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DESIGNING AND EVALUATING USER INTERFACE MECHANISMS FOR AFFECT LABELING TO ENHANCE ONLINE DISCUSSION ENVIRONMENTS

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ABSTRACT

Mariana Linhares de Carvalho: Designing and evaluating user interface mechanisms for affect labeling to enhance online discussion environments
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The development of technology and diversification of means of communication have increased the range of social interactions that people have in their daily lives. As an adverse side effect, it is not uncommon to see heated and uncivil discussions happening online, creating a hostile environment that highly affects both the users and the reputation of the services. This is a particularly troublesome problem in online news sites, which different studies have shown to suffer from different negative consequences caused by hostile interactions on their online platforms.

While several theories have tried to explain why communication decays in digital medias, scholars have arrived at conflicting conclusions regarding the responsible factors. One possible approach is to better understand the processes of emotion regulation in order to address the hostile behaviors frequently seen online. Recent research suggests that affect labeling, that is, explicitly naming one's emotional reactions, could be an option for emotion regulation online. Therefore, this thesis proposes to design and evaluate different options of affect labeling mechanisms to help individual emotion regulation, aiming to enhance the quality of online discussions.

This thesis studies design factors which might lead to higher acceptability in an affect labeling enabling mechanism. In order to do so, this work was composed by three stages. First, different news websites from around the world were benchmarked to identify mechanisms being used to ensure user engagement and quality, which were then categorized. These categories served as base for the creation of fourteen user interface designs that would enable an affect labeling process. Next, a user study was conducted, where eighteen participants were interviewed regarding their online engagement habits and perceptions on affect labeling and then evaluated six of the designs regarding their acceptability.

The study confirms some of the negative impacts of online hostility shown by previous studies, such as a general lack of motivation from all the participants to participate in online discussions. It also shows that participants' perception on affect labelling change depending on the approach used for the process to happen: obvious options, such as open text, were less preferred, while more subtle variations (e.g. reactions, emojis) were well accepted, perceived as a safer form of expression. The evaluations show that the participants preferred simplicity and a small number of steps to use a tool. At the same time, they also valued the tool providing a feeling of focus on the user, as an individual, and allowing certain level or personalization on the users' inputs.

Based on the results, guidelines for future affect labelling designs were compiled. It would be interesting to perform new evaluations with participants with more active online engagement behavior in order to compare if the results are valid and gather new insights.

Keywords: human-technology interaction, interaction design, online emotion regulation, affect labeling, news platforms, online engagement, online hostility, emotion regulation mechanisms

PREFACE

This thesis was made at Tampere University, at the Human-Technology Interaction department.

I am grateful to the participants of Emodim research group, whose project served as reference and inspiration for the development of this thesis. I want to thank my supervisor Thomas Olsson for tutoring me through the multiple phases of the study and support. I also want to thank my friends and colleagues who agreed to participate in the evaluation phase of this study.

Special thanks to my family, for the long-distance support, and Johannes.

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Mariana Linhares de Carvalho

CONTENTS

1. INTRODUCTION

Communicating is inherent to living beings, and with the development of technology and diversification of means of communication there has been an increase in the range of social interactions that people have in their daily lives. In many contexts, technology enabled computer-mediated communication (CMC) and online interactions have become as commonplace as face-to-face (FtF) communication. As our online and offline lives merge, the differences between FtF and CMC dynamics should be explored in order to better understand the causes of distinct behaviors and how they can be influenced toward creating healthier communication habits for users.

In the change to CMC, interaction changes drastically. Previous research has argued that because the form of communication, i.e., nonverbal cues, serves a role of its own, CMC restrains many of the FtF conversational clues, making it less effective (Warkentin, Sayeed, & Hightower, 1997). Several theories have attempted to explain the lower communication effectiveness in online interactions when compared to face-to-face (e.g. Daft & Lengel, 1986; Reicher, Spears, & Postmes, 1995; Dyer, Green, Pitts, & Millward, 1995; Suler, 2004), suggesting that it may be the reason for behaviors such as flaming (i.e., the act of being aggressive and insulting online). One approach proposes that the lack of nonverbal cues in textual communication affects the ability to regulate emotions and to feel empathy (Walther, 1993). Emotional self-control is an ability required in many situations in our daily lives, and emotions impact our online communication behavior just as much as FtF. Therefore, understanding both emotion and processes of emotion regulation might be a path to address and enhance the current levels of hostility that are commonly seen online.

Unfortunately, hostile behavior has become so common in online discussions that it is often already expected by users (Reader, 2012). In addition to social media, research has shown that hostile comments and lack of emotional control also impact online news platforms, such as inhibiting motivation to participate (Springer, Engelmann, & Pfaffinger, 2015), influencing users' perception about the public opinion (Anderson et al., 2014) and impacting users' perception of journalistic content quality (Dohle, 2018). These studies show online hostility highly affects not just users' relation to news, both the services and

facts themselves, but to the concept of online interactions themselves, impacting how users perceive and react to it.

Finding new ways and tools to enable and encourage constructive, civil discussions are of key importance for the (near) future of our CMC interactions, especially to avoid further deterioration of online news platforms. Following the proposal on how emotion regulation might provide new forms to address the issue, recent studies have shown that affect labeling, i.e., naming one's emotional reactions, might be a potential approach for emotion regulation in social media (Fan, Varol, Varamesh, Barron, Leemput, Scheffer, & Bollen, 2018; Torre & Lieberman, 2018), although it has only recently started to receive more attention and be studied as a potential emotion regulation process when compared to others.

The aim of this thesis is to design and evaluate alternatives for user interface mechanisms for affect labeling that could help individual emotion regulation online. In order to do so, different online news platforms and social media are benchmarked for the available engagement tools and the current available means to ensure quality in the comments. These are categorized and serve as basis for a brainstorming phase, where different designs will be created with the focus to elicit an affect labeling process. Lastly, an interview study answers to the questions about the participants' online engagement habits and perceptions on affect labeling, as well as the acceptance of some of the designs created in stage two.

This study contributes to (1) understanding of the use of affect labeling in online contexts and (2) its acceptability by users, leading to a (3) set of evaluated designs that could be further developed and implemented. It also resulted in a set of guidelines on what features for affect labeling tools are most interesting for users, leading to bigger engagement and possibly a quality increase in the comments.

The structure of this document is as follows. In Chapter 2, the characteristics of face-to-face and computer-mediated communication are compared, along with definitions and theories for civility and hostility online and its impact. Chapter 3 introduces theory on emotions and their social role, the process of emotion regulation and especially affect labeling, the one relevant for this work. Chapter 4 sums up the literature review in order to introduce the research questions and overall view of the empirical work. Three studies were conducted for this thesis in order to answer the research questions, which are explained in chapters 5 to 7. The final results, proposed guidelines and conclusions are discussed in chapter 8.

2. COMPUTER-MEDIATED COMMUNICATION

As the objective of this thesis is to design and evaluate engagement mechanisms which enable an affect labeling process in the attempt of enhancing online discussions, this literature review critically examines current research in the area of computer-mediated communication (CMC), focusing on hostility and civility in online comments and its possible consequences.

Section 2.1 addresses the main characteristics of face-to-face (FtF) communication and their impact on interaction, the differences to CMC and its consequence on online interactions. Section 2.2 introduces the definitions of hostility and civility in online comments. In section 2.3 are presented theories that try to understand and address the causes of online hostile behavior. Lastly, section 2.4 tackles the effects of hostile comments to online newspapers.

2.1 Direct and Mediated Communication

Communicating is inherent to human beings. Humans went from vocalizing to developing speech, while also keeping other forms of passing on information cues, such as gestures and body posture. By sounds, gesture or even by staying silent, all behavior is a form of communication when in the presence of another (Watzlawick, & Beavin, 1967), making FtF interactions multimodal by nature. FtF interactions are possible among dyads and groups, can have different levels of formality, provide immediate feedback to those participating in it, among other characteristics. However, with the development of technology and diversification of means of communication, there was an increase on the range of social interactions that people have on their daily lives. The conveniences provided by technology, like high rates of accessibility with mobiles phones and access to internet, helped to change how people interact. As technology develops and starts to support more complex forms of interaction in higher quality (e.g. video calls), aspects that once were restrict to FtF start to be part of CMC too.

Information and Communication Technology has enabled CMC and online interactions to become something as commonplace as FtF communication. As our online and offline lives merge, the differences between FtF and CMC dynamics should be explored in order to better understand the what causes distinct behaviors and how they can be influenced towards healthier communication habits.

2.1.1 Aspects of FtF

Koudenburg, Postmes, & Gordijn (2017) say that while interacting, individuals try to achieve a sense of solidarity, an experience of unity within the group and the sense that one belongs to or identifies with the group. At a collective level, the group is perceived as an entity, associated with characteristics such as social norms, hierarchy and a shared reality. When interacting, the content of the conversation is not the only factor that influences our judgment, but also its form helps to shape social outcomes.

Norms can be seen as the behaviors expected from an individual in order to adjust to a particular group, community, or culture. When it comes to communication, it helps to create, transmit and interpret messages. We follow static social cues that are passed to us from larger culture, which include more noticeable hints such as the proper form to greet another member of the group, for example. However, our communication is also affected by dynamic social cues, influencing these norms due to the feedback we get from the interlocutor (Roos, 2017). Research on group norm establishment shows that group members can become aware of these patterns in a subtle way, by observing the behavior of their peers (Cialdini, 2001). In fact, norms can be separated into explicit and implicit social control mechanisms. Explicit mechanisms are sanctions applied to those who deviate from the norms, but it is perceived as a costly interaction, risking retaliation and relationship damage (Axelrod, 1986; Horne, 2001). In order to avoid this risk, research shows that signals of group disapproval tend to be gentler, even when a corrective response is an expected reaction, showing that explicit regulation is quite rare (Koudenburg, Postmes, & Gordijn, 2013; 2017).

Hierarchical status within a group affects both verbal and nonverbal communication. Berger, Conner, & Fisek (1974) claim, at the Expectation States Theory, that a person's hierarchical position in a group affects their communication style, and that this style will serve to maintain the inequality within the group. They also suggested that these different styles are guided by the person's expectations about the behavior of people in different hierarchical levels. It is expected that members of the group will proceed with the proposed behavior in order to not threaten the solidarity of the group.

Regarding a shared reality, research shows that people validate their points of view through information exchange with others (Kashima, Klein, & Clark, 2007). This process, named grounding, not only allows people to perceive their world and interaction with stability, but also shows that their views are shared by other members of the group, creating a sense of unity (Kashima et al., 2007). The same cues can have different interpretations and impact the communication and members' relationships in different ways.

Another point that may increase solidarity is behavioral coordination. Conversations, among other activities, exemplify what may be called as complementary action, “forms of social interaction wherein two (or more) individuals coordinate and mutually complete their incongruent actions, rather than performing imitative behaviors” (Sartori & Betti, 2015). While performing it, it is necessary a fluid integration of the participant’s inputs in order to reach a successful outcome. To achieve a proper conversational flow, participants give signals regarding the length of their speech, allowing members to create smooth transitions between their turns. When conversational flow does not happen accordingly, it influences negatively the social outcomes, affecting the perception of quality of the relationship and the perception of mutual understanding (Koudenberg et al., 2017).

When it comes to FtF interactions, communication itself and the maintenance of solidarity is affected by these different aspects, influencing behavior in practical manners. There are several nonverbal cues commonly associated to FtF communication that may seem purely involuntary, but that transmit messages regarding a person’s state and communication condition. In fact, these nonverbal cues are so relevant that when verbal and nonverbal messages are conflicting, the verbal information is practically disregard in favor of the nonverbal cues (Argyle, 1967). Some examples are gestures, body posture, eye contact and non-linguistic aspects of speech such as silence patterns.

Gestures can be used both to communicate a specific message or be an involuntary act. In certain contexts, gestures may carry up to 70% of the information conveyed by the speaker (Holler & Beattie, 2003; Holler & Wilkin, 2009). Another possibility is that the gesture is coordinated with speech, helping to complete the meaning of utterances. Holle, Gunter, Rüschemeyer, Hennenlotter, & Iacoboni (2008) showed that gestures facilitate language processing and, in line with this finding, it has been demonstrated that questions accompanied by gestures get faster responses than those who do not (Holler, Kendrick, & Levinson, 2017).

Body posture is mostly involuntary and can work as means for people to signal their emotional state. Recent studies show that changes in body posture and movement communicate information about a person’s emotional state and play an important role in conjunction with voice and face (Dael, Mortillaro, & Scherer, 2012), even possibly modulating the information conveyed by these two other channels (Aviezer et al., 2008).

Eye contact is an expected interaction form when people are engaged in a conversation. It has been observed that the degree of eye contact can serve as an indicator of attitude and its changes towards the interlocutor (Mehrabian, 1969). Eye contact can also give

indications about hierarchy and status relationships between interacting people. An example is the maintenance of eye-contact, which can lead to loss of status for those who break it because it is perceived as a sign of submission (Argyle, 1967).

Patterns of silence can induce different reaction on the participants of the conversation and can convey different information. A person may remain silent for longer than expected due to a distraction or it can be a signal of disapproval. As mentioned before, implicit regulation is more common than explicit forms, and brief moments of silence can be used to indicate that social norms were broken (Koudenburg et al. 2017).

Therefore, it is clear that both types of communication, verbal and nonverbal, are influential on the development and outcome of the interaction (Koudenburg et al., 2017). Verbal aspects such as the establishment of norms, maintenance of hierarchical status within the group and establishing a shared reality are factors that can be more easily incorporated to other means of communication, making the creation of solidarity possible not only in FtF interactions. However, aspects such as behavioral coordination and nonverbal cues is compromised once the interaction becomes computer-mediated, creating issues of its efficiency, as explained next.

2.1.2 Aspects of CMC

Once switched to CMC, the form of communication changes drastically. As described, the form of communication serves a role of its own, and older research argues that CMC restrains many of the FtF conversational cues, making it less effective (Warkentin, Sayeed, & Hightower, 1997).

Theories such as Media Naturalness Perspective and Social Information Processing claim that CMC can reach the same level of solidarity and efficiency as in FtF interactions, given enough time. This requires the same people to interact through the media for a specific period, which hardly occurs depending on the service being used and its purpose. Still, social norms do develop in online interactions, impacting both content and form (Postmes, Spears, & Lea, 2000). Its dissemination happens by observing the behavior of others through the available channels.

Especially regarding commenting platforms in services such as social medias and online newspapers, the lack of non-verbal language and a-synchronicity of the media, causing disruption of interaction flow, impacts the arrangements of social norms. Even though communicators have been shown to adapt their language, style and other available cues in order to compensate for the lack of nonverbal signals (Walther, Loh, & Granka, 2005),

users on CMC platforms have to rely on language much more than during FtF interactions to properly transmit their ideas in order to avoid ambiguity, because they don't have access to the subtle cues that are commonly used to convey the norms. This lack of cues creates a smaller cognitive load, which has been linked to heightened self-awareness, overestimating their clarity and total contributions during interactions (Kruger, Epley, Parker, Ng, 2005).

The substantial reliance on written language and lower detachment from personal perspectives may cause messages to be overly direct and explicit, which may be interpreted as hostility, followed by an egocentric idea about one's own behavior and its impact. Since online social norms seem to have a different tolerance level and accept behaviors that would receive prompt disapproval in a FtF interaction, there is room for abundance of hostile interactions. Considering that subtle behavioral corrections do not happen like in FtF communication, users may be led to believe that uncivil behavior is accepted and within the norms.

2.2 Defining civility and hostility in online comments

Textual interaction is one of the most significant forms of CMC, although current information technology allows also other forms of communication, such as audio and images. Text is present in the majority of services and applications, if not all, allowing different "activities" that are nowadays a common part of our daily lives. Some of them, due to their own characteristics, do not offer enough time to establish the same levels solidarity and efficiency as in FtF, such as commenting and reading others' comments. Users have to rely on writing and interpretation skills in order fit the seemingly established social norms and due to the particularities of CMC, as presented above, spaces such as comment threads can be a propitious environment for hostile interactions. It is necessary, however, to establish what would be a hostile or civil interaction, which in this case translates as a low-quality or high-quality comment.

The word quality has two meanings, the degree of excellence of something and a characteristic or feature of someone or something ("Quality", n.d.). When analyzing online comments, these two aspects are co-dependent, and one influences the other. The qualities, or features, of a comment may indicate the quality of that comment, or how good or bad it is. What configures a low-quality and high-quality comment has been discussed by different researchers, especially in terms of the civility and hostility of the discussions.

The definition of civility varies within literature. Normative definitions describe it as the avoidance of personal attack and use of rude language, engaging in polite interactions.

Still, many authors argue that civility and politeness are not equivalent (Papacharissi, 2004; Reader, 2012), and that the notion of civility varies from group to group (Papacharissi, 2004; Hurrell, 2005). This point of view understands that a civil behavior is one that is not offensive to those who are part of the group and is constructed differently among parties. In the end, a commonly accepted notion of civility between these different perceptions is the absence of hostility, a comment that moves a discussion forward without name-calling, stereotyping, or the purposeful incitation of anger from the other part (Ksiazek, Peer, & Zivic, 2014).

Hostility, commonly referred as flaming, also has varying definitions. Normative conceptualization defines flaming as a hostile behavior to another party that is offensive and usually contains expressions such as insults or name-calling. In contrast, like civility, another approach is to define flaming based on the perceptions of the group, considering the context and the group's understanding of the message as flaming (O'Sullivan & Flanagin, 2003), instead of relying on a third-party categorization, like on normative definitions. In an attempt to integrate these different points of view, it is possible to say that a hostile comment is one that intends to attack the other party, through the use of low-level expressions such as name-callings and insults, creating negative emotions like anger.

One aspect that should be separated from these definitions is the notion of politeness, which many times is associated with some level of kindness. However, being argumentative or even assertive is possible while keeping civility, as long as the features associated with hostility are not found in the comment. The main characteristic of civility is not politeness, but the constructive engagement with others (Herbst, 2010).

2.3 Theories for hostility in online comments

Unfortunately, hostile behavior has become so common in online discussions that they are already expected by the users on interaction experiences (Reader, 2012). Due to social influence and the desire to be accepted, observing hostile behavior may lead users to believe that flaming is an acceptable form of interaction within that group and/or discussion space, leading users to adopt uncivil terms on their own comments, causing a loop. Because learning these behavioral models can happen through words and images, not necessarily requiring face-to-face interaction (Bandura, 1986), social norms get established on commenting platforms as well.

Although scholars have arrived at conflicting conclusions regarding the responsible factors, several theories have been used to or tried to explain the lower communication

effectiveness in online interactions when compared to face-to-face, which may lead to behaviors such as flaming.

Media Richness Theory

Presented by Daft and Lengel (1986), MRT is used to rank communication medium based on the capacity to process and reproduce information. Face-to-face is considered the richest medium, since it is able to convey several cues simultaneously, personally addressing the interlocutor and allowing fast feedback, while a poster would be on the opposite spectrum.

MRT can be used to explain hostile behavior on online comments through the richness analysis of commenting platforms. Although some critics state that a rich communication is not solely dependent on a rich medium (Van der Kleij et al., 2009), and other theories state that users can reach an interpersonal level similar to face-to-face interactions given enough time, news' commenting forums are a fast interaction space that do not enable a longer contact period between users. Even if it is possible to reply comments and create long threads, the conversation is usually focused on the topic of the article. Also, since new articles are published constantly, these threads have a quite short attention span when compared to other platforms.

Considering comments only pass information through text, with the possible addition of images such as emoticons, other cues such as facial expression and voice tone are lost on communication. Arguments can easily be misinterpreted, leading to a hostile reaction.

Deindividuation

Deindividuation is a concept that explains the change of behavior in groups through loss of self-awareness. Classic theories claim that the loss of individuality found when being a part of a group is based on a sense of anonymity and lowering of personal responsibility, which leads to loss of control (Festinger, Pepitone, & Newcomb, 1952). These characteristics result in less inhibited and anti-normative behavior.

