was proven that in relative-clause sentences the main verb receives the longest fixation times followed by subjects and object nouns (Holmes & O'Regan, 1981). Furthermore, words that are *“constrained by or predictable from the context receive shorter fixations than do words that are not constrained by or predictable from the context (Rayner & Duffy, 1986, p. 191)”*. This might be especially interesting in the context of bad fictions, as some characters are behaving in a way that is not predictable from the context and thus longer fixation times might occur here.

In conclusion, many factors might influence longer or shorter fixation times in reading. However, it is safe to say that longer fixation times and more fixations lead to some form of irritation in reading, as it is the only time new information can be processed.

¹ This is different in the case of dyslexia, as most people with dyslexia are not reading in a linear way but rather in a circular way.

7. Electroencephalography

7.1. EEG: An Overview

Hans Berger's discovery of electroencephalography goes back to an incident in 1892 when he was a young student who narrowly escaped certain death during a military exercise, as he and his horse fell down a steep ravine and Berger came to rest under the wheel of a gun. Luckily, Hans Berger survived and escaped with merely a fright. That same evening, Berger surprisingly received a telegraph from his father who was worried about his well-being, although he could not have known about his accident. Berger's eldest sister, who he was especially close to, had initiated this telegraph, after she told her parents that she knew for certain an accident had happened to Berger. As this was the first and only time Hans Berger ever received a telegraph by his relatives, he was convinced that he and his sister had experienced a thought transmission (Schwarz, 2016, p. 149). From then on, Berger focussed his research on telepathy and even though he never proved the existence of telepathy, he made another revolutionary discovery during his experiments – *electroencephalography*.

This discovery was made in 1929, when Berger placed electrodes on the human scalp and thus could demonstrate, after amplifying the signal, that electric activity produced by the brain can in fact be measured. However, not everyone was aware of this discovery's significance and for some time the electric activity of the brain was thought to be an artefact produced by the environment. It was not until 1935, when respected scientists confirmed the importance of this discovery and electroencephalography, or EEG, became an accepted measuring technique (Luck, 2014, p. 4).

Ever since, the EEG has become established as a widely used measuring method both in scientific and clinical applications. In science, two fields of investigation can generally be differentiated: *Event Related Potentials* techniques and *Neural Time Series* techniques. Event Related Potentials, or ERP, focus on cognitive ERP components, which are “*neural responses associated with specific sensory, cognitive, and motor events* (Luck, 2014, p. 5)”. A famous ERP example is the P300 component. Whenever an unpredicted stimulus is shown, a **P**ositive peak around **300** msec. (thus the name P300) occurs after the stimulus is presented (Luck, 2014, p. 6). Even though ERP analysis is possible with the data set in this experiment, the focus of this work is on analysing neural time series data. This is due to the fact that not one certain event is analysed, but rather the period of time while reading bad fiction.

7.2. EEG: Neural Time Series Data

The electric activity of the brain consists of oscillations, which can be measured by frequency, power and phase. Frequency is measured in Hz (oscillations per second) and multiple frequencies occur simultaneously, which can be separated and grouped into bands. The most prominent frequency bands are named delta (2-4 Hz), theta (4-8 Hz), alpha (8-15 Hz), beta (15-30 Hz) and gamma (30-80 Hz) (Cohen, 2014, p. 33). One should keep in mind that no precise boundaries between frequency bands exist and thus the range of each frequency band might vary depending on the literature.

Particular frequency bands are associated with specific organism states. The lowest frequency band delta is correlated with deep sleep, while theta bands represent mental focus or falling asleep. When the participant has their eyes closed, usually the alpha band is prominent, as one does not react to visual input. Open eyes, mental effort and arousal usually are represented by beta frequency bands. The switch from closed to open eyes and thus from alpha to beta bands is also called the Berger-effect. Frequencies higher than beta are associated with high vigilance, perceptual binding or meditation (Vogt & Thönes, 2016, p. 26).

In order to analyse time frequency, event markers are needed. These markers are also called triggers and are sent at certain events to the recording EEG data. In the case of this experiment, a trigger is sent at the beginning and at the end of every text stimulus. As it is not possible to give triggers a different number with the used hardware, the triggers are renamed after the experiment within the EEG data. By doing so, the period of time while certain text types are read can be extracted easily and other tasks in the experiment, such as the drift check, can be excluded from the EEG data. Triggers are further essential to synchronise EEG and eye-tracking data as the two separate recordings should not have a delay at all. The length of the trigger is set to 10 msec. A trigger that is too short might not be registered by the EEG recorder and longer triggers might overlap with other markers. Furthermore, it could happen that responses to one stimulus will continue for a few hundred milliseconds in the next stimulus. In order to avoid this, an intertrial interval, which is a period of time between two presented text stimuli that is at least 1000 msec. long, should be included. Since a drift check is presented after each text stimulus this is the case in this experiment.

Time-frequency data can be imagined as a three-dimensional space, with the parameters *time*, *frequency* and *space*, as mentioned earlier, where space is measured by the distance of the electrodes. However, three dimensional visualisations of EEG data are uncommon as they tend to be uncluttered and usually two dimensional representations are used. The first common representation focuses on power and frequency and is called *frequency slice*. Here, the parameter time is not represented but a good overview on how powerful a certain frequency band is represented can be given. Another common representation of data is the *time slice*, where only one frequency band is selected and its power is visualised over a certain period

of time. A third representation is the *space slice*, which looks similar to a heat map visualized on a representation of a head. The visualization can focus on a certain time period or an average of certain conditions and the topographical distribution of the electrodes and their frequency is presented. However, the EEG has many disadvantages when it comes to topographical localization as is discussed in the next chapter. Last but not least, visualizations focusing on *time-frequency* are common, where time, frequency and power are presented. These four visualizations of EEG data are very common in analysing neural time data and are used in this experiment as well (Cohen, 2014, p. 36). Unlike with ERP analysis, the focus is not on one single electrode and the corresponding frequencies over time, but rather one has to carefully choose which parameters should be included in the analysis and which are not to be included.

7.3. EEG: Advantages and Limitations

Perhaps the most prominent advantage of working with an EEG is the fact that reactions can be directly seen in the recorded data without any delay. Therefore, it is possible to record cognition over a certain time frequency. This is especially important as cognitive processes are fast, often only tens to hundreds of milliseconds long, and a small delay thus would falsify the data (Cohen, 2014, p. 15). Most other brain activity measuring methods, e.g. fMRI or DTI, have a delay to a certain extent (Amthor, 2019, p. 62).

Another advantage of working with EEG is that neural activity is measured directly. In comparison, fMRI for instance measures the level of blood oxygen in certain parts of the brain and only the EEG focuses on the electric activity of the neurons. Therefore, oscillations measured by the EEG are direct reflections of the oscillations inside the human scalp (Cohen, 2014, p. 16). Last but not least, EEG data does not measure one parameter but as mentioned earlier, time, space, frequency and power are recorded. This is an advantage as studies can focus on different aspects and multiple analysis can be done with one data set. Furthermore, the brain is a very complex organ that uses a multidimensional space, therefore measuring multidimensional seems appropriate (Cohen, 2014, p. 16).

However, these benefits come at a price and one should always weigh up advantages and disadvantages before running an EEG experiment. As mentioned earlier, the EEG is not suited for experiments focusing on topographical localization. When a signal reaches an electrode, it cannot be said for certain if the signal comes directly from underneath the electrode. There are multiple reasons for this. First of all, a signal has travelled a certain distance that cannot be traced back. Once a signal arrives at the electrode it has already passed the scalp and eventually other parts of the brain. Some signals are weaker than others in general and some signals are fainter when they arrive at the electrode as they have passed a longer distance. The electrode only measures a sum of all these underlying signals and they cannot be separated into individual components. In technical jargon this problem is also referred to as a *superposition problem* (Luck, 2014, p.

29). Secondly, electric activity in individual neurons can cancel each other out. Neurons create a tiny dipole when they are active, which cannot be measured by an electrode on the scalp. However, when a high number of neurons create a dipole at the same time, the sum of this activity can be measured by an electrode. If neurons now orient in a certain position to each other, the positivity of one neuron and the negativity of another neuron cancel each other out. Similarly, this can also happen if one neuron receives an inhibitory neurotransmitter and the other neuron receives an excitatory neurotransmitter (Luck, 2014, p. 42). Therefore, multiple factors must be true in order to measure a signal on the scalp, including a high number of neurons that must be activated at the same time and similar direction and additionally these neurons should not cancel each other out (Luck, 2014, p. 42).

Furthermore, it is not possible for the EEG recording to take the three dimensional space into account. Let's say for instance one has a special interest in the amygdala, which is responsible, among other things, for the emergence of fear and seems to play a relevant role in generating emotions (Amthor, 2019, p. 306). The amygdala is located in the centre of the temporal lobe and is part of the limbic system. Due to this central position it is not possible to trace back any signal arriving at any electrode to the amygdala and it is also not possible to estimate at which electrode a signal might even be recorded.

Another limitation of the EEG is that neural activity is relatively small compared to noises produced by the environment. However, this issue has been partly solved by changing the experimental design when using an EEG. Instead of presenting a stimulus once, the reaction on a certain stimulus is measured multiple times. All these reactions are then averaged as different noises will cancel each other out. This process is also called *evoked potential* (Amthor, 2019, p. 61). Therefore, in this experiment not one example of bad fiction is presented, but multiple excerpts from bad fiction are used, that are averaged in a later process. Moreover, it is always essential to have a comparison parameter for the stimuli examined, which is explained in more detail in chapter 9.

Regardless of these limitations, the EEG is still a very powerful tool to measure brain activity. However, one should keep the limitations in mind and evaluate if the EEG is suited for the experimental design beforehand. In this experiment the EEG seems suitable, as the focus is on neural time series data and topographical features are only taken partly into account. Furthermore, compared to an fMRI, the EEG is easy and flexible in its usage. It would be possible to run an EEG experiment in any laboratory with just a few adjustments, which is not true for an fMRI. Attaching and filling the electrodes is time consuming, but not as time consuming as other measuring methods and can be learned easily.

7.4. Running an EEG Experiment

In this experiment the EEG hardware produced by the company [Brain Vision](#) is used. The setup provides the possibility to either use a set of 32 or 64 electrodes, which is both common in EEG experiments. This question was discussed in detail before the experiment and a decision on using a set of 32 electrodes has been made for two main reasons. First, as topographical location is not a focus of this study, more electrodes are not necessarily needed. Second, using the smaller electrode set is much faster in preparation and clean up. Moreover, the laboratory has two sets of 64 electrodes, which means that when running an experiment with 64 electrodes only two participants could take part in the experiment per day, whereas using 32 electrodes allows for four participants a day.

Once the head circumference of a participant is known, the electrodes can be attached to a well fitted electrode cap. In the setup of this laboratory, so called *acticaps* are used, which means that electrode caps out of a fast drying fabric in multiple sizes are available (Brain Vision, 2021). The individual electrodes have to be snapped into the electrode cap at predefined positions. Depending on the experiment leader's practice, this takes around 10 minutes when using 32 electrodes. Most biological women have a head circumference of 54 cm, whereas the average circumference for biological males tends to be 56 cm. Electrode caps in these sizes are always prepared before any participant arrives at the institute to speed up the process. However, during the experiment it was noticed that most biological women have a head circumference of 54 cm or smaller and therefore the electrode caps were too large in some cases.

The used electrode caps furthermore have a predefined position for a ground and reference electrode. The ground electrode is often placed at the forehead but technically could be placed at any part of the human body. Its main purpose is to reject common mode, thus to cancel out noise from power lines. The reference electrode measures the difference of electric potential from one electrode to the reference electrode (BIOPAC, 2022). In the setup used, the reference electrode is placed at a central position on the skull between the FZ and CZ electrodes.

Once the electrodes are attached, the electrode cap can be placed on the participant's head. If the participant wears glasses, these are removed beforehand and later placed on top of the electrode cap. The fitting of the electrode cap depends on the shape of the participant's head and on how much hair the participant has. Longer hair tends to form a larger layer between the electrode and the scalp and this is especially problematic in the ear area. It is thus helpful to remove some hair from underneath the electrode cap through the prefabricated holes for the ears. Once the electrode cap seems to sit well on the participant's head, the centre of the head is additionally measured. Here, a measuring tape is first placed from one ear to the other and then from the nasion to theinion. If the electrode CZ is exactly in the middle, the cap sits correctly.

Another technique is to mark the CZ position on the participant's head before placing the electrode cap on the head, yet, when testing the setup, the used method seemed more convenient and easier to adapt.

Now that the electrode cap is properly placed on the participant's head and the electrodes are connected to the EEG system, the electrodes can be filled with gel. At that point, the electrodes have an impedance greater than 500 k Ω , as hair, air and the scalp are between the signal and the electrode. Furthermore, the impedance can be increased by fat and cornea, which is why neither a lot of hair nor a bald head are ideal for measuring. For this reason, electrolyte gel is placed between the scalp and the electrodes to transmit the neural signal from the brain to the electrode sensor. In order to obtain data as clean as possible, an impedance value of 20 k Ω is chosen. This means that the impedance has to be lower than 20 k Ω in order for the electrode light to turn green and ideally all electrodes should have this value before starting the experiment. In exceptional cases it can happen that single electrodes are not reaching an impedance of 20 k Ω , which is mostly the case when the participant has a lot of hair and the distance of the electrode is thus too far from the scalp. However, this should be an exception and any electrodes having an impedance lower than 20 k Ω are noted in an external file. The process of filling in the gel might take around 10-30 minutes, depending on various factors, such as the experience of the person filling in the gel, the scalp of the participant, the number of electrodes etc. In this experiment two people fill in 32 electrodes, as the process would take a considerably longer time if only one person were to fill in the electrodes. Furthermore, one should always start by filling in the ground and reference electrode first, as a high impedance in these electrodes has a negative impact on all other electrodes.

8. Preceding Work

8.1. A Survey on Bad Fiction

The focus of this study is the topic of bad fiction. It seems inappropriate to select text stimuli arbitrarily, which is why a survey was conducted in advance. First, stimuli were extracted manually, as a base for the survey. Therefore, 20 text excerpts from bad fictions within the *Harry Potter* fandom are chosen. The length of each text excerpt is approximately 50–100 words; the length of text stimuli is discussed in more detail at a later point in this chapter.

In addition to the bad fictions, a reference corpus is needed. This reference is essential when working with EEG, as the effect on reading one text type always must be compared with other text stimuli. A reliable statement about the effect of a particular genre can only be made in comparison to a reference corpus. Since a certain genre of fanfiction is used for this analysis, it seems reasonable to use specific fanfictions as a reference as well. Here, the genre *allgemein* (engl. *general*) is chosen, as it is a rather neutral genre. Again,

20 text excerpts with a length of 50-100 words are chosen from the Harry Potter fandom. Spelling and grammatical errors are corrected in advance, since they are an interference factor and readers would focus on these mistakes. This would interrupt the natural flow of reading and one would therefore be able to examine almost exclusively the reaction to spelling and grammatical errors.

Once all text stimuli are conducted manually, a survey on the platform [FanFiktion](#) is posted. Participants have to read the text stimuli and after each text excerpt a Self-Assessment-Manikin, or SAM scale, is presented. The SAM-scale is very common in psychology and was invented in 1980 for computer based surveys (Bosch et al., 2008, p. 2016). It features pictograms on a, in this case, five-tier scale, which represent *arousal*, *valence* and *dominance*. Arousal ranges from *very aroused* feelings to *boredom*, valence represents *positive* to *negative* feelings and dominance describes how the participant feels like *having the situation under control*. The SAM-scale seems suitable, as it is simple in its application and comparably fast to answer.

The survey takes approximately 30 minutes, a total of 82 people take part and five randomly selected participants are given a 10 € voucher for a bookstore as a payment. The text stimuli for the experiment are chosen based on the answers on this survey. An analysis of the two-sided t-test shows that answers for arousal are significant, whereas the results for dominance and valence are even more highly significant. 15 bad fictions are therefore chosen on high valence and low dominance values, whereas 15 general fanfictions are chosen based on high dominance and low valence values.²

Reactions on the survey were very mixed, as some participants left positive comments on the survey, whereas others reached out in a very negative way. Especially the topic of copyright led to controversial statements by some authors. At the beginning of the survey it is clearly stated that the exact references of the text excerpts are made at the very end, as author names influence the participant's answers. For instance, some authors are famous within the community and thus seeing that a text is written by this specific author would have distorted the answer. Furthermore, some titles directly indicate that a text is bad fiction, which is also not desirable.

The text excerpts are from fanfictions posted on the website [FanFiktion](#), which concerning intellectual property states: "*Dem Nutzer ist bekannt, dass IdeaFactory nicht verhindern kann, dass andere Nutzer oder Dritte Inhalte des Nutzers vervielfältigen, verbreiten oder öffentlich zugänglich machen* (fanfiktion.de, 2022)." This indicates that authors posting their fanfiction have accepted that third parties might use their texts unrestricted as well. Furthermore, § 60a states that up to 15 % of a published work may be used for scientific purposes (Bundesamt für Justiz, 2022). As excerpts of approximately 50-100 words are used, this is not even close to 15 % of the published works. Last but not least, it is argued that fanfictions are not

² The survey and its results are explained in detail in the term paper "A survey on Bad fictions" and can be reviewed there.

covered by copyright and are themselves a legal infringement. The copyright owner of the intellectual property of an original work, in this specific case J.K. Rowling, as author of the *Harry Potter* books, has an exclusive right with regard to copying and distribution. In the Anglo-American region, there is a so-called *fair-use* clause which, according to § 107 of American copyright law, states: „*ein geschütztes Werk zitieren, kritisieren oder parodieren, diesem also eine Bedeutungsebene hinzufügen, keine Copyright-Verletzungen dar[stellen]* (Einwächter, 2015, p. 5).“ Thus, works that add a layer of meaning are not copyright infringements in the Anglo-American region, however, it is uncertain to what extent this applies to fanfictions. Moreover, the fair-use clause has no legal basis whatsoever in the German-speaking world. While fanfiction authors in the Anglo-American area therefore move in a legal grey area, in the German-speaking area, they clearly violate copyright infringements that apply here (Einwächter, 2015).

Considering the legal basis in which fanfiction authors operate, it is surprising that two authors reached out, stating that on a legal basis it is not allowed to use text excerpts from their work. The first author seemed to be angry that her bad fiction text occurred between ‘Schrottfics’, as she called the other fanfictions, and did not want to be associated with those. She went on saying: “*Zudem ist es völlig aus dem Kontext gerissen, da es eine Badfic ist und mit Absicht schlecht geschrieben ist, was dort nicht erwähnt wird! Ich bin gerade sehr sauer und es geht nicht einfach Text ohne Einwilligung herzunehmen!*“” This statement is very emotional and after receiving her text, it was decided to end the survey prematurely. However, it was subsequently possible to discuss the situation with the author and she explicitly ‘allowed’ the use of her text excerpts in this thesis and even asked for a positive review on her fanfiction.

The second author who reached out wrote an interesting reply and it is worth reading:

„Ich finde es verdammt uncool, dass Du keine Erlaubnis für eine derartige Verwendung eingeholt hast, sondern einfach einen Ausschnitt genommen hast, ohne vorher zu fragen, ob ich als Urheberin dieses Textes dem überhaupt zustimme. Wir werden das auch an die Admins der Seite melden. [...] Ich hoffe für Dich, dass Du in Deinem Studium gelernt hast, wie sauberes wissenschaftliches Arbeiten funktioniert, wie man richtig zitiert und was eigentlich ein Plagiat ist. Ein Tipp: Arbeite in Deiner Masterarbeit selbst sauberer und gib vollständig an, woher Du was genommen hast, im MA wird eher kein Auge mehr zugedrückt werden, wenn Quellen nicht ordentlich angegeben sind.“

The author went on to contact the supervisor of this work, which is interesting in the sense that information about the supervisor is not given in the survey. No reply was given to her messages and it was decided to exclude her text excerpt from this experiment.

In conclusion, these reactions are surprising, as fanfiction authors violate copyright, but have not informed themselves in this regard and accuse the survey of copyright infringement, although this is not the case. It is not possible to ask fanfiction authors for permission to use their text excerpts, as they write under pseudonyms and some are not active on the website anymore, nor is it necessary from a legal perspective.

8.2. Pilot Study and Additional Changes

Once the text stimuli are selected, a pilot study is performed. At that time, the laboratory had a different eye-tracking device, the [SMI 250 Mobile](#), which is poorer in performance compared to the new tracking device. Therefore, no details about the used hardware and software are given, as a different tracking device is used in the later experiment anyway. During the pilot study bad fictions and fanfictions were alternated, however, the order of texts within the genres was randomised. After each text stimuli a fixation cross was presented. During the pilot study a set of 64 electrodes was used, however, after evaluating time and benefit it was decided to use a set of 32 electrodes.

An additional change that was made after the pilot study was adding further text stimuli. The pilot study showed very clearly that the ratio of experiment execution and pre- and post-processing were not ideal. It took approximately 5-10 minutes to read all text stimuli, while the whole pre-processing, including the application of all electrodes, calibrating and validating took between 30-60 minutes. After the experiment, the participant had to wash and dry their hair, which can take up to another 30 minutes. Therefore, the whole process around data collection takes considerably longer. Moreover, the experiment data always needs to be conducted by two researchers, as one is in charge of eye-tracking and the other is in charge of the EEG during the experiment. For all these reasons, it was decided to combine this thesis with another project.