A more recent approach is the Social Identity model of Deindividuation Effects (SIDE) (Reicher, Spears, & Postmes, 1995), based on Social Identity Theory (Tajfel & Turner, 1986) and Self-Categorization Theory (Turner, 1987). SIDE follows the idea that individuals do not lose a sense of self; instead they shift from personal to social levels of identification, meaning that members will define themselves according to the groups they belong. This identity shift is called depersonalization (Turner, 1987), and happens when the social self is more salient than the individual self, causing the behavior in groups to be regulated by social standards. These are the same behavior characteristics found in

deindividuation studies. When shifting awareness to the group identity, the lower perception of members as distinct individuals creates a sense of anonymity.

SIDE, when regarding CMC, uses the self-categorization argument that group identity only becomes salient or meaningful through comparison with a relevant outgroup (Turner, 1987) in order to understand polarization on discussions. Thus, if there is already a preference for a point of view, people will position their arguments away from the opposite point of view in order to conform with the group. When combining the intergroup contrast with ingroup conformity, a more extreme position in the preferred direction is created, resulting in polarization (Turner, 1987).

Online disinhibition effect

Online disinhibition effect is a concept that tackles people's lowering of restraints online when compared to face-to-face behavior (Dyer, Green, Pitts, & Millward, 1995; Suler, 2004). The effect can lead to both positive and negative behavior. For the latter was coined the term toxic disinhibition (Suler, 2004), used to address behaviors and actions such as flaming. Several factors have been listed as enablers of disinhibited behavior, such as anonymity, invisibility, asynchronicity, absence of non-verbal cues and personality traits (Suler, 2004).

Anonymity and invisibility, while being related, are not the same. When commenting in an online platform, the user is invisible to others. Even if profile information is available, the possibility to be physically invisible encourages disinhibition, because you will not be perceived by your look or tone and will not receive non-verbal cues that might inhibit behavior. Anonymity differs on the sense that it is not about being perceived but being unidentifiable. Users may even go further and face a dissociation process where they do not acknowledge their online behavior as part of their offline self, and this separation lessens the vulnerability to reprimands.

Asynchronicity of online comments, as opposite to the synchronicity of face-to-face conversations, means that the users don't have to cope with immediate responses and negative reactions from other users, also encouraging negative behavior.

Invisibility is related to lack of non-verbal cues, such as eye-gaze, which also contributes to disinhibition. Eye contact highly impacts face-to-face conversations, influencing the participants perception on characteristics such as trust and approval. A common non-verbal reaction for disapproval is avoiding eye-contact. Because it is a significant part of communication, its absence on CMC has high implications both emotionally and behaviorally on users, contributing to flaming (Lapidot-Lefler, Barak, 2011; Suler, 2004).

2.4 The impact of hostile comments in online newspapers

As said in the beginning of this chapter, CMC and online interactions have become something as commonplace FtF interactions. With the expansion of technology and CMC, different services have adapted to the online environment in order to take advantage of the accessibility and immediate access to information and services provided by the internet and devices such as computers and smartphones. One of these services are news businesses, that not only have created websites of their own but also take advantage of the quick exposure and fast spread of information provided by social media.

Commenting platforms are one of the easiest tools for online engagement and are usually seen with good eyes by both users and journalists. It offers the users the possibility to express their opinions and interact, indicating their level of interest towards the content. However, the quality of the discussions happening on these platforms is a matter of concern for both sides.

Since generally users value these platforms, and because recent research shows that low quality discussion on the comments can inhibit motivation to participate (Springer, Engelmann, & Pfaffinger, 2015), finding ways to encourage more civic and high-quality discussions is of major concern to keep user engagement. Even though a small percentage of the total users comment on these platforms, the majority reads what has been posted (Barnes, 2015). News organizations care not only for the volume of engagement, but for it to be done in productive ways, with quality interaction.

Hostility in the comments can have palpable impact for online newspapers in different spheres. Sources or subjects of stories can become targets to criticism or harsh attacks through the comments, which may lead to increased difficulty to get new sources and information (Diakopoulos, Naaman, 2011). It can also polarize previous attitudes, as mentioned before, and influence the perception of the user about the public opinion (Anderson, Brossard, Scheufele, Xenos, & Ladwig, 2014). Yet, the most relevant impact might be that negative and positive comments are perceived as heuristic cues to evaluate the quality of journalistic content. Studies have shown that users considered journalistic products with more positive comments to have higher quality than identical ones with negative comments (Dohle, 2018).

Therefore, finding new ways and tools to enable and encourage constructive, civil discussions are of key importance for the (near) future of our CM interactions, especially to avoid further deterioration of online newspapers' platforms.

3. EMOTIONS

Following the previous chapter, this literature review will focus on the affect labeling aspects of the designs, examining current research in the area of emotions and emotion regulation, focusing in the affect labeling process and its applications online.

Section 3.1 presents an introduction to emotions and different approaches that tried to explain them throughout history, leading to the modern theories. Section 3.2 presents a more practical view, the social roles of emotions. Section 3.3 introduces the processes of emotion regulation, with section 3.4 focusing specifically on affect labeling.

3.1 Understanding emotions

Emotions are one of those concepts that we know about but find hard to explain, despite our intuitive perception of it. Since ancient Greece, philosophers and scientists have tried to define and explain what emotions are and how they work, varying on the level of importance assigned to them, without reaching a consensus. Although committing mistakes, parts of these old emotion theories served as basis for the ones we have today. As a general definition, emotions can be described as responses to significant internal and external events (Schacter, Gilbert, Wegner, & Hood, 2011), and such responses can include verbal, physiological, behavioral and neural processes (Fox, 2008).

3.1.1 The evolution of emotion theories

An explanation for emotions started being drafted under the concept of psyche, central to Plato's philosophy. The psyche, or the soul, was separate from the body and responsible for human behavior, feelings and reasoning. Greek theories anticipated modern insights such as emotions implying reason, which later would be addressed on the role of cognition, and how emotions could be separated under different valences, being influenced by events and taking different forms, concepts that served as basis for today's theories (Schirmer, 2014). Following Greek assumption on how emotions were related to the soul, centuries later Descartes in his work The Passions of the Soul states that emotions are not only caused by external events, but in some cases the soul might be responsible for the creation of emotions. To explain how it occurs, Descartes introduced the concept of emotion regulation, precisely reinterpretation and distraction, while also recognizing bottom-up and top-down emotional responses, proposed different emotion categories, among other ideas. Later, like some of Descartes propositions, Darwin also suggested in his The Expression of the Emotions in Man and Animals different groups

for emotions, while also linking them to changes in the body and behavior, and payed special attention to the roles of facial expressions in humans.

With the establishment of psychology as a new discipline during late 19th century, the study of emotions became divided into medicine and psychological streams of research during the 20th century. On the psychology side, Magda Arnold (1961) proposed the appraisal theory, which would become a trend for future researches, and proposed thought as the basis for resulting emotions, something already suggested by the Greeks, as mentioned before. At the time, cognitive functions were understood as results of simpler subprocesses, which inspired researchers to approach emotions on the same basis. Through conscious or unconscious processes, appraisal theory linked heavily emotions to cognition. Emotion research following appraisal theory would then be divided into those who agreed on the dependency of emotion on cognition, such as Richard Lazarus, and those who believed the opposite, that emotions were independent of and antecedent to cognition, for example Robert Zajonc (as proposed in Kunst-Wilson & Zajonc, 1980).

3.1.2 Modern theories on emotions

Emotion theories would still evolve and take three major paths as the major modern theories we have today: the categorical, dimensional and appraisal approaches. The categorical approach views emotions as discrete entities with specific functions that have patterns of both triggers and expression of behavior, and that these patterns will occur in particular situations. The main categorical approach today proposes the so-called basic emotions. The work of Paul Ekman, inspired by Darwin, as a leading supporter of this approach suggests that each of these basic emotions have universal traits, specific bodily reactions, that can be recognized regardless of cultural background. These expressions were demonstrated in a study about facial displays, where participants could identify signs of happiness, sadness, anger, disgust, fear and surprise (Ekman, Sorenson, & Friesen, 1969).

The dimensional approach doesn't consider emotions to be entities, but experiences that can be graded along dimensions. One of the most important models for this approach is the circumplex model (Russell, 1980), which places emotions in a circular scale with two dimensions, valence and arousal. Russell named what would be the basic levels of these dimensions as core affect, a basic affective experience, which can change due to internal and external experiences. Once this change becomes noticeable, the individual is expected to feel an emotion.

Lastly, the appraisal approach is derived from the appraisal theory (Arnold, 1961), where the subprocesses that lead to emotions are called appraisals. Different than the two previous approaches, this one accepts a bigger amount of emotions than just the basic ones proposed in the categorical approach and also allows more dimensions than the dimensional approach. Klaus Scherer (2001), on his component process model, proposed that emotions result from four appraisals: relevance check, check of event implications, check of one's coping potential and check of the normative significance of the event.

These three theories differ in multiple aspects, not only on the processes that elicit emotions but how they understand the emotions themselves. From the Greeks until modern theories, a consensus on emotion hasn't been achieved. However, our current theories agree on certain assumptions, such as the evaluation of a stimulus in order to trigger an emotion (despite on disagreements regarding the process) and that emotions are linked to behaviors that have proven beneficial throughout our evolution (Schirmer, 2014).

3.2 The social role of emotions

One common aspect on the different recent paths employed on the attempt to understand emotions is that, traditionally, these concepts approach emotions mainly as individual phenomena, focusing on intrapersonal effects (Van Kleef, Cheshin, Fischer, & Schneider, 2016). However, emotions have an important role and impact on social factors.

Based on the consensus that emotions are functional and prepare us for different situations, it allows us to adapt to different scenarios, including social ones. Since we do not only feel but also express them, emotions provide information to others, which might influence their response to us and how both sides relate. Emotions are often evoked by others, directed to others and regulated in order to influence or abide to people, the social context and its norms (Parkinson, 1996; Van Kleef, 2009; Van Kleef et al., 2016).

Averill (1980) proposed emotions are temporary social roles, meaning that they consist of different elements that depend on the current context and social role of the person experiencing the emotion. This proposition comes from the idea that one emotion may lead to different reactions, or no overt expression, depending on factors such as the object of the emotion, location, if there are spectators, etc. Therefore, the effects of social context are influenced not only by the presence of others, relationship to oneself and their part on the situation, but by others' behavior and emotional state. This leads to a possible conclusion that an appraisal of the social context is part of the emotion reaction,

since the evaluation of an emotional event leads to the evaluation of others' behavior in order to decide what is an appropriate conduct.

It is also possible to consider the effects of emotion expression from the opposite role, as the one that is subject to it. The EASI model claims that an observer's behavior may be influenced by two processes, inferential process and affective reaction (Van Kleef, 2009).

Inferential process is when an observer, based on impressions of another's behavior, makes assumptions regarding the person's feelings, attitudes and intentions. The conclusions may lead the observer to change or proceed with its own behavior, depending on what is assumed to be appropriate. Here is possible to trace connections to some previously introduced concepts. Ekman's study (1969) proposed the universality of certain emotions, and how observers can recognize them on facial display. If the characteristics of these displays can be linked to the emotion independent of the observer's cultural background, it could be possible to say that Ekman's basic emotions reinforce the social aspects of emotions by demonstrating a successful case of inferential process, despite the intrapersonal orientation of the categorical approach. Another link is to nonverbal communication, explained in the previous chapter, and how it consists of most of the information conveyed during interactions. One aspect of a successful communication is to understand these nonverbal cues, which can be demonstrations of emotions, in order to react and proceed with the interaction accordingly.

Affective reaction is when one's emotion expression causes an affective reaction in the observer. The reaction, however, may take different shapes depending on the context and its norms and to what the original emotion expression was directed. For example, if a participant in a debate reacts fiercely to your argument it might instigate competition, while if the reaction is towards the other participant personally it may cause anger. However, because the expression of emotions is speculated to be linked to context, an overt affective reaction might go against the social norms. An example is when a boss is angry with results and acts rudely with the employees. Although the employee will likely be just as angry for being treated impolitely, in many cultures the norm is that the employee shouldn't openly react or complain. The evaluation of the suitability of an emotional expression, its context and the influence it causes on the observer's behavioral response is the result of another emotional process that impacts our relation and reactions towards both other people and the environment. This process is called emotion regulation.

3.3 Emotion regulation

Following the consensus on the functionality of emotions, it is assumed that they trigger reactions and prepare us mentally and physically for responses in different scenarios, as already stated. Therefore, if the current emotional state is altered, it is expected that consequential behaviors will also be altered, causing a tendency to behave in specific ways or not acting in others. These emotions and consequential actions can be either beneficial or disadvantageous depending on the context, and an acceptable reaction in a certain situation might be inappropriate in another circumstance (e.g., demonstrating joy and gratitude when receiving a gift compared to being joyful in funeral). On these moments where an emotion has an inappropriate intensity, length or type, it becomes unhelpful and it might be necessary to start a process of emotion regulation (Gross, 2015) so it better serves the situation and our goals.

Emotion regulation can be defined as “the processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions” (Gross, 1998). Learning how to control emotions is a skill that human beings start learning at young ages (Cole, Zahn-Waxler, & Smith, 1994) and may develop throughout life (Gross, Carstensen, Pasupathi, Tsai, Gottestam, & Hsu, 1997). It is necessary for our co-existence in society and can be done in several different ways. Actually, since emotions can be elicited by either internal or external events, the constant exposure to possibly arousing stimuli without fully triggering an emotional reaction may signal that, in fact, people engage in forms of emotion regulation more frequently than one would initially guess (Davidson, 1998).

3.3.1 Explicit forms of emotion regulation

The precursors of contemporary studies date back to Sigmund Freud (Freud, 1926), focusing specially on anxiety regulation, while the field of emotion regulation like we see today only emerged in the past decades (Gross, 1998). Traditionally, research on emotion regulation prioritized explicit forms of regulation, i.e those that require conscious effort to start and demand monitoring for the completion of the process, which we are aware of. Specifically, a form of regulation can be recognized as explicit if the individual is aware of what evoked the emotion, is aware of the emotional state and is able to identify the effects caused by the regulation process (Gyurak, Gross, & Etkin, 2011).

There is a wide variety of emotion-regulation strategies and classification models, which can emphasize different aspects such as functions or time course. Here will be considered the so-called “process model” (Gross, 1998), which classifies regulation strategies

based on their moment of intervention. This model proposes five categories of the process: situation selection, situation modification, attention deployment, cognitive change, and response modulation. Situation selection refers to the choice of one situation option over another in order to avoid elements that may elicit certain emotions, such as avoiding meeting a person. Situation modification is the process of modifying a situation in order to alter its emotional impact, also called as problem-focused coping (Lazarus & Folkman, 1984). Attentional deployment is one of our first developed methods and is about shifting focus, e.g. distraction. Cognitive change consists on modifying the way you think about the stimulus, like reframing or reappraisal. Response modulation is the last step, and the only one that happens after emotional responses have been elicited. It consists of directly influencing these responses and may vary from suppression of emotional reactions to the use of substances (e.g. drugs, food) to change the experience.

3.3.2 Implicit forms of emotion regulation

Implicit forms of regulation, on the contrary, seem to be automatic processes provoked by the stimulus and do not demand monitoring nor cause awareness (Gyurak et al., 2011). As mentioned, we are constantly exposed to emotion-arousing stimuli. Just like our attention is a limited resource and we do not become consciously aware of all the stimuli around us, we might as well not become aware of every step and procedure of a regulation mechanism, or not be aware of the process at all. Examples of this form of regulation are emotional conflict adaptation, habitual emotion regulation, affect labeling and error-related regulation (Gyurak et al., 2011). Emotional conflict adaptation tackles the modification of performance when there is conflict involved, resulting in different distribution of cognitive resources in order to overcome the conflict (see Etkin, Egner, Peraza, Kandel, & Hirsch, 2006). Habitual emotion regulation consists of an explicit form of regulation becoming implicit over time due to frequent use. Affect labeling refers to assigning emotional labels to oneself or another. Lastly, error-related regulation is about the ability to adapt control parameters during situations with conflicting stimuli, managing proceed from one circumstance to another.

Just like the appropriateness of an emotion varies depending on the context, so do the forms of emotion regulation, which can have different outcomes in different situations. Distinct contexts will demand diverse strategies in order to achieve various levels of regulation success. Regarding commenting sections and its impact for news websites, in order to trigger a successful emotion regulation process, it is important to consider not only the limitations imposed by the platform but also the distinct behavior that users can demonstrate online when compared to face-to-face interactions. Also, their goals play a

significant part when deciding the appropriate strategy to be employed, such as the desire to inform users about facts while also keeping them engaged without demanding extra effort. One possible option is affect labeling, better explained on the next section.

3.4 Affect labeling as a form of emotion regulation

Affect labelling, or naming one's emotional reaction, and its effects and benefits are not novelty, although only recently it started receiving more attention and being studied as a potential emotion regulation process when compared to others. It is not even necessary to go as far as therapy to exemplify its uses, it is a common social behavior among humans. Sharing your emotions with friends, writing diaries or more artistic forms of expression such as poetry or lyrics are frequent forms of emotional expression.

The term "affect labeling", in fact, includes different variations. Torre & Lieberman (2018) say it can refer to labeling your own or other's feelings or to label the emotionally evocative aspect of a stimulus. It can be achieved by speaking, writing or even choosing from a range of previously selected affect labels.

Several studies have shown that when applying affect labeling to emotional stimuli, participants report decreased levels of affect, both positive and negative (e.g., Burklund, Creswell, Irwin, & Lieberman, 2014; Constantinou, Bogaerts, van Diest, & van den Bergh, 2013; Lieberman, Inagaki, Tabibnia, & Crockett, 2011). In addition, it can lead to two kinds of effect: immediate and delayed reduction of responses. Interestingly, the speed of responses was linked to the necessity of generating affect labels. In studies that required participants to generate their own labels were reported delayed effects with longer duration, while if the labels were provided the effects were immediate but not as long lasting. According to Torre & Lieberman (2018), some reasons that could lead to this behavior are that provided labels make the choice simpler and reduce need for introspection, allowing the regulation to happen more easily, while also providing a sort of validation and recognition feeling regarding the label choices and person's emotions, since they were created by somebody else. At the same time, self-generating labels may cause longer lasting effects due to the necessity of an introspection process, which in the end is more relevant to the person.

Despite these results, a study showed that people are more likely to believe that affect labelling does not work, supposing it would actually cause more distress. This lack of proper understanding on how the process works shows there is no need for an intent to regulate emotions, when applying affect labeling, for it to be effective (Lieberman et al., 2011). This lack of awareness about the ongoing effects of affect labeling may cause it

to be a useful tool to incite emotion regulation without perception of the affected part, while still achieving emotion regulating results. As mentioned on the previous chapter, finding new tools to enable and encourage civil discussions online is a concern of high relevance, and affect labeling seems a potential option for unobtrusive emotion regulation in digital media.

3.4.1 Affect labeling online

A recent study by Fan, Varol, Varamesh, Barron, Leemput, Scheffer, & Bollen (2018) observed the evolution of emotions when affect labeling was used by Twitter users in naturally occurring episodes with use of online language. The study observed if positive or negative valenced emotion expressions were related to either an increase or decrease of the original emotion at different moments before and after the use of affect labeling.

It was noted that immediately after the users had expressed their emotions in written form, a rapid decrease of negative emotions and a less rapid decrease of positive emotions occurred, confirming previous literature regarding the impact of affect labeling on both negative and positive valenced emotions. It was also observed that although negative emotions start manifesting and accumulate for a longer period of time, it declines and ends faster after being expressed.

These results offer a strong demonstration of the promising effects of affect labeling in digital medias and support the use of affect labeling as a viable tool to enable emotion regulation online. As an implicit, unobtrusive form of regulation, it can be the basis for future user engagement and interaction mechanisms in an attempt to enable more civil discussions and promote an emotionally healthier environment for users.

4. RESEARCH QUESTIONS AND METHODOLOGY

This chapter concludes the literature review phase. Section 4.1 links the key points of the literature review to the here presented research questions. Section 4.2 introduces an overall view of the empirical work, which will be described in the next chapters.

4.1 Establishing the research questions

As described in Chapter 2, there are significant differences on the dynamics of FtF and CMC. One of the main points is how relevant and present non-verbal social cues are in FtF interactions, providing information which help to guide behavior for those involved through demonstrated social norms. Understanding these nonverbal cues is many times key to successful communication, and since these cues can be demonstrations of emotions, recognizing the signals is necessary in order to react and proceed with the interaction properly, as explained for the social role of emotions in Chapter 3. Evaluating the suitability of an emotional response, while considering the context and its established social norms, is called emotion regulation. However, social norms also exist in online interactions, impacting both content and form (Postmes, Spears, & Lea, 2000), but they are formed by observing the behavior of others through the available channels.

Subtle behavioral corrections do not happen in CMC like in FtF communication, and the necessity to rely solely on text to convey information may cause messages to be overly direct and explicit, which can be interpreted as hostility. Another possibility is that the lack of nonverbal cues in textual communication affects the capacity to regulate emotions and feel empathy (Walther, 1993), which can lead to uncivil or aggressive behavior by many users. Since social norms online are established by observing others' attitudes, this may lead to a belief that uncivil behavior is accepted and within the norms in an online environment. Unfortunately, users already expect hostile behavior in online discussions due to how common it has become (Reader, 2012).

Although several theories have been considered when trying to explain why CMC is more prone to hostile behavior, also called flaming, researchers arrived at conflicting conclusions. Even if an explanation for the reasons and origins of such behavior cannot be provided under a consensus, its consequences are tangible and have been shown in previous studies. Low quality discussion on the comments can inhibit motivation to participate (Springer, Engelmann, & Pfaffinger, 2015), increase difficulty to get new sources

and information due to them or subjects of stories becoming targets to criticism or harsh attacks through the comments (Diakopoulos, Naaman, 2011), attitude polarization, influence on the perception of the user about the public opinion (Anderson, Brossard, Scheufele, Xenos, & Ladwig, 2014) or that users considered journalistic products with more positive comments to have higher quality than identical ones with negative comments (Dohle, 2018) are some of the observed results. These issues are especially concerning when it comes to journalism and news services, causing them to be the focus of this work.

Considering how constant in our lives CMC has become, implementing ways to create a healthier and more civil environment is of great relevance. Taking into consideration the possible lack of emotion regulation when interacting via text, which results in inappropriate behavior, and that acceptable attitudes are defined by observing others, this work assumes the approach of providing means for users to regulate their feelings and control their behavior in advance instead of trying to create awareness over mass behavior in order to avoid additional depreciation of online news' platforms.

Analyzing emotion regulation as a possible basis for enhancing online interactions, recent studies have shown that affect labeling might be a potential tool for this process in social medias (Fan, Varol, Varamesh, Barron, Leemput, Scheffer, & Bollen, 2018; Torre & Lieberman, 2018). Hence, this thesis will proceed by designing and evaluating different options of affect labeling mechanisms that could help individual emotion regulation online. In order to achieve this goal, three research questions were formed, which will be referred as RQ.

As one of the consequences of hostility in comments the inhibition of motivation to participate, the first question focuses on the current mechanisms or methods available to ensure the engagement of users and the quality of comments and interactions. Factors such as the variety of options available at the moment, how often they are available, if there is any guideline of behavior provided by the service with easy access or if the judgment of a user's behavior is done by moderators or other users are contemplated by it, in order to find an average of the common options available.

RQ1: "What kind of mechanisms are currently used in online news websites to ensure user engagement and the quality of comments?"

With the current forms of engagement established and if there are distinct designs available already, the second question aims to investigate how affect labeling could be incorporated to the design of such mechanisms, what possible options are there, in what stage of the engagement would the affect labeling take place and through which tools.

RQ2: “What kind of different solutions there could be for implicit affect labeling, in order to provide user engagement and secure the quality of comments?”

The last question, based on a selection of the designs created for RQ2, aims to identify which aspects would cause strangeness or acceptance with users. It proposes an investigation of the possible qualities and defects of the presented designs, resulting on the characteristics that would make the mechanism easier to be implemented within the news’ services.

RQ3: “Which of the presented user interface mechanisms would be most accepted by users and due to which characteristics?”

Once the study is complete, the results might contribute to some extent to (1) understand the use of affect labeling in online contexts and (2) its acceptability by users, leading to a (3) validated design that could be further developed and implemented. It may also result in guidelines on what features for affect labeling tools are most interesting for users, leading to bigger engagement and possibly a quality increase in the comments.

4.2 An overview of the empirical work

In order to answer the proposed research questions, an empirical research process with several stages was conducted. The work for this thesis is divided in three stages, or studies, which correspond to each one of the questions, with different research method which were chosen according to both the needs of the study and the background of the writer.

The first stage focused in gathering data by benchmarking different services, news and social medias, that had comment sections available. The intent of this phase was to analyze what kind of mechanisms are available for users to interact with the content and/or other users in the comment thread. Through the benchmarking it was possible to define categories for the most common mechanisms and also see how often they are offered. Once the categories for most common mechanisms were established, it was possible to identify website which had different forms of interaction available. These were also categorized.

For the second stage, a series of designs for engagement mechanisms were created where affect labeling was supported. As part of the process, categories were created for the affect labeling such as who/what did it, at what moment, the format through which it was expressed and if it included a way to measure intensity. The categories created in stage 1 for the distinct mechanisms were also employed here, with some design fulfilling

its specifications. The purpose of this stage was to explore different design possibilities, ranging from conventional options to more conceptual ones.

The last stage consists of interviews and evaluation some of the designs created in stage 2. Interviews were done in trios in order to stimulate discussion and exchange of opinions, totalizing three trios of students from the Tampere University Human-Technology Interaction master's degree and three trios of students from other fields. The interviews intended to identify the interviewees habits of engagement and commenting behavior, how often they read news online and their initial impressions on affect labeling. The interview is followed by the evaluation of six designs.

The outcomes of stage three will result in the creation of guidelines on user acceptability for future affect labeling based designs, perceived usefulness and ease of use and impact on reading flow.

5. STAGE 1 – WEBSITE REVIEW

The goal of this phase was to discover which mechanisms can be found in news' websites for user engagement and control of the comment's quality, addressing RQ1. The intention is to identify patterns or trends on the availability of such mechanisms, to establish what is mostly available. In Section 5.1 the research method is presented. Sections 5.2 presented the results, while Section 5.3 introduces a discussion on the findings, as such will serve as basis for the development of stage 2 in the next chapter.

5.1 Research method

The gathering of data for this study was done in august 2019 through benchmarking. The method has several definitions, depending the context through which it is analyzed. A way to define it is the search for other organizations' best practices that lead to superior performance or changing processes in one's own company in order to achieve these excellency standards once they are identified (Moriarty & Smallman, 2009). Benchmarking was chosen as the research method in order to help create a picture on the current tools for user engagement and quality control of the interactions, their availability and how they are employed.

In total, 87 newspaper or news service websites from all over the world were benchmarked, along with 17 other social media services that employ similar mechanisms. The list of news websites to be benchmarked was composed based on their size or relevance of the service per continent, trying to keep a variety of countries of origin. The list of social media was thought to contain services with distinct proposals, most of them with high rates of usage.

At first, different articles of the chosen websites were analyzed in search for comment platforms. Those where articles with enabled comment threads could not be found were disregarded, a total of 33 news websites. For all the other ones, a series of factors were examined. What is the standard set of engaging mechanisms available? Are there any different mechanisms besides the identified common ones? How is quality in the comments supported?

Despite the focus on news services, social medias were also benchmarked due to the usual high levels of engagement and the presence of different sorts of tools to enable user activity. Besides, some social medias also work as means of propagation for news

content, generating discussions even if these do not happen in news service website itself.

5.2 Results

In order to identify distinct mechanisms, first a standard set had to be defined. The majority of news websites and social media offered three or more engagement mechanisms (47/54 for news, 11/18 for social media) and required the user to log in in order engage with the content (37/54 for news, 17/17 for social media). The demand for an account is already an attempt on identifying users and providing a higher quality control on the discussions, since open threads may encourage ill intended users. Based on the average amount of tools available and what they were, a standard set was defined, which can be seen in Table 1.

Table 1. *Standard engagement tools*

Mechanism	Example
Comments	
Reply	A reply can appear under the original comment, forming a new thread, or have the replied comment show up as a citation on the user's own comment.
React	Options for reacting have different design options, such as like/dislike, upvote/downvote, heart and other variants.
Report/flag	There is either a flag icon, the word 'report' or a three dots sign indicating there are hidden options, where the report one is included.
Sorting	User can choose the order the comments will be displayed, such as newest, oldest, most popular/active (those with more likes or replies).
Share	The comment can be shared on your profile on the available social medias.
Articles	
React	Articles can be liked or recommended (usage of different icons such as a heart or a star).
Share	Possibility to share in your profile on the available social media.

In addition to the engagement tools, it was also observed in the news websites which forms were employed to encourage and guarantee the quality of users' interactions. Besides from the already mentioned report/flag tool, the majority did not have the website's policies on commenting and behavior easily available for the users.

Proceeding to define which benchmarked websites have distinct tools, a mechanism was considered out of the standard set if it (1) offered new forms of interaction, (2) provided information in new forms regarding the users' engagement and its quality, (3) had one of the standard tools with a different form or approach or (4) made the behavior guidelines easily accessible for user or encouraged the interactions towards a healthier behavior. Only tools implemented on the websites were considered, if a plugin was used for comments (e.g. Facebook or Disqus), the offered tools were disregarded as distinct options. The evaluated websites that had engagement tools and/or quality control mechanisms other than the identified standard set are listed on Table 2a and 2b. The lists of remaining websites, news and social media, can be found in Appendix A.

Table 2a. *News websites included in benchmarking that had mechanisms other than those presented in Table 1 for user engagement and/or reinforcement of comment quality*

Website	**Country**	**Address**	**Type**	**Has distinct tools for…**
Aamulehti	Finland	https://www.aamulehti.fi/	News	User engagement & reinforcement of quality
El Espectador	Colombia	https://www.elespectador.com/noticias	News	Reinforcement of quality
El Tiempo	Colombia	https://www.eltiempo.com/	News	Reinforcement of quality
Helsingin Sanomat	Finland	https://www.hs.fi/	News	Reinforcement of quality
Le Monde	France	https://www.lemonde.fr/	News	Reinforcement of quality
O Estadão	Brazil	https://www.estadao.com.br/	News	User engagement & reinforcement of quality
Philippine Daily Inquirer	Philippine	https://www.inquirer.net/	News	User engagement
The Huffington Post	U.S.A	https://www.huffpost.com/	News	Reinforcement of quality
The Namibian	Namibia	https://www.namibian.com.na/	News	User engagement
The New York Times	U.S.A	https://www.nytimes.com/	News	Reinforcement of quality
The Telegraph	United Kingdom	https://www.telegraph.co.uk/	News	Reinforcement of quality
The Washington Post	U.S.A	https://www.washingtonpost.com/	News	Reinforcement of quality
Yahoo News	U.S.A	https://news.yahoo.com/	News	User engagement

Table 2a. *Social media included in benchmarking that had mechanisms other than those presented in Table 1 for user engagement and/or reinforcement of comment quality*

Website	Country	Address	Type	Has distinct tools for…
Facebook	Global reach (U.S.A)	https://www.facebook.com/	Social media	User engagement
Medium	Global reach (U.S.A)	https://medium.com/	Social media	User engagement
Sina Weibo	China	https://www.weibo.com/overseas	Social media	User engagement

The most observed category regarded reinforcement of comment quality with behavior guidelines. It was observed in ten different websites, either as recommendations or a link close to the commenting box, the latter leading to a separate page with longer instructions and explanations on the website's behavior policies. Aamulehti and O Estadão displayed recommendations close to the commenting box, making it noticeable to the user while the comment is about to or being written. While Aamulehti gave overall short guidelines on the appropriateness of the comment form and content, O Estadão displayed a longer warning about the content of the comments, the newspaper's position regarding the subject in the comments, removal and automatic rejection. Helsingin Sanomat, differently, made available on top of the commenting section a link to their behavior proposal and guidelines. Examples are seen in figures 1, 2, and 3. Other examples can be found in Appendix B.

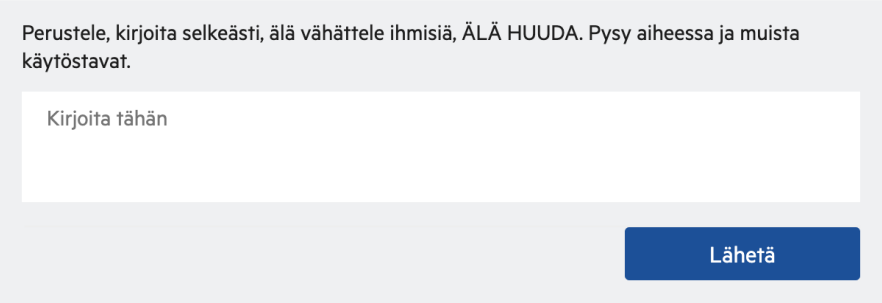


Figure 1. *Reinforcement of comment quality: behavior guideline above the comment box in Aamulehti – "Argue, write clearly, do not belittle, DO NOT SHOUT. Stick to the subject and remember manners."*

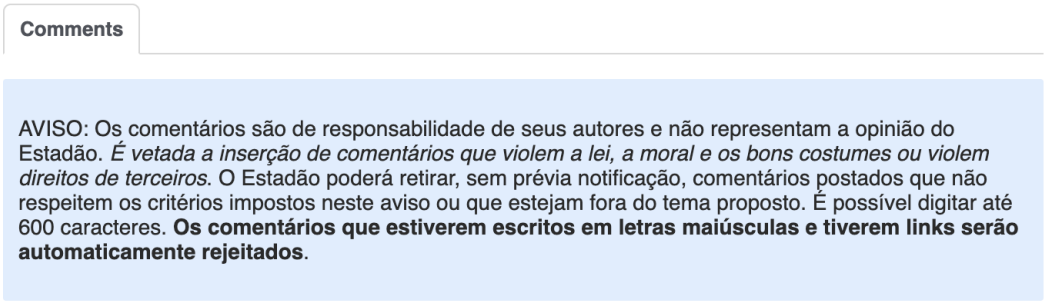


Figure 2. *Reinforcement of comment quality: behavior guideline above the comment box in O Estadão – "WARNING: Writers are responsible for their comments and the latter do not represent the opinion of O Estadão. It is forbidden comments that violate the law, moral standards and good behavior or that violate others' rights. (…)"*

Figure 3. *Reinforcement of comment quality: link to the behavior guidelines above the comments in Helsingin Sanomat – "HS wants to create the best conversation in Finland."*

A different form or approach to a standard tool was the second most observed case within the final group of websites. Five websites fell into this category, for reactions either to articles and/or comments. The most well-known example is the reaction tool on Facebook which can be used for posts and other users' comments, shown in figure 4, offering more options than a simple thumbs up button ("like"). Similar to it, displaying the same options for evaluation, is a tool to react only to the article in the Philippine Daily or to posts in Sina Weibo. The latter two can be seen in Appendix C.

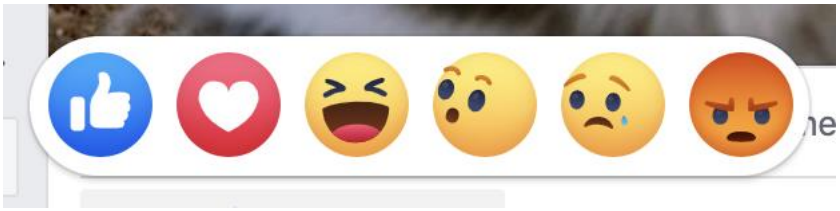


Figure 4. *Different form of a standard tool: reaction options for both posts and comments in Facebook*

The two other websites, O Estadão and The Namibian, had distinct options of reaction. O Estadão, instead of liking a comment, allowed users to 'respect' one with an icon of two hands being shaken. The change on the reaction, from like to respect, might have an impact on how other users rate or perceive comments. You might not agree with the comment but recognize good use or arguments or a new point of view. In The Namibian

the interactions were directed to the article, while the comments were displayed as a list. Among the actions the user could take, it was possible to react to the article with ‘omake’, an Otjiherero phrase meaning to applaud. The feature stands out from the other reaction options, like and dislike, because it enables the user to have a new level of appreciation for the article while also using a local expression. The examples are seen in figures 5 and 6. Clapping hands are also used to like comments in Medium, seen in figure 9.

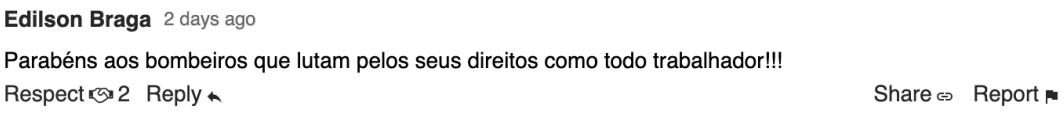


Figure 5. *Different form of a standard tool: “respect” button (hands shaking), reaction option for comments in O Estadão*

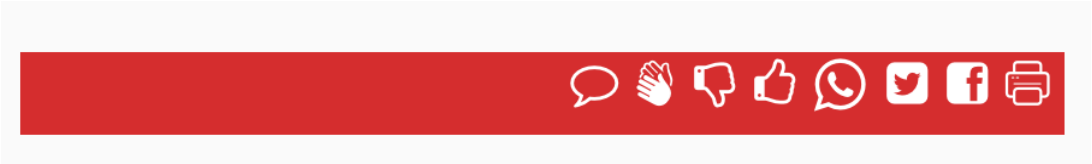


Figure 6. *Different form of a standard tool: “omake” button (hands applauding), reaction option for articles in The Namibian*

Regarding new forms of interaction, two websites were put into this category. Aamulehti offers different categories for the user to post comments, which already helps to sort out which kind of content it will have and forces the user to think on its purpose and intentions in advance. Medium offers a highlight tool that can be used throughout the article and the option of the highlighted area appearing as a citation on the user’s comment. The examples are seen in figures 7, 8 and 9.

Figure 7. *New form of interaction: comment sorting in Aamulehti – “Blue button: join conversation / Options: I have a new point of view; I want to contact the journalist; I want to report a misinformation”*

Figure 8. *New form of interaction: by highlighting parts of the text in Medium interaction options are shown*

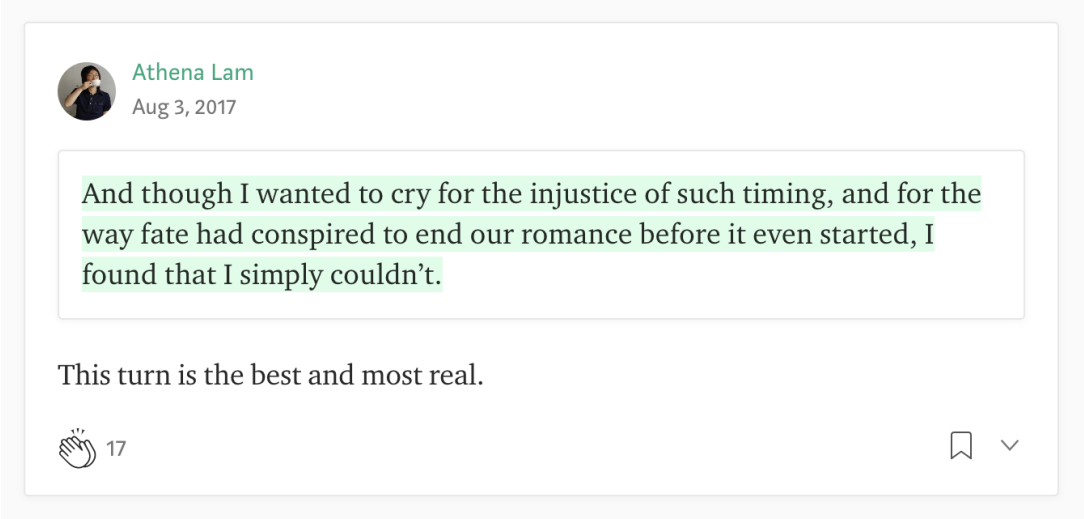


Figure 9. *New form of interaction: citation from highlighted text in a comment in Medium*

Lastly, only one website had a tool that provided new information on the users' engagement and its quality. Above the comment thread, Yahoo News displayed a scale on the quality of the ongoing discussion. Since there wasn't any visible way of voting about it, it may be speculated the website uses artificial intelligence to measure the tone. The example is seen in figure 10.