The aim of the second study is a postdoc research replicating a study by Hsu, who evaluates reactions to emotional parts in *Harry Potter* with an fMRI. For this, 120 *Harry Potter* text excerpts are chosen and annotated as *happy*, *neutral* or *fear* (Hsu, 2014). The text passages are approximately 40 words long, which is why the fanfiction and bad fiction excerpts were also shortened to around 40 words. Adding text stimuli from the original *Harry Potter* books has various advantages for the set-up of the experiment. The original *Harry Potter* paragraphs can be used as a reference corpus and thus analysis regarding original text and fanfictions can also be taken into account. Furthermore, it is assumed that reactions to bad fiction are even stronger, when mixing them with original text passages. Once the participant realises that the presented text stimuli are from *Harry Potter*, a certain expectation arises. This expectation then is broken, when reading bad fiction. For instance, if one knows the relationship between Draco Malfoy and Hermione Granger in the original work, it might come as a surprise when reading a bad fiction excerpt where Draco Malfoy falls in love with Hermione. In the study by Hsu, unexpected passages are analysed as well, however unexpected is here defined as text excerpts where magic happens (Hsu, 2014). This seems unsuitable as magic in *Harry Potter* might be indeed expected and for that reason it is decided to define bad fictions as unexpected text parts.

Since including additional text stimuli, it is further decided to measure the skin resistance, as this is directly linked to emotional arousal. This is done by using *Galvanic skin response*, or short GSR, electrodes. The GSR electrodes are placed on the palm of the non-dominant hand, because this area contains sufficient sweat glands (Brain Vision, 2016).

Another pilot study with one participant was done after the additional changes and no major adjustments have been done since. The final corpus including all text stimuli and attention questions can be found in the appendix in chapter 18.2.

9. Experiment Design

9.1. Experiment

The experiment starts with a 13 points calibration and validation. Next the text stimuli are presented according to a fixed pattern, yet randomised within these categories. First, four different original *Harry Potter* text excerpts are presented, followed by one fanfiction. Then again four original text excerpts are presented, succeeded by one bad fiction. This pattern is repeated until all 150 text stimuli are presented. It was considered to completely randomize all text stimuli, yet it was decided to use the fixed pattern for mainly two reasons. First, a higher number of original stimuli is presented than fanfictions or bad fictions which should be distributed as evenly as possible throughout the experiment. Second, it is not possible to give the trigger that is sent to the EEG data file different labels, thus all triggers for original text parts, fanfictions as well as bad fictions, are named identical in the EEG data file. The individual triggers are relabelled after the experiment and this step is faster if all participants have the same pattern in which the stimuli are presented. Text stimuli are still randomised within their group and some participants were asked after the experiment if they recognised a fixed pattern in the stimuli, which none of them affirmed.

After reading a text stimulus, the participant presses an arbitrary button on the *EyeLink button box*. This box is used instead of a keyboard, as it has “*minimal delay and low variability in timing (SR Research, 2005, p. 5)*”. Once the participant has pressed a key, the drift check appears on the screen. This drift check is accepted manually by the experiment leader. Subsequently, the next text stimulus is presented.

After every sixth stimulus an *attention question* is included. There are several possibilities to review if subjects participate attentively in a study or just ‘click through’ the stimuli. In the second case the recorded data has to be rejected, as it indicates that a participant has not tried to focus during the experiment. Attentive participation is measured by simple yes or no questions regarding the last stimulus that has been presented.

These questions are formulated for every text stimulus and an expected answer is saved. Participants can use a mouse for choosing to answer *yes*, *no* or *I don't know*. The questions appear after a text stimulus and before a drift check. Once all text stimuli are read by the subject, the experiment data file closes automatically and a questionnaire is opened manually on the device.

9.2. Questionnaire

The questionnaire is generally divided into three subcategories:

1. Experiment-specific questions
2. Questions about reading habits
3. Socio-demographic questions

Experiment-specific questions are presented at the very beginning, as the impressions of the experiment at this point are as far as possible not influenced by other questions. First, it is important to get some understanding regarding the enjoyment subjects derive from reading bad fiction. As mentioned earlier, bad fictions are very controversial, with some participants enjoying reading them, whereas others highly dislike doing so. For that reason, a bad fiction that has already been presented in the experiment is presented again and subjects are asked to describe their impression in three to five keywords. This question is repeated with another bad fiction text excerpt, so that the answer can be generalised as far as possible for a test person. Bad fictions are chosen randomly from the respective corpus.

Next, participants are asked to answer questions regarding the topic *Harry Potter*. The first question is a multiple choice question, referring to how many of the original *Harry Potter* books the subject has read. It was decided to include an option, where the participant has read additional *Harry Potter* content, as this indicates a very high interest on this topic. The main purpose of this question is to determine participants' knowledge about the presented text stimuli and whether they could be considered as '*Harry Potter Fans*'. Next, another multiple choice question is presented that refers to *Harry Potter* movies. It is possible that a subject has not read any *Harry Potter* books, but still has background knowledge on the presented text stimuli from watching the film adaptations.

The final experiment-specific question is a self-assessment question, asking the participant how far they would consider themselves as '*Harry Potter fans*'. Answers range from 'not at all' to 'fan' and can be chosen on a slider. As self-assessment questions can be problematic, the answer is compared to the two previous questions.

Subsequently, questions about the participants' reading habits are asked. As discussed in chapter 6.3, reading habits can have a huge impact on recorded eye-tracking data and reactions on the text stimuli. Therefore, responses need to be collected regarding this issue. However, reading habits might vary vastly and self-assessment questions might be answered differently depending on various factors. Considering all

of this, two questions regarding reading habits are asked in this experiment. The first question is a reading habit questionnaire developed by Moniek Kuijpers and provided by Franziska Hartung. The questionnaire focuses on different types of text and on how much they are approximately read within the last 12 months. The scale goes from $0 = \textit{never during the last year}$ to $6 = \textit{Almost every day last year}$. A number has to be chosen on a slide for 21 different text categories, such as *horror*, *science fiction* or *historical novels* (Kuijpers et al., 2020). Adjustments on the categories are made, as *fanfiction* and *parody/trash* is added manually to the existing categories, since they represent a central point of investigation in this experiment. Using this questionnaire seems suitable, as some participants might be well read in specific literary genres, such as fanfiction, while they may not be familiar with classical canonical works of literature. The questionnaire thus provides a better overview and is more specific in reading habits. The second reading habit questionnaire used is the so-called *author-recognition* test (Grolig et al., 2020). Here, a list of 75 authors is presented and the subject has to select authors that are known to him. However, the list does not solely include authors but also names of people who are not authors. Therefore, guessing names can be recognized easily and a good overview on reading habits can be given. Last but not least, socio-demographic questions are presented. These are ordinary questions regarding gender, age, education and mother tongue(s). The questionnaire ends by presenting the list of references from the text stimuli.

9.3. Hypothesis

With this experimental setup multiple hypotheses can be analysed. However, in this thesis the focus is on analysing bad fictions. The first hypothesis is that neural frequencies are more powerful when reading bad fictions compared to other text stimuli, as they are described by readers with strong emotional words. Furthermore, more regressions are expected in bad fiction, as the content is often unexpected, which might also lead to longer fixation times and more fixations in general. Additionally, readers are grouped into subjects who enjoy reading bad fiction vs. subjects who do not and a comparison of these two groups is made.

During the pilot study, differences within the right prefrontal cortex could be noticed, depending on whether the subject liked trash literature in general or not. However, as only two subjects participated in the pilot study this cannot be generalised. Furthermore, as mentioned in chapter 7.3, the EEG is not ideal for measuring topographical locations. Nevertheless, special attention is paid to this during the analysis, as it could be investigated in future studies.

In addition, the frequencies of subjects while reading are examined according to genre preference. It might be expected that subjects who like to read trash literature or fanfictions will react differently to the text

stimuli presented, not just on a topographical level. This could likewise apply to the prior knowledge of the subjects regarding the *Harry Potter* books and movies. For instance, subjects who are well acquainted with the original texts might react more strongly to non-original ones.

10. Experiment Procedure

Participants arriving at the institute first have to go to the registration room. During the experiment the 2G rule regarding SARS-CoV-2 applies, thus only subjects who have had COVID-19 within the last six months or are vaccinated at least twice, can participate in the experiment. The convalescent or vaccinated status is checked at the beginning of the experiment. Once the experiment procedure has been briefly explained, the head size of the subject is measured. Furthermore, participants have to do a CoViD-19 antigen rapid test. During the 15 minutes wait time for the test results, the participant can read and sign the consent form. Snacks and drinks are provided as well. While the participant waits in the registration room for the test results, the experiment conductors can prepare the laboratory. Now that the head size of the participant is known, electrodes can be attached to the appropriate electrode cap if needed. Furthermore, the hardware and software are prepared and electrode gel is filled into syringes with a blunt tip. After 15 minutes the participant is picked up and accompanied to the laboratory by one experiment conductor, while the second experiment conductor disinfects the registration room.

The subject is seated at a chair in front of the stimulus display. First, the GSR electrodes are attached to the non-dominant hand, as it takes several minutes to have a reliable signal (Brain Vision, 2016, p. 29). The non-dominant hand is chosen because it is not used during the experiment and the electrodes are thus more likely to stay in place and artefacts from moving the hand are eliminated. Then the electrode cap is placed on the participant's head and the experiment conductors start filling in electrode gel with the syringes. It is important to explain the process in detail to the participant and even offer them to touch the blunt tip of the syringes. The whole process can be overwhelming; therefore, care is taken to ensure that the participant feels as relaxed as possible. Unfortunately, one participant was afraid of syringes and their usage should definitely be mentioned in future experiments. During the process of filling in the electrode gel, the experiment design is explained to the participant in detail and questions regarding the hardware are answered. It is crucial to interact with the participant during this process, as filling in the electrodes might take up to 30 minutes and the participant should not get tired during this process. Furthermore, it is assumed that participants try to focus better during the experiment if they have an emotional connection to the experiment conductor. For a relaxed atmosphere, music is played in the background as well. Participants are asked at the beginning what kind of music they would enjoy, which further acts as an icebreaker.

Furthermore, a playlist including all musical requests is created, which was received positively by participants.

If participants are interested in their EEG data, it is shown to them before the experiment data is recorded. Mike Cohen suggests that all participants see their EEG data in real time, as it shows clearly what strong effects a little noise, like a smile or a blink, can have on the recorded data. When participants see these noises, they can try to avoid this behaviour during the experiment (Cohen, 2014, p. 95). If the participant is interested in seeing their data, the GSR electrodes are checked while presenting the data to them, otherwise this test is done without the participant seeing their data. For the GSR electrode test the participant has to do a deep inhale as the GSR signal ideally drops significantly during the inhale.

Next, the eye-tracking set-up is checked. If the participant wears glasses, they are cleaned and put up the nose bridge. Furthermore, the table height is adjusted according to the participant, the distance between the eyes and the eye-tracker is measured and a target sticker is applied to the forehead. After, the participant is asked to look in all four corners of the screen to evaluate if the pupil is lost at any of these positions. If needed, pupil- and corneal threshold are increased or decreased manually at this point. After this, the calibration and validation can be carried out and the experiment recording begins.

While the participant reads the stimuli, one experiment conductor observes the eye-tracking data and accepts all drift checks. If re-calibration is necessary, this is communicated with the test subject. The second experiment conductor is responsible for the EEG data and marks major events, for instance if the participant has to take a break, in the EEG data. Furthermore, important information is collected in an external table, such as if the participant is wearing glasses, is left handed etc.

After the data is recorded, one experiment conductor removes the EEG and GSR electrodes and goes to an external washing place to clean them. The second experiment conductor simultaneously opens the questionnaire and encourages the test subject to drink some water and eat some snacks. This is important as most subjects feel exhausted after focusing on the experiment. Answering the questionnaire takes approximately 5-10 minutes.

Once the subjects have finished the questionnaire, they get the possibility to wash their hair, as electrode gel should always be washed out of the hair immediately. For this reason, a shower head has been installed in the bathroom of the institute, which is made available to the test persons. Shampoo, conditioner, a hair dryer and combs are also provided to the subjects and disinfected afterwards. Once the participant has dried their hair, a remuneration of 7 € per half hour or part thereof is paid. As soon as the participant has left, all surfaces are disinfected by the experiment conductors.

The experiment is approved by the Ethics Committee and complies with the [Declaration of Helsinki](#). The data is collected within four weeks and on most days, with a few exceptions, three experiment slots are

offered. One slot is 2.5 hours long, which turned out to be a good reference. 54 time slots are offered and a total of 50 people applied. However, some subjects cancelled at the last minute or did not show up to the experiment at all. To counteract fluctuation as much as possible, reminder emails were sent to subjects the day before the experiment. In addition, a list of substitutes was created so that people on the list could be contacted in case of spontaneous cancellations. At the end, data of 40 subjects was collected.

11. Questionnaire

11.1. Metadata

In total 40 people participated in this study, of whom 20 identify as biologically female, 18 as male and 2 as diverse.

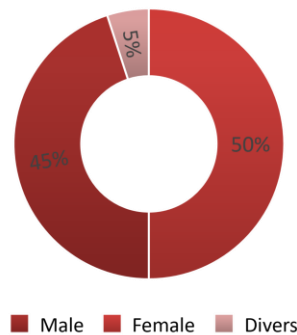


Figure 1: Gender distribution

As the experiment is conducted in the context of a university, the average age of participants is, as to be expected, relatively young. 70 % of all participant state that they are between 21-29 years old and an additional 20 % are between 18-20 years old. Only three participants are between 30-39 years old and one participant is 60 years or older.

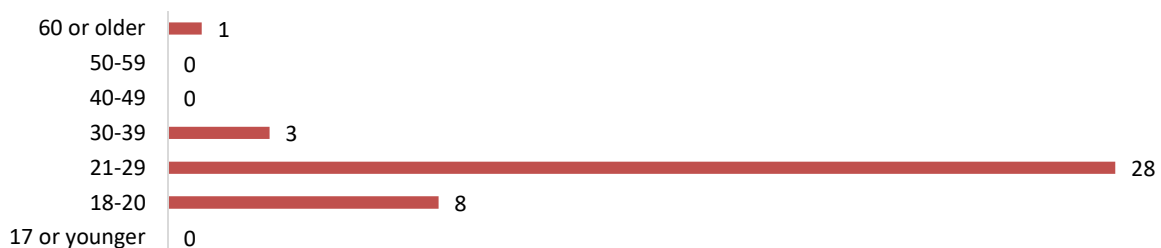


Figure 2: Age distribution

German at native language proficiency level is required for this experiment and in this case all participants were native speakers. In addition, there were some bilingual participants who have further recorded English, Turkish, Vietnamese, Russian or Albanian as their mother tongue.

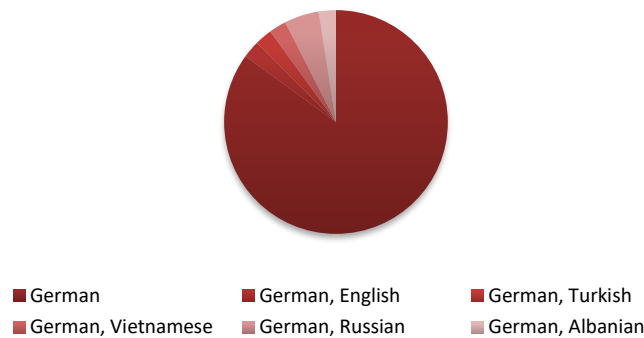


Figure 3: Mother tongue

Next, participants were asked about their highest level of education. As participants were mostly recruited from TU Darmstadt, it comes as no surprise that 57.5 % note Gymnasium (Abitur) and 27.5 % a Bachelor's degree as the highest level of education.

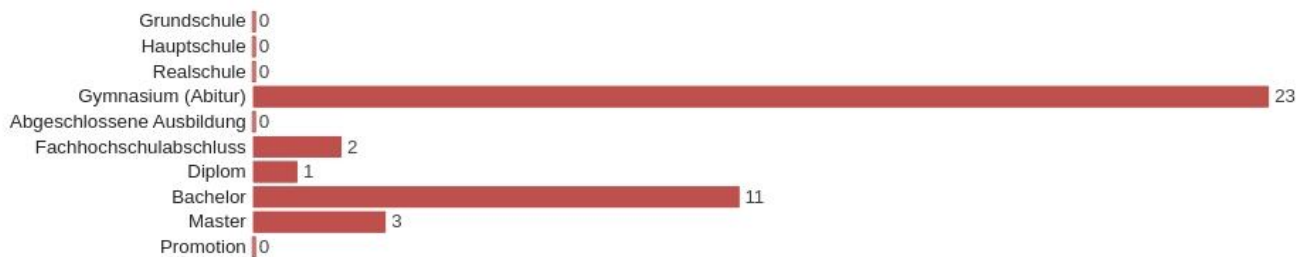


Figure 4: Highest level of education

11.2. Bad Fictions

The answers regarding bad fiction are very contradictory. Some participants used positive words to describe the text passages, finding them funny, whereas other participants described them as rather strange and confusing. For the first analysis, all keywords were collected in one data file, where words summarising the content were removed. This leaves a list with keywords that describe thoughts and emotions while reading bad fiction excerpts.

Certain patterns seem to become visible when considering the negative word-cloud. As mentioned earlier, participants seem to be confused by bad fictions, as they describe them with terms like “*verwirrend*”, “*absurd*”, “*unrealistisch*”, “*seltsam*”, “*eigenartig*”, “*irritierend*”, “*skuril*”, “*absurd*”. Some of the subjects, on the other hand, find the texts simply bad and use terms such as “*schroff*”, “*unangenehm*”, “*sexistisch*”, “*pervers*”, “*abscheu*”, “*gefällt mir nicht*”, “*fremdscham*”, “*verletzend*”, “*diskriminierend*”, “*unsensibel*”, “*befremdlich*”, “*unangenehm*”. It is striking how negative these terms are. Other participants mention that it is difficult to understand the written text, using expressions such as “*schwer zugänglich*“, „*furchtbarer Stil*“, „*nicht zugänglich*“, „*grammatikfehler*“, „*verschachtelt*“, *schwieriger Satzbau*, *schwer verständlich*“. These expressions all indicate that it is hard to understand the text on a syntactical level. Interestingly, some participants describe the exact same bad fiction excerpts as “*Stil ist in Ordnung*”, “*gut zu lesen*”, “*gute Wortwahl*“. This clearly shows that sentence structure is striking for participants, but not necessarily in a bad way for all of them.

In contrast, the positive expressions seem to focus on the excerpts being humoristic, as participants use keywords such as “*lustig*”, “*unterhaltsam*”, “*witzig*”, “*amüsant*”, “*erheiternd*”, “*parodistisch*” to describe the excerpts. Additionally, some keywords are simply positive, without mentioning humoristic aspects, such as “*rhythmisch*”, “*angenehm*”, “*ästhetisch*”, “*kreativ*”, “*interessant*”.

The keywords clearly prove the hypothesis that bad fictions are either described as negative or positive, i.e. only answers at the two extreme ends of the spectrum are given. Subjects find them confusing and striking or humoristic and entertaining. Sometimes these mixed feelings are even described by a single participant. For instance, one subject states that the text is strange yet entertaining “*Fremdschämend dennoch unterhaltsam*”, whereas another person states that the confusion of the text makes it funny “*verwirrend, konfus, dadurch irgendwie lustig*“. However, these mixed descriptions seem to be the exceptions, as most participants either use negative or positive descriptions.

The terms defined as neutral can roughly be categorised in two groups. A majority state that the excerpts are “*beschreibend*”, “*deskriptiv*” or “*direkt*” thus focusing on narrational aspects of the text. The other majority of keywords simply states “*Fanfiction*”, thus the participants have realised that the presented excerpts are not part of the original *Harry Potter* books. Participants made the following statements regarding this topic “*Ein Teil klingt bekannt*“, “*Ich kann mir gut vorstellen, dass dieser Text nicht zu Harry Potter gehört, sondern aus einer Fanfiction stammt*“, „*Erinnerung an Harry Potter aber nicht in Film?*“, „*Aus Buch? Unglauben?*“, „*Es ist aus Harry Potter aber das ist nicht im Buch passiert*“. These statements show that some participants seem to notice that the texts somehow belong to *Harry Potter* but are not excerpts taken directly from the book series.

Last but not least a few comments are made that directly reply to the story line, rather than focusing on emotions experienced while reading, and it is worth having a closer look at those as well. For instance, one participant states regarding a bad fiction that includes a romantic relationship between Draco Malfoy (a student) and Snape (a teacher) that they could have been in a relationship in the original books as well “*sie hätten im buch wirklich zusammen sein können*”, whereas another participant argues that this kind of relationship is absurd “*absurde Vorstellung eines Lehrer-Schüler Verhältnisses*”. A similar student-teacher relationship is described in a bad fiction between Dumbledore and Harry Potter, which is commented by one participant as “*Beziehung mit ungesundem Machtverhältnis*”, thus again criticising a relationship between a teacher/principal and its student. Interestingly, one participant states regarding a bad fiction excerpt including Ron Weasley and Harry Potter that Ron’s unkindness towards Harry is described well in this passage “*Rons Unfreundlichkeit zu Harry wird gut dargestellt*”. In the original story these two characters have a friendly relationship and it is thus striking that this participant has apparently noticed some unfriendliness between these characters before and now positively highlights this description.

In conclusion, it seems that bad fictions do indeed lead to contrary emotions that are rather very negative or very positive. The negative keywords seem to focus on confusion and strong disapproval, whereas the positive emotions seem to focus on humoristic aspects. Bad syntax seems to be striking for a high number of participants, however, not for all of them as some have made positive comments regarding the sentence structure. Furthermore, some subjects seem to recognise the text excerpts as fanfictions, whereas others are unsure on how to categorise these text excerpts.

11.3. Previous knowledge on *Harry Potter*

Regarding the question whether the participants know the original *Harry Potter* book series 37.5 % answered that they have not read any of the books. On the other hand, 15 % state that they have read all seven books and an additional 30 % of all participant state that they have read all books and supplementary material, such as fanfictions or books related to the *Harry Potter* universe.

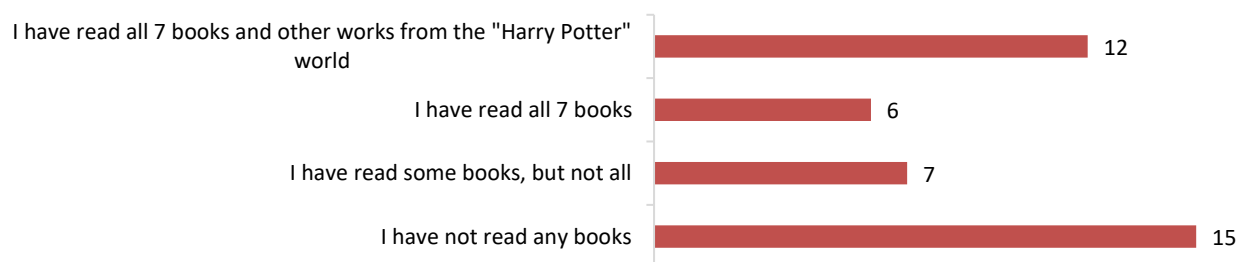


Figure 7: Previous knowledge on *Harry Potter* books

When considering the answers on how many participants have seen the *Harry Potter* movies, most participants, namely 65 %, state that they have seen all movies. 30 % of all participants have seen some movies and only two participants have not seen any of the movies. In total only two participants have never seen any of the movies nor read any of the books and have hence no or little background knowledge on the text stimuli.

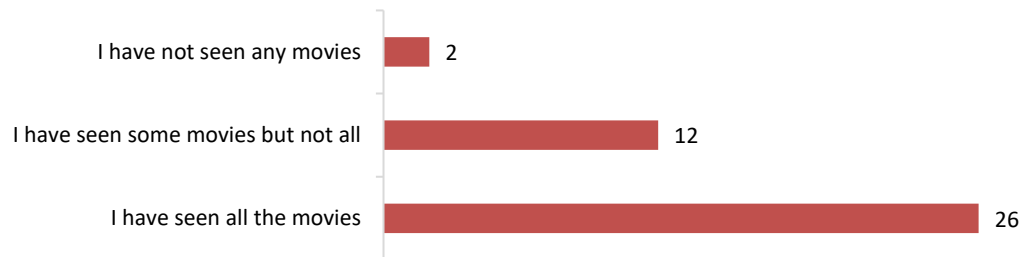


Figure 8: Previous knowledge on Harry Potter movies

Unfortunately, the question whether participants would describe themselves as fans or not had to be removed, because many subjects were irritated whether being a fan means that the slider should be on the very left or in the middle of the scale. Thus the results are partly incorrect and cannot be used for further analysis.

11.4. Genre Preferences

For the analysis in this thesis, the focus on genre preferences is solely on the categories parody/trash, humour/satire and fanfiction.

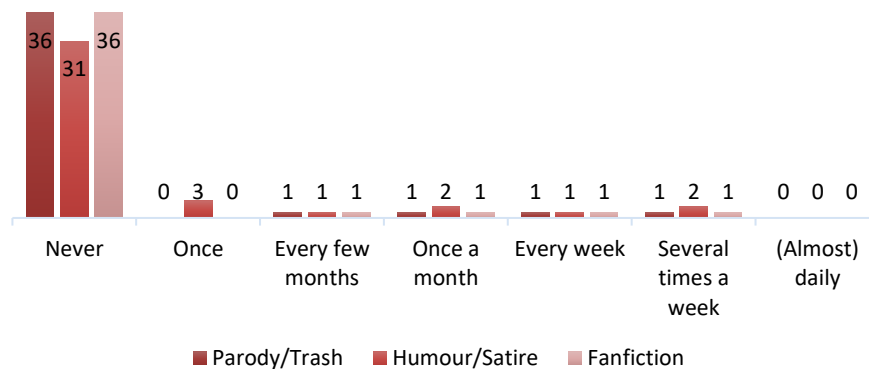


Figure 9: Answers regarding genre preferences

As can be seen in Figure 9, most participants have not read any texts related to the three categories within the last 12 months. The distribution of parody/trash and fanfiction is very similar, as the answer options “*Every few months*”, “*Once a month*”, “*Every week*” and “*Several times a week*” have each been selected by one participant respectively. The genre humour/satire seems to be comparably more popular, as only 31 subjects claim that they have not read any literature related to this genre within the last 12 months. Thus 22.5 % of participants have read humour/satire texts within the last year, with equally distributed answers among the other categories. The last category “*Almost daily*” is not chosen by any subject.

12. EEG Data: Pre-Processing

Before the analysis of the data can proceed, the EEG data must be transformed and cleaned. First, triggers are renamed in the recorded data of all participants. The EEG files contain a S15 trigger (*S for Stimulus*) at the time the trigger is sent from the experiment to the EEG recording and a R15 trigger (*R for Response*) at the time the EEG confirms that it has received the trigger. In the recorded data S15 and R15 triggers are identical in their time position. Thus the names of S15 triggers are changed to mark the beginning and end of the according stimulus type but changing R15 instead of S15 would have led to the same results.

Next an *Infinite Impulse Response*, or short *IIR*, filter is applied to all segments. With this filter undesired frequency components can be removed to some extent. First, it is recommended to apply a *low cut-off*, which can also be referred to as *high-pass* filter, where only frequencies above the specified frequency range can pass. The high-pass filter is usually applied at 0.5 Hz because of slow drifts in the electrodes (Cohen, 2014, p. 80). Slow drifts normally occur over time, due to the interface of the electrode, gel and the head and can be easily be minimized by applying a high-pass filter (v. Ehinger, 2019). Furthermore, a

high cut-off or *low-pass* filter is applied. Choosing a value for the low-pass filter highly depends on the research question and cannot be generalized. Some researchers only focus on higher frequencies, whereas others argue that frequencies above 30 Hz are likely to contain muscle artefacts and should thus not be used for the analysis (Cohen, 2014, p. 74). In this experiment, a low-pass filter is applied at 40 Hz, as the gamma frequency band starts at 30 Hz and should be included in the analysis as well. However, higher frequencies are likely to have too much noise to be included. Moreover, a frequency magnitude response can be chosen. This means that the amplitude is attenuated by a specific value in dB, for instance 3 dB would attenuate the amplitude by 30 %. For the high-pass filter, the smallest available attenuate of 12 dB is chosen, whereas for the low-pass filter 48 dB is chosen. Note that this does not mean that frequencies over 40 Hz are not included, however, they are strongly attenuated. Furthermore, a so-called notch filter is applied to the data. This filter attenuates by 96 dB and is applied to approximately 2.5 Hz before and after the selected frequency (Brain Products, 2008, p. 246). The filter is applied at 50 Hz, as electronic devices in Germany have a normed frequency of 50 Hz. Therefore, signals at this frequency are very likely from other electronic devices and not produced by neural activity. It should be mentioned that 50 Hz is common in most countries, however the United States and some other countries have a normed frequency of 60 Hz and thus the notch filter would here be applied at 60 Hz.

Once all stimuli are renamed, all eye blinks are removed, as they are artefacts in data. Eye blinks are most prominent in the Fp1 and Fp2 electrodes, since they are placed directly on the forehead of the participant. It is also possible to place additional electrodes around the eye, in order to measure vertical (VEOG) and horizontal (HEOG) eye movements. However, in the pilot study good results were achieved by using the Fp1 or Fp2 electrode as reference and further electrodes placed on the face seem inconvenient for the participant.

During an eye blink, activity is mostly measured in the area of Fp1 and Fp2, whereas comparably lower activity is recorded in other electrodes. This makes it possible to detect eye blinks and remove them from the data set. Furthermore, eye blinks are well visible, as they show a strong negative amplitude. In order to remove eye blinks, the Fp1 or Fp2 electrode is used as VEOG, depending on which electrode shows better results and provides cleaner data. An independent component analysis is used to remove eye blinks from the data, the so-called *Ocular Correction Independent Components Analysis*, or short *Ocular Correction ICA*. Here, EEG data is decomposed into “*a set of components that attempt to identify independent sources of variance in the data* (Cohen, 2014, p. 88)”. The algorithm used is the *Meaned Slope Algorithm*, where strong variations in the selected VEOG channel are detected (Brain Products, 2008, p. 277). All channels are chosen for correction, however GSR electrodes are left out, as they should not show any artefacts from eye blinks. The data used to compute the ICA matrix can either be the whole data set, only around blinks

or in intervals. In this analysis best results are achieved when using the whole data or intervals. As no difference in results could be detected between these two methods, intervals are chosen, as it is significantly less time consuming to run the analysis. The interval length is set to 40.96 seconds, since this length is recommended for 32 channels. Figure 10 shows the Fp2 channel of P38. The red line represents data before using Ocular Correction ICA, where an eye blink is clearly visible shortly after the end of an original stimulus, while the drift check is presented. The blue line represents the corrected data, where the eye blink is removed successfully. Next to the Fp2 channel a topographical overview of activity in electrodes is given. It is clearly visible that activity is most prominent in the area of the forehead, which indicates an eye blink.

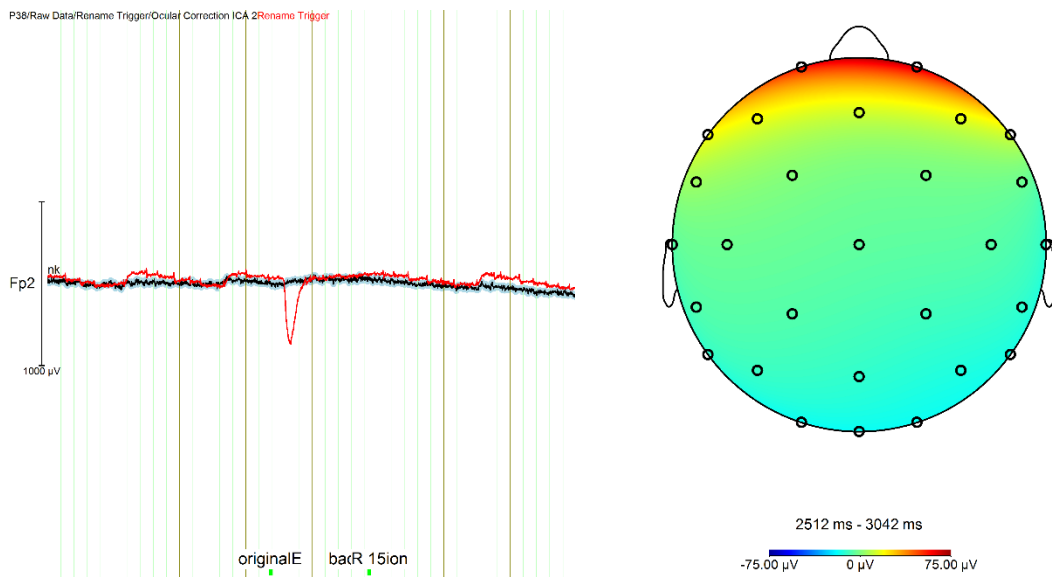


Figure 10: P38, channel Fp2 with (red) and without (blue) Ocular Correction ICA. Activity is mostly seen in channel Fp1 and Fp2

In the next step, bad electrodes are removed from the data. Electrodes can be bad for various reasons, such as a bad impedance, the participant moving too much etc. As mentioned earlier, especially the electrodes in the ear area are problematic, as they might be too far away from the head and thus have bad impedance. The following electrodes were defined as electrodes in the area of the ear: FT9, T7, TP9, FT10, T8, TP10. When removing electrodes, one must weigh the benefits and costs of removal. On the one hand, one would like to retain the data of all electrodes if possible. On the other hand, it may be that individual electrodes are primarily responsible for artefacts, which would mean that hardly any trials of a subject can be used without artefacts.

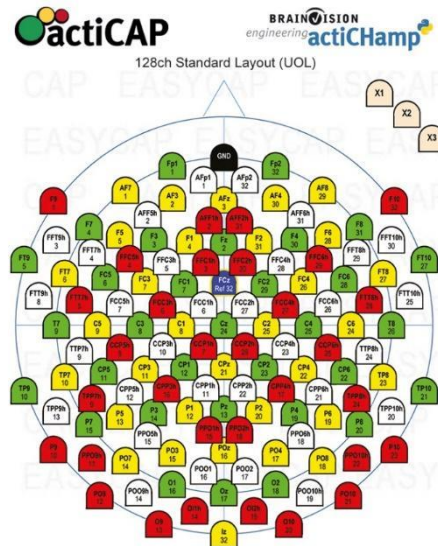


Figure 11: Electrode position. Green coloured electrodes are used in the context of this experiment (*Electrode Position File*, 2016).

For instance, for P13 the electrode TP10 is removed, as the channel is consistently showing artefacts over the whole data. If other artefacts occur due to the participant moving, it can be seen over all channels. However, in this case TP10 tends to show artefacts, while the other channels show relatively clear data, as is shown in Figure 12. Here, artefacts are marked in red colour. Furthermore, the channel seems to have strikingly fast oscillations, as if the electrode is not positioned correctly or has poor impedance values and is thus removed. Please note that electrodes are checked multiple times before they are removed, as this should be an exception and be well considered.

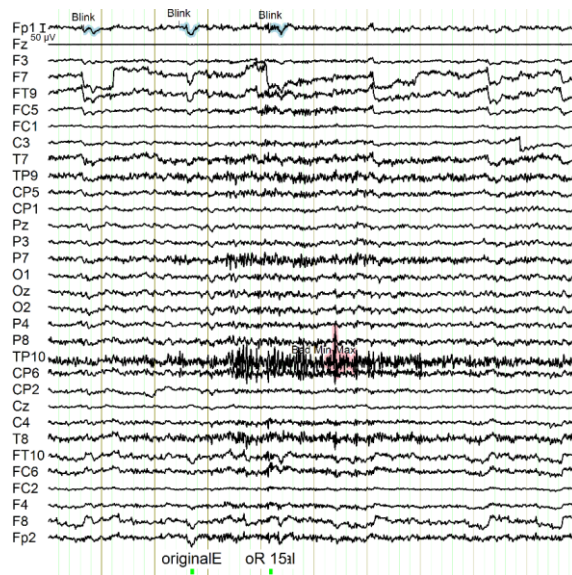


Figure 12: P13, channel TP10 is removed

In two cases, electrodes from different regions of the head are removed as well. However, bad electrodes occur mostly around the ears, which can be seen in the table listing the removed electrodes in the appendix in chapter 18.1. The two exceptions are channel F7 and F8. These electrodes are located at the left and

right frontal skull and it is assumed that for some participants, saccades can be noticed and thus horizontal eye movements might be visible in these channels. This tendency seems to vary depending on the subject and is usually more evident in one electrode than the other. Figure 13 shows P07, for whom horizontal eye movements are clearly visible in channel F7. Artefacts are again marked in red and this channel has to be removed completely, as artefacts are noticeable constantly over the recorded data.

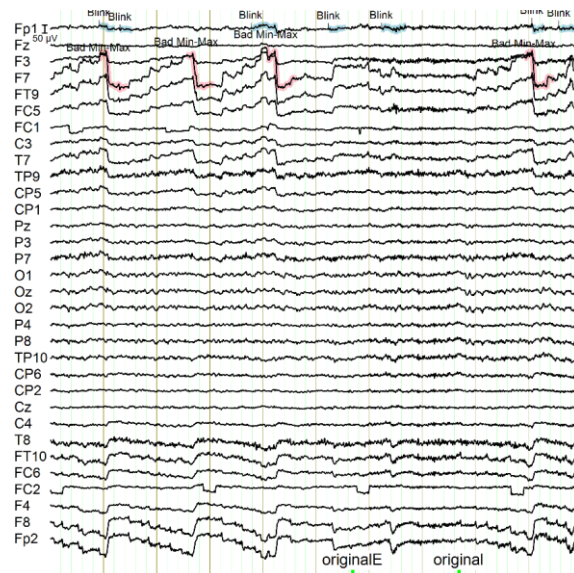


Figure 13: P7, channel F7 is removed

Once bad electrodes are removed from the data set, physical artefacts are detected and marked as such. This is done by the function *Raw Data Inspection* in the [BrainProducts Analyzer](#). Here, artefacts are detected for all channels, except for GSR channels.

Several criteria are established to identify an artefact as such. First, the maximal allowed voltage step is set to $50 \frac{\mu V}{ms}$, which means that the voltage difference of two data points is marked as bad gradient if it is greater than $50 \frac{\mu V}{ms}$ (Brain Products, 2008, p. 257). Furthermore, a maximal allowed absolute difference of $200 \frac{\mu V}{ms}$ is set and the lowest allowed activity is $0.5 \frac{\mu V}{ms}$. Examples for individual electrodes showing bad min-max values have already been presented in Figure 12 and 13. However, it is more common that artefacts occur due to the participant moving, which then can be seen over all electrodes. Figure 14 shows an example, where the participant has either moved quickly or compressed the jaw.

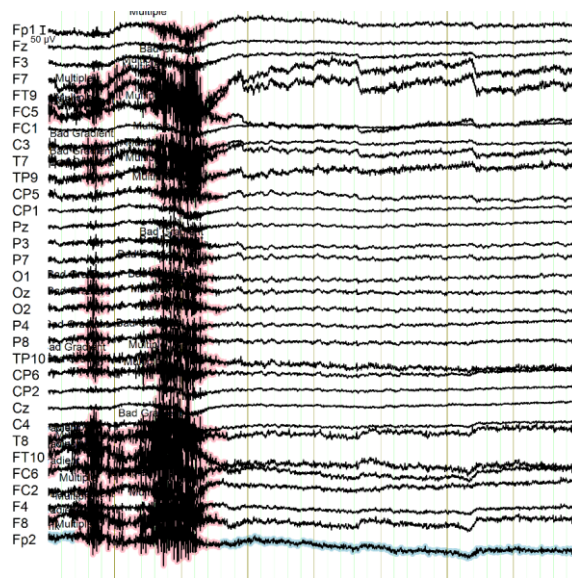


Figure 14: P22, artefact

Artefacts are marked and manually checked. In a next step, data is segmented into sequences of original, bad fiction and fanfiction stimuli. Here, new segments are created by using the start and end triggers of a certain stimulus type. Therefore, three segments are created and data that is recorded during the drift check or attention question is not taken over. Furthermore, bad intervals are skipped. This means that trials containing artefacts are not included in the new segments. For instance, Figure 14 shows artefacts during an original trial and therefore this trial is not included in the segment of original text stimuli.

As a preparation for the frequency analysis, data is next divided into equally long segments. This step is not necessary when doing ERP-analysis as the focus is on specific events. However, when comparing frequency bands, it is recommended that segments are the same length (Brain Products, 2008, p. 314). Longer epochs are recommended and therefore the data is segmented into 3000 msec. long epochs. The segmentation is again applied to all text genres, i. e. original fanfiction and bad fiction stimuli.

Next, all segments of one text genre are averaged, so that only one average per text genre and participant remains. Here, the created segments are aligned and the voltage is then averaged. This step is essential, as it attenuates noise to a certain extent. A single trial not only contains brain activity, but other artefacts as skin potentials or muscle artefacts. In some trials noise might be in a positive direction, whereas it is in a negative direction in other trials. When averaging, artefacts in positive and negative directions thus cancel out each other (Luck, 2014, p. 259).

This effect can be seen clearly, when switching to the so-called butterfly view. This view visualises all channels overlaid above each other. On the left side of Figure 15 all channels of P01 are visualised while reading fanfictions, without an initial average. It can clearly be seen that in the time sphere of around 700–1500 msec. noise is visible in a positive-going and negative-going direction. This noise is primarily created

by electrodes F7 and F8, which is presumably due to horizontal eye movements being visible in these electrodes, as has been mentioned earlier. However, these artefacts cancel each other out, which can be seen on the right side of Figure 15, where an average is applied over all fanfiction segments.