Figure 10. *Providing new information to the user: discussion quality measure in Yahoo News comment thread*

5.3 Discussion

A different approach or form of a standard tool was the most common category of mechanism seen among the websites, used for both comments and articles or posts. Available as different reaction options, it gives the user the possibility to analyze its own impressions in a larger spectrum instead of just as positive/negative (like/dislike, upvote/down-

vote). However, in options like the reactions on Facebook the choices available are restricted to some extreme and easily identifiable emotional reactions, with the possible aid of the emotion name displayed either as text on the side or when hovering the emoticon. When other emotions are instigated, users might either use a generic reaction (like/dislike) or express their opinion through other means, such as the usage of images in the comment itself (emoticons, GIFs, etc). More subtle emotions and different variations of intensity are not available for users to choose, which may keep the expression of affect at a superficial level. In alternatives such as “respect” or “omake”, the user’s reaction is not directly represented by an emotion, although the actions are related to positive or negative ones. This kind of representation opens the possibility to use neutral options in an attempt to discourage extreme reactions and even local expressions for reactions and feelings, creating a connection with the users.

Quality control and encouragement was only seen as flag/report tools and behavior guidelines. Although there were more websites displaying the guidelines than there were websites which implemented reaction tools, the guidelines were not part of a mechanism or displayed in a more active and encouraging form. The examples found contained recommendation texts or links to the full guidelines, which is a passive form to employ it, relying that the user will pay attention and read it fully. The need for moderators or reports by other users on faulty comments is still necessary to keep the thread under a defined standard of quality and civility.

The presented new forms of interaction, despite the examples seeming very different from one another, can be interpreted as forms of focusing comments. Aamulehti offers different categories on the purpose of the comment and Medium lets the user identify, through the highlight tool, to which part of the text the comment is directed to. It gives the users the possibility to think about their intentions and to what they are reacting, which could help avoid misinterpretations from other users.

Giving information on the user’s engagement had only one result, which provided an insight to new and current users on the tone of the discussion. At the same time that it can alert users on the type of behavior they might encounter, it can also cause them to not comment if they think the discussion is too aggressive and are not willing to risk aggressive interactions from other users towards them. Further analysis would be needed, but it could be expected some level of influence on new users’ comments. By seeing in advance the tone of the thread, it may lead the user to follow a similar tone in order to fit in the existing discussion. From the moderators’ point of view, it is a useful tool to keep track of increasingly uncivil comment threads.

All in all, considering the present tools, there is not much variation on how the users can express their feelings and impressions or means to specify it. There is no bigger integration between engagement tools and maintenance of quality and civility in comment threads except from flagging/reporting. The reaction tools such as Facebook's may work as a form of affect labeling, but it is used by a minority of services.

6. STAGE 2 – PROTOTYPING

Following the past stage, this second one addresses RQ2 and aims to explore different designs for engagement tools that employ affect labeling, leading to a possible increase on comment quality. Base on the literature review, it is considered that the affect labeling process will be the factor responsible for addressing the user's civility. In Section 6.1 the research method is described, followed by the results on Section 6.2. Finally, Section 6.3 discusses the process.

6.1 Research method

In order to proceed with RQ2 a second study was realized, under the view of Research through Design (RtD), as proposed by Frayling (1993). This approach draws strength from applying design practices into the generation of knowledge and has been catching attention in the Human-Computer Interaction (HCI) field (Zimmerman, Stolterman, & Forlizzi, 2010), differing from commercial design due to its interest on problematic situations.

With a growing interest in "wicked problems", which refer to those difficult and ambiguous problems with changing requirements and no single solution, RtD offers the possibility for designers to engage in more societal problems. Professionals are able to collaborate in the construction of a better society instead of merely applying their skills to commercial purposes. Driven by a research question, the resulting artifacts may create data for analysis and further develop theories, although the latter is not the first reason for the research (Savic & Huang, 2014). Considering its attempt on creating new insights on technology and the purpose of this thesis, RtD will be the method used to create possible answers and proposal for RQ2, resulting in study 2.

Based on the benchmarking realized for study 1, a total of fourteen (14) designs were created for possible engagement tools. The intent of the designs was to investigate different forms that could initiate an affect labeling process, either as new versions of the previously introduced standard tools or as new proposals. The goal for the designs is that the tool itself would help the users to moderate their behaviors, leading to higher civility in the comments.

In order to create different design variations and then test the best forms through which affect labeling could work, four different categories were created. Each category had

different options that could be combined between themselves. The categories can be seen on Table 3.

Table 3. *Categories used to base the designs*

Category	Options
Labeling process done by	Self – another user – machine
When the process occurs (timing)	Before reading – before commenting – after commenting – after posting
Format used	• Words: free text – pre-determined text • Visual: images (emoticons) – colors
Intensity measurement	• Form: slider – words – colors • Provider: user – machine

To answer RQ2, during the development of the tools it was given most focus on the proposed interactions instead of interface and aesthetic aspects of the design. The intent was to make the tool understandable and usable enough to remain independent from the interface, especially considering that these could be implemented in different websites that have their own user interfaces.

6.2 Results

The created designs mixed different options of the four categories, with the possibility of not addressing all categories in one design. Designs following the same concept were also created but used different options of the categories to see how these differences would impact the functionality. A summary on how the categories were explored in each design can be seen in Table 4.

For each design, an average of two or three wireframes were made illustrating the functioning of the tool. If a tool couldn't be summarized to a maximum of three wireframes, it was considered either too complicated or required too many steps to be used. However, there were designs that presented information to the users before the usage of the tool itself and requiring more wireframes, so these were still considered.

As previously said, the concepts considered merely the tools and the interaction performed by the user. Therefore, the designs are restricted to the moment when the affect labeling process should take place without considerations on how comment threads

would look, if the information provided by one user would appear to others, if this would help personalize the website content, among other possibilities.

Table 4. *Summary of the designs and their characteristics*

Design	Labeling by	Time	Style	Intensity
01	Self	Before commenting	Pre-determined text	Words (user)
02	Self	Before reading & before commenting	Images (emoticons)	-
03	Self	Before commenting	Pre-determined text	-
04	Another user & machine	After posting	Pre-determined text & colors	-
05	Machine	After posting	Colors	-
06	Self	Before commenting & after posting	Images (emoticons)	Colors (user)
07	Self	Before commenting	Images (emoticons)	Slider (user)
08	Self	Before commenting	Images (emoticons)	-
09	Self	Before commenting	Colors	Slider (user)
10	Self & machine	After commenting	Free text	Words (machine & user)
11	Self	Before commenting	Free text	Words (user)
12	Another user	After posting	Free text	Words (user)
13	Machine	After commenting	Images (emoticons)	-
14	Machine	After commenting	Images (emoticons) & colors	Slider (machine)

The following are small explanations on how the designs function and a few examples on the wireframes. The totality of wireframes created can be seen in Appendix D.

Design 1 (Figure 11) falls under the category “one of the standard tools with a different form or approach”, providing a more detailed form of reaction with pre-made textual tags. Before commenting, the user chooses the valence and is then presented with intensity options. The commenting section can be filtered by the valences. The initial filter is, by default, a positive valence to try to influence readers towards a similar behavior, as part of the process to establish social norms online is to observe other’s behavior.

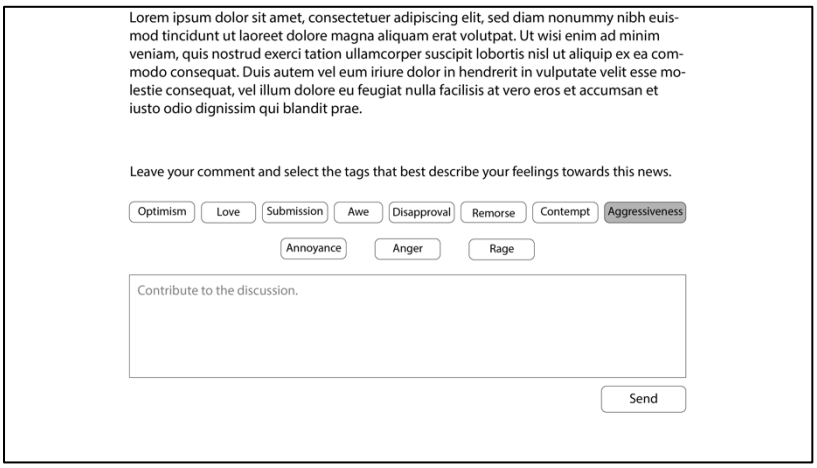


Figure 11. *Design 1*

Design 2 (Figure 12) follows some aspects of design 1, allowing users to react through a different approach, but also addresses the quality feature, “make the behavior guidelines easily accessible for users or encouraged the interactions towards a healthier behavior”. Before reading the article, the user has to choose between valence options regarding the first impression caused by the title and is asked the same after reaching the bottom of the article, which the system understands as the user finishing the reading. Based on the emotion evolution, the placeholder in the commenting box changes, displaying recommendations on the comment to be made.

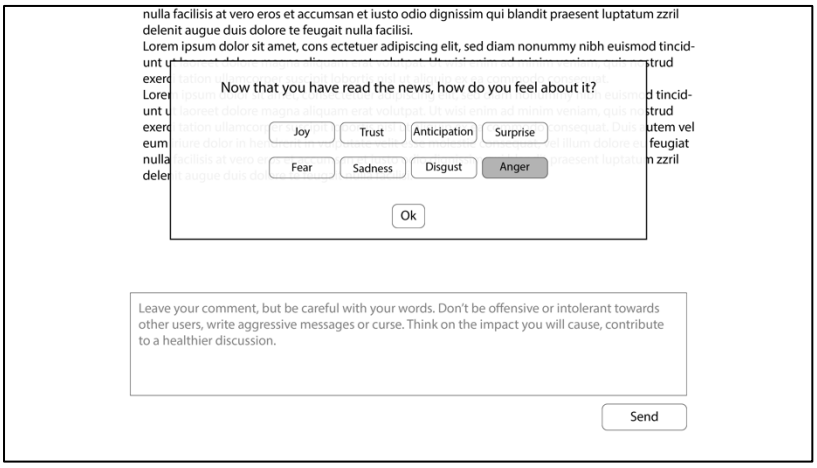


Figure 12. *Design 2*

Design 3 (Figure 13) offers a new form of interaction and had two options on how to function, which would need further investigation regarding users’ acceptance and its viability. For the first option, the user is able to highlight different areas of the text, indicating their feelings towards that part (emoticon-based reactions) and/or comment. The user is able to do that in several parts of the article. Each user can see their own highlighted

part, but how other's highlights are displayed would need further iteration and investigation. In option 2, the author leaves the main points of the article highlighted and the users can only react and comment on those parts.

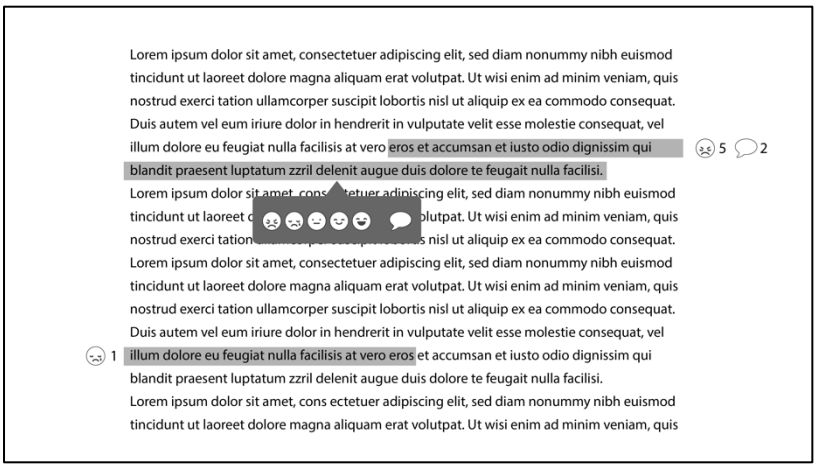


Figure 13. *Design 3*

On design 4 (Figure 14), the machine will position the thumb on the slider according to the tone of your comment. The slider is color coded, so users can understand the positioning. Other users can move the thumb, in case they think it is wrong, and indicate the reasons to why that comment should have their rating. This is the first design where the focus was not how the article made the user feel, but others' comments.

Figure 14. *Design 4*

Design 5 (Figure 15) derives from the original concept of design 4, with the machine giving an estimative on the quality of the comment. Here, the machine will fill the user's bar according to the quality of the comment. Ideally it is used in websites that require a user login/registration, since there are two possibilities for this to work: 1) the average is done for each comment individually or 2) the bar will be filled according to the average

of the user's comments in different articles through time, and users with very low bars can be "punished" according to the website's policies.

Figure 15. *Design 5*

Design 6 (Figures 16a and 16b) provides information in new forms regarding the users' engagement and its quality and has one of the standard tools with a different form or approach. It allows the user to see on the main page the ratings for the article and the commenting section. On the article page, by voting the user is able to label their feelings towards the article by positioning the thumb in the emotion wheel and towards the commenting section's quality, using the same tool. It is a more complex tool to manipulate, since not only the user can choose from different options but also has to define the intensity, which is color coded. This is the first design to provide information for the users, in this case by showing as ratings the average of users' labelings.

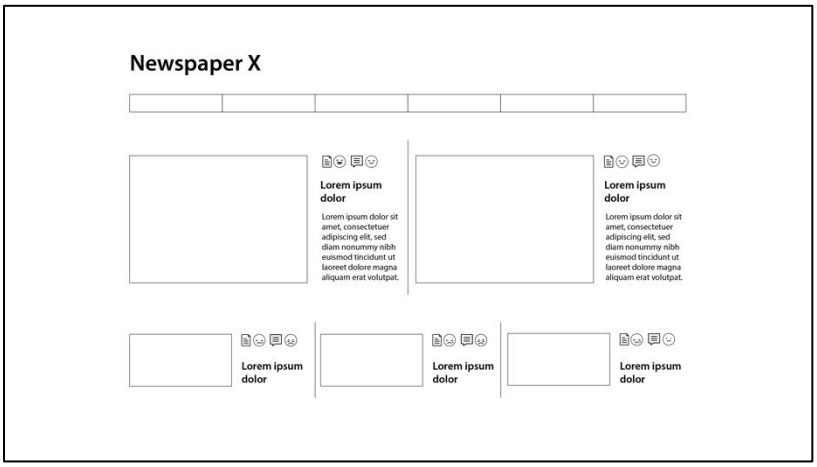


Figure 16a. *Design 6 (home page)*

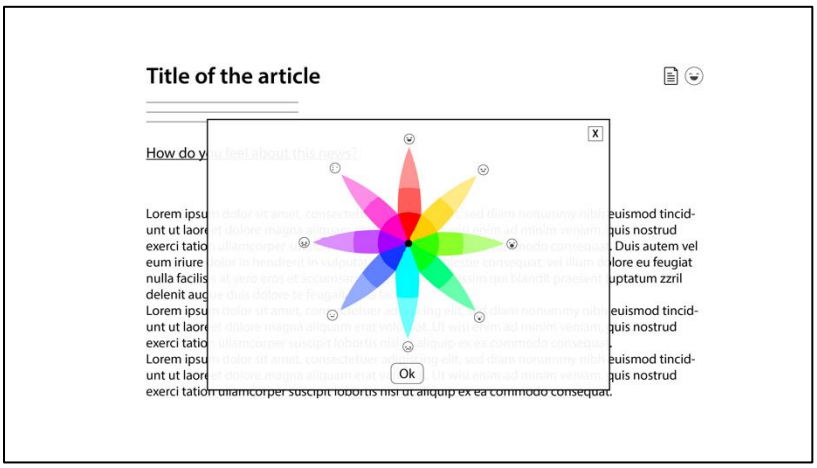


Figure 16b. *Design 6 (mechanism in the article page)*

In design 7 (Figure 17) reactions are given a little more complexity, with the possibility to define arousal. Before commenting, the user chooses the valence towards the article and is then allowed to move the slider to indicate the intensity of the chosen valence. Arousal was part of the interaction in designs 1 and 2, but now user is given more freedom to specify their feelings instead of choosing from pre-made tags.

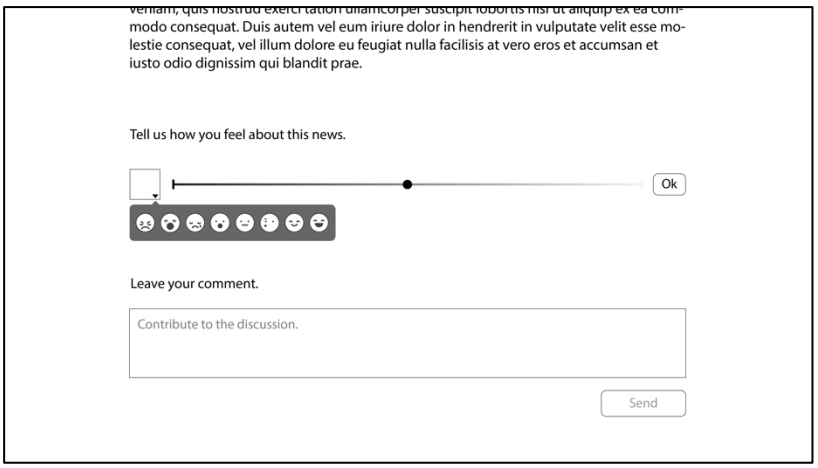


Figure 17. *Design 7*

Design 8 (Figure 18) has a more experimental proposal. It lets the user manipulate the emoticon face to match their own emotion towards the news. Further consideration is needed regarding the viability of allowing manipulation for the whole face or if it should be only using pre-determined options that the user can choose from. It requires more time of use, and although this can be strange considering how fast users expect these online interactions to be (“like” button requires one click), it can also give the user time to calm down while s/he decides how the face will look like.

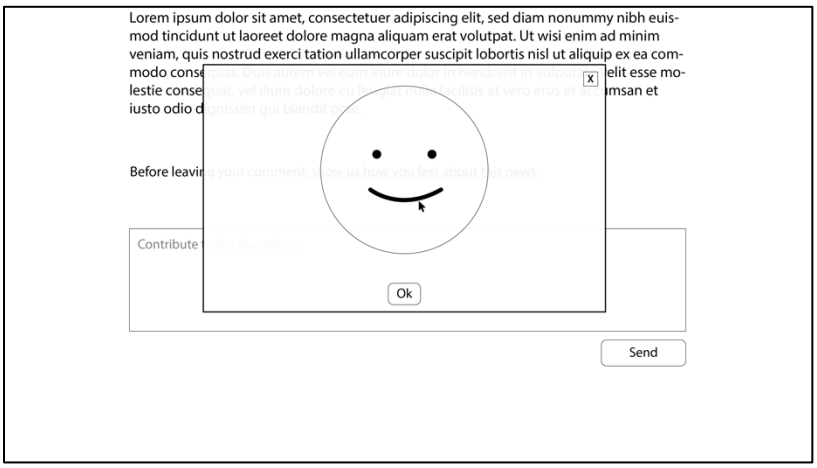


Figure 18. *Design 8*

With design 9 (Figure 19), the user moves the sliders to indicate valence and intensity. Colors are associated with certain emotions and leave space for people to express their feelings in a more subjective way. One issue that may arise is that color perception changes with culture. This was based on the new form for a standard tool category, although taken to a more abstract side. Conceptually it is similar to design 7, but the emoticons were replaced with colors to define valence.