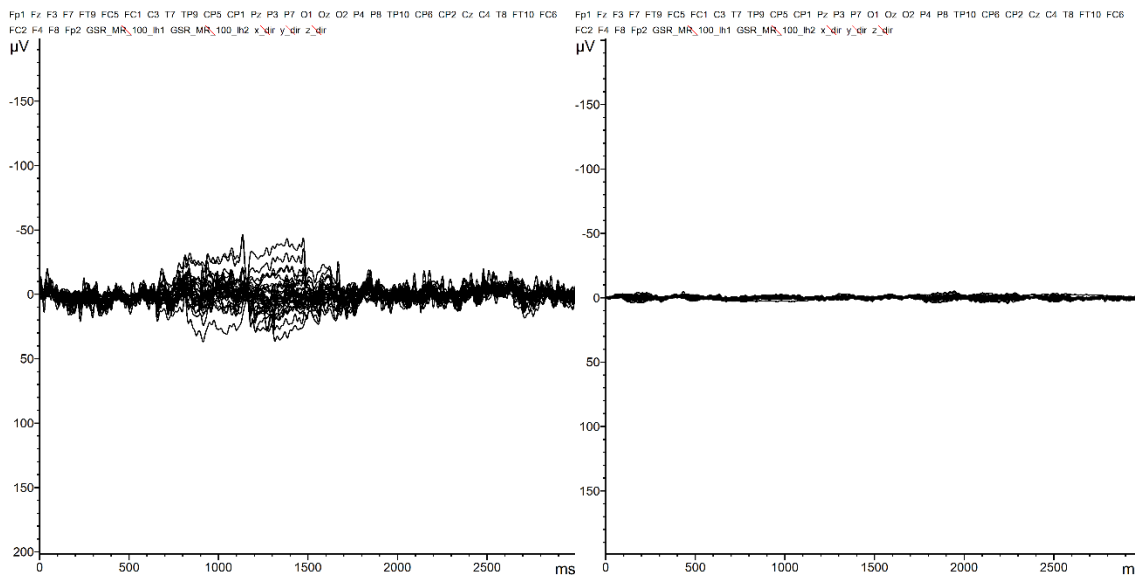


Figure 15: P01, butterfly view of all channels, while reading fanfiction. The left side shows the data without an average, whereas the right side is averaged

12.1. Fast Fourier Transformation

The pre-processed EEG data is presented in a time domain, which is converted to a frequency domain for this analysis by using the *Fourier Transformation*. This transformation works by computing the dot product “between the signal (such as EEG data) and sine waves of different frequencies (Cohen, 2014, p. 121)”. By doing so, the signal is disassembled into multiple sinusoids, which allows the data to be converted in a frequency and power domain. Theoretically, the phase of the signal could be visible in a Fourier visualisation as well, however, a two dimensional representation without the signals phase is more common. The Fourier transformation is named after the French mathematician Jean-Baptiste Joseph Fourier (1768-1830), who invented an algorithm to decompose temporal signals into their frequency components (Tamm, 2005, p. 20). Multiple variations for various purposes of Fourier’s algorithm exist nowadays. When working with EEG data, the *Fast Fourier Transformation* is most common, which in turn is based on the *Discrete Fourier Transformation*. The latter one basically creates multiple sine waves with different frequencies and then computes the dot product between each sine wave and the EEG data in the time domain (Cohen, 2014, p. 124). As this process is quite time consuming, the Fast Fourier Transformation, or short FFT, was established. Here, redundant steps from the Discrete Fourier Transformation are eliminated. Whereas the Discrete Fourier Transformation analysis has as many data points as estimated by the data, the FFT assumes that the number of data points is a power of two (Brain Products, 2008, p. 313). This makes the FFT

approximately ten times faster than the Discrete Fourier Transformation, which is a significant difference, especially when working with larger data sets (Cohen, 2014, p. 134).

When working with FFT, so-called edge artefacts might occur. This is due to the fact that segments are treated as if they are repeating periodically, which might lead to incorrect data in the segment boundaries, thus at the beginning and end of each segment. In order to prevent edge artefacts, either buffer zones at the beginning and end of each segment could be used or a taper could be applied to the segments. When working with FFT, the second option is common, as little data is lost with this method. Tapering the data basically means to apply a window, which damps the data at the borders of a segment. Two types of windows are common in FFT, namely the Hann-window, named after Julius von Hann, and the Hamming-window, named after Richard Hamming (Tamm, 2005, p. 24). Both windows are quite similar, with the only difference being that the Hann-window tapers the data down completely to zero at the borders of a segment. Due to this reason, the Hann-window tends to lead to better results and is thus frequently used in FFT-analysis. The mathematical algorithm for the Hann-window is as follows:

$$\omega(k) = 0.5 - 0.5\cos\left(\frac{2\pi}{N}k\right)$$

Once the FFT is applied to the data, the frequency domain is visualised with the frequency in Hz on the x-axis and voltage in μV on the y-axis. Figure 16 exemplarily presents a FFT for P01 at electrode F4, while reading fanfiction. As can be seen, frequencies are coloured depending on their frequency band. Additionally to the frequency bands discussed earlier, sub-delta is visualised in a light blue colour and frequencies above gamma in a black colour. Sub-delta ranges from 0 to 0.5 Hz and as results are rather inaccurate in this spectrum, sub-delta is most likely not be considered. The same is true for frequencies above gamma, as they are most likely produced by muscle artefacts.

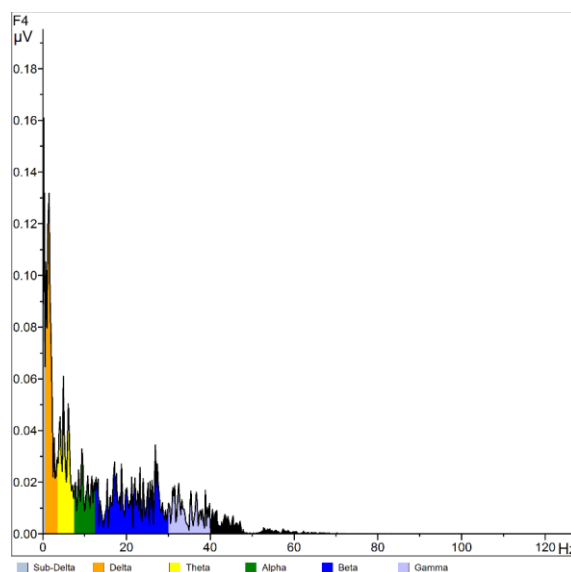


Figure 16: P01, channel F4, FFT while reading Fanfiction

13. EEG: Results

13.1. Hypothesis I: Frequencies are more powerful while reading Bad Fiction

A grand average is performed for the individual groups of interest. This is a common method in cognitive electrophysiology in order to compare trials among subjects on a group-level (Cohen, 2014, p. 451). Here, an average is calculated taking a specified number of subjects into account. The first analysis focuses on the hypothesis that frequencies are higher while reading bad fictions, compared to fanfiction and original text stimuli. For this, a grand average is done over the already existing FFT data for each genre and averaged over all participants. Next, a statistical data comparison is performed, where first frequencies while reading original stimuli and bad fictions are compared.

The comparison in Figure 17 shows a significant difference in frequencies, as frequencies are more powerful while reading bad fiction than while reading original stimuli.

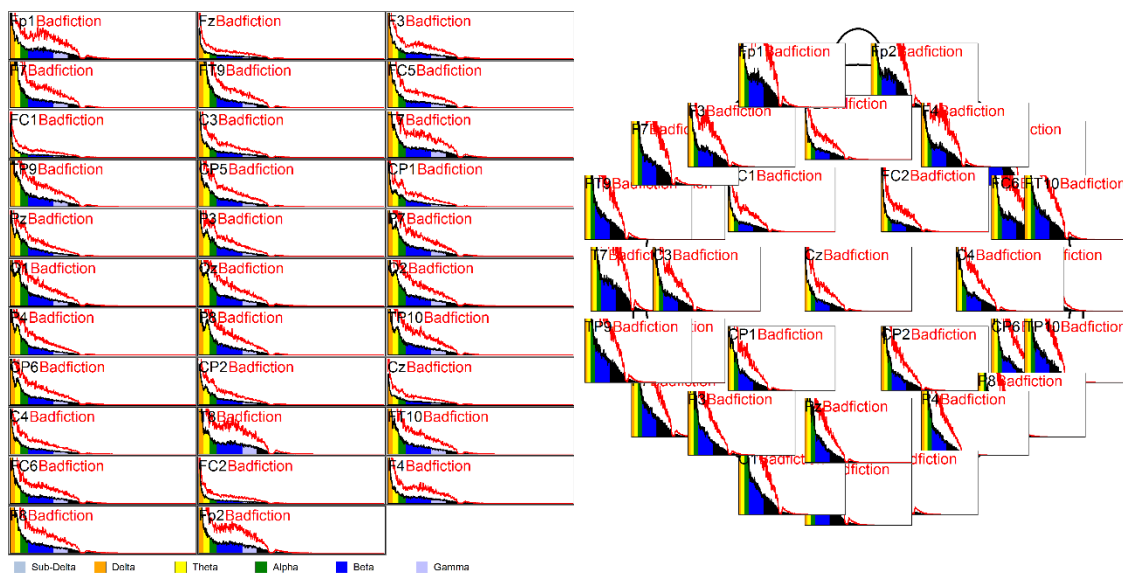


Figure 17: comparison Grand Average on original stimuli and bad fiction (marked in red). Grid view (left) and head view (right)

Figure 17 gives an overview of all electrodes, where the coloured frequency band represents original stimuli and the red line bad fictions. The left side of Figure 17 gives a listed view of all channels, while on the right side channels are placed on the according topographical position. Figure 18 on the other hand shows two channels exemplarily in a larger scale, namely channel Fp2 and F7.

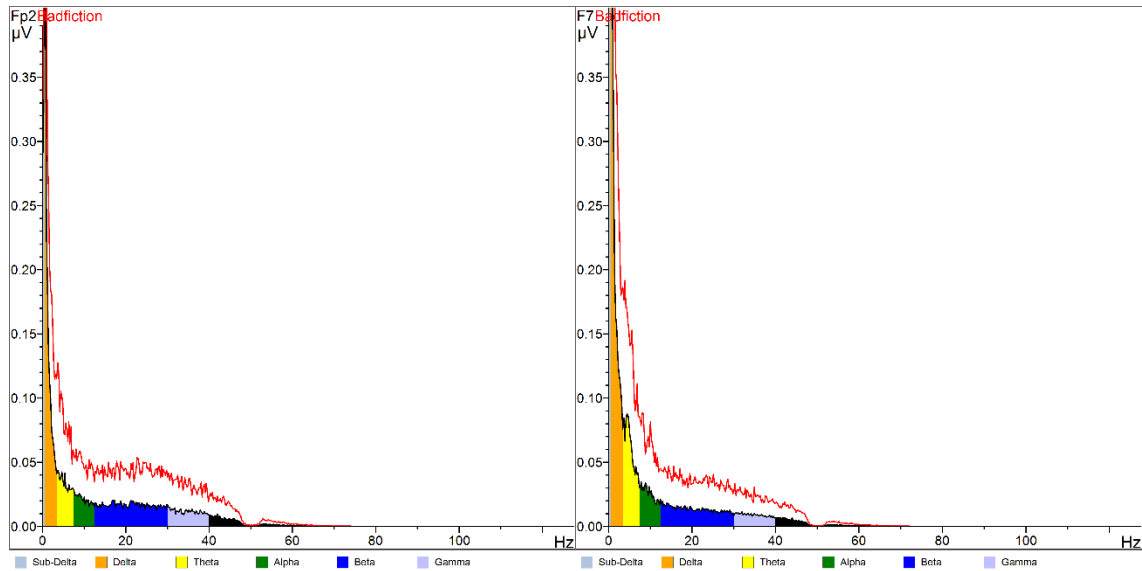


Figure 18: channel Fp2 (left) and F7 (right). FFT on original and bad fiction (red)

In Figure 18 it can be observed that sub-delta seems to occur in a similar power for both stimuli types, while, delta, theta, alpha, beta and gamma are all significantly more powerful while reading bad fictions. This can be observed over all electrodes and thus a difference in frequency bands while reading original stimuli and bad fiction can be observed.

A similar effect can be detected, when comparing original stimuli and fanfiction. In fact, the results look strikingly similar, which could indicate that fanfictions and bad fictions are received similarly. In order to examine this more closely, fanfictions and bad fictions are now compared with each other with regard to their frequencies.

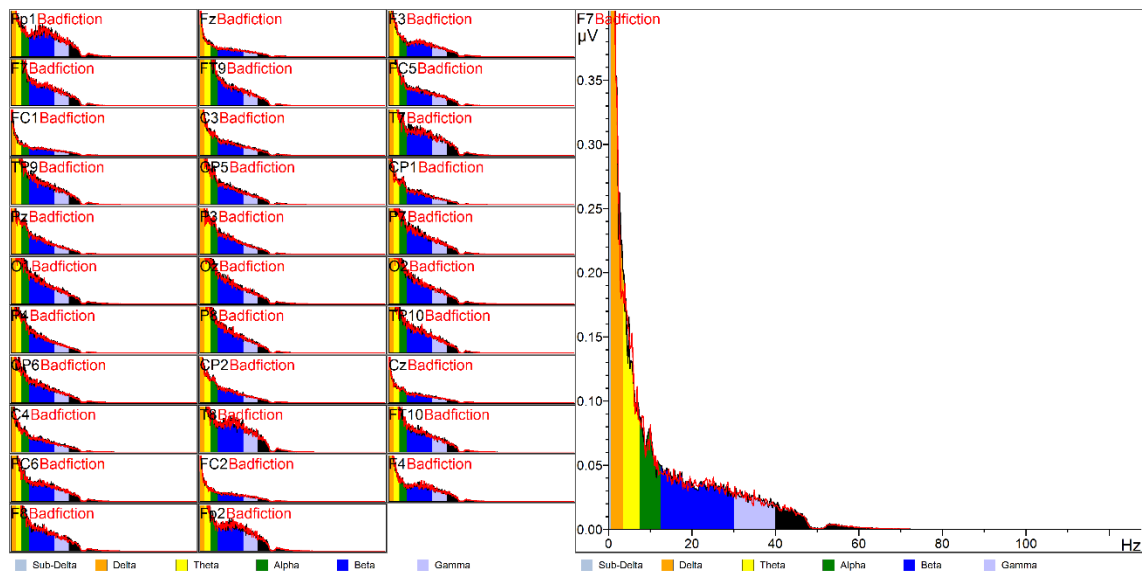


Figure 19: all channel (left) and channel F7 (right). FFT on fanfiction and bad fiction (red)

Figure 19 clearly shows that no significant differences in frequency power can be detected when comparing fanfiction and bad fiction. This is true for all channels and all frequency bands. The data indicates that

original stimuli are read differently by participants than fanfiction in general, but no difference between fanfiction and bad fiction can be observed.

13.2. Hypothesis II: (Topographical) Differences in reading Bad Fiction

In a next step, differences in reading bad fictions depending on the keywords used to describe the bad fictions are analysed. For this, a subgroup of participants that solely uses positive words to describe bad fictions and a second subgroup that solely uses negative words is created. A grand average is conducted again, resulting in a dataset named bad fictions positive and a second dataset named bad fictions negative.

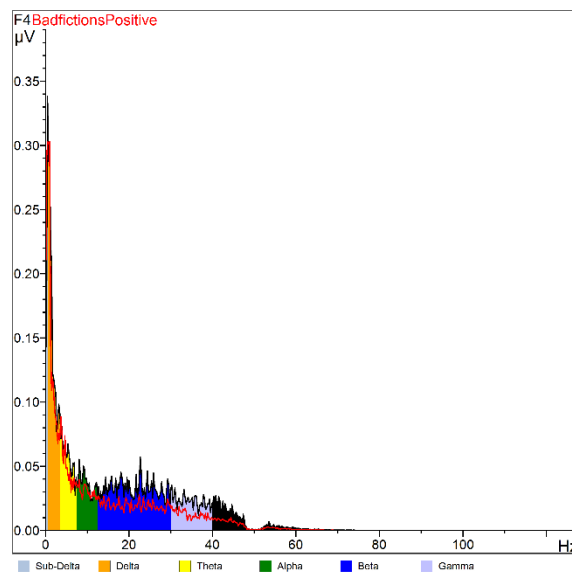


Figure 20: channel F4. Participants who enjoy bad fictions (red) and who do not

Figure 20 shows the frequency bands of people disliking bad fictions in colour, whereas people liking bad fictions is represented in a red colour. A difference in frequency power is clearly visible in higher frequency bands. In sub-delta, delta and theta, no significant differences in frequency power can be observed. However, in higher frequencies, namely beta and gamma, clear differences are detectable. Subjects describing bad fictions in a positive way show significantly lower power in these frequency bands compared to subjects disliking bad fictions. In the alpha band, differences are visible, however they are not as strong as in beta and gamma. Therefore, beta and gamma frequency bands show significant differences in participants depending on whether they like or dislike bad fictions.

Next, a topographical map of both groups is analysed, as some anomalies are detected in the pilot study. However, no major differences in topographical distribution are visible in this study. For both groups electrodes in the central parietal and frontal area seem to have less power, compared to all other electrodes. This seems to be most prominent for channel FZ, FC1, FC2 and CZ, as these all show a power

of around $0 \mu V$. Therefore, the observation in the pilot study regarding the right prefrontal cortex cannot be confirmed.

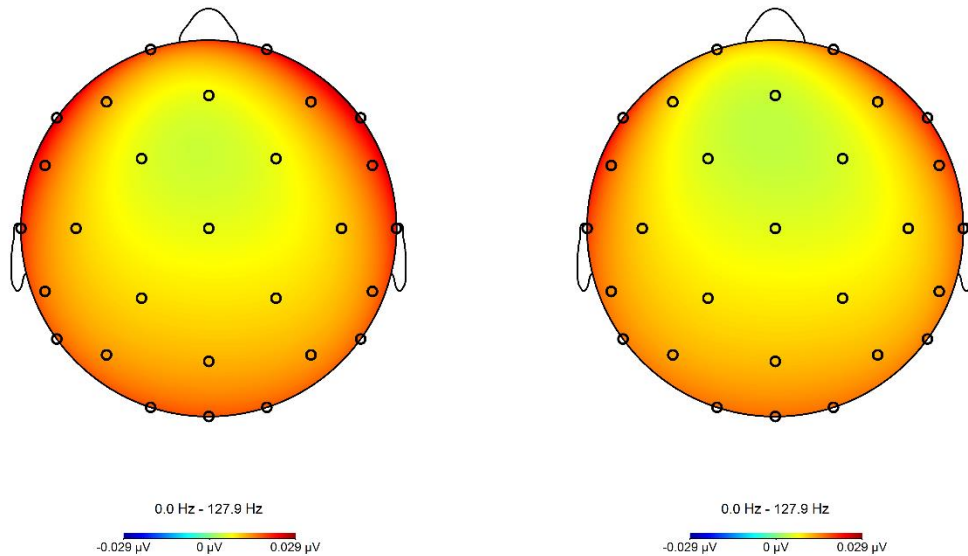


Figure 21: Topographical distribution while reading bad fiction on participants who dislike bad fiction (left) and enjoy bad fiction (right)

13.3. Hypothesis III: Differences in Frequency depending on previous Knowledge on *Harry Potter*

In this analysis, participants are divided into groups, depending on their answer in the question regarding how many *Harry Potter* books they have read. The assumption is that participants who have read all seven books and participants who have read all seven books and additional material react stronger to the stimuli. This is because they have more knowledge of the text stimuli and might thus feel more immersed in the text. Furthermore, it is expected that this effect is strongest for participants who have read additional materials, as they most likely will be fans of *Harry Potter*.

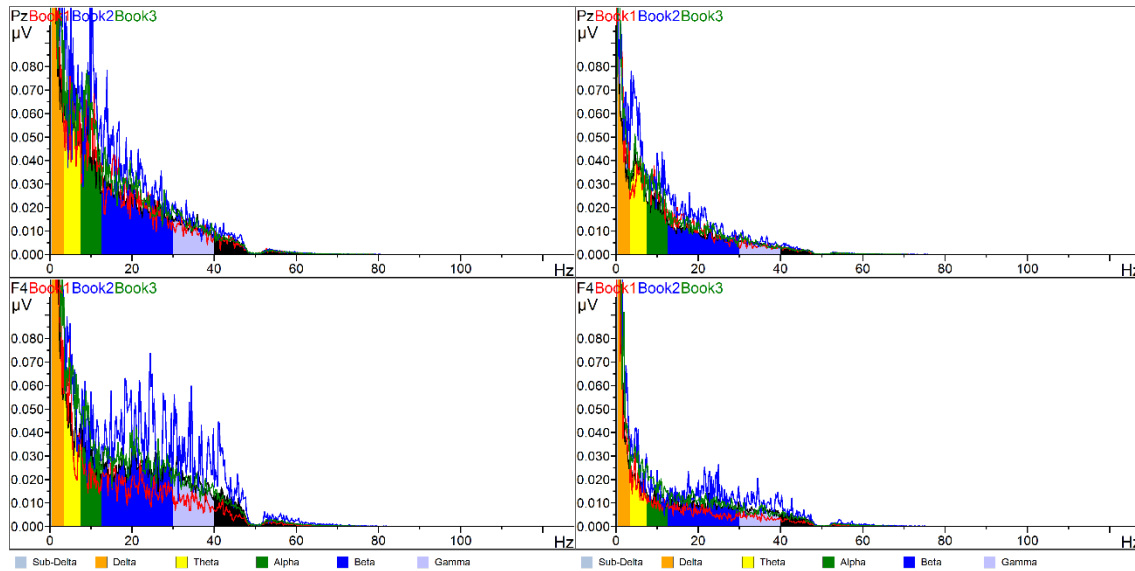


Figure 22: Channel PZ and F4, while reading fanfiction (left) and original (right). No colour = has not read any book, red = has read some books, blue = has read all seven books, green = has read all books and additional material.

Figure 22 shows channel PZ and F4 while reading fanfiction and original excerpts. The green line shows the data for participants who have read all books and additional material, blue represents participants who have read all seven *Harry Potter* books, red shows participants who have read some books and the coloured frequencies represent participants who have not read any books. The results show that the power in frequency is lowest for participants who have not read any books or only some. This aligns with the hypothesis, as it is expected that these participants do not feel as immersed in the texts as the other groups. However, frequency power is by far strongest for participants who have read all seven books and not for participants who have read all seven books plus additional materials. It should be considered that a high number of participants that have not read any of the *Harry Potter* books, were familiar with some or all *Harry Potter* movies. Therefore, participants are now grouped depending on their answers on how many *Harry Potter* movies they have seen.

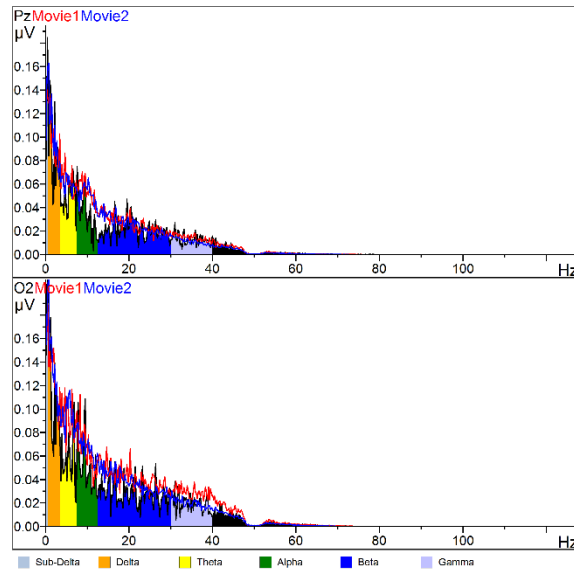


Figure 23: Channel Pz and O2, while reading fanfiction stimuli. No colour = has not seen any movies, red = has seen some movies, blue = has seen all movies

Figure 23 shows the data while reading fanfiction stimuli. The blue line represents participants who have seen all movies, red refers to participants who have seen some movies and no colour represents participants who have not seen any movies. Significant differences in frequency band power are visible between participants who have not seen any movies and participants who have seen some or all *Harry Potter* movies. These differences in frequency band power are most visible in theta, alpha and beta frequencies, but not so much in gamma and delta. However, it should be kept in mind that only two participants have not seen any *Harry Potter* movies and thus the n for this group is too small to make a statistically relevant statement.

13.4. Hypothesis IV: Differences in Frequency depending on Genre Preferences

It is assumed that differences in frequencies might occur depending on the participant's genre preferences. In this analysis, however, it should be kept in mind that the distribution of the groups is rather uneven. Only four subjects claim to have read fanfiction or parodic texts within the last 12 months, while 36 subjects did not do so during this period of time. A comparison with such varying group sizes is hence not optimal and the n of the group reading fanfiction or parody is too small. However, since this data has been collected, it is reasonable to look at the electroencephalographic data with the consideration of genre preferences, but the results should be taken with a degree of caution.

First, the subjects are divided into a group of participants who have read fanfictions within the last 12 months and a group that has not and a grand average is conducted over these two groups.

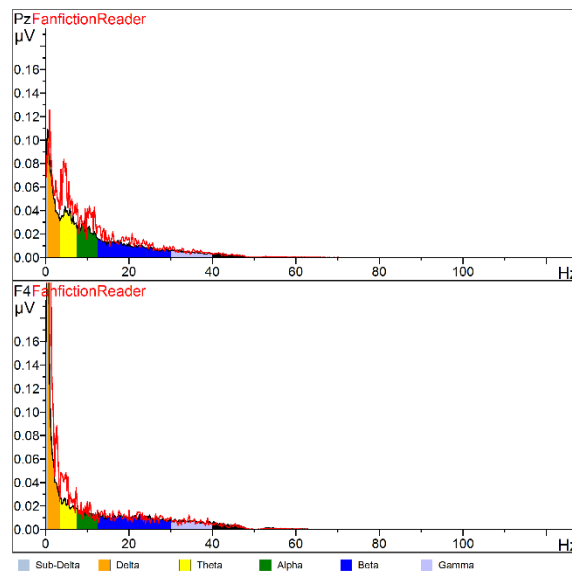


Figure 24: Channel PZ and F4, while reading original stimuli. Subjects who have not read fanfictions within the last 12 months and subjects who have (red)

Figure 24 shows the FFT for subjects who have stated that they have read fanfictions within the last 12 months in red and the other group is visualized in colour, while reading original stimuli. It is visible that small differences can be detected in theta and partly in delta frequency bands. However, no major differences seem to be visible in the other frequency bands. The same observation is true for subjects while reading fanfiction and bad fiction stimuli.

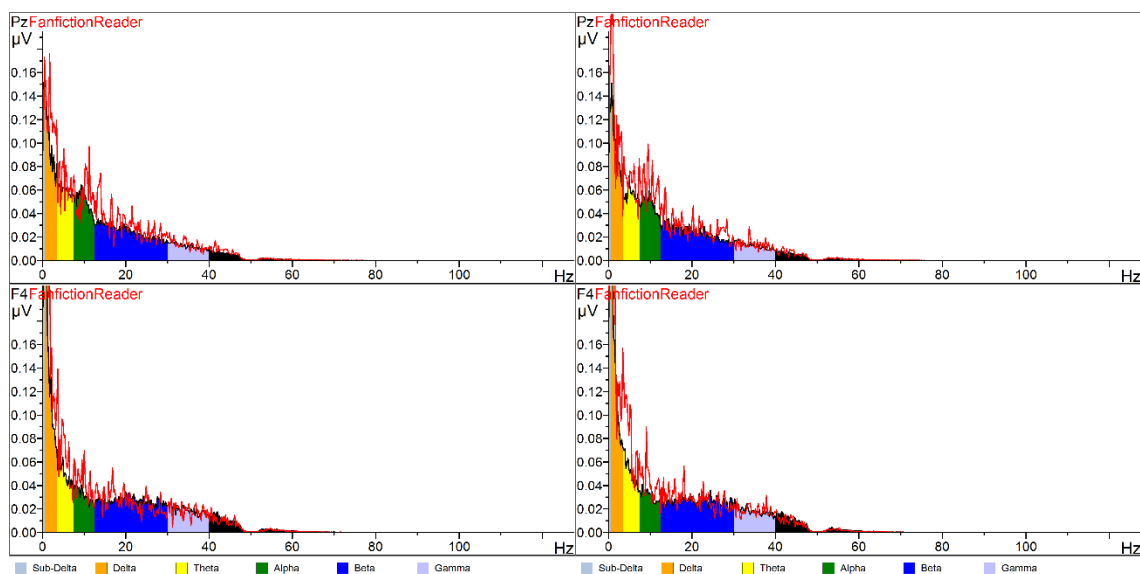


Figure 25: Channel PZ and F4, while reading fanfiction (left) and bad fiction (right). Subjects who have not read fanfictions within the last 12 months and subjects who have (red)

As Figure 25 shows, lower frequencies seem to be slightly more powerful for fanfiction readers in most channels and for both text stimuli. However, higher frequencies seem to be similar for both subgroups. Since the two groups are different in size, it cannot be clearly determined if this is an actual difference or if it is due to varying group sizes.

The same method of analysis is replicated for the genre parody/trash, where four people stated that they have read this genre within the last 12 months. The results look very similar to the analysis done before, as again no major differences between stimuli could be noticed. However, subjects stating that they have read parody within the last 12 months seem to have more power within lower frequency bands over all stimuli. It should be noted that two out of four subjects who have read parody or trash within the last 12 months are also in the group of participants who have read fanfiction within the last 12 months. Therefore, results are not particularly conclusive, as the group of fanfiction and parody/trash readers is not very dissimilar. Lastly, subjects are divided in groups on whether they have read humoristic texts within the last 12 months. The group of participants who have read this genre during the last year consists of nine subjects, of which a total of six has either been in one or both of the previous genre preference analyses.

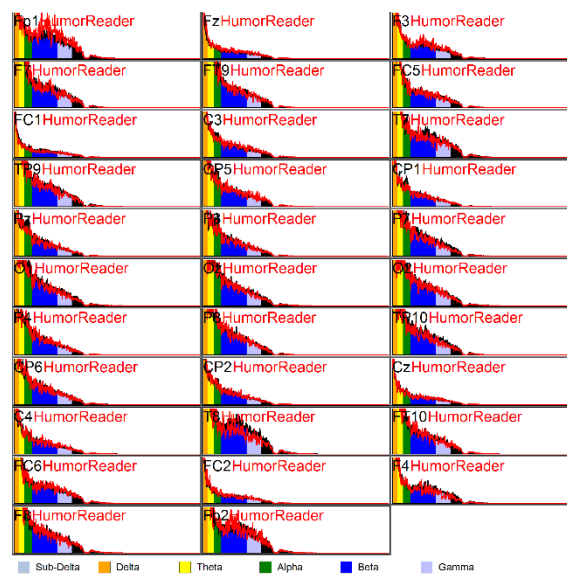


Figure 26: All channels while reading bad fiction. Subjects who did not read humour/satire over the last 12 months and subjects who have (red)

The results between the two groups and all stimuli look very similar and no significant difference can be detected. Figure 26 shows this observation for bad fiction stimuli, where it was assumed that people who have read humoristic texts within the last 12 months would react stronger or differently to the text stimuli. This cannot be verified in this experiment, as small or no differences can be detected between these two groups.

14. Eye-Tracking: Results

In this analysis regressions of different stimuli are compared. First, the absolute number of saccades for each stimuli type is calculated. Within the [SR Research software](#), regressions are counted as saccades as well, thus the absolute number of saccades includes all regressions. It is possible to create a regression report, where the absolute number of regressions for areas of interest is calculated. Each word is a separate

area of interest and thus the absolute number of regressions in and out of areas of interest, represents the absolute number of regressions made while reading a certain stimulus. Next the percentage of saccades that are regressions is calculated for each stimulus type.

Stimulus	Saccade count	Regression In count	Regression Out count	Regressions count total	Regressions in %
bad fiction	34252	3991	4024	8015	23%
fanfiction	29056	3340	3404	6744	23%
original	225098	29383	29796	59179	26%

Table 1: Overview of saccades and regressions for the individual genres

Unexpectedly, bad fictions do not have the highest number of regressions. The data shows approximately 23 % of all saccades are regressions for bad fiction and fanfiction. Original text stimuli have the highest number of regressions with 26 %. However, a difference of 3 % is not significantly large, but the hypothesis that more regressions are made while reading bad fiction cannot be verified.

Next, fixations made during the three stimuli types are compared. First, the total number of fixations for each stimulus type is calculated and then the average number of fixations per trial is calculated. The results in Table 2 show clearly that the average number of fixations is highest for bad fictions, with approximately 63 fixations per trial. While reading fanfiction, participants made approximately 53 fixations per trial and around 51 fixations were made while reading original stimuli. Even though the number of fixations per trial differs significantly, the average fixation duration is similar for each stimulus type. Fixations are on average around 202 msec. long when reading original stimuli and bad fiction, and around 198 msec. long when reading fanfiction.

Stimulus Type	Number of fixations	Number of trials	Average number of fixations per trial	Fixation Duration	Average Fixation Duration in msec. per trial
bad_fiction	34719	555	62,55675676	112311	202,3621622
fanfiction	29517	555	53,18378378	109857	197,9405405
original	228757	4440	51,52184685	900319	202,7745495

Table 2: Overview of fixation and fixation duration for the individual genres

15. Interpretation

15.1. EEG

The analysis of the three different stimuli types clearly shows that differences in frequency power while reading original text stimuli and not original text stimuli could be detected. This indicates that participants perceive differences between original and non-original *Harry Potter* texts. However, no difference between fanfictions and bad fictions could be detected. It seems that the distinction between original and non-

original is sufficient to produce more powerful frequencies in the subjects. This is an interesting result and further studies in this area could be promising.

Even though the reception of bad fiction and fanfiction seems to be similar in many senses from a frequency analysis perspective, differences in perception could be detected on whether participants described bad fictions in a positive or a negative way. Participants who have described bad fictions in a positive way, and thus most likely enjoyed reading them, have significantly less powerful beta and gamma frequency bands. This might be due to the fact that participants disliking bad fictions get aroused while reading them. In contrast to participants who enjoy reading bad fiction, they used keywords like *uncomfortable* or *alienated* to describe their feelings. Furthermore, this aligns well with the fact that beta bands present arousal and gamma bands high vigilance.

No differences in topography while reading different stimuli types could be detected. However, this could be due to the reason that 1. EEG is not very reliable in topography and 2. the data is averaged multiple times. Subjects might react in different areas of the brain and when making an average this information could be lost. In order to have a proper topographical analysis first multiple conditions need to be tested with one subject to see what a typical reaction looks like, which has not been done in this experiment. For instance, there are major differences in topography between right- and left-handed subjects which is not considered in this average (Amthor, 2019, p. 119).

Results on genre preference and *Harry Potter* background knowledge did show some differences. However, it is not possible to make statistically valid statements on these, as some of the subgroups are too small for comparison. There seem to be some differences between participants who have background knowledge on *Harry Potter* and those who do not, however, only two participants have never read any of the books nor seen any of the movies. Differences in genre preferences do not seem to make any significant differences in perceiving the text stimuli. This might be due to the fact that a person enjoying a certain text type does not necessarily have to read these types of texts on a regular basis. For instance, only a small number of participants stated that they read parody/trash literature within the last 12 months, whereas a comparably much higher number of participants described bad fictions with positive keywords. The results do not show significant differences in the perception of any text stimuli type depending on genre preference.

15.2. Eye-Tracking

The eye-tracking data shows the highest number of regressions while reading original text stimuli, followed by fanfiction and then bad fiction. However, the numbers are very close to each other and thus the differences are not significant. Nevertheless, these results are surprising, as it was expected that participants would do more regressions while reading bad fiction.

The average number of fixations per trial differs significantly in bad fictions compared to both other text stimuli types. This indicates that more ‘breaks’ are needed from the participants to process information from this text stimuli type. The difference between bad fictions and the other text stimuli is remarkable. The average fixation duration is similar in all text types. As discussed, longer fixation durations might occur with low frequency words, as the participant needs more time to process the words. This indicates that the participants do not struggle with identifying the words used in bad fictions, but rather the content.

These results further confirm that combining eye-tracking and EEG in an experimental setup offers many advantages. The EEG data itself shows small differences in frequency power between fanfiction and bad fiction and significant differences between original and non-original text type. The Eye-Tracking data, however, shows significant differences in fixation time only in bad fiction compared to other text stimuli. This indicates that bad fiction is harder to process while reading compared to fanfiction, perhaps due to words that are unpredictable from the context. On a neural level, however, the differentiation between original and non-original is more important, as frequency power differs between these text types significantly.

16. Conclusion and Outlook

The aim of this thesis was to discuss the question of the reception of bad fiction, which was made possible by the experiment that was conducted. In the first chapter, a theoretical overview of the topic of fanfictions and especially bad fictions was given. Although bad fictions are an independent genre, some parallels to the already established genre of trash could be drawn. Additionally, it was found in these chapters that bad fictions are either received in a very positive or a very negative way, which can be proven by the analysis of the experiment data.

Chapters 6 and 7 presented in detail the measurement instruments used and what to consider when working with an eye tracker and an EEG. Here, the eye movements to be measured, namely fixation, saccade and regression, were described, which are of importance for the analysis of the data. With the EEG, on the other hand, the neuronal activity is measured, the possibilities of evaluation, explicitly the evaluation of neural time series data, were presented.

Chapter 8 presented the pilot study that had already been conducted and the changes that were subsequently made. These included, for instance, the addition of further text stimuli and a modified eye-tracking system. The final experiment design was presented in chapter 9. This is divided into the recording of eye-tracking and EEG data, as well as a questionnaire, which has been presented in this chapter as well. The

questionnaire is structured into experiment specific questions, reading knowledge questions, and additionally metadata was collected.

Chapter 10 describes the experiment procedure, focusing primarily on aspects that need to be taken into account when working with test subjects. Suggestions for improvement for future experiments were given here, such as mentioning the use of blunt syringes to participants beforehand, as well as tips for future experiment leaders, such as playing music during electrode filling to help relax participants.

In Chapter 11 the data collected from the questionnaire was analysed. First, the metadata collected was evaluated and, in a next step, the keywords used to describe the reception of bad fictions were analysed. It was noticed that strongly negative or strongly positive emotion words were used and that a large part of the test subjects described bad fictions as "confusing". In addition, it could be observed that a part of the test participants could recognize bad fictions as a form of fanfictions. Next, prior knowledge of *Harry Potter* films and books was summarized, and it was found that only two subjects knew neither the films nor the books. Subsequently, the answers of the genre preferences were evaluated, whereby the focus was on genres in relation to trash literature or fanfictions.

In chapter 12 pre-processing of the EEG data was explained in detail. First, triggers were renamed, an Infinite Impulse Response filter was applied and eye blinks were removed using Ocular Correction ICA. Subsequently, bad electrodes were removed from the data set and artefacts were identified as such. Next, the data was segmented into originals, fanfiction, and bad fiction, and trials with artefacts were not included. These segments were then divided into trials of equal length, which were averaged to produce an average per subject and per genre. These averages were then transformed into the time-frequency domain using Fast Fourier Transformation.

After the EEG data has been cleaned, the previously established hypotheses could be examined in chapter 13. First, the hypothesis that frequencies are most powerful during the reading of bad fiction was reviewed. On the one hand, this could be confirmed by the collected data, but on the other hand, the reception of fanfictions shows similarly strong frequencies. Thus, the distinction between original and non-original seems to be essential in reception. Next, the hypothesis of topographical differences in reading bad fictions depending on whether one likes or dislikes the genre was examined. This hypothesis was based on an observation within the pilot study with two subjects. However, the hypothesis could not be generalized and no topographic differences were found. Next, the hypothesis that subjects who know the original *Harry Potter* works would respond differently to the stimuli was investigated. Although subjects who knew the originals showed significantly higher frequencies, the result is statistically limited because the group of subjects who did not know the originals is too small. Finally, the reception of the stimuli was analysed

according to the response given for genre preferences, whereby the problem of too small groups was again problematic, so that no statistically meaningful statement can be made.

In chapter 14, the eye-tracking data was analysed in terms of number of regressions and fixations related to the three genres investigated. The number of regressions was comparable in all stimuli, while the number of fixations was significantly higher when reading bad fictions compared to the other stimuli. The increased number of fixations suggests that subjects had to process more information. In addition, this result confirms that the combination of eye-tracking and EEG is indeed reasonable.

With the existing data set, further forms of analysis are possible, which, however, would exceed the scope of this thesis. First of all, pupillometry could be included, i.e. the change of pupil size during reading, as this can provide additional important information about emotional reactions. Another analysis could be related to Event Related Potentials, abbreviated as ERP. As mentioned earlier, EEG analyses can be generally divided into frequency analyses and ERP analyses. Here, certain amplitudes occur as responses to certain types of stimuli. A well-known example of an ERP is the P300. This amplitude occurs when something unexpected happens and has its peak in the positive range 300 msec. after the presentation of the stimulus (Luck, 2014, p. 5). It would be conceivable that such a component occurs at the first bad fiction because the content is unexpected. For this, one would naturally have to define an event for each stimulus, from which this amplitude is examined, for example after the first regression.

Another possible investigation based on the data would be further inclusion of the author recognition test. This gives information about the reading skills of the test subjects to a certain degree. One could therefore examine the reading skills on the one hand with the EEG to determine whether the immersion in the text could be different and on the other hand the eye-tracking data and pupil size. Differences in reading behaviour at the level of saccades, fixations, and regressions are to be expected, but it is unclear to what extent this would apply to pupillometry.

Additionally, a further experiment to investigate original and non-original would be conceivable. There are numerous fanfictions on other books of various genres, making the implementation of such a study feasible. The EEG data suggest that these literary domains are differently stimulated and further research in this area is conceivable. Therefore, it could be investigated whether the different perceptions occur on the content level of the text or whether the writing style of the fanfiction authors leads to these different receptions.