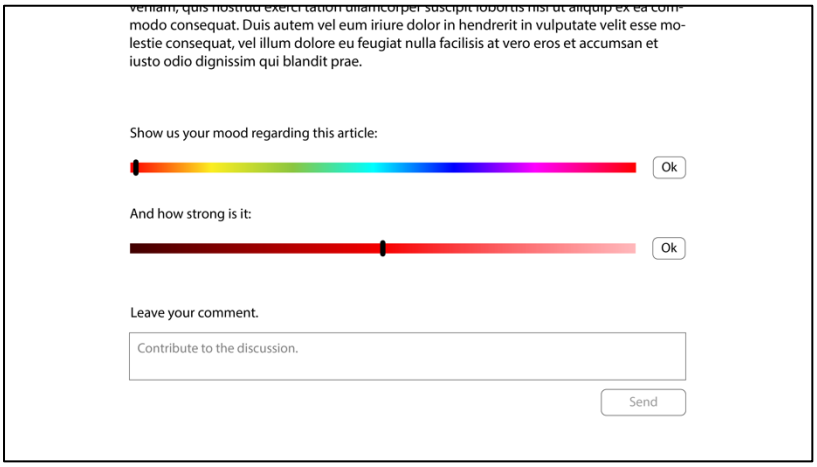


Figure 19. *Design 9*

Design 10 (Figure 20) promotes a new form of interaction. While the user writes, the machine identifies words/expressions that indicate certain emotions and highlights them. When the user stops writing, the system indicates the major perceived valence and asks the user if that is right, also giving a recommendation based on the behavior policies depending on what was identified. It is not defined if the user has to answer the question in order to be able to post the comment or if it is an optional step, different tests would have to be made in order to compare the results and see the best option. This design is

very distinct from the first two where the machine was in charge of identifying the emotions, although here the users are able to label too since they can correct the identified emotion.

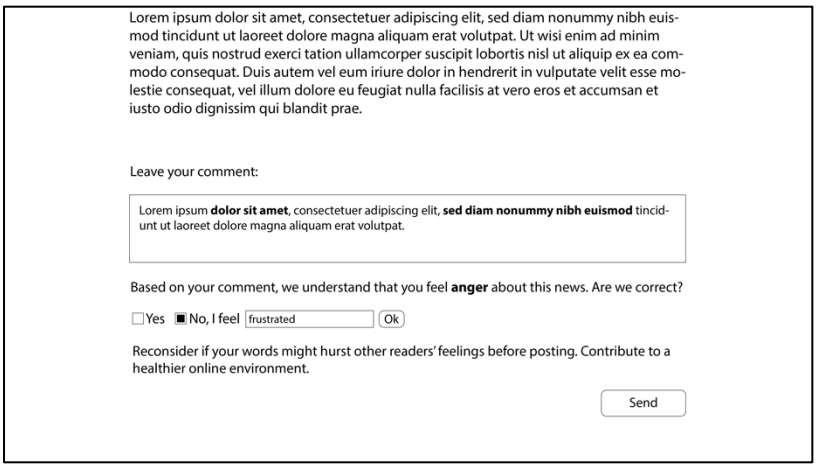


Figure 20. *Design 10*

With design 11 (Figure 21), the user can freely right what feelings the news caused on them. Some problems in case the moderators want to check the emotions being evoked are the usage of slangs, typing errors, spelling errors, among others. This was made as a comparison to the pre-made tag designs, specifically designs 1 and 2, although those that use emoticons can be considered too. This was inspired by Torre & Lieberman (2018) discussion on the different impacts of pre-made and self-generated tags.

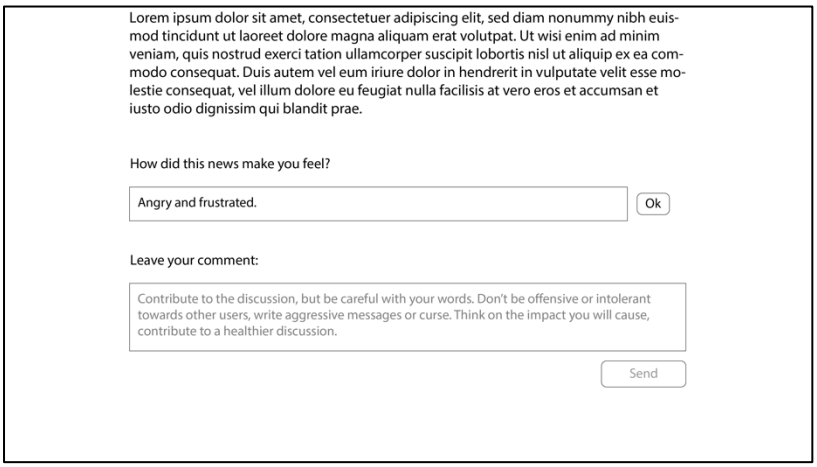


Figure 21. *Design 11*

Design 12 (Figure 22) allows other users to flag comments that they perceive as problematic and have to provide a reason for it. Moderators then are able to judge if it's an actual problematic comment or some "internet grudge" (e.g. polarization such as left vs

right wing arguments). This developed from the same concept as design 4, but also taking the considerations of Torre & Lieberman (2018) on the different impacts self-generated labels have on the regulation process when compared to pre-made tags. Comparing, design 4 has a more complex stage of marking the message as problematic (a slider, while here is just a regular flag button), while design 12 requires more though when giving reasons for the flagging.

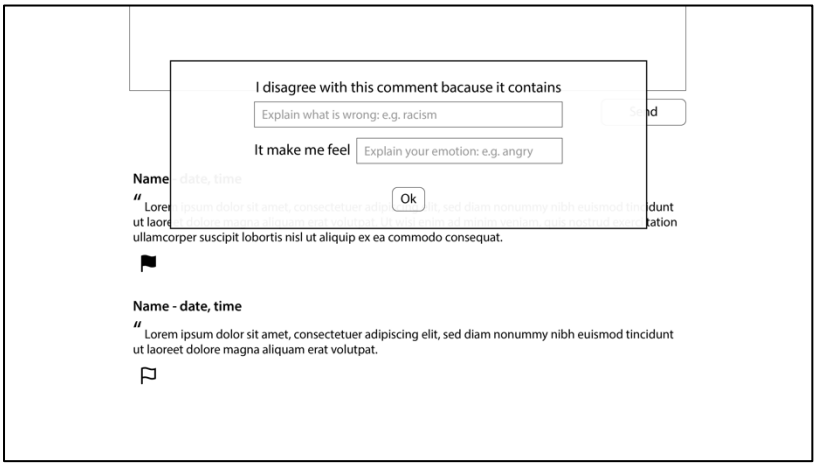


Figure 22. *Design 12*

Design 13 (Figure 23) is a variation of design 10. In both, while the user writes, the machine identifies words/expressions that indicate certain emotions and highlights them. While in design 10 the machine asks for written confirmation on the identified feelings, here the machine indicates the perceived emotions through emoticons and gives a recommendation about the comment. The user is not able to feed information so the machine can learn to better identify feelings, but the process has less steps for the user.

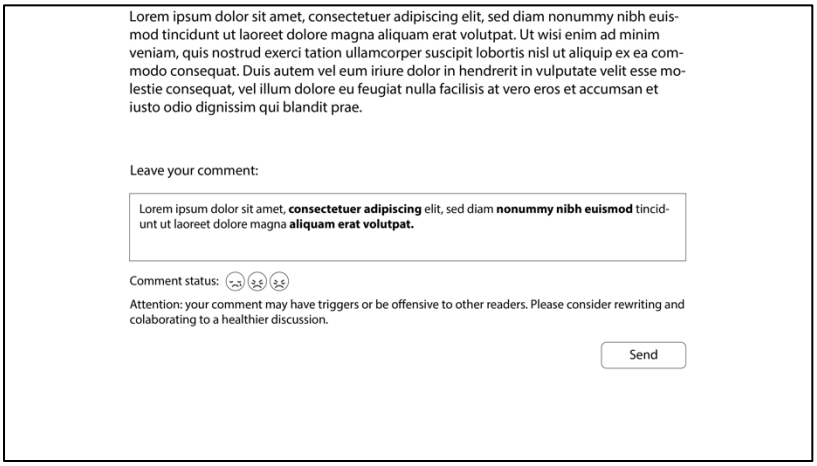


Figure 23. *Design 13*

Lastly, on design 14 (Figure 24) another variation of the concept was made. Again, while the user writes the machine identifies words/expressions that indicate certain emotions and highlights them. The valences identified on the comment will be indicated with emotions on the ends of the slider, and the slider will be positioned according to which valence is most present. In case there is only one perceived emotion, the slider will show the intensity level (the closer to the emoticon, the strongest). Design 10 provided just one emotion for the user to confirm, while design 13 had the possibility of showing different emoticons which represented the valences of the highlighted text, but in a very simple way. In this last design, it takes into consideration the possibility of multiple emotions and presents it in a more complex way to the user.

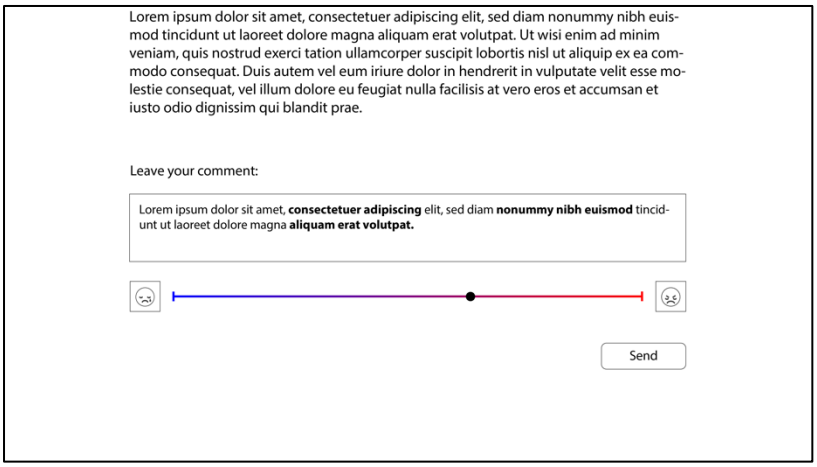


Figure 24. *Design 14*

6.3 Discussion

Several design options were created for possible affect labeling tools, aiming to enhance the civility and quality of discussion in news websites. The designs employed different methods in order to lead to the labeling process, such as the moment the emotion was expressed, through which form or who was performing the labeling.

The brainstorming process, although at first challenging, became more structured once the different affect labeling aspects were categorized (labeling done by, time of labeling, style and intensity measurer, showed previously in Table 4) and then combined with the categories of the first study: offered new forms of interaction, provided information in new forms regarding the users' engagement and its quality, had one of the standard tools with a different form or approach or made the behavior guidelines easily accessible for user or encouraged the interactions towards a healthier behavior (as introduced in Chapter 5).

Some of the designs are variations of the same original concepts but combining different elements of the categories. This allows for iteration within the ideas, and although not all the versions will be evaluated for validation (Chapter 7), the insights acquired during the next phase can already give hints if some of the non-evaluated designs would have higher changes of success and also show which combinations have higher changes of rejection.

Some of the designs proposed different forms for already existing tools, adding other aspects that could enhance the affect labeling process by giving the user extra information or options to consider. Some examples are the usage of color or forms to measure intensity along emotions represented on reactions. More complex designs are the emotion wheel and emoticon manipulation, which demand a bit more time both for consideration of the emotions and usage of the tools, giving more freedom and allowing some self-evaluation but at the same time risking causing impatience and disinterest on the users due to the extra work.

The possibility to report a comment was addressed in designs 4 and 12, requiring users to explain the reason for flagging. While other designs tackle the users' emotions about the news, on these the focus is what other comments might cause them to feel. In design 4 the labeling is done through the slider, allowing measurement of intensity while also being color coded, and in design 12 the affect labeling is done with free text. These designs are easier than other flagging systems seen in social medias that require explanation, which usually require the user to go through a longer process and is mostly concerned about the content.

Designs 5 and 6 provide new information to users. In design 5, users are able to keep track on how the behavior and tone of their comments are being perceived, what might encourage a different posture when expressing their opinions and feelings in future articles. The tool itself on this design doesn't provide an affect labeling opportunity, but it might direct the user towards it on the comments. Meanwhile, on design 6, the user is presented with early information on the tone of articles and comment thread before accessing the material as part of the functionalities available. Like design 5, it doesn't allow an affect labeling process, but it might influence the user on future interactions.

In general, the designs attempted to provide a variety of possibilities, from simpler tools closer to those users are acquainted with to more experimental ones, in order to investigate the limits of acceptance by the users and possible benefits that these designs could provide. After proper evaluation, some of them could be combined in order to achieve a better balance on how intrusive the tool is to the reading-commenting process for the

user. Another aspect is how the labeling done by the user would be used by the website, if it would appear after the comment is posted or a filter option is available.

7. STAGE 3 – INTERVIEWS AND DESIGN EVALUATIONS

This chapter describes the empirical work carried out for RQ3, carried out by using interviews and subjective evaluation. The results of this study might contribute to the creation of guidelines regarding future designs on user engagement mechanisms with an affect labeling base. In Section 7.1 the research method is presented, along with the results in Section 7.2. Finally, Section 7.3 presents a discussion on the findings, leading to the creation of design guidelines for future engagement mechanisms.

7.1 Research method

As the last stage, in order to answer RQ3, interviews were done with eighteen participants. The interviews were divided into two groups, students from Tampere University's Human-Technology Interaction (HTI) master's programme and non-HTI students from Tampere University and Tampere University of Applied Sciences, each group consisting of three trios.

The interviews were done in groups for three main reasons. The first was to avoid a possible feeling of pressure or tension which might arise in individual interviews if the participant has a more introverted personality or is not used to participating in such studies, which is directly related to the second reason, providing a more natural discussion environment where the answers of one participant may encourage another's and create an exchange of points of view. This second point is supported by Casey and Krueger (2000), who claim such interviews provide a more natural environment than an individual one due to how the participants influence each other, like in a real-life situation. Lastly, the group interviews allowed a bigger number of participants while saving time, which was especially relevant considering all the interviewees were students with rather similar schedule restrictions.

Each session included three parts. 1) Interview on the participant's preference on news source, engagement habits and thoughts on affect labeling. 2) Evaluation of six designs chosen from those presented in Chapter 6. 3) Discussion on preferred designs and their characteristics, as opposed to those they wouldn't use. The sessions happened in the premises of Tampere University between October and December 2019. The duration of the meetings was between 40 and 80 minutes, having one session exceeded the target

duration of one hour. In the beginning of the meeting, a recording agreement was signed by participants, who also completed a form to provide demographical data (Appendix E).

7.1.1 Data analysis

The interviews were analyzed in three parts, the introductory questions, the design evaluations and the conclusion on participants' preferences. Notes were taken for each question's answers, which were then grouped by similar ideas and opinions in order to define possible average behaviors and points of view. Distinct thoughts were also looked for, in order to identify possible contrary opinions.

7.1.2 Participants' background

Participants were recruited among the writer's acquaintances from different courses and activities at the university. Ages ranged between 21 and 33 years (see Figure 25), 22% (4/18) were bachelor students, 61% (11/18) master's and 17% (3/18) doctorate students (Figure 26).

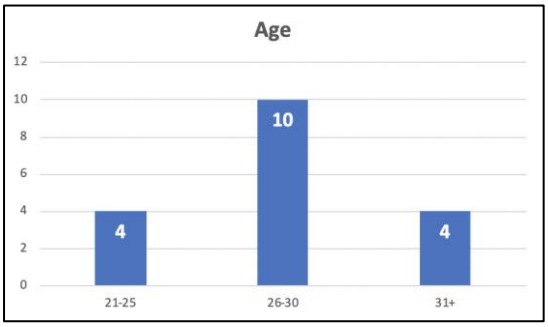


Figure 25. *Age distribution*

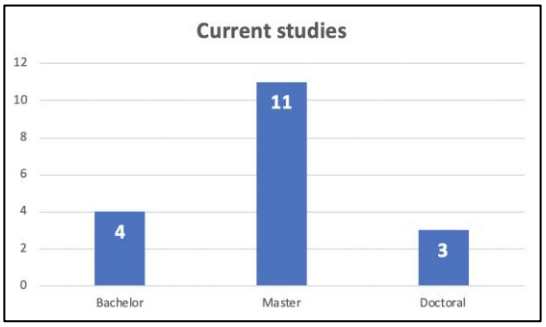


Figure 26. *Educational background*

The background questionnaire collected some information which later were better explored during the interview. The questions aimed to verify the participants' news reading habits, the commenting frequency and if they engage with other comments (see Figures 27-29). Considering that content engagement isn't restricted to commenting, it was also asked what kind of content the participants share, creating engagement within their own circles, which resulted in a higher number of answers since some participants answered more than one option (Figure 30).

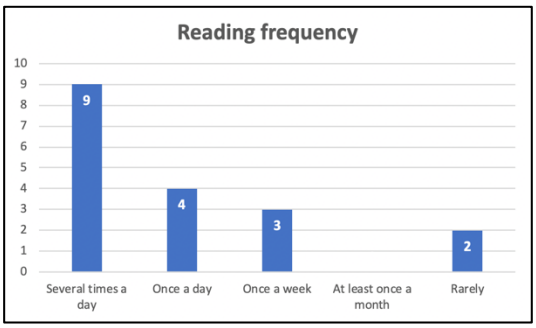


Figure 27. *"How often do you read news online?"*

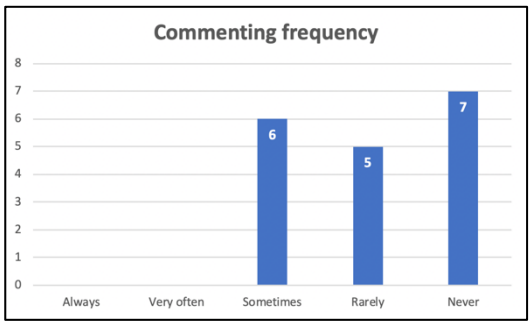


Figure 28. *"How often do you comment on news articles/posts?"*

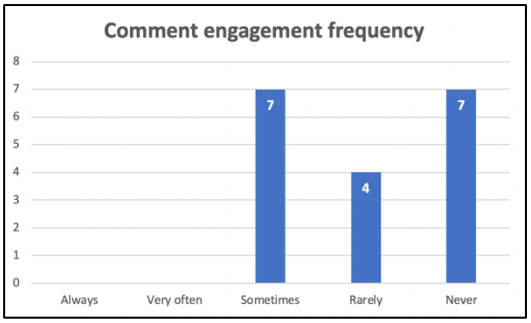


Figure 29. *"How often do you engage with other comments?"*

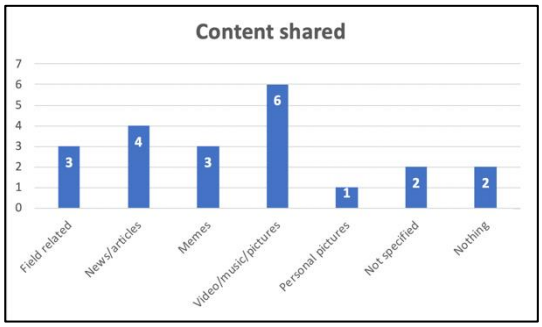


Figure 30. *"What kind of content do you usually share?"*

7.1.3 Introductory interview

In the beginning of the sessions, a semi-structure interview was done to find out the participant's preferences on news source, engagement habits and thoughts on affect labeling. The first part intended to briefly identify the reasons that made the participants prefer certain sources over others and with which ones they engaged more, if they did. The second part focused on commenting habits and possible impacts caused by their own comments or comments of others. The last part approached the concept of affect labeling, which none of the participants knew about although the idea of naming emotions is familiar to all. This part of the interview touched not only the process of labeling itself, but its application online. The main questions are listed in Table 5, divided by parts and its themes.

Table 5. *Interview main questions*

Part/theme	Questions
1 – Background complement:	Which is your favourite news source? Why?
Source preference	In which news/article source do you interact/engage the most? Why?
2 – Commenting behavior	What makes you comment or not?
	How do you feel after commenting? Do you feel any kind of (emotional) change?
	Do you check the tone of previous comments before commenting? In case yes, does it influence your own comment?
	Does the content of other comments influence your perception on the article?
3 – Affect labeling and labeling mechanisms	Do you think expressing/naming your emotions/feelings help to deal with them?
	Do you express emotions/feeling online? Why/Why not?
	How do you think it's possible to express emotions online?
	Do you use them, and if yes, do you feel any difference after using?