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18. Appendix

18.1. Overview of removed Electrodes

Participant	ICA	Removed Electrodes	Other
P01	Fp1		
P02	Fp1		
P03	Fp1		
P04	Fp1		T8 partly problematic
P05	Fp2		T8 partly problematic
P06	Fp1		
P07	Fp1	F7	
P08	Fp2		
P09	Fp1		
P10	Fp1		
P11	Fp1		
P12	Fp1		T7 partly problematic
P13	Fp1	TP10	
P14	Fp1		First three triggers had to be removed, as the experiment had to be stopped at that point to reposition the participant
P15	Fp1		
P16	Fp1		Oscillations sometimes seem problematic
P17	Fp1		
P18	Fp2		Might be removed completely
P19	Fp1		
P20	Fp1		
P21	Fp1		
P22	Fp2		
P23	Fp1	F8	Fp2 partly problematic
P24	Fp1		T8 partly problematic
P25	Fp1		
P26	Fp1		
P27	Fp1	TP10	
P28	Fp2		T7 partly problematic
P29	Fp1		T7 and T8 partly problematic
P30	Fp1		T8 partly problematic
P31	Fp1	TP9, P7, P8	
P32	Fp2		Fp1 partly problematic
P33	Fp1		
P34	Fp1		
P35	Fp2		
P36	Fp1		First three triggers had to be removed, as the experiment had to be stopped at that point to reposition the participant
P37	Fp1		
P38	Fp2		
P39	Fp1		
P40	Fp1		

Table 3: Overview of removed electrodes

18.2. Text Stimuli used in the Experiment

Passage	Texttype	Question	Expected answer	Reference
Ron beugt sich zu Harry und sah ihn kritisch an. "Sie ist deine Halbschwester, weil dein Vater ein Frauenheld war und alles gebumst hat, was nicht bei drei auf dem Baum war." Harry überlegte kurz, warum er überhaupt mit Ron befreundet ist.	Badfiction	Hat Harry eine Halbschwester?	Ja	(ana aka Kirsche, 2021)
"John und Mary Perkins haben Sie großgezogen wie ein eigenes Kind, aber sie sind nicht Ihre Eltern. Ihre Eltern sind Lord Voldemort und Professor McGonagall, so dass Sie die letzte Nachfahrin von Salazar Slytherin und Godric Gryffindor sind und die einzige, die den dunklen Lord besiegen kann."	Badfiction	Haben Lord Voldemort und Professor McGonagall in dem letzten Textausschnitt ein Kind?	Ja	(Aramyntha, 2010)
Cedric wechselte seine Kleidung nicht mehr, wusch sich nicht mehr und verwahrloste. Aufgrund mangelnder Körperhygiene fing er an, ganz fürchterlich zu stinken, bis Cho ihn in den Schwarzen See schmiss, um ihn zu waschen. Aber auch das half nichts mehr und so war es eine große Erleichterung, als er endlich starb.	Badfiction	Stirbt Cedric in dem letzten Textausschnitt?	Ja	(Noctua, 2014)
Viel interessanter waren im Moment Snape und Malfoy, die Händchen haltend vor ihm hergingen. Harry fand, dass sie ein süßes Paar waren. Der Kontrast der schwarzen Haare des einen und der blonden Haare des anderen, passten einfach perfekt zusammen. Und auch vom Charakter her waren die beiden ein Traumpaar.	Badfiction	Sind Snape und Harry in dem letzten Textausschnitt ein Paar?	Nein	(x-Hanny-x, 2012)
Hermine ist, als hätte sie in diesem Augenblick alles Schreckliche auf der Welt auf einmal gesehen. Doch es kommt noch schlimmer: Auf der Rückseite ist eine Notiz für sie! Sie liest sie durch, während ihre Nackenhaare sich aufstellen. Wie kann das sein? Draco ist verliebt in sie?	Badfiction	Ist Snape im letzten Textausschnitt in Hermine verliebt?	Nein	(DeinSchicksal, 2018)
Und mit diesen Worten ließ er die Feuerwände, die Voldemort immer noch umgaben, komplett verschwinden. Albus stürzte sofort auf Tom Riddle zu und küsste ihn stürmisch. In Harry regte sich etwas wie Eifersucht, doch er sagte sich: "Es ist nur um Albus glücklich zu machen. Und wenn er glücklich ist, bin auch ich glücklich."	Badfiction	Küssen sich Harry und Tom Riddle im letzten Textausschnitt?	Nein	(x-Hanny-x, 2012)
"Mein lieber Junge!", hob Dumbledore seinen eiförmigen Kopf und strahlte zu Harry hoch, der einen Satz zurück machte: Seit wann war der Schulleiter kahl, runzlig und einzähmig? Und wieso prosternierte er sich vor einem gigantischen Kürbiskernbonbon?	Badfiction	Ist Dumbledore im letzten Textausschnitt kahl, runzlig und einzähmig?	Ja	(Iiraien, 2006)
Harrys Hand fuhr zu den Haaren des ehemals alten Mannes und er strich ihm eine Strähne aus dem Gesicht, nur um gleich darauf seine Lippen ungestüm auf die des Anderen zu drücken. Es wunderte ihn, dass Dumbledore den Kuss erwiderte.	Badfiction	Küssen sich Harry und Dumbledore im letzten Textausschnitt?	Ja	(x-Hanny-x, 2012)
Da hört er plötzlich eine liebliche, lockende Stimme: "Hermiiiiine! Mein Schnuckelputz!" Und es legen sich zwei sanfte Hände über seine Augen. Erschrocken fährt er herum. Dort steht Ron und starrt ihn erschrocken an. "Warte mal...", sagt er. "Bist du das, Hagrid? Du siehst aus wie Hermine!"	Badfiction	Sieht Hagrid im letzten Textausschnitt aus wie Hermine?	Ja	(DeinSchicksal, 2018)
Wusste dieser doch, dass das Schicksal der gesamten magischen Welt davon abhing, dass aus Florinella, die bis eben einfach noch ein wunderschönes, hochintelligentes Mädchen mit goldenem Haar und Augen, die ihre Farbe je nach Stimmung und Wetterlage veränderten, war, die Geheimwaffe zum Endschlag gegen Voldemort wurde.	Badfiction	Wird Florinella als unattraktive Frau beschrieben?	Nein	(Aramyntha, 2010)
Liebste Hermine, ich freue mich sehr darauf, dich bald zu treffen. Das Wiesel ist deiner nicht würdig. Schätze dich glücklich, meine Feinste. In Liebe und Anbetung, dein gutaussehender Schnuckel Draco. P.S.: Ich hoffe das Foto mit meinem bedeutungsvollen, anziehenden Blick gefällt dir und sagt dir mehr als meine Worte.	Badfiction	Schreib Draco einen Liebesbrief an Luna?	Nein	(DeinSchicksal, 2018)
Draco hingegen ist entsetzt über die Verfettung seiner angebeteten Hermine. "Aber man kann es wieder abtrainieren!", versucht er sich zu trösten. "Komm jetzt endlich ins Wasser!", bittet Draco Hagrid alias Hermine, jetzt schon nicht mehr ganz so überzeugt.	Badfiction	Ist Hermine im letzten Textabschnitt übergewichtig?	Ja	(DeinSchicksal, 2018)
"Severus' Fluch konnte mir natürlich nichts anhaben, doch die Landung nach diesem Fall hätte mich umgebracht. Wenn Tom mich nicht aufgefangen und somit gerettet hätte. Ich weiß, was du	Badfiction	Rettet Tom jemanden?	Ja	(x-Hanny-x, 2012)

über ihn denkst: Mörder, Rassist... Doch es stimmt nicht. Das alles waren nur Gerüchte!"				
Und es zog ihn hin zu ihm mit Macht, und er spürte die Wärme seines Körpers und den herben Geruch nie gekannter Salben. Und sie sahen, dass es gut war. Bis Ron sich auf einem Arm hochstemmte und sagte: "Harry. Du stinkst nach ranzigem Schaf."	Badfiction	Riecht Harry nach Schaf?	Ja	(Iiriae, 2006)
Snape trat noch ein paar Mal nach Sirius, dann richtete er sich zu voller Größe auf. "Ehrwürdiger Abt", presste er hervor, "Gott vergebte ihm, aber ich habe Euren Bruder Cellerar der Ketzerei überführen können: Frau Sirius hat sich an Eurem Busen genährt wie die Schlange im Garten."	Badfiction	Kam in dem letzten Textausschnitt Harry vor?	Nein	(Iiriae, 2006)
Schon immer war Hermine ein kluges Mädchen gewesen. Bereits als kleines Kind hatte sie immer allen Dingen auf den Grund gehen wollen, und im Kindergartenalter hatte sie angefangen zu lesen. Der Kindergarten selbst hatte ihr nicht besonders gefallen.	Fanfiction	Spielt der letzte Textausschnitt in der Hermines Schule?	Nein	(romi, 2021)
Der Junge war umgeben von Parselmagie. Und es war keine zufällige Kindheitsmagie. So funktionierte Parsel einfach nicht. Man musste sehr, seeehr genau wissen, was man tat. Und genau das war es, was Quirinius nicht verstand. Potter konnte es nicht geerbt haben.	Fanfiction	Geht es in dem letzten Textausschnitt um Parsel Magie?	Ja	(100alanna, 2021b)
Der Boden des Raumes war kariert. Ron ging ein Licht auf und er fing an zu grinsen. "Schach!", rief er, "wir müssen uns durch den Raum spielen!" Die Freude in seiner Stimme war kaum zu überhören. Hermine wandte ein, dass es bestimmt eine Tücke gäbe und dass Zauberschach sowieso total barbarisch war.	Fanfiction	Geht es in dem letzten Textausschnitt um ein Mensch-Ärgere-Dich-Nicht Spiel?	Nein	(Kaktus Hermine, 2021)
Heute war es soweit. Die Weasleyzwillinge hatten mehrere Wochen an einer besonderen Stinkbombe gearbeitet. Sie sollte wie ein Feuerwerk bunte Funken versprühen und hatte einen Timer. Ihr Ziel war es, die Bombe in Umbridges Büro zu platzieren.	Fanfiction	Basteln die Weasley Zwillinge einen Wasserballon?	Nein	(LeseMaedchen, 2021)
"Evans?", sie zuckte so heftig zusammen, dass der ganze Schnee, der sich auf dem Weg zu den Quidditchumkleideräumen auf ihrem Umhang gesammelt hatte, an ihr hinab Richtung Boden segelte. Sie kannte die Stimme, die gesprochen hatte.	Fanfiction	Spielt der letzte Textausschnitt in der Quidditch Umkleide?	Ja	(Buntstiftchen, 2021)
Er lief ohne anzuhalten in den Wald hinein und die beiden Schüler beeilten sich aufzuholen. Fast eine halbe Stunde liefen sie schweigend durch das Dickicht. Nichts fiel sie an und dank des hellen Vollmondes war es auch nicht stockfinster.	Fanfiction	Spielt der letzte Textausschnitt im Wald?	Ja	(Mountain12345, 2021a)
"Wingardium Leviosa!", rief Filch und deutete mit seinem Zauberstab auf ein Kissen. Dieses bewegte sich jedoch kein Stück. Bringt dieser Kwikzauber-Kurs überhaupt etwas? fragte er sich zum wiederholten Male. Er übte nun schon vier Wochen und noch nie hatte ein Zauber funktioniert.	Fanfiction	Kann Filch zaubern?	Nein	(LeseMaedchen, 2021)
Doch die Großinquisitorin ließ es sich nicht nehmen ihrer Kollegin auf Schritt und Tritt zu folgen. "Mrs. Johnson, Sie müssen den Zauberstab etwas schräger halten", sagte die Professorin gerade als Umbridge sich räusperte. Langsam nervte dieses rosa Monster die sonst so geduldige Minerva.	Fanfiction	Ist Minerva von Professor Umbridge genervt?	Ja	(LeseMaedchen, 2021)
"Es tut mir sehr leid, Professor. Ich habe nicht nachgedacht.", sagte Lily Evans schuld bewusst und bohrte ihre Fingernägel in den Stoff ihrer Robe. "Das ist mir klar, Miss Evans. Was haben Sie sich bloß dabei gedacht, Mitten in der Nacht auf den Astronomieturm zu klettern und dazu noch ohne Aufsicht?!"	Fanfiction	Ist Lily Evans im letzten Textausschnitt in den verbotenen Wald gegangen?	Nein	(Mountain12345, 2021a)
Draco lag seit einigen Stunden unter seiner dunkelgrünen Bettdecke im Malfoy Manor und konnte nicht einschlafen. Emotionslos starrte er an die Decke und versuchte, das Chaos in seinem Kopf zu ordnen. Das Gedankenkarussell hinter seiner Stirn fuhr seit einer Ewigkeit.	Fanfiction	Befindet sich Draco im Malfoy Manor?	Ja	(Josyy, 2021)
Zusammen mit Gellert lief ich über den Vorgarten unseres Hauses. Dicke Regentropfen fielen auf unsere blauen Kapuzenmäntel und durchnässten uns bis auf die Knochen. Seit einem Monat nun war ich mit ihm unterwegs gewesen. Wir hatten die schönsten Städte der Welt besucht. Rom, Paris, Athen und Venedig.	Fanfiction	Regnet es im letzten Textausschnitt?	Ja	(Mountain12345, 2021b)
Heute sollen sie mir den Trank der Lebenden Toten brauen. Ich weiß natürlich, dass sie das schon einmal gemacht haben. Doch da ich hier überwiegend Dummköpfe in der Klasse habe und der festen Überzeugung bin, dass ihr Spatzenhirne das schon wieder vergessen habt, wiederholen wir das heute.	Fanfiction	Wird die Schulklasse als intelligent beschrieben?	Nein	(LeseMaedchen, 2021)

Die Sonne schien gleißend hell von einem strahlend blauen Himmel auf den großen Garten des Black-Anwesens. Sirius Black, der älteste Sprössling, streckte sein Gesicht eben dieser Sonne entgegen und genoss die Wärme, welche von ihr ausging.	Fanfiction	Regnet es im letzten Textabschnitt?	Nein	(Traumfabrik, 2021)
Minerva drehte sich um und betrat gefolgt von den Erstklässlern die Halle und führte sie vorne zum Lehrertisch wo, wie schon angekündigt, ein Hocker mit dem Sprechenden Hut stand. Minerva zog eine Rolle Pergament aus ihrer Tasche und rief nach der Reihe die Schüler auf.	Fanfiction	Geht es im letzten Textausschnitt um Dumbledore?	Nein	(Schaefchen2611, 2021)
Aber egal was auch immer die Gründe waren, Lilly war eine brillante Hexe. Sie fand viele Freunde unter ihren Jahrgangskollegen und darüber hinaus. Sie scherte sich nicht um die Hauszugehörigkeit. Ihr war es egal, ob die anderen Gryffindor, Hufflepuuff, Ravenclaw oder, Merlin bewahre, Slytherins waren.	Fanfiction	Legt Lilly wert auf Hauszugehörigkeit?	Nein	(100alanna, 2021a)
"Klar", sagte Harry, gespannt darauf, mehr von Hagrids Zauberkünsten zu sehen. Hagrid zog den rosa Schirm hervor, schlug ihn zweimal sachte gegen die Seitenwand des Bootes, und schon rauschten sie in Richtung Küste davon.	Original	Hat Harry in dem Textausschnitt Magie eingesetzt?	Nein	(Hsu, 2014)
Harry ergriff den Zauberstab. Plötzlich spürte er Wärme in den Fingern. Er hob den Stab über den Kopf und ließ ihn durch die staubige Luft herabsausen. Ein Strom roter und goldener Funken schoss aus der Spitze hervor wie ein Feuerwerk, das tanzende Lichtflecken auf die Wände warf.	Original	Hat Harry in dem Textausschnitt einen Zauberstab benutzt?	Ja	(Hsu, 2014)
Wieder fuhren sie eine Rolltreppe hoch, und hinaus ging es auf den Bahnhof Paddington. Harry erkannte erst, wo sie waren, als Hagrid ihm auf die Schulter klopfte. "Haben noch Zeit für einen Imbiss, bevor dein Zug geht", sagte er.	Original	Sind Harry und Hagrid in dem Textausschnitt am Bahnhof?	Ja	(Hsu, 2014)
Hagrid half Harry in den Zug, der ihn zu den Dursleys zurückbringen würde, und reichte ihm dann einen Umschlag. "Deine Fahrkarte nach Hogwarts", sagte er. "Am 1. September Bahnhof King's Cross - steht alles drauf."	Original	Geht der Zug, in den Harry in dem Textausschnitt einsteigt, nach Hogwarts?	Nein	(Hsu, 2014)
Die Abteiltür glitt auf und der jüngste der Rotschöpfe kam herein. "Sitzt da jemand?" fragte er und deutete auf den Sitz gegenüber von Harry. "Der ganze Zug ist nämlich voll." Harry schüttelte den Kopf und der Junge setzte sich.	Original	Findet die Szene im letzten Textausschnitt im Zug statt?	Ja	(Hsu, 2014)
Harry, sagte der andere Zwilling, "haben wir uns eigentlich schon vorgestellt? Fred und George Weasley. Und das hier ist Ron, unser Bruder. Bis später dann. "Tschau", sagten Harry und Ron. Die Zwillinge schoben die Abteiltür hinter sich zu.	Original	Lernt Harry in dem letzten Textausschnitt Hermine kennen?	Nein	(Hsu, 2014)
"Eben so", sagte er leicht verärgert. Er packte sein linkes Ohr und zog daran. Sein ganzer Kopf kippte vom Hals weg, als ob er an einem Scharnier hinge, und fiel ihm auf die Schulter. Offensichtlich hatte jemand versucht ihn zu köpfen, aber das Geschäft nicht richtig erledigt.	Original	Geht es im letzten Textabschnitt um Exekution?	Ja	(Hsu, 2014)
Sie lasen ihre Briefe und ein paar Minuten herrschte Stille. In Harrys Brief hieß es, er solle wie üblich am ersten September den Hogwarts-Express vom Bahnhof King's Cross nehmen. Auch eine Liste der Bücher fürs folgende Schuljahr war enthalten.	Original	Hat Harry im letzten Textabschnitt einen Brief gelesen?	Ja	(Hsu, 2014)
Harry, Ron, George und Fred wollten zu einer kleinen Pferdekoppel der Weasleys auf dem Hügel hinter dem Haus. Sie war von Bäumen umgeben, die die Sicht vom Dorf unten versperrten, und solange sie nicht zu hoch flogen, konnten sie dort Quidditch üben.	Original	Wollte Harry und die Weasley-Brüder Quidditch spielen?	Ja	(Hsu, 2014)
Die Wagenräder glitten durch das flaumige Wolkenmeer, der Himmel war ein helles, endloses Blau unter der blendenden Sonne. Sie fühlten sich wie inmitten eines phantastischen Traums. Das ist die einzig wahre Art zu reisen, dachte Harry.	Original	Ist Harry in dem letzten Textausschnitt geflogen?	Ja	(Hsu, 2014)
Er bestieg seinen Besen, stieß sich vom Boden ab und sauste hoch in die Lüfte. Die kühle Morgenluft peitschte ihm ins Gesicht und weckte seine Lebensgeister. Ein wunderbares Gefühl, wieder auf dem Quidditch-Feld zu sein. Mit vollem Karacho sauste er um das Stadion und jagte Fred und George hinterher.	Original	Ist Harry in dem letzten Textausschnitt auf dem Besen geflogen?	Ja	(Hsu, 2014)
Von Grauen gepackt sah Harry, wie sich der Mund öffnete, immer weiter, und ein riesiges schwarzes Loch freigab. Etwas Riesiges klatschte auf den steinernen Boden der Kammer und ließ ihn erzittern. Harry wusste, was geschah, er konnte es spüren, konnte fast sehen, wie die Schlange sich aus Slytherins Mund herauswand.	Original	Kam in dem letzten Textausschnitt eine Schlange vor?	Ja	(Hsu, 2014)

Die Schlange schlug mit dem Schwanz aus und verfehlte Harry nur knapp - er blickte ihr direkt ins Gesicht und sah, dass ihre Augen, beide großen kugligen gelben Augen, vom Phönix durchstochen worden waren; Blut floss auf den Boden und die Schlange zischte in tödlicher Qual.	Original	Hat die Schlange Harry in dem letzten Textausschnitt angegriffen?	Ja	(Hsu, 2014)
In diesem Augenblick kam Mrs Weasley in die Bar, beladen mit Einkäufen und gefolgt von den Zwillingen Fred und George, die nun ihr fünftes Jahr in Hogwarts begannen, vom neu gewählten Schulsprecher Percy und vom jüngsten Kind und einzigen Mädchen der Weasleys, Ginny.	Original	Kommen die Malfoys im letzten Textabschnitt vor?	Nein	(Hsu, 2014)
Mit einem Ruck kam der Zug zum Stillstand und fernes Poltern und Krachen sagte ihnen, dass Koffer aus den Gepäcknetzen gefallen waren. Dann, ohne jede Vorwarnung, erloschen alle Lampen und sie waren jäh in schwarze Dunkelheit gehüllt.	Original	Musste der Zug im letzten Textabschnitt rasch bremsen?	Ja	(Hsu, 2014)
Der Zug fuhr weiter nach Norden und der Regen wurde stärker; die Fenster hatten ein undurchdringliches, schimmerndes Grau angenommen, das sich allmählich verdunkelte, bis schließlich die Laternen in den Gängen und über den Gepäcknetzen aufflackerten.	Original	Kommt Hermine in dem letzten Textausschnitt vor?	Nein	(Hsu, 2014)
Eine verummte Gestalt. Das Gesicht war unter einer Kapuze vollständig verborgen. Harrys Blick schoss nach unten, und was er da sah, ließ seinen Magen zusammenkrampfen. Eine Hand lugte unter dem Umhang hervor und es war eine glitzernd graue, schleimige, verschorfte Hand, wie etwas Totes, das im Wasser verwest war...	Original	Gibt es im letzten Textausschnitt eine verummte Gestalt?	Ja	(Hsu, 2014)
Auf dem langen, ansteigenden Weg hoch zum Schloss wurde die Kutsche allmählich schneller; Hermine streckte den Kopf aus dem kleinen Fenster und sah zu, wie die vielen Zinnen und Türme näher kamen. Endlich machte die Kutsche schaukelnd Halt und Hermine und Ron stiegen aus.	Original	Fahren Hermine und Ron Auto in dem letzten Textausschnitt?	Nein	(Hsu, 2014)
Die neuen Schüler in Hogwarts wurden auf die Häuser verteilt. Dazu diente der Sprechende Hut, den sie aufsetzten. Professor McGonagall schritt auf ihren Platz am Lehrertisch zu und Harry und Hermine gingen so unauffällig wie möglich in die andere Richtung zum Tische der Gryffindors.	Original	Ist der letzte Textausschnitt über Quidditch?	Nein	(Hsu, 2014)
Harry und Ron ließen sich die Teetassen füllen und gingen zurück an ihren Tisch, wo sie den brühend heißen Tee so rasch wie möglich tranken. Sie schwenkten die verbliebenen Teeblätter, wie Professor Trelawney gesagt hatte, dann ließen sie den Tee ablaufen und tauschten die Tassen.	Original	Haben Harry und Ron im letzten Textausschnitt Tee getrunken?	Ja	(Hsu, 2014)
Harry, Ron und Hermine kletterten schweigend Professor Trelawneys Leiter und die enge Wendeltreppe hinunter und machten sich auf den Weg zur Verwandlungsstunde bei Professor McGonagall. Sie brauchten so lange, um ihr Klassenzimmer zu finden, dass sie, obwohl sie früh aus Wahrsagen gekommen waren, fast zu spät kamen.	Original	Sind Harry, Ron und Hermine im letzten Textausschnitt auf dem Weg zu Professor McGonagall?	Ja	(Hsu, 2014)
Er hob den Zauberstab auf Schulterhöhe, sagte "Waddiwasi!", und richtete ihn auf Peeves. Mit der Kraft einer Gewehrkegel schoss der Kaugummi aus dem Schlüsselloch und geradewegs hinein in Peeves' linkes Nasenloch; er wirbelte herum und schwebte prustend und fluchend davon.	Original	Kam in dem letzten Textausschnitt ein Zauberspruch vor?	Ja	(Hsu, 2014)
Und dann verstummte die Schar, die vorne Stehenden zuerst, und ein Schaudern breitete sich den Gang entlang aus. Die fette Dame war aus ihrem Gemälde verschwunden und das Bild mit solcher Wut zerschlitzt worden, dass Leinwandfetzen auf dem Boden herumlagen; ganze Stücke waren weggerissen.	Original	Wurde in dem letzten Textausschnitt ein Gemälde zerschlitzt?	Ja	(Hsu, 2014)
Mindestens hundert Dementoren, die verummten Gesichter ihm zugewandt, standen dort unter ihm. Es war, als würde eiskaltes Wasser in seiner Brust aufsteigen und ihm die Eingeweide abtöten. Und dann hörte er es wieder... Jemand schrie, schrie im Innern seines Kopfes... eine Frau.	Original	Kommt in dem letzten Textausschnitt ein Zauberspruch vor?	Nein	(Hsu, 2014)
Wenn sich die Dementoren näherten, hörte er die letzten Momente im Leben seiner Mutter, ihre Versuche, ihn, Harry, vor Lord Voldemort zu schützen, und Lord Voltmorts Gelächter, bevor er sie ermordete... Harry döste ein und schreckte immer wieder hoch, sank in Träume voll feuchtkalter, verrotteter Hände und grauenerfüllten Flehens.	Original	Ist Harry in dem letzten Textausschnitt von tragischen Erinnerungen heimgesucht?	Ja	(Hsu, 2014)
Sie verseuchen die dunkelsten, schmutzigsten Orte, sie frohlocken inmitten von Zerfall und Verzweiflung, sie saugen Frieden,	Original	Ist der letzte Textausschnitt über Quidditch?	Nein	(Hsu, 2014)

Hoffnung und Glück aus der Luft um sie her. Kommst Du einem Dementor zu nahe, saugt er jedes gute Gefühl, jede glückliche Erinnerung aus dir heraus.				
Bei einem Bild von der Hochzeit seiner Eltern hielt er inne. Da stand sein Vater mit dem widerborstigen, in alle Himmelsrichtungen abstehenden tiefschwarzen Haar, das Harry geerbt hatte, und winkte ihm strahlend zu. Und da war seine Mutter, Arm in Arm mit seinem Vater, und sie schwebte fast vor Glück.	Original	Schaut sich Harry in dem letzten Textausschnitt ein Foto von seinen Eltern an?	Ja	(Hsu, 2014)
Dicke Büschel aus Stechpalmzweigen und Misteln zogen sich die Korridore entlang, aus den Rüstungen leuchteten geheimnisvolle Lichter und in der Großen Halle prangten die üblichen zwölf Weihnachtsbäume, an denen goldene Sterne glitzerten. Ein überwältigender und leckerer Geruch aus den Küchen wehte durch die Korridore.	Original	Wird in dem letzten Textausschnitt die Weihnachtsdekoration beschrieben?	Ja	(Hsu, 2014)
"Knallbonbons!", sagte Dumbledore begeistert und bot Snape die Verschnürung eines großen silbernen Bonbons an. Snape packte es zögernd und zog daran. Laut wie ein Pistolknall flog das Knallbonbon auseinander und es erschien ein großer spitzer Hexenhut, auf dem ein ausgestopfter Geier saß.	Original	Kommt Snape im letzten Textausschnitt vor?	Ja	(Hsu, 2014)
Ausnahmslos jeden Abend sah man Hermine in einer Ecke des Gemeinschaftsraums, wo sie gleich mehrere Tische beanspruchte mit ihren Büchern, Arithmantiktabellen, Runenwörterbüchern, und mit stapelweise Ordnern für ihre ausführlichen Notizen.	Original	Wird in dem letzten Textausschnitt Hermines Lernstrategie beschrieben?	Ja	(Hsu, 2014)
Der Dementor nimmt seine Kapuze ab, um seine letzte und schlimmste Waffe einzusetzen. Sie nennen es den Kuss des Dementors. Das tun sie denen an, die sie vollkommen zerstören wollen. Ich vermute, es ist eine Art Mund unter der Kapuze, sie pressen ihr Kiefer auf den Mund des Opfers - und saugen ihm die Seele aus.	Original	Handelt der letzte Textausschnitt von Weihnachten?	Nein	(Hsu, 2014)
Sprachlos trug Harry den Feuerblitz hoch zum Gryffindor-Turm. Als er um die Ecke bog, sah er den von Ohr zu Ohr grinsenden Ron auf sich zurennen. Seit einem Monat war Harry nicht mehr so leicht ums Herz gewesen.	Original	Findet die Szene im letzten Textausschnitt im Wald statt?	Nein	(Hsu, 2014)
Das Team jubelte wie verrückt. Harry ließ den Schnatz wieder los, gab ihm eine Minute Vorsprung, dann jagte er ihm nach, wobei er sich zwischen den andern hindurchschlängelte; er sah ihn nach Katie Bells Knie lauern, drehte lässig einen Looping um sie herum und fing den Schnatz erneut ein. So gut hatten sie noch nie trainiert.	Original	Handelt der letzte Textausschnitt von Quidditch?	Ja	(Hsu, 2014)
Es war, als hätten sie den Quidditch-Pokal schon gewonnen. Den ganzen Tag tobte die Fete und weit hinein in die Nacht. Fred und George Weasley verschwanden für ein paar Stunden und kehrten mit Massen Butterbier, Kürbislimonade und Süßigkeiten aus dem Honigtopf zurück.	Original	Kommen Fred und George im letzten Textausschnitt vor?	Ja	(Hsu, 2014)
Die Osterferien waren nicht gerade erholsam. Neville Longbottom schien einem Nervenzusammenbruch nahe. Doch so viel wie Hermine hatte niemand zu tun. Meist war sie abends die Letzte, die den Gemeinschaftsraum verließ, und am nächsten Morgen die Erste, die in der Bibliothek saß.	Original	Kommt Neville Longbottom im letzten Textausschnitt vor?	Ja	(Hsu, 2014)
Mindestens eine Woche lang schwelgte Harry im Glück. Selbst das Wetter schien ihren Pokalsieg zu feiern. Der Juni brach an, die Wolken verzogen sich und es wurde schwül, und alle hatten nur noch Lust, über die Wiesen zu schlendern und sich mit ein paar Krügen eiskalten Kürbissafts ins Gras zu fläzen.	Original	Passiert die Handlung des letzten Textausschnittes im Winter?	Nein	(Hsu, 2014)
Der reiche Mann, dem das Riddle-Haus inzwischen gehörte, lebte nicht hier und nutzte es auch nicht; im Dorf hieß es, er würde es aus "steuerlichen Gründen" unterhalten, doch keiner wusste so recht, was das heißen sollte.	Original	Kommt in dem letzten Textausschnitt das Riddle-Haus vor?	Ja	(Hsu, 2014)
Über den dunklen Boden des Korridors glitt etwas auf ihn zu, und als es sich dem Lichtstreifen des Feuers näherte, erkannte er mit einem Schauer des Entsetzens, dass es eine gigantische, gut vier Meter lange Schlange war. Versteinert vor Angst starrte Frank auf das Tier.	Original	Ist in dem letzten Textausschnitt eine Schlange vorhanden?	Ja	(Hsu, 2014)
Er knipste die Lampe auf dem Nachttisch an, stieg aus dem Bett, durchquerte das Zimmer, öffnete seinen Schrank und blinzelte in den Spiegel an der Innenseite der Tür. Ein hagerer Junge von	Original	Ist in dem letzten Textausschnitt eine Schlange vorhanden?	Nein	(Hsu, 2014)

vierzehn Jahren schaute zurück, dessen hellgrüne Augen unter dem zerzausten schwarzen Haar leicht verwirrt dreinblickten.				
Einverstanden, sagte Harry strahlend. Er wandte sich um und ging zur Wohnzimmertür, während er gegen die Lust ankämpfte, jauchzend in die Luft zu springen. Er durfte fort... Zu den Weasleys, zur Quidditch-Weltmeisterschaft!	Original	Fährt Harry im letzten Textausschnitt zur Quidditch-Weltmeisterschaft?	Ja	(Hsu, 2014)
Onkel Vernon schnaubte in seinen Schnurrbart. Normalerweise hätte er gefragt, was für ein Auto Mr. Weasley fuhr; andere Männer pflegte er danach zu beurteilen, wie groß und teuer ihre Autos waren.	Original	Kommt in dem letzten Textausschnitt Onkel Vernon vor?	Ja	(Hsu, 2014)
Harry und Ron verdrückten sich aus der Küche und machten sich gemeinsam mit Hermine und Ginny auf den Weg durch den engen Flur und die klapprige Treppe empor, die im Zickzack durch das ganze Haus bis hoch zu den Dachkammern führte.	Original	Ist Hagrid im letzten Textausschnitt dabei?	Nein	(Hsu, 2014)
Mr. Weasley beschwor Kerzen herauf, denn im Garten wurde es allmählich dunkel. Es gab Nachtisch (selbstgemachtes Erdbeereis), und als sie aufgegessen hatten, flatterten Motten tief über den Tisch und der Duft von Gräsern und Geißblatt erfüllte die warme Luft.	Original	Gab es im letzten Textausschnitt Eis zum Nachtisch?	Ja	(Hsu, 2014)
Zu müde, um viele Worte zu wechseln, zogen sie sich rasch an und stiegen unter Gähnen und Ächzen hinunter in die Küche. Mrs Weasley stand am Herd und rührte in einem großen Topf, Mr Weasley saß am Tisch und blätterte einen Stapel großer Pergamentkarten durch.	Original	Findet die Handlung des letzten Textausschnittes im Wald statt?	Nein	(Hsu, 2014)
Schließlich brannte das Feuer, auch wenn es noch mindestens eine Stunde dauerte, bis es groß genug war, um darauf etwas zu kochen. Ihr Zelt schien gleich am Fußweg zum Spielfeld zu liegen, und Leute aus dem Ministerium schritten hastig hin und her und grüßten Mr Weasley im Vorbeigehen höflich.	Original	Wird in dem letzten Textausschnitt ein Feuer angemacht?	Ja	(Hsu, 2014)
Dem Lärm nach zu schließen waren Tausende auf den Beinen, sie hörten ihr Lachen und Rufen und gelegentlich wehte Gesang an ihre Ohren. Die fiebrige Erregung war höchst ansteckend: Harry konnte nicht aufhören zu grinsen.	Original	Kommt Voldemort in dem letzten Textausschnitt vor?	Nein	(Hsu, 2014)
Jeder Zentimeter seiner Haut schien vernarbt zu sein. Der Mund war eine klaffende Wunde, die sich schräg über das Gesicht zog, und ein großes Stück der Nase fehlte. Doch es waren die Augen des Mannes, die einem wirklich Angst einjagten.	Original	Geht es im letzten Textausschnitt um ein Schaumbad?	Nein	(Hsu, 2014)
Sofort falteten sich die Beine der Spinne über ihrem Körper zusammen; sie rollte sich auf den Rücken und begann unter fächerlichen Krämpfen hin und her zu wippen. Sie gab keinen Laut von sich, doch Harry wusste, wenn sie eine Stimme gehabt hätte, dann hätte sie geschrien.	Original	Zieht sich Harry im letzten Textausschnitt eine Mütze auf?	Nein	(Hsu, 2014)
Sobald die goldenen Teller leer geputzt waren, erhob sich Dumbledore von neuem. Die Halle war nun von angenehmer Spannung erfüllt. Harry fragte sich, was wohl kommen würde, und spürte ein leises, erwartungsvolles Kribbeln.	Original	Kommt Neville Longbottom im letzten Textausschnitt vor?	Nein	(Hsu, 2014)
Ihre Mitschüler brüllten vor Lachen, und selbst Fred und George stimmten mit ein, sobald sie sich aufgerappelt und ihre Bäerte ausgiebig begutachtet hatten. Fred und George machten sich auf den Weg in den Krankenflügel, begleitet von Lee, der sich vor Lachen kaum auf den Beinen halten konnte.	Original	Haben Fred und George im letzten Textausschnitt einen Bart?	Ja	(Hsu, 2014)
Sie konnten nicht hören, was Hagrid zu Madame Maxime sagte, doch sein Blick hatte sich verschleiert und sein Gesicht hatte einen Ausdruck von Entzückung angenommen, wie Harry ihn bei Hagrid nur einmal beobachtet hatte - als er den Babydrachen Norbert betrachtet hatte.	Original	Wird im letzten Textausschnitt ein Flug auf einem Besen beschrieben?	Nein	(Hsu, 2014)
Alle winkten ihm zu, und schon von weitem sah er sie lächeln. Er flog über die Tribünen hinweg zurück, das Toben der Menge pochte in seinen Ohren, und er landete weich auf der Erde. Seit Wochen war ihm nicht mehr so leicht ums Herz gewesen.	Original	Wird im letzten Textausschnitt ein Flug auf einem Besen beschrieben?	Ja	(Hsu, 2014)
Harry, der es vor einer Stunde noch nicht für möglich gehalten hätte, dass er jetzt vor Glück schwebte, nahm das goldene Ei und den Feuerblitz und schlüpfte mit Ron, der wie ein Wasserfall redete, aus dem Zelt.	Original	Gab es in dem letzten Textausschnitt ein goldenes Ei?	Ja	(Hsu, 2014)
Als er sich umwandte und aus dem Gehege ging, war ihm das Herz leichter als eine Feder. Und es war nicht nur Ron... Die dort im Publikum jubelten, waren nicht nur Gryffindors. Als es darauf	Original	Kommt im letzten Textausschnitt ein Drache vor?	Nein	(Hsu, 2014)

ankam, als sie gesehen hatten, was ihm bevorstand, waren die meisten seiner Mitschüler auf seiner Seite gewesen.				
Und tatsächlich, als sie den Gemeinschaftsraum der Gryffindors betraten, jubelten und klatschten ihre Mitschüler, dass die Wände wackelten. Sämtliche Tische und Fensterbänke trugen Berge von Kuchen und Krüge voll Kürbissaft und Butterbier.	Original	Findet die Handlung des letzten Textausschnittes im Freien statt?	Nein	(Hsu, 2014)
Harry nahm sich etwas zu essen und setzte sich zu Ron und Hermine, er hatte beinahe vergessen, wie es war, richtig hungrig zu sein. Er konnte es immer noch nicht begreifen, dass er sich so glücklich fühlte; Ron war wieder an seiner Seite und er hatte die erste Aufgabe geschafft.	Original	Beschreibt der letzte Textausschnitt den Zauberunterricht in Hogwarts?	Nein	(Hsu, 2014)
Sofort war ihm klar, dass jeder Wasserstrahl eine andere Sorte Schaumbad enthielt, aber es war Schaumbad, wie Harry es noch nie erlebt hatte. Aus einem Hahn blubberten rosa und blaue Blasen von Fußballgröße, aus einem anderen quoll eisweißer Schaum, so dicht und fest, dass Harry sicher war, er würde ihn über das Wasser tragen.	Original	Ist Harry in dem letzten Textausschnitt mit einem Schaumbad beschäftigt?	Ja	(Hsu, 2014)
Er hatte die Maulende Myrte noch nie so gut gelaunt gesehen, außer an dem Tag, als sich Hermine mit einer Dosis Vielsaft-Trank ein haariges Gesicht und einen Katzenschwanz verpasst hatte.	Original	War die Maulende Myrte in dem letzten Textausschnitt schlecht gelaunt?	Nein	(Hsu, 2014)
Wurmschwanz schrie, schrie, als ob jeder Nerv seines Körpers brennen würde, das Schreien erfüllte Harrys Ohren, und die Narbe auf seiner Stirn entflammte vor rasendem Schmerz; auch Harry schrie jetzt laut.	Original	Ist Wurmschwanz in dem letzten Textausschnitt glücklich?	Nein	(Hsu, 2014)
Einen schrecklichen Augenblick lang sah Harry acht glimmende schwarze Augen und rasiermesserscharfe Greifscheren, dann war die Spinne über ihm. Sie zwängte ihn zwischen ihre Vorderbeine und hob ihn hoch; in verzweifelter Anstrengung schlug er mit den Füßen um sich.	Original	Kommt Hermine in dem letzten Textausschnitt vor?	Nein	(Hsu, 2014)
Erneut loderte ein brennender Schmerz durch Harrys Stirnnahe, und Wurmschwanz stieß einen markerschütternden Schrei aus. Voldemort löste den Finger von Wurmschwanz' Mal, und Harry sah, dass es sich pechschwarz verfärbt hatte.	Original	Kommen Fred und George im letzten Textausschnitt vor?	Nein	(Hsu, 2014)
Es war ein Schmerz, der alles übertraf, was Harry je erlitten hatte; seine Knochen standen buchstäblich in Flammen; sein Kopf, fürchtete er, würde jeden Moment entlang der Narbe aufplatzen; die Augen überschlugen sich in seinem Kopf.	Original	Wird in dem letzten Textausschnitt Schmerz beschrieben?	Ja	(Hsu, 2014)
Der bislang heißeste Tag des Sommers neigte sich dem Ende zu und eine schläfrige Stille lag über den großen wuchtigen Häusern des Ligusterwegs. Autos, die normalerweise glänzten, standen staubig in den Einfahrten, und Rasenflächen, die einst smaragdgrün waren, lagen verdorrt und gelbstichig da.	Original	Beschreibt der letzten Textausschnitt einen Wasserfall?	Nein	(Hsu, 2014)
Er grinste unentwegt auf schreckliche, besessene Art umher, bis all die neugierigen Nachbarn von ihren Fenstern verschwunden waren, dann winkte er Harry zu sich heran, und aus dem Grinsen wurde eine wutentbrannte Grimasse.	Original	Gibt es im letzten Textausschnitt ein Laib Brot?	Nein	(Hsu, 2014)
"Was soll das heißen?", sagte Harry erneut, doch mit einem kalten, flauen Gefühl im Magen. Gestern Nacht hatte er in seinen Träumen wieder den Friedhof besucht. Dudley lachte harsch und bellend auf und nahm eine spitze, wimmernde Stimme an.	Original	Wird in dem letzten Textausschnitt beschrieben, wie Hermine ihre Zeit einteilt?	Nein	(Hsu, 2014)
Harry hörte, wie sich der Schlüssel im Schloss drehte und Onkel Vernon schweren Schrittes die Treppe hinunterging. Ein paar Minuten später hörte er Autotüren knallen, einen Motor aufbrummen und das unverwechselbare Geräusch eines Autos, das aus der Einfahrt brauste.	Original	Kommt eine Schlange im letzten Textausschnitt vor?	Nein	(Hsu, 2014)
"Was möchtest du, Harry?", rief Mrs Weasley. "Haferbrei? Muffins? Räucherheringe? Speck und Eier? Toast?" "Nur-nur Toast, danke", sagte Harry.	Original	Wird in dem letzten Textausschnitt Schmerz beschrieben?	Nein	(Hsu, 2014)
"Die Bücherlisten sind angekommen", sagte er und warf Harry, der auf einem Stuhl stand, einen Umschlag zu. "Wird auch Zeit, ich dachte, sie hätten's vergessen, normalerweise kommen sie viel früher..."	Original	Wurde in dem letzten Textausschnitt gekämpft?	Nein	(Hsu, 2014)
Dann öffnete er seinen Brief. Er enthielt zwei Pergamentblätter: das eine mit der üblichen Erinnerung, dass das Schuljahr am ersten September begann; auf dem anderen wurde ihm mitgeteilt, welche Bücher er für das kommende Jahr benötigte.	Original	Wird in dem letzten Textausschnitt ein Quidditch-Spiel beschrieben?	Nein	(Hsu, 2014)