7.1.4 Design evaluations

The interview proceeded with the evaluation of designs 2, 3, 6, 7, 10 and 11. These were chosen in order to present a wide range of options to the participants, with different sets of characteristics, as proposed in Table 4. The questions for evaluation part of the interview are in Table 6. The reasoning for the chosen designs was as follow.

Design 2 makes the user think about his/her emotional development and even if the comment isn't changed, it has been shown that many people stop to think about their text if someone calls their attention about it. On the other side, it has a limited set of emotions to select, with no intensity variants. It was chosen for evaluation because the limited amount of options might please those who try to avoid situations that require too much thought, so the use of word tags is straightforward, while also including recommendations on the commenting box.

Design 3 could be implemented in different manners. In one option, the user is able to highlight different areas of the text. Your own highlights are visible to you, but only the

most highlighted areas (user average) are visible for everybody. User keeps his/her independence, but there are issues that need further thinking such as 1) in case someone decides to highlight several parts or a whole paragraph it will look messy and 2) how would the commenting tool work if you highlight an area that nobody else did (who would see your comment) or if your highlight is too long and covers two different majorly highlighted areas (to which comment section would your own comment be posted). In a second option, the author leaves the main points of the article highlighted and the users can only react and comment on those parts. Here the interface wouldn't become messy, but there is loss of independence. In general, comments can be better specified by showing directly to what they are related. However, it could increase the amount of comments to moderate, while users who want to keep interacting must keep track of the different threads throughout the article. This was chosen, despite these issues that would need further development, because it differs from regular commenting sections, while requiring the user to read at least a bit in order to comment (in order to decide what s/he will highlight) and making the thread more organized because comments are concentrated to the parts they refer to.

In design 6, users have more freedom to specify their emotions, although it may be difficult to interpret the wheel. It's more subjective and users may think that it will take too much time. In general, it is a more ludic approach, but is not immediately available (the user should click to open the tool, which can cause the tool to be passed by) and while the concept will seem familiar for users from certain fields, to others it may look to unrelated to what they have as reference.

Design 7 allows bigger focus and freedom to define emotion intensity, but these are predetermined, so the user must recognize the emoticon used to represent each feeling. From the chosen designs for evaluation, it is the only option allowing bigger manipulation of the intensity levels.

Design 10 is the only on in the selection where the machine has an active part. Since it shows the user what in his behavior is being noticed, it becomes more practical than reading the commenting guidelines. However, users may mark "yes" out of impulse and there is the risk of misspelling, slangs, etc.

Lastly, design 11 allows bigger freedom to express emotions. On the opposite side, free text allows misspelling, slangs, irony, etc., which may cause error on the recommendations on the commenting box. Also, users can confuse and write what would go in the commenting box in the emotion box. It is a simple tool and offers the possibility to compare free text with pre-selected tags (design 2).

Table 6. *Questions for the design evaluations*

Part/Proposal	Questions
Each design:	What do you think of it?
perceived ease of use - - - - - -	Does this feel like a natural step of the interaction?
	In case no, would it interrupt the reading-commenting flow? To what extent would it impact the process?
perceived usefulness - - - - - -	How do you think this tool would complement or impact your interaction?
Conclusion	Which one(s) do you prefer? Why?
	In case it's different, which one(s) do you believe would be most accepted by the majority of users? Why?
	Which one(s) you wouldn't use? Why?
	On your preferred one, do you have any comments or suggestions about the functionality?

The wireframes were turned into short animations, which were played for the participants as many times as requested (Appendix F).

7.2 Results

7.2.1 Participants' online engagement

As shown from the background questionnaire answers, the vast majority of participants read news with good frequency, half of them doing so several times per day. The two main reasons that lead participants to read their chosen news websites was the sense of trustworthiness and political alignment, although one participant claimed to check sources from both left and right views in order to see how they communicated facts. Seven participants (39%) mentioned different social media platforms as their original source of news instead of the service's website directly.

Considering the standard engagement tools defined in Chapter 5, it was asked from the participants if they engaged in ways such as sharing, reacting or commenting. Despite the relevance of social medias as a source of news, among the participants it did not play such a role of propagation, with only 4 participants (22%) claiming to share news in their personal accounts. Six participants (33%) mentioned they might share by private message with close friends and family or acquaintances if they think the article will interest the person. The main reason for this behavior, pointed by seven participants, is that they did not want possible controversial news or contents in their profiles which could

lead to discussions for others to see, and for this reason they preferred to discuss the topic directly with those they are closer to, or not share at all.

For reactions, only two participants affirmed liking articles or news content in their social medias as a common habit, while one participant used to use a feature to rate the relevance of articles in the news website itself. Others who mentioned liking content affirmed doing so to materials related to their hobbies or work field instead of “political” pieces.

Lastly, the majority of questions were about commenting habits since they are the most relevant for this study. All participants had reservations towards commenting. Half of them claimed to never comment, and common statements were that “it seems like a waste of time” or “discussions in comments don’t result in anything good”, confirming the results from previous studies that low quality discussions in the comment thread inhibit will to participate (Springer, Engelmann, & Pfaffinger, 2015).

> *“I don’t feel like there is anything to gain from commenting. People don't maintain good discussions, and nobody is going to change each other’s opinion.” – Man, 26.*

One participant said he could comment if he had something to say about the topic that had not been mentioned before, while three participants mentioned they might if the topic is something they have knowledge about and can add to the discussion or answer doubts, but not in political threads. One participant said she comments in posts that are nice and skips those that irritate her, while another mentioned an opposite behavior and the wish to comment in posts or topics that made her angry (e.g. other users defending controversial topics without proper arguments). One participant added she might comment if the post or article is about something very important to her.

Those who commented, even with a low frequency, stated different feelings after doing so, such as apprehension on how people would react to the comment or tiredness, since the conversation doesn’t seem to move forward when users have opposing opinions. For the so called “nice posts”, two participants mentioned that they felt good after commenting. Three of the participants who comment said that the tone of other comments influences on their decision to comment or not

> *“For example, in those posts about rescued dogs and how they have recovered, it is nice to comment because I let out all those sensitive emotions.” – Woman, 31.*

When asked if the content of comments affected their view on the article, eight participants claimed that sometimes comments might add on their perception of the article’s topic. However, the condition was that the comment should provide new information with good arguments, be well written and in a polite manner. It was stated that comments might provide new insights missed by the article writer or expose biases.

"I will read the comments if it's a relevant topic, it's nice to get points of views from both sides even if you disagree, except the dumb ones. But the person needs to explain properly and be polite." – Woman, 24.

"Sometimes I read the comments because I'm curious about a wider perspective and how people are feeling about the topic." – Woman, 31.

One participant said comments might help when he did not fully understand or does not know what to think about the article by providing new points of view on the topic. Three participants stated firmly that comments do not change their perception.

"The commenters usually provide more extreme views than the article itself. Even if it provides new information, the comments don't change my opinion because the articles are usually complete and well written." – Man, 27.

"I have strong opinions about the topics I am interested in, but I might check a few of the most popular comments to see if there is a lot of people who think the same way as I do." – Man, 26.

The other seven participants did not have definite opinions on whether the comments influence their perception or not, explaining it depends on the topic and that usually they do not read comments.

7.2.2 Participants' perception on affect labeling

Next, a few questions were made in order to understand participants' general perception and awareness of affect labeling as a process and its possible effects and applications online.

Although the term affect labeling was not familiar to any of the participants, when asked if they felt that naming your emotions helped to deal with them, seventeen participants (94%) affirmed that externalizing your emotions can be beneficial. Conditions such as the type of emotion externalized or to whom or how this process was done was given by all sixteen participants, such as talking only with close ones or sharing mostly negative emotions. From these seventeen, one participant affirmed sharing emotions with close ones only if it has been bothering for a long time. One participant said to avoid sharing information due to how personal that information can be.

"I don't talk much because I don't want to bother my family or friends, but if I have emotions that have been bothering me for a long time, I think it's really helpful to talk to someone. I just think it's hard to verbalize these feelings by myself." – Man, 26.

"I don't like that others know what emotions and feelings I have. If you express to others it's easy to get attacked because it's very personal." – Woman, 26.

When asked if they expressed emotions online as well, the majority of participants claimed not doing so. Two participants said that it is easier to share positive emotions, and two participants claimed to have lost the habit of sharing online as they grew older. One participant mentioned that she still uses certain platforms to express herself, but under certain conditions that protect her privacy.

> *"No, online is a place for venting and you don't get any improvements." – Man, 27.*
>
> *"I write in platforms where only people that know me can read, but sometimes also on reddit and it's mostly telling stories about something that happened. It's easier to post there because it's more anonymous." – Woman, 27.*

Five participants mentioned reactions (e.g. "like" or other options such as those offered in Facebook) as their form of expressing emotions online on different kinds of posts. When asked what other forms there were to express emotions online, emojis were the most mentioned option, followed by GIFs, memes and language (e.g. irony, use of punctuation). Other audio-visual forms were mentioned such as audio or video, although they are not as used, and its usage varies depending on the service.

When asked if they used these kinds of tools and how they felt, three participants claimed to not use any. Three participants said that tools like reactions or emojis are beneficial due to its distant approach when compared to text. One participant added that they are an easier and more direct response, but its usage depends on the context.

> *"It feels safer instead of using words, because the interpretation responsibility is on the reader." – Woman, 25.*

One participant claimed to prefer GIFs and memes due to its capacity to stand out more among other comments in the thread. One participant claimed that using reactions and emojis provided a low level of satisfaction.

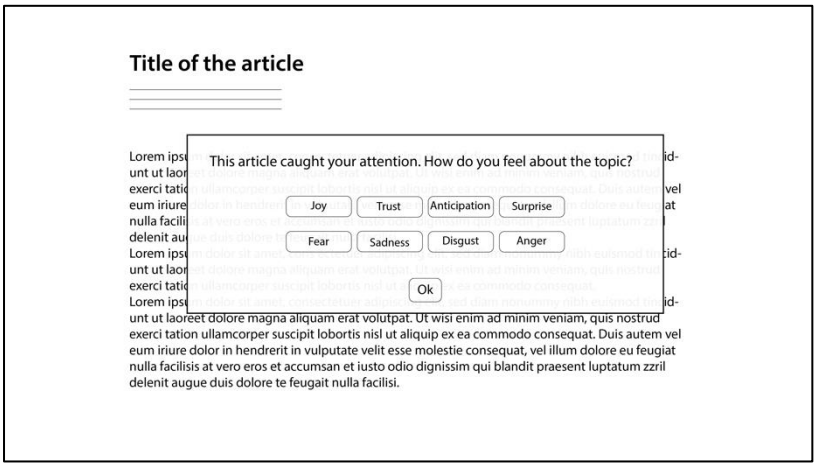
> *"I prefer GIFs or memes. Emojis are everywhere so people just ignore them, but the others attract people's attention better." – Woman, 26.*

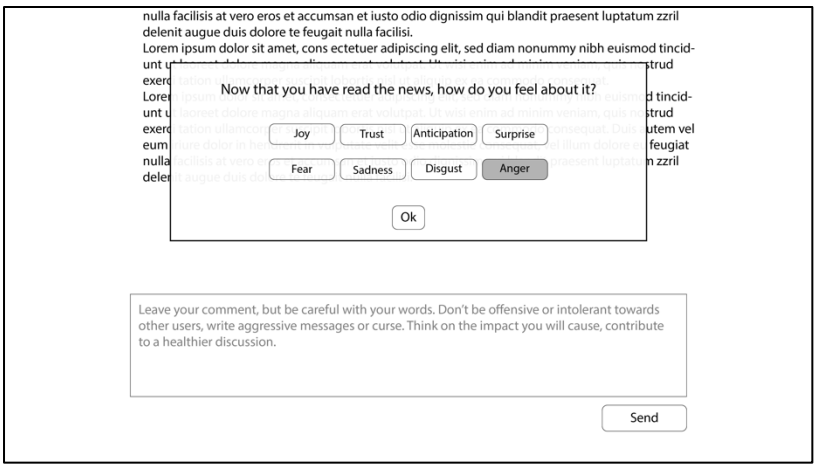
7.2.3 Design evaluations

After the introductory interview, a short animation was played on how each design worked. After each video, the participants answered questions about their impressions on the design, focusing more on the interaction of each proposed idea than in the user interface itself.

Design 2

Description: User chooses between the offered emotion tags before and after reading the article. Based on the evolution, the placeholder changes to give recommendations.





All participants stated that pop-ups are interruptive and would worsen the experience. Five participants (28%) stated that the first pop-up would make them leave the website without reading the article. Since the box shows up as soon as the user opens the article page, it was associated with adds or requirements such as cookies' policies. Two participants mentioned being curious on why the website would ask the questions twice and wonder if this was to help them build models about the users.

> *"The first question on your emotions, the one before reading, feels weird and out of place. The second question feels like a normal thing you could see in websites." – Man, 27.*

When asked to explain further how it interrupted the usage flow, two participants stated that it is an extra click or step that users are not expecting and one claimed that there were too many options, creating too much extra work. Two participants said they would click on any answer just to complete the step. Three participants pointed out that such a question is not commonly asked, and therefore it might create difficulties to answer because users are not accustomed to think about it.

"The several questions about emotions might be challenging because people are not used to thinking about it all the time, only when they feel strongly about something." – Woman, 26.

Regarding the impact the emotion tags and the comment recommendations in the placeholder, there were three major understandings between the participants. The first idea was that the tool would have an opposite result from what was intended, annoying the participants and possibly increasing negative comments. The latter could result from a feeling of confrontation from the system, depending on what is written in the placeholder.

"If you are having a strong emotion, like anger, users won't read or care about the recommendations in the commenting box. So, unless there is some kind of reinforcement or moderation, they already made up their minds and won't be polite." – Man, 24.

"If a reader has an extreme reaction or the feeling isn't present in the options, it might be annoying." – Man, 27.

The second perception was how the credibility of the service could impact the tool's acceptance. If the user trusts the website and the articles are aligned with their views, participants mentioned there could be higher chance that users would trust the tool. Otherwise, it would seem that the service is trying to manipulate the discussions' level of arousal.

"I think that the acceptance of such a system has to do with how you feel about the publisher, if you trust it and the publisher is trying to improve things for you. If you don't like the publisher, then would probably just leave the website." – Man, 27

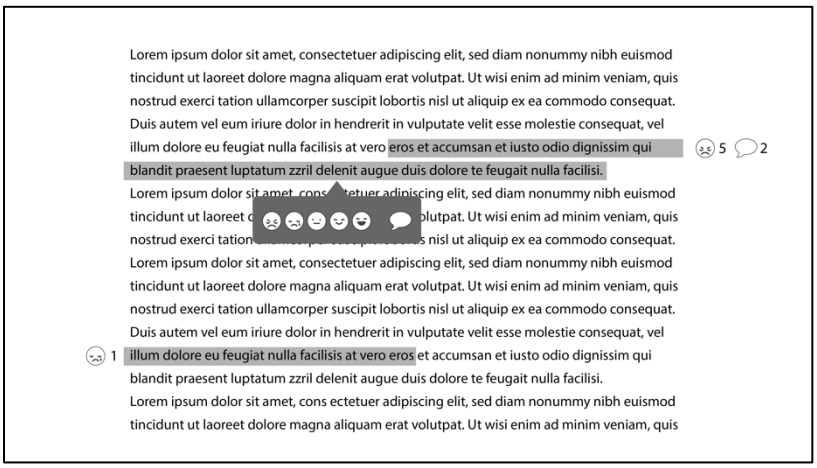
The last major perception was that if such a tool became used in a regular basis, users would learn to better recognize their feelings and possibly learn to manage them as a consequence by being more self-aware.

"Some people they might like because now technology helps them track feelings. You become self-aware while using the technology. Reminds me of the slow-technology movement, because you would improve a damaging part of this kind of interaction." – Man, 26.

Lastly, one participant mentioned the possibility of users cheating the system by selecting different tags and one participant pointed out how the tool could be rejected due to privacy concerns.

Design 3

Description: Possibility to comment and react directly to different parts of the text through a highlight feature.



While four participants immediately had positive reactions to the concept, the majority of participants said that the highlights might worsen the reading experience 1) if there are too many highlights, creating visual pollution and confusion, or 2) by aiding selective reading, while the article is to be absorbed as a whole. It was also mentioned that it would require more work to read comments or check reactions, since they could be separated, and also suggested that it would be a great improve if the visualization of highlights could be turned on and off.

> *"Feels a bit micro for commenting, and the reactions might lead people to highlight big parts of text. The article is supposed to be absorbed as a whole." – Man, 27.*
>
> *"The highlights should not affect the reading experience, they should not pop out so much, but it would be nice sometimes to know which parts are found most interesting by readers. Maybe not enable this with daily news, but perhaps opinion pieces." – Man, 29.*

Those who had a first positive response stated that the possibility to be specific in their comments and reactions was very interesting, that it worked as a similar function to quoting. One participant mentioned this could be especially useful in long articles. Another participant mentioned that he regularly uses similar functions in shared documents with known people, such as Google Docs.

However, when asked if the form of interaction felt natural, only two participants disagreed. Not only it was compared to quotes, but also was said that highlighting is a common activity done by people in different situations such as working or studying. It was also mentioned that other services offer similar features, such as the possibility to have a time stamp in your comment at Youtube.

> *"Niconico Douga has something similar where the comments show up on the video as a timeline based on their time stamp. It's nice but can be visually confusing, although you can turn off the feature." – Man, 24.*

When asked how this feature could impact or complement the interaction and experience, factors were pointed out and some were seen as both positive and negative. One of the main points was how the tool could have its purpose diverted. Highlights could be done to mark details such as grammar, names or other minor issues, or to use certain highlighted areas for discussions and arguments without taking into consideration the whole article.

> *"People maybe would focus in little details that they get annoyed about instead of focusing in the argument of the whole text. It would depend on the subject of the article." – Man, 26.*
>
> *"The readers could pick up parts, becoming a thing of its own, so the article isn't read in the way the writer meant." – Man, 29.*

Another aspect is that previous highlights might influence readers perception and understanding of the topic. At the same time, it was seen as a good point because it can help future readers to identify important points when glancing through.

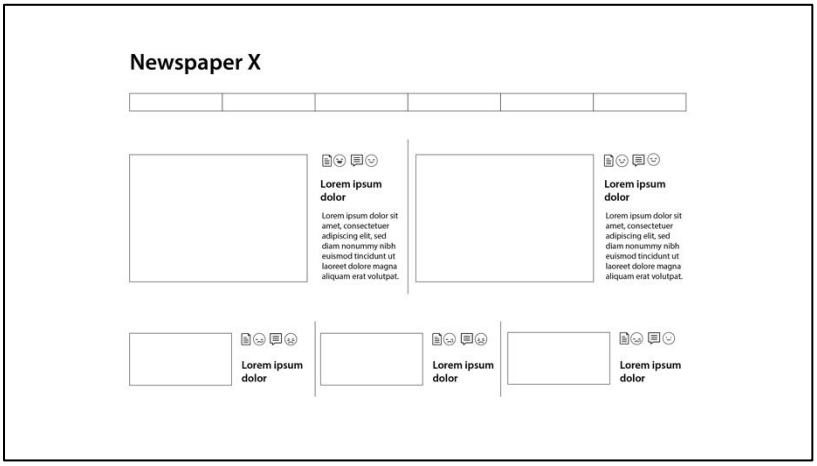
> *"If all the highlights are available, it can be too much information or can influence my reading. For example, I can feel pressure to think something is important or highlight it too because other people have done it." – Woman, 31.*
>
> *Sometime people don't want to read everything, so the public highlights could help with this. Or maybe if I could share my highlights along with the article to someone, the person would see what I find important. – Woman, 26.*
>
> *"It makes it feel more connected with the other readers. It also makes it easier to glance through the article with the highlights, which can also be a bad thing." – Man, 32.*

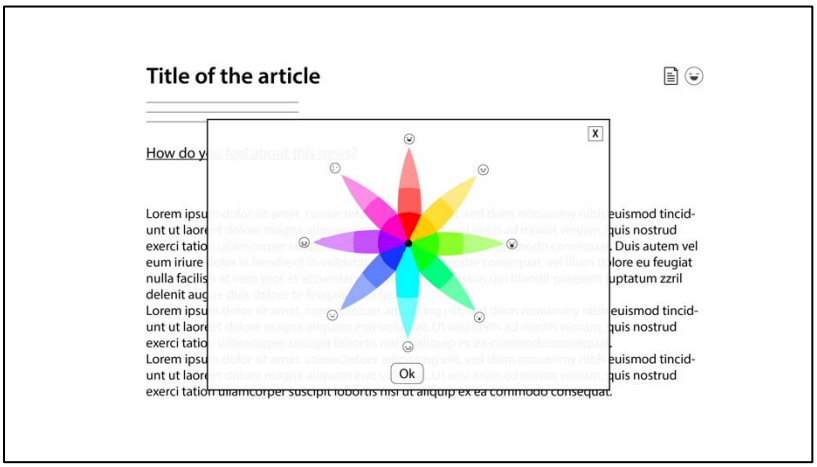
The last main point regarded how the comments were organized. While it was mentioned again that separated comments result in more work to read them or that it is confusing if you just wish to make one general comment about the whole article, other participants saw it as an easier way to find comments that interest the reader since they would be separated by topic. As a consequence, it becomes also easier to find new pieces of information in the comments.

> *"It can help organize the comments for when people start fighting about something. With this they could be direct on the point instead of making the general thread confusing, since people don't understand what they are talking about." – Man, 24.*
>
> *"Can be that people provide specific pieces of extra knowledge to parts of the text." – Man, 27.*

Design 6

Description: Ratings for the article available at the main page. On the article page, users can label their feelings towards the article and comment thread quality using the emotion wheel.





Opinions towards this design were divided. Although the reader is able to vote only in the article page using the emotion wheel, the average preview given in the main page was also taken into consideration by the participants as a separate part of the tool with its own effects.

Regarding the ratings for the articles and comment threads, two participants stated it was a good feature that could help people select better which news they would read based on their current emotional wishes or demands. Four other participants focused their initial feedbacks on the rating display and described it as a problematic feature, with possibility of manipulation by the voters (e.g. downvote articles based in political agenda) or influence the readers on their feelings about the news before they read it.

> *"This could be implemented but without the ratings in the main page by the headlines, to avoid manipulations. There could be some indication of activity but something less detailed." – Man, 27.*

The participants that focused their initial feedback on the voting and emotion wheel majorly stated that it seemed confusing, with two participants specifying that the colors were the reason for that impressions. However, three of these participants also liked it or found

it interesting, despite the difficulty. Two participants said it added extra work due to the multiple steps if a reader wanted to vote for both the article and comment thread quality. One participant mentioned he would not notice the link to vote unless there was a warning about it.

> *"I like it, but the colors make it super complicated, the spectrum of information is too big. The interaction itself is nice, just have to improve the selection of emotions." – Woman, 31.*

When asked how natural the interaction seemed and the perceived ease of use, opinions focused more in the wider range of options readers can choose from than in the wheel itself. The manipulation of the tool was described as easy, and three participants mentioned they would not have problems since they have to interact with different sorts of interfaces in work or hobbies (e.g. video games). One participant had an opposite impression, stating that the tool was too distant from other possible references.

> *"To me the wheel is fine, but I have more familiarity with this kind of tool and different user interfaces, but other people might deal better with tools that have less options or variables." – Man, 32.*
>
> *"Too distant from previous experiences, the person would need to put more effort and time into thinking and using the tool." – Man, 27.*

Seven participants reinforced that the choice of emotion would be the hardest and less intuitive part, either because there are too many options for both valence and arousal too choose from, or because you might have multiple emotions towards a topic or feel between two different feelings that are not close in the wheel for the user to select.

> *"It's nice that you have more freedom of choice for the emotions, but it might create problems if you are feeling between emotions that are not side by side on the wheel." – Woman, 27.*
>
> *"The selection of emotions, the decision itself, is confusing, although visually appealing." – Man, 33.*

Regarding how the feature could impact or complement the interaction and experience, despite the reinforcement on how it could influence readers and instigate emotions before reading the article due to the rating, it was added that the tool could serve as a form of comparison between different websites, giving an idea on the public's perception.

> *"If this kind of system was used in many websites, it could serve as a form of comparison for the readers." – Man, 27.*

While one participant mentioned it might be nice to know in advance how other readers feel about the topic, two participants pointed that it could also be used by readers who

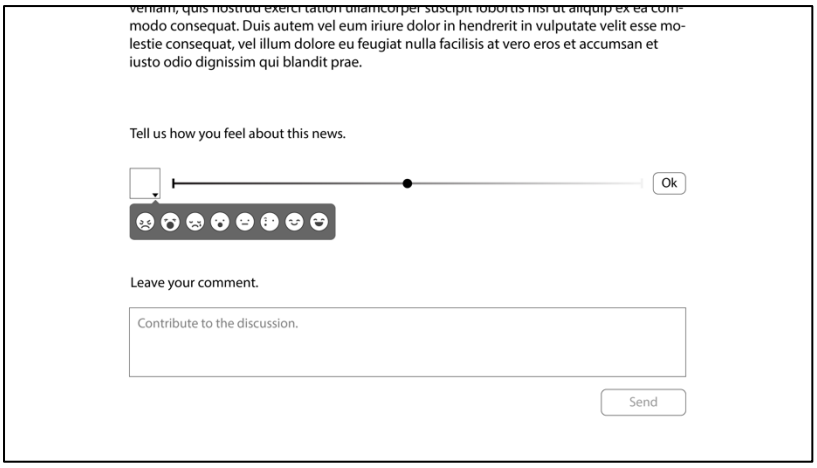
wish to participate in or instigate conflict. One participant added that it might lead to confusion if the reader expects to feel a certain emotion due to the rating, but after reading feels a different one.

> *"It would create more disagreement room due to possible influence on future readers, for example, they open the article or comments thinking already that it will be problematic, or people that actively search for conflict to participate." – Man, 27.*
>
> *"There would be different edge cases, people just browsing for certain types of news." – Man, 24.*

One last possibility mentioned by the participants on how the ratings may not reflect the reality on how many readers feel, due to manipulation, is that some users might choose the same emotion as the current displayed average instead of taking time to self-evaluate.

Design 7

Description: The user chooses the valence towards the article and is then allowed to move the slider to indicate the intensity of the chosen emotion.



This design was described as simpler than the previous options, easier to understand and more convenient. Eight participants, however, claimed that the direction of the slider along with the color gradient were confusing, and that the OK button seemed like an emotional state (the slider would be your feelings between the chosen emotion-emoji and feeling "ok") instead of confirming and submitting the emotion and intensity information. Three participants mentioned there too many extra steps when compared to current reaction tools, so the design could be redone in order to decrease the amount of work.

"I like it, but the UI looks weird. Is the scale between the emotion and 'ok'? Or is it submit? And I would think that the more to the right the more intense, but the color gradient goes the opposite way." – Woman, 24.

"The direction of the slider seems confusing, but the concept is the most easily understandable. Not sure how much a "scale" is a good thing because it's not so quick when compared to just clicks, but the emotion choosing was intuitive." – Man, 27.

Although the logic of the slider was perceived as unnatural to some extent, it was also said that the dropdown for emotion selection and a slider are not unknown. Two participants added that the position of the tool, after the article, and its presentation made it seem more natural or familiar. It was described as 'not resembling an advertisement', which also characterized the design as less intrusive.

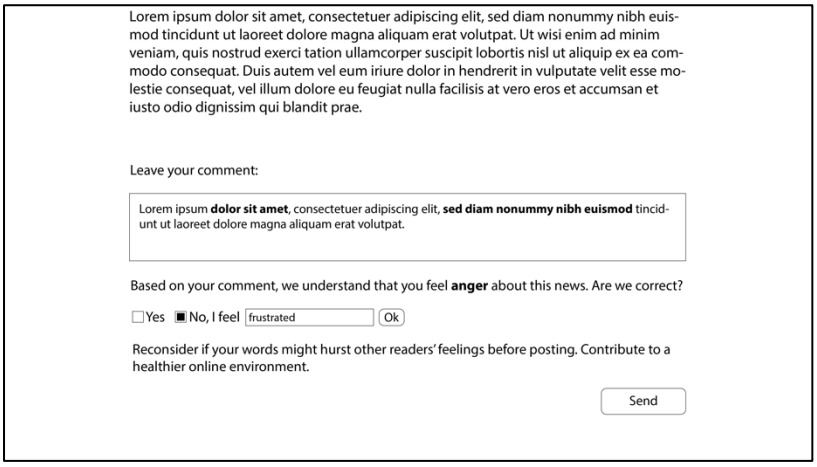
When asked other forms that this design could impact the interaction, three participants asked how the selected emotions would show up on your comment and to other users, indicating that such display could have beneficial consequences. Two participants added, beyond the display to other readers, how the submitted emotions could impact the websites themselves. One participant stated it could be used as an opinion measurer.

"If the emotions that you submit were visible to others when your comment is published, maybe it could help with empathy because people would know in advance your emotional state. Could also help with situations like sarcasm or irony." – Man, 26.

"What if the information provided affects the sort of news you get, a sort of recommendation, or the placeholder in the commenting box..." – Woman, 31.

Design 10

Description: The machine identifies words/expressions that indicate certain emotions and highlights them. When the user stops writing, it indicates the major perceived valence and asks the user about his/her emotion and gives a recommendation on behavior if necessary.



The design was considered controversial. All the participants mentioned impressions regarding the AI such as feeling of control, censorship, intrusion, unexpected extra steps or the possibility that the tool would only anger more the users by pointing out their hostility. It was found that the most problematic step of the tool was the request for emotion confirmation, due to the feeling of “feeding the AI”. However, eight participants thought it could also lead to good results. The marked words and recommendation were seen as a help to achieve neutrality in comments done by users without actual extreme feelings, while the emotion confirmation request can be a form of validation for feelings. One participant mentioned that users might just agree with the request and post their comments without considering the recommendations, cheating the system. Another participant claimed to like the tool because it seemed very interactive, like an artificial therapist was talking to her.

“Feels like you are being patronized. Although if you are about to leave a bad comment just for it and the website tells you to not do it, it feels bad. But if you are just doing a regular comment, it feels like "just let me post it".” – Man, 24.

“For some cases it could help a bit, but maybe not so much because people making hostile comments usually know that they are being hostile and that's the purpose. But it could help in situations where people are not actually hostile, maybe it's sarcasm or saying an inside joke, so the machine helps with neutrality.” – Man, 26.

“I can think of two things coming out: flagging problematic content, which is good, but right now feels too much like feeding the AI and there is no obvious benefit. Wording could be changed to sound more like a recommendation and maybe use emoticons of emotions instead of asking you to type your emotion.” – Man, 27.

Four participants said the tool worked fast and was easy to understand, making the interaction natural, especially because it resembled tools used in other services such as online banking where information confirmation is required. From this four, one participant added it depended on the type of feedback given. Five participants mentioned the emotion confirmation stood out as extra work, since it is not clear why the specification is needed, and two reinforced that the flagging on problematic parts of the comment and recommendation to rethink what is written would make them leave the website instead of rewriting.

“If I write a comment and after it somebody tells me to change it, I'll just give up and leave.” – Woman, 26.

“The question to confirm your feelings feels like an extra step, I would probably ignore it.” – Woman, 31.

As for possible impacts or how such a tool could complement the interaction, two participants reinforced how the system could be cheated and that it feels like heavy moderation on the comments. Four participants said that it could affect how users write their comments, with the addition that the system should not prevent users from posting their comments in order to keep the sense of control.

> *"I might make people think twice on what they write, as long as you can still post things despite the feedback." – Man, 26.*

Three participants suggested changes on how the machine communicates with the user or changes in the steps available, such as the addition of reactions instead of merely focusing on the user's self-evaluation. The goals were to get more responses, lessen the number of steps and sense of intrusion, unless it was an extreme text.

> *"If there was some automatic option, for example "it sounds like you are happy, do you want to put a smiley face by your comment?" it would get more emotional reactions." – Man, 27.*

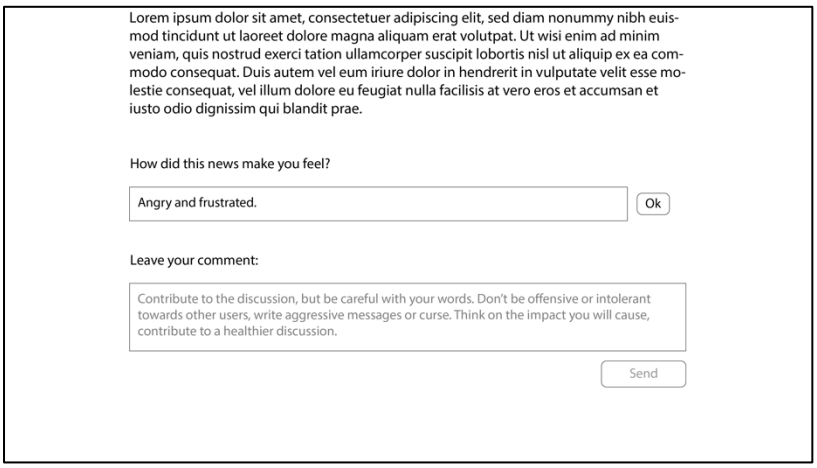
> *"It could assign levels of arousal to the identified emotions and based on that will have different actions such as let you post right away or give a time out if it's a really mean comment." – Woman, 24.*

> *"It could be something like Grammarly, that the markings on the words are color coded and will only show what it is if you click on it. So, it's up to the user. There are too many clicks to do right now, so it's annoying… it could just give you a hint." – Woman, 31.*

One participant added that the tool could be misleading. The recommendation and markings in the comment could lead the user to think posting will not be allowed, even with the "send" button available. In case the user considers the comment reasonable and under the rules, the same logic would not apply, showing the participant considers that the users' own sense of hostility and self-awareness play a role in case the system gives a hint that behavior is being checked.

Design 11

Description: The user writes what feelings the news caused on them, in a free-text box separated from the comment box (where the placeholder will change accordingly).



Despite the possibility to express more freely, which three participants said could lead to reflection on how the users feel, the participants listed more problems resulting from the concept than benefits on a first glance. The first issue mentioned by two participants was the extra burden put on the users to name their own emotions, which can make premade tags a more preferable option. Two participants added that the recommendation in the placeholder might not have any effect, either because the user does not read it or because it disappears once you type in the commenting box to write, making it easy to ignore. Four participants said the extra step of typing in two different boxes would make them skip the emotion box and enter their comment directly. The last matter mentioned was the lack of understanding on the purpose of the tool, either how it is displayed to other users or how it its treated and used by the website.

> *“This puts more burden on me to understand that I have a certain emotion. It’s not the same as emoticons because they are a more "neutral communication". It changes the range of words I'd use to describe my feelings, for example, interested.” – Man, 27.*
>
> *“I don't know if people would take the time to write in separate boxes or if they would just type their comments. If this is optional, it wouldn't do any good because people wouldn't use it and reconsider.” – Man, 26.*

When asked about the ease of use and how natural it felt, six participants agreed that it was fine. Three participants faced it as two separate comment boxes, while normally users may describe their feelings in a more subtle way in a standard comment. Participants who found it unnatural mostly agreed that the extra step was disruptive, while one participant mentioned that the “ok” button felt unnecessary and another participant was concerned if the information would become available to other users.

> *“The necessity to click “ok” is weird, I would just expect for it save or press enter.” – Woman, 26.*

"Depends if the answer would be visible to others, words are more personal and might feel weird to have two boxes divided." – Woman, 26.

Finally, regarding the perceived usefulness and how participants though the tool could impact or complement the interaction, previous points were mentioned again, such as the possibility of users ignoring the emotion box, how it might feel like a burden, the lack of clarity on the purpose of the tool and if other users can see what you wrote. Five participants reinforced the benefits of free text and typing your emotions, allowing users to be more detailed and personal and promoting self-reflection.

"People would have to think and acknowledge what they are feeling, but it's a more difficult process that people might not want to do." – Man, 32.

"Adding more steps is usually annoying but I think making this mandatory would be good, because people that feel strongly about something and really want to comment would take the necessary time to fill both boxes." – Man, 26.

One participant mentioned, however, that the intensity of the emotion might impact how the user feels towards the tool. Someone that feels strongly about the topic will take more benefits from writing down the feelings than someone who is not as reactive.

7.2.4 Final impressions

As the final part of the session, a conclusion interview was done in order to establish the most accepted and rejected designs, as well as gather insights on the participants' motives.

The most preferred ones were design 03, the highlight tool, and design 07, emotion slide tool, chosen by six participants (33%). They were followed by the emotion wheel, design 06, and machine learning, design 10, chosen by three participants (17%) each. The main appointed reasons for the choices are indicated in Table 7.

Table 7. *Preferred designs and appointed qualities*

Design	Reasons
03 (highlights)	• "Quoting" > specify comments to different parts of the article • Specify reactions to different parts of the text • Familiarity from other services/activities • Feeling of closeness due to how specific the reader can be
07 (emotion slider)	• Simplicity • Reference from existing tools
06 (emotion wheel)	• Average ratings available • Resemblance to different UIs (e.g. videogames)
10 (machine learning)	• Focus on the user • Gets information from the user even if the person does not answer the emotion confirmation request • Did not disturb or request as much from the user

Participants were then requested to evaluate which design they thoughts had a higher chance of being accepted by the majority of users, which might not be the same as their own preferred design. Results are present in Table 8. Two participants stated they did not have an opinion, resulting in sixteen answers. Nine participants (56%) answered design 07, the emotion slider, four participants (25%) chose design 10, the machine learning, and three participants (19%) answered design 03, the highlight tool.

Table 8. *Estimative on the preferred designs by the majority of users*

Design	Reasons
07 (emotion slider)	• Simple • Fast to use
10 (machine learning)	• Reacts to what the user wrote • Small number of steps
03 (highlights)	• Familiarity from other services/activities • Possibility to be specific in your engagement (feeling of focus)

One participant, despite voting for design 03 as the preferred design for the majority of users, added he thinks the machine learning could be easily accepted especially if users do not know or understand how the process of machine learning works, which would lead them to just keep clicking instead of having a stronger feeling of being monitored.

Having the qualities of the designs defined, participants were then chosen to select which design they mostly disliked or would not use if they encountered it in a website. Design 02 (emotion tags) was chosen by nine participants (50%), design 10 (machine learning)

by four participants (22%), design 03 (highlight tool) and 11 (free text) by two participants each (11%) and design 06 (emotion wheel) by one participant (6%). Main reasons can be found in Table 9.

Table 9. *Designs' aspects that lead to rejection by participants*

Design	Reasons
02 (emotion tags)	• Question is asked before actually reading • Pop up is too intrusive • Resembles advertisements
10 (machine learning)	• The negative feedback is too direct • Feeling of control over the user
03 (highlights)	• Interaction (comments, reactions) is too scattered • Possibility to have users not taking the tool seriously (e.g. highlighting funny names)
11 (free text)	• Purpose is not clear • Feels like an extra commenting box • Free text can be too personal
06 (emotion wheel)	• Takes too much time

Lastly, participants were asked if they had any suggestions on their preferred design's functionality. Suggestions were made for designs 03 (highlight tool), 06 (emotion wheel), design 07 (emotion slider) and design 10 (machine learning).

It was reinforced that design 03 could become too visually overwhelming with highlights visible all the time. Despite the fact that, by the time the interviews were conducted, the better form of implementation for the highlights was not fully decided, it was suggested once more that readers should be able to turn on and off the highlights in order to not disrupt their reading experiences.

Regarding design 06, the ratings were praised, but the wheel was considered to complex and overwhelming. It was suggested less colors, so it does not conflict with the emotions themselves, and another form of selection other than a wheel (e.g. a bar, "plus" buttons to add the select emotions). It was also mentioned that a free slider throughout the whole wheel made it too complex, and maybe there could be pre-selected positions.