Dann spähte er hinüber zu Hagrids Hütte, die von diesem Fenster aus klar zu erkennen war, und da die Vorhänge zugezogen waren und aus dem Schornstein kein Rauch stieg, war ebenso klar, dass sie nicht bewohnt war.	Original	Kommt in dem letzten Textausschnitt Dumbledore vor?	Nein	(Hsu, 2014)
Harry riss sich das Langziehoehr heraus. Sein Herz hämmerte rasend schnell und Hitze schoss ihm ins Gesicht. Er schaute zu den anderen. Die Schnüre baumelten ihnen immer noch aus den Ohren und sie starrten ihn alle an. Mit einem Mal stand Angst in ihren Gesichtern.	Original	Zieht sich Harry im letzten Textausschnitt eine Mütze auf?	Nein	(Hsu, 2014)
Die Küchentür ging auf und die ganze Familie Weasley mitsamt Hermine kam herein. Alle sahen glücklich aus, und Mr Weasley, mit einem gestreiften Schlafanzug unter einem Regenmantel, ging stolz in ihrer Mitte.	Original	Spielt Sirius Black im letzten Textausschnitt eine Rolle?	Nein	(Hsu, 2014)
"Tja, das ist eigentlich alles, was ich zu sagen hatte. Ich werde Sie über die Entwicklungen auf dem Laufenden halten, Premierminister – das heißt, ich werde wahrscheinlich zu beschäftigt sein, um persönlich vorbeizukommen, aber dann schicke ich Fudge hierher."	Original	Spielt der Premierminister im letztes Textausschnitt eine Rolle?	Ja	(Hsu, 2014)
Ein Wecker, den Harry vor mehreren Jahren repariert hatte, tickte laut auf dem Fenstersims, er zeigte eine Minute vor elf. Daneben war ein Bogen Pergament zu sehen, den Harry locker in der Hand hielt, bedeckt mit feiner, schräger Schrift.	Original	Gibt es im letzten Textausschnitt einen Wecker?	Nein	(Hsu, 2014)
Sie schwenkte den Zauberstab über ihre Schulter; ein Laib Brot und ein Messer schwebten elegant auf den Tisch. Während der Laib Brot sich selbst in Scheiben schnitt und der Suppentopf auf den Herd zurücksank, nahm Mrs. Weasley Harry gegenüber Platz.	Original	Gibt es im letzten Textausschnitt ein Laib Brot?	Ja	(Hsu, 2014)
Als er Hagrid Harrys Gesicht sah, strahlte er, ohne die verdutzten Blicke der vorübergehenden Muggel zu bemerken. "Harry!" dröhnte er, und kaum war Harry aus dem Wagen gestiegen, schloss Hagrid ihn auch schon in eine knochenbrechende Umarmung.	Original	Umarmt Hagrid im letzten Textausschnitt Harry?	Ja	(Hsu, 2014)
Das Wetter draußen vor den Zugfenstern war so durchwachsen, wie es den ganzen Sommer über gewesen war; sie fuhrn streckenweise durch kalten Nebel, dann wieder in schwaches klares Sonnenlicht.	Original	Spielt der letzte Textausschnitt am Strand?	Nein	(Hsu, 2014)
Harry winkte, bis der Zug eine Kurve genommen hatte und Mr und Mrs Weasley nicht mehr zu sehen waren, dann ging er nachschauen, wo die anderen geblieben waren. Vermutlich hatten sich Ron und Hermine in den Waggon mit den Vertrauensschülern verzogen.	Original	Spielt der letzte Textausschnitt im Zug?	Ja	(Hsu, 2014)
"Das dachte ich auch!", entgegnete Harry. Er zermarterte sich den Kopf, wann Dumbledore ihm das erzählt hatte, aber jetzt, wo er darüber nachdachte, konnte er sich nicht erinnern, dass Dumbledore je erwähnt hatte, was Slughorn unterrichten würde.	Original	Bringt Dumbledore im letzten Textausschnitt Harry zum Lachen?	Nein	(Hsu, 2014)
Sie kehrten in den Gemeinschaftsraum zurück, der leer war bis auf ein halbes Duzend Siebtklässler, darunter Katie Bell, die als Einzige noch vom alten Quidditch-Team von Gryffindor übrig war, in das Harry in seinem ersten Schuljahr eingetreten war.	Original	Spielt der letzte Textausschnitt im Gemeinschaftsraum?	Ja	(Hsu, 2014)
"Nun hören Sie -", fing Odgen an, aber zu spät: Ein Knall ertönte, Odgen lag am Boden und hielt sich krampfhaft die Nase, und eine ekelhafte gelbliche Schmiere spritzte zwischen seinen Fingern hervor.	Original	Bekommt Odgen im letzten Textausschnitt Blumen überreicht?	Nein	(Hsu, 2014)
"Du widerliche kleine Squib, du dreckige Blutsverräterin!", brüllte Gaunt, der nun völlig die Beherrschung verlor, und seine Hände schlossen sich um die Kehle seiner Tochter. Harry und Odgen schrien gleichzeitig "Nein!"	Original	Kommt in dem letzten Textausschnitt das Riddle-Haus vor?	Nein	(Hsu, 2014)
Harry hatte Mundungus an der Gurgel gepackt und gegen die Wand des Pubs gedrückt. Er hielt ihn mit der einen Hand fest und zog mit der anderen seinen Zauberstab. "Harry!", rief Hermine schrill.	Original	Zieht Harry seinen Zauberstab?	Ja	(Hsu, 2014)
Dann, zwei Meter über dem Boden, stieß Katie einen fürchterlichen Schrei aus. Sie riss die Augen auf, aber was immer sie sehen konnte oder was immer sie empfand, machte ihr offenbar schreckliche Angst.	Original	Schreit Katie im letzten Textausschnitt?	Ja	(Hsu, 2014)
"Oh Percy!" rief Mrs Weasley und warf sich in seine Arme. Rufus Scrimgeour blieb auf seinem Gehstock gestützt in der Tür stehen und lächelte, während er diese ergreifende Szene beobachtete.	Original	Ist Mrs Weasley wütend?	Nein	(Hsu, 2014)

Sie schien den ganzen Tag besonders gut gelaunt, und abends im Gemeinschaftsraum erklärte sie sich sogar bereit, Harrys Kräuterkundeaufsatz durchzusehen (mit anderen Worten, ihn zu Ende zu schreiben).	Original	Bekommt Harry Hilfe bei seinem Kräuterkunde Aufsatz?	Ja	(Hsu, 2014)
Dann breitete sich ein Lächeln auf seinem Gesicht aus. "Harry, das ist eine phantastische Nachricht! Sehr gut gemacht, wirklich! Ich wusste, dass es dir gelingen kann!" Jeder Gedanke daran, wie spät es war, schien vergessen.	Original	Ist Harry im letzten Textausschnitt verärgert?	Nein	(Hsu, 2014)
Harry hatte den ganzen Vormittag lang seinen Schulkoffer komplett ausgeräumt, zum ersten Mal seit er ihn gepackt hatte. Seither hatte er zu Beginn jedes Schuljahres immer nur drei Viertel der Sachen oben herausgenommen.	Original	Packt Harry seinen Schulkoffer aus?	Ja	(Hsu, 2014)
Er brauchte noch eine Stunde, um ihn vollständig auszuräumen, die nutzlosen Dinge wegzuworfen und das Übrige auf Haufen zu verteilen, je nachdem, ob er die Sachen künftig brauchen konnte oder nicht.	Original	Spricht Harry im letzten Textausschnitt parsel?	Nein	(Hsu, 2014)
Als Harry ins Wohnzimmer trat, waren dort alle drei Dursleys versammelt. Sie trugen Reisekleidung: Onkel Vernon eine rehbraune Reißverschlussjacke, Tante Petunia einen adretten lachsfarbenen Mantel und Dudley eine Lederjacke.	Original	Tragen alle Dursleys Reiseklamotten?	Ja	(Hsu, 2014)
"Wow", fügte er hinzu und blinzelte ziemlich schnell, als Hermine auf sie zugeeilt kam. "Du siehst großartig aus!" "Immer dieser überraschte Unterton", sagte Hermine, lächelte aber. Sie trug ein luftiges, lilafarbenes Kleid mit dazu passenden Stöckelschuhen; ihr Haar war glatt und glänzte.	Original	Trägt Hermine im letzten Textausschnitt eine Jogging-Hose?	Nein	(Hsu, 2014)
Fred und George klatschten als Erste los, und stürmischer Beifall folgte, während die goldenen Ballons über den Köpfen platzten: Paradiesvögel und goldene Glöckchen flogen und schwebten daraus hervor und stimmten zwitschernd und bimmelnd in den lauten Trubel ein.	Original	Kommen im letzten Textausschnitt Paradiesvögel vor?	Ja	(Hsu, 2014)
Ginny spähte nach hinten, grinste, zwinkerte Harry zu und wandte sich dann rasch wieder nach vorn. Harrys Gedanken schweiften weit weg von dem Zelt, zu den Nachmittagen zurück, die er mit Ginny allein an lauschigen Plätzen des Schulgeländes verbracht hatte.	Original	Ohrfeigt Ginny im letzten Textausschnitt Harry?	Nein	(Hsu, 2014)
Ganz anders verhielt es sich mit dem einzigen Zauberefoto an den Wänden, einem Bild von vier Hogwarts-Schülern, die Arm in Arm dastanden und in die Kamera lachten. Harrys Herz schlug höher, als er seinen Vater erkannte.	Original	Schaut sich Harry ein Bild seines Vaters an?	Ja	(Hsu, 2014)
Ein schwarzhaariges Baby flog auf einem winzigen Besen ins Bild und wieder hinaus, mit schallendem Gelächter, und ein Paar Beine, die zu James gehört haben mussten, jagten ihm hinterher. Harry steckte das Foto zusammen mit Lilys Brief in seine Tasche.	Original	Fängt im letzten Textausschnitt ein schwarzhaariges Baby einen Ball?	Nein	(Hsu, 2014)
Kreacher eilte mit einer großen Terrine in den Händen zum Tisch und schöpfte Suppe in blitzsaubere Schalen, während er durch die Zähne pfiiff. "Danke, Kreacher", sagte Harry und begann seine Suppe zu löffeln.	Original	Isst Harry Suppe?	Ja	(Hsu, 2014)
Dass Hermine schmolte, konnte seine Hochstimmung nicht trüben: Ihre plötzliche Glückssträhne, das Erscheinen der geheimnisvollen Hirschkuh, die Entdeckung des Schwertes von Gryffindor und vor allem Rons Rückkehr machten Harry so glücklich, dass es ihm schwerfiel, ernst zu bleiben.	Original	Gehen Hermine und Harry gemeinsam essen?	Nein	(Hsu, 2014)
Ron und Hermine strahlten immer noch. Vertraute, freundliche Stimmen zu hören war eine besondere Stärkung. Zum ersten Mal seit vielen Wochen lachte Harry: Er spürte, wie die Last der Anspannung von ihm abfiel.	Original	Lacht Harry im letzten Textausschnitt?	Ja	(Hsu, 2014)
Ein Knall war zu hören, weißes Licht zuckte auf, und Harry brach unter qualvollen Schmerzen zusammen und konnte nichts mehr sehen. Er spürte sein Gesicht unter seinen Händen rasch anschwellen, dann kamen schwere Schritte ringsum auf ihn zu.	Original	Spielt Harry im letzten Textausschnitt Quidditch?	Nein	(Hsu, 2014)
Harry wurde vornübergeworfen und fiel mit dem Gesicht auf die Erde. Ein dumpfer Aufprall verriet ihm, dass Ron neben ihm niedergeschlagen worden war. Sie konnten Schritte und Krach hören; die Männer warfen Stühle um, während sie das Zelt durchsuchten.	Original	Fallen Harry und Ron zu Boden?	Ja	(Hsu, 2014)
Harry befand sich gegenüber einem Spiegel über dem Kamin, einem großen, vergoldeten Ding mit kompliziert verschnörkeltem	Original	Sieht sich Harry im Spiegel?	Ja	(Hsu, 2014)

Rahmen. Durch seine Augenschlitze sah er sein Spiegelbild, zum ersten Mal seit er das Haus am Grimmauldplatz verlassen hatte.				
Ohne Zauberstab, hilflos, wie er war, weiteten sich Pettigrews Pupillen voller Entsetzen. Seine Augen waren von Harrys Gesicht zu etwas anderem gehuscht. Seine silbernen Finger bewegten sich unaufhaltsam auf seine eigene Kehle zu.	Original	Tötet Harry im letzten Textausschnitt Pettigrew?	Nein	(Hsu, 2014)
"Ja, ja, sie hat das Baby bekommen!", rief Lupin. Überall am Tisch waren Freudenschreie zu hören, Seufzer der Erleichterung. Hermine und Fleur quiekten beide: "Glückwunsch, Glückwunsch!", und Ron sagt: "Meine Fresse, ein Baby!"	Original	Bekommt jemand ein Baby?	Ja	(Hsu, 2014)
Es war ruhig, noch würde es etwas dauern, bis die Läden öffneten, und es waren kaum Käufer unterwegs. Die gewundene Pflasterstraße hatte sich stark verändert seit damals, als Harry vor seinem ersten Jahr in Hogwarts hier gewesen war und ein geschäftiges Treiben erlebt hatte.	Original	Zaubert Harry im letzten Textausschnitt?	Nein	(Hsu, 2014)
"Ihr Zauberstab wird genügen, Madam", sagte der Kobold. Er streckte seine etwas zitternde Hand aus, und wie ein furchtbarer Schlag traf Harry die Erkenntnis, dass die Koblode von Gringotts wussten, dass Bellatrix' Zauberstab gestohlen worden war.	Original	Wurde Bellatrix' Zauberstab gestohlen?	Ja	(Hsu, 2014)
Dann bogen sie um eine Ecke und sahen das, worauf Harry gefasst war und das sie dennoch alle erstarren ließ. Ein gigantischer Drache war vor ihnen an den Boden gekettet und versperrte den Zugang zu vier oder fünf der tiefsten Verliese von Gringotts.	Original	Ist im letzten Textausschnitt ein Todesser an den Boden gekettet?	Nein	(Hsu, 2014)
Jetzt saßen sie wirklich in der Falle: Es gab keinen Weg nach draußen, außer durch die Tür, und eine Horde Kobolde schien sich auf der anderen Seite zu nähern. Harry blickte zu Ron und Hermine und sah panische Angst in ihren Gesichtern.	Original	Hat Harry im letzten Textausschnitt Angst?	Ja	(Hsu, 2014)
Alle drei begannen zu lachen, und nachdem sie einmal angefangen hatten, war es schwierig, wieder aufzuhören. Harry taten die Rippen weh, doch er sank rücklings ins Gras unter dem immer röter werdenden Himmer und lachte, bis er einen rauen Hals hatte.	Original	Ist Harry im letzten Textausschnitt traurig?	Nein	(Hsu, 2014)
Konnten sie die Angst in ihrer Nähe fühlen? Harry war überzeugt davon: Sie schienen jetzt schneller heranzukommen, atmeten auf jene schleppende, rasselnde Weise, die er verabscheute, witterten Verzweiflung in der Luft, waren schon dicht bei ihnen...	Original	Hat Harry im letzten Textausschnitt Angst?	Ja	(Hsu, 2014)
Im nächsten Moment wurden Harry, Ron und Hermine von etwa zwei Dutzend Leuten bestürmt, die sie umarmten, ihnen auf die Schultern schlugen, ihnen die Haare zerstrubbelten, die Hände schüttelten, als ob sie gerade ein Quidditch-Endspiel gewonnen hätten.	Original	Umarmt Dumbledore im letzten Textausschnitt Harry?	Nein	(Hsu, 2014)
"Ich weiß, dass ihr euch bereitmacht zum Kampf." Einige Schüler schrien, manche klammerten sich aneinander und sahen sich voller Entsetzen nach der Herkunft der Stimme um. "Eure Bemühungen sind zwecklos. Ihr könnt mich nicht besiegen."	Original	Lachen die Schüler im letzten Textausschnitt?	Nein	(Hsu, 2014)
Dann erschütterte eine Reihe von schweren Schlägen das Schloss, und ein mächtiger Reiterzug durchsichtiger Gestalten galoppierte an ihnen vorbei, und ihre Köpfe, die sie unter den Armen trugen, schrien im Blutausch.	Original	Tragen die Gestalten ihre Köpfe unter den Armen?	Ja	(Hsu, 2014)
Dann hörte er einen schrecklichen Schrei, der an seinen Eingeweiden zerrte, der von Todesqualen kündete, die weder Flammen noch Flüche verursachen konnten, und er stand auf, schwankend, und hatte größere Angst als er in seinem ganzen Leben gehabt hatte.	Original	Weint jemand im letzten Textausschnitt?	Nein	(Hsu, 2014)
Angstschreie gellten durch die Luft. Die Kämpfer zerstreuten sich, Todesser wie Hogwartianer, und rote und grüne Lichtstrahlen flogen mitten zwischen die angreifenden Monster, die schauderten und sich aufbäumten, schrecklicher denn je.	Original	Kommen im letzten Textausschnitt Todesser vor?	Ja	(Hsu, 2014)
Und nun blickte Snape Voldemort an und Snapes Gesicht war wie eine Totenmaske. Es war marmorweiß und so reglos, dass es ein Schock war, als er zu sprechen begann und es sichtbar wurde, dass sich Leben hinter diesen leeren Augen verbarg.	Original	Blickt Snape im letzten Textausschnitt Harry an?	Nein	(Hsu, 2014)
Der Schlangenkäfig wälzte sich durch die Luft, und ehe Snape etwas anderes tun konnte als schreien, war er mit Kopf und Schultern darin eingeschlossen, und Voldemort sprach Parsel: "Töte." Ein furchtbarer Schrei war zu hören. Harry sah, wie Snapes Gesicht den letzten Rest Farbe verlor und weiß wurde.	Original	Spricht Voldemort Parsel?	Ja	(Hsu, 2014)

Sein Blick war auf Etwas gefallen, das die Geräusche verursachte. Es hatte die Gestalt eines kleinen nackten Kindes, das sich am Boden krümmte, sah wund und rau aus, wie gehäutet, und lag schaudernd unter einem Stuhl, wo es zurückgelassen worden war, unerwünscht, weggesteckt, vor Blicken verborgen und nach Atem ringend.	Original	Fliegt ein Baby im letzten Textausschnitt auf einem Besen?	Nein	(Hsu, 2014)
Albus Dumbledore kam auf ihn zu, munter lächelnd und aufrecht, in einem wallenden, mitternachtsblauen Umhang. Er schien Glück auszustrahlen wie Licht, wie Feuer: Harry hatte den Mann noch nie so vollkommen, so offensichtlich zufrieden erlebt.	Original	Lächelt Dumbledore im letzten Textausschnitt?	Ja	(Hsu, 2014)
Mit einem Schlenker seines Zauberstabs ließ Voldemort den Sprechenden Hut in Flammen aufgehen. Schreie gellten durch das Morgengrauen, und als Neville lichterloh brannte, wie zu Stein erstarrt, unfähig, sich zu rühren, konnte Harry es nicht mehr länger ertragen.	Original	Lässt Voldemort den Sprechenden Hut in Flammen aufgehen?	Ja	(Hsu, 2014)
Aber James lachte nur, erlaubte seiner Mutter, ihn zu küssen, umarmte flüchtig seinen Vater und sprang dann auf den sich rasch füllenden Zug. Sie sahen ihn winken, dann spurtete er den Gang entlang, um nach seinen Freunden zu suchen.	Original	Spielt James im letzten Textausschnitt Quidditch?	Nein	(Hsu, 2014)

Table 4: Text stimuli used in the experiment