Design 07, the slider, has a similar suggestion. Participants thought it would be faster and more practical if users did not have to choose between a fully manageable slider. Pre-defined positions in the slider were recommended.

Lastly, for design 10, it was suggested that emotions could appear on comments, instead of having just the machine recognize them, and this action could be performed by the

users. This could be done in a faster way, instead of confirming the recognized emotion or typing the correct one, the machine could suggest an emoticon equivalent to the identified emotion. The user would either confirm or choose a different emoticon, if desired, reducing the number of clicks.

7.3 Discussion

The results of the interview provided interesting insights and confirmation to other studies that served as base for this thesis. It should be considered that the participants' quota had only educated young adults, studying in Finland, with access to technology and certain level of knowledge on how it works. This might influence the results and consequent reflections made upon the collected data. However, access to technological knowledge and understanding is becoming more widespread, meaning that the results could be extrapolated to other close age ranges. Also, it is especially interesting because half of the participants are HTI students, meaning their current perception and relation to technology might give a hint on what changes and new proposals they might make as professionals in the future.

7.3.1 Engagement habits and affect labeling

As already mentioned, the results of this work confirmed a previous study that states low quality discussions in the comments inhibit the will to participate (Springer, Engelmann, & Pfaffinger, 2015). Despite eleven participants (61%) claiming to comment or to engage in other comments with rare or mid frequency, all of them stated to have concerns regarding commenting. Those who comment had conditions for doing so, such as the topic being of great relevance for them, being able to add information to the discussion that has not been mentioned yet (this was mostly related to hobbies or work related topics which the participants had knowledge about) or the "environment" having specific dynamics, e.g. commenting in known people's posts or in closed groups in social media.

It was a general perception that commenting in news threads did not have productive results, with expectation of hostile reactions from other users. This expectation also confirms a previous study which stated that hostility is an expected behavior in such online discussions (Reader, 2012). It did not only affect commenting behavior, but participants also had concerns about sharing news content in their own "public" online profiles (e.g. Facebook), worried that such heated discussions could be started also there. This could contribute to a worsened scenario of "political bubbles", where people do not share or discuss controversial, yet important, topics due to a will to avoid conflicts. It can already be seen in platforms where users can block or select to which people their content will

appear, isolating from those who have opposite opinions. It can also contribute to an increasing inability to argument and understand different points of view from a wider range of users, since people are clustering with those who share opinions or have close enough relationships to avoid discussions.

This apprehension was also seen on the results regarding affect labeling. Even though participants recognized the benefit of sharing emotions, there was caution about who had access to this sort of information, and none said to share it online publicly. Two participants mentioned they used to share information online about their feelings and personal experiences, a habit they abandoned as they grew older. Both said they do not know if this happened because it was a “young person’s habit” or because “the internet has changed”. The only participant who claimed to still share feelings online explained to have conditions for it. Other than having private profiles where only known people can read, she also posted about her life’s events and feelings concerning them on Reddit due to the anonymous approach of the profile. Anonymity is listed as a base factor for flaming in both Deindividuation and Online disinhibition effect theories. Here, the participant employed it in a beneficial way, anonymity providing a safe zone to share her experiences, but doing the opposite and facing anonymity as a shield that allows hostility is not uncommon.

Another shared impression between the participants was that comments were a place where many users vent, without the intent to have discussions and consider their opinions, and that emotions can be weaponized against them, being such a personal matter. Therefore, other forms of expression such as reactions, emoticons, memes and GIFs are seen as safer, more distant ways to express feelings. Despite users aiming for a certain level of impersonality, GIFs, memes and stickers provide a wide range of options to express one’s emotions and opinions. One of the participants mentioned to prefer such tools because they stand out from reactions and emoticons, which might mean users still want to feel they have conveyed their impressions and had this action recognized and validated, but are searching for a balance between expressing themselves and staying distant from hostility. A possible indication of this desire was seen during the design evaluations, which will be referred later.

7.3.2 Evaluations feedback

The designs were evaluated in order to find their level of acceptability, investigating how participants perceived their ease of use and usefulness, followed by a general interview to identify general qualities and defects that led participants to their preferences.

One issue that was mentioned several times throughout the evaluations was how the level of trust of the user towards the service could influence the acceptability of the tool. Participants thought users would be more willing to engage with the tools in websites that they visit frequently and are aligned with their views, trusting the news service had good intent towards the readers.

Another point is that the purpose of the tool should be clear. Designs 02 and 11 requested information from the user and the only impact created was the change of the placeholder, which might pass unnoticed, resulting is questions such as “what is the point of this?”. Designs 03, 06, 07 and 10 had either features that were closer to already existing mechanisms (e.g. reactions) or the intent of the tool was easily understood.

Another aspect was how intrusive or disruptive the designs could be. Design 02 was highly rejected due to the pop-up format, which is associated to requests such as cookies or advertisements. Design 11, and design 06 to some extent, were criticized due to the time users would spend evaluating themselves in order to describe their emotional state. This would pause the reading-commenting flow for a longer time than users expect based on their experience with previous mechanisms. An important comparison concerning the time requested by these designs and the choice to comment with, for example, GIFs or memes is that the latter is a choice from the participant instead of a tool from the service. Searching for a GIF to post is amusing, while selecting your emotional state from the emotion wheel is seen as extra work.

As mentioned before, there seemed to be a concern on the recognition and validation of the participants’ inputs. Since the designs only showed the commenting process, instead of how the information would be displayed once the comment was posted, there were several questions on how or if their inputs would be shown to other users. Those who mentioned the matter were the same ones that claimed to comment online, even if in a low frequency.

Options suggested varied from a general reaction counting, like Facebook shows for posts nowadays, to the reaction being show in your comment, which could help to create empathy and avoid misunderstandings (e.g. irony). This last option received suggestions such as an emoticon of your emotion displayed with your comment, or even the use of different colors on the background. These concerns were exposed with designs 07 and 10, which had higher acceptance but did not give any hint on how this information would be displayed after commenting. This interest on properly conveying the user’s intentions and increasing other users’ understanding shows that participants recognize a lower communication efficiency when commenting online, such as suggested by the Media

Richness theory. The lack of non-verbal cues would be compensated by the display of users' reaction along with the comment, an extra information that would allow other readers to properly interpret one's comment.

Design 06, despite having the wheel criticized due to its complexity, was appreciated due to the available ratings for article and comment thread. This might not be as personalized as displaying the emotion input in your comment, but it gives an idea on how the community is reacting. It was mentioned by the participants that such ratings could be manipulated to address political agenda or have a more personal effect by influencing readers in advance on what to expect and how to feel about the news. This can be problematic if the average rating shows a negative emotion, as users might feel that an aggressive behavior will be accepted in the comments since the majority of other readers identify with that feeling, possibly shifting from personal to social levels of identification, experiencing depersonalization (Turner, 1987).

Going back to the matter on how much time users would spend manipulating the tool, participants looked for simplicity on the actions performed by the users. Design 07 was considered the simplest one, although the slider would need to suffer iterations and new testing, but design 10 was considered equally fast because the number of steps done by the user is small, being the major part performed by the machine. In this case, there was exchange of information between the user and the system without noticeable effort and answering the machine on the emotion recognition did not stop them from posting the comment, which allowed users to skip the step if they wanted and go forward without much disruption.

Despite the feedbacks for preference on fast interactions, design 03 was chosen as one of the favorite options among the participants. It was pointed out that the tool could disrupt too much the reading experience in case all the highlights and reactions were constantly visible and that comments were too scattered, but being able to direct the interaction to parts of the text decided by the user made the experience more personalized, creating a sense of relation between the article and the reader.

One last point is how the system provides feedback to the user. Design 10 received criticism on how the feedback was very direct towards the user, since the machine flagged possibly problematic content and gave behavior recommendations based on the identified emotions. At the same time, more subtle approaches such as the change of the placeholder was seen by some of the participants as an irrelevant measure because users might not take the time to read it, and since it disappears once you start typing in the box, users might ignore what was written. The feedback given by the system should

be emphasized, maybe in a permanent position such as in design 10, but wording should be explored and tested to avoid feelings such as being patronized or judgment.

8. GUIDELINES FOR CREATING UI MECHANISMS FOR AFFECT LABELING

The following guidelines were formulated based on the literature and the results of this study. Some of the results reinforced well established heuristics for interaction design, and therefore will be summarized instead of fully described in the guidelines. **Affordance** and **simplicity** were present in the need of users to intuitively understand how to use the mechanism; **good usage of metaphors** was seen in designs where users could corelate the form of interaction with other activities in their lives, showing higher acceptance to those which the original usage context could be linked to news; and **efficiency of use** was perceived on the preference for designs with small number of steps and that were fast to use.

Clearly communicate the intention of the mechanism

The user might not understand in a deeper, academic level what affect labeling and emotion regulation processes are, but s/he understands the purpose of certain mechanisms used to interact online. Designs which did not make clear the purpose or intent of the interaction from the very beginning had much higher rejection rates among participants. In these cases, the steps which enabled the affect labeling process were described by participants as 1) something to be ignored, 2) made them suspicious on the intent behind the tool or 3) something that caused annoyance, which would lead participants to leave the website.

Prefer pre-made labels for the user to choose from over self-generated ones

Pre-made labels have been shown to have a more immediate effect of affect decrease when compared to self-generated labels, which have a delayed decrease effect but last longer (e.g., Burklund, Creswell, Irwin, & Lieberman, 2014; Constantinou, Bogaerts, van Diest, & van den Bergh, 2013; Lieberman, Inagaki, Tabibnia, & Crockett, 2011). Since the intent is to help decrease hostility in comments, it is of greater interest to have an immediate reduction in affect instead of making this state last longer. Participants initially thought pre-made labels might cause annoyance if users do not see a label corresponding to their feelings, but the option of creating their own labels received more criticism and was conflicting with the preference for fast using mechanisms. Also, when an option was presented where the system identified an emotion and provided feedback, participants had positive reactions and considered it as a form of validation for the said feeling.

This opinion matches the speculation made by Torre & Lieberman (2018), which believed pre-made labels provided a kind of validation and recognition feeling regarding the label choices and person's emotions, since they were created by somebody else.

Consider alternative forms to express a feeling other than text

When asked about expressing emotions online, participants had negative reactions towards the idea of conveying feelings by text. It was considered that emotions are used to attack users, being such personal information, and that text increased the possibility of being target to hostility, as words are more direct. Rejection lowered if emotions were to be expressed through other means such as images (e.g. reactions, GIFs), as participants interpreted them as a less personal form of expression, and therefore were more willing to use.

Consider the timing when to start the labeling process

One of the criteria created to brainstorm new designs was the moment when the affect labeling process would occur: before reading, before commenting, after commenting or after posting. Designs which had it before reading were highly criticized, as participants considered that you can not give a proper evaluation just by reading the title. Also, they claimed that answering or interacting with a mechanism right before reading the article disrupted the reading flow. Before commenting and after commenting did not influence the participants' opinion, being a matter of seeing which moment is more appropriate for each design concept. Designs with after commenting timing were not evaluated, being a possible point for future studies.

Provide a feeling of focus on the user

Designs that gave an impression of personalization on the interaction were praised by the participants. Either in an active role, such as highlighting and commenting on what was personally relevant, or in a more passive condition where the system identified your feelings, which was seen as a validation of the user's emotion, participants felt that their interaction stood out instead of being counted as just another like/dislike input, providing a sense of closeness with the service.

Prefer limited scales over free options

Freely allowing the users to position the thumb on the slider or wheel, although providing conditions for specificity, was seen as unnecessary and to cause extra work. Participants judged providing pre-determined positions in the slide would make the interaction faster and easier, since users were more likely to choose common positions (extremes and the middle) than fully evaluating their exact position in the spectrum.

Balance the wording on feedbacks provided by the system

In designs used for the study, the system addressed the user either through instructions in the placeholder or more directly, with recommendations in a prominent position of the interface. Considering that one aspect of emotions is that they are regulated in order to influence or, more relevant to this case, abide to people, the social context and its norms (Parkinson, 1996; Van Kleef, 2009; Van Kleef et al., 2016), recommendations in eye-catching places might help to establish clear boundaries on the environment's social norms. At the same time, participants claimed that wrong wording could lead to the opposite effect, causing feelings such as patronize, annoyance or even make people with highly aroused negative emotions feel undermined or defied.

Account for users' inputs

Averill's (1980) proposal on emotions as temporary social roles claimed that social context affected one's emotions and reactions, and that the context itself was influenced by other's behavior and emotional state, among other factors. Participants in this study evaluated that displaying the user's emotional input along with the comments could help to create a more empathic environment, since it could serve as an extra cue and address possible reading misunderstandings (e.g. irony), making the behavior evaluation of other users more accurate and compensating the lack of non-verbal cues. Another point was that many participants wanted to know if other readers felt the same way as them, so such displays (individual ones by the comment and general ratings) could serve as a form of validation. However, exactly because this appraisal could make a user feel entitled to misbehaving if the most common displayed emotions are negative, future studies could investigate the best form and moment to expose such information. This study assumes, based on one of the evaluations, that ratings shown before opening the article might have negative effects such as influencing a reader's pre-disposition or attracting users who want to engage in hostile interactions.

9. CONCLUSIONS

The development of this study was based on three research questions. The first one aimed at investigating the current mechanisms or methods available for user engagement and to ensure the quality of comments and interactions. The second question focused on speculating how affect labeling could be incorporated to the design of such mechanisms, leading to a brainstorming phase and the generation of different designs ideas to explore possible options. Lastly, by evaluating a selection of the created designs, the study aimed to identify which aspects would cause strangeness or acceptance with users, investigating possible qualities and defects.

9.1 Key Findings and Contributions

The results of this work present several aspects to be considered when designing engagement mechanisms that promote affect labeling. Not only a set of guidelines was proposed regarding user acceptability, the different steps of this thesis provided an overview on online engagement methods, how quality is being ensured or stimulated in discussions, public's perception on the benefits and disadvantages of engaging and use of affect labeling in online contexts.

The websites that were reviewed showed that the majority of news services provide a standard set of tools to engage, either with the article or other users in the comment thread, and those which allowed the user to express their impression or feelings were mostly binary (e.g. thumbs up/down), except for the few ones which had a set of reactions to choose from. Quality was ensured by moderators and the possibility to flag a comment, and a few websites provided guidelines on behavior, or a link to the page stating them, in a visible place.

It is possible to assume that these measures are not enough to ensure civil comments and good quality discussions, which in return affects the levels of engagement even if the services provide mechanisms for doing so. As shown in Chapter 2, users already expect hostile behavior in online discussions due to how common it has become (Reader, 2012) and some consequences found are that low quality discussion on the comments can inhibit motivation to participate (Springer, Engelmann, & Pfaffinger, 2015) and influence on the perception of the user about the public opinion (Anderson, Brossard, Scheufele, Xenos, & Ladwig, 2014), among others. These two aspects were confirmed

by the interview stage conducted for this study, as all participants stated to have concerns about commenting and that discussions online never resulted in positive, constructive conversations, and many said to read comments in order to see how other people feel about the topic and to see how many agreed with their point of view, a demonstration of the shared reality aspect of FtF, as shown in section 2.1.1.

As for the usage of affect labeling as a form of online emotion regulation, results showed that although recognizing the benefits of expressing their feelings, the expectations of hostile behavior online lead participants to not do it openly online. This common hostility created feelings of anxiety, unsafety and mistrust on the appropriateness of open online spaces to share such information. However, this was mostly seen regarding text, with participants judging words as a more direct and definite mean of communication, which went against previous studies where immediately after the users had expressed their emotions in written form, a rapid decrease of negative emotions and a less rapid decrease of positive emotions occurred (Fan, Varol, Varamesh, Barron, Leemput, Scheffer, & Bollen, 2018). Certain levels of rejections also showed up when the labeling was done by the system and feedback was given as text. Images (in this case, emoticons used as reactions, similar to Facebook's), were chosen as better forms of communicating feelings in both scenarios. For labelings done by the user, it was perceived as a safer option, providing less personal information for other users to be hostile about, and at the same time capable of creating empathy among users by playing the role of non-verbal cue. For the labeling and feedback given by the system, it was seen that textual labeling was seen as harsh or possibly capable of arousing even more negative emotions, as users could feel defied or judged. Participants evaluated that feedback could be divided, having recommendations in form of text, but the emotion label itself would be better received if given as an image. This was an especially interesting conclusion because one of the designs brainstormed during the second stage of this thesis proposed labeling done by the system in form of emoticons (design 13). However, this one was not part of the evaluation stage, becoming an option for future work in order to validate if it is a viable option and if results match.

The design evaluations done with videos provided relevant feedback on the characteristics that lead to higher levels of acceptance for engagement mechanisms in general and how to optimize the aspects of it that enable an affect labeling process. Despite the lack of interactivity, the method was suitable for the purpose and data was collected successfully. Participants understood the procedure well, and even though they did not have an active online engagement behavior, they were willing to contribute as possible, giving

insights on what could make them consider engaging and trying to imagine what someone who engages frequently would think about it.

To conclude, although the creation of interactive prototypes is advisable for proper validation of the designs, this thesis was able to pinpoint approaches with higher chances of success if implemented and identified aspects that need to be taken into consideration when iterating the present designs or creating new ones. As this work aimed to identify design factors which could lead to higher acceptability, the proposed guidelines can be seen as a valuable starting point for future developments on affect labeling mechanisms.

9.2 Evaluation of the study

As previously mentioned, the participants performing the evaluations, despite separated in two groups (HTI and non-HTI students), still formed a relatively uniform group. The most relevant characteristic was that they did not actively engage online, so recruiting people with a more intense engagement history would create an interesting contrast. Although the original intent was to get the designs evaluated by people who commented and used the available engagement mechanisms with certain frequency, this study provides points of view and hints on a group that might feel attracted to participate more if they perceive the environment as safer and that interactions could have productive results.

Varying the age range could also provide new insights on the designs, since the evaluation performed for this study consisted of young adults. Teenagers and older adults or early third age participants should give very different feedbacks, since the relationship with technology and how they were introduced to it is significantly different for these different generations.

Another aspect that might have influenced was the location. The study happened in Finland, and although half (9/18) of the participants were foreigners, all of them were inserted in a context of high access to technology, education and information. Conducting the study in other parts of the world with different social conditions can give distinct perspectives on how participants interpret the designs and online interactions.

Some other limitations in this study consist of the available time to perform it and unnatural evaluations conditions. Due to time constraints, evaluations were performed in groups in order have a bigger number of participants. Although this approach has its benefits, individual sections could provide different results and new insights. Additionally, also due to time constraints, the designs were presented as videos instead of actual

interactive prototypes. The results acquired were based on the participants' rational understanding of the mechanism concept, since the animation of the mechanisms showed how it was supposed to work and proceed. The possibility to actually interact with a prototype could result in a different relation to the tool and provide distinct feedback, since participants would need to explore the mechanisms and discover how it worked by themselves.

9.3 Future work

For future studies, this thesis has revealed different areas that could use more investigation, which would also help to validate and further specify the generated guidelines. The first area regards how fast users expect certain online interactions to be in order to create mechanisms that will not elicit negative emotions such as annoyance, balancing tool and complexity and a time limit for usage. The second concerns the optimal moment to start the affect labeling process, since only three of the four proposed options for the timing category were evaluated. One had high levels of rejection, while the other two did not show significant distinction, which could be due to lack of enough data to make a proper comparison. Third, it was an assumption among some of the participants that displaying a user's affect input in a more direct manner (e.g. by the side of one's username) could generate more empathy, as it provided more information on the writer's intention, helping to compensate the lack of non-verbal cues. A more focused study could be conducted on whether such display helps to generate empathy or if it would have the opposite effect by giving extra information to hostile users, with the possibility of other effects that were not speculated here. Lastly, further research on better forms to present and phrase feedback or recommendations given by the system is required.

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APPENDIX A: BENCHMARKED WEBSITES

News websites included in the benchmarking that had a commenting section

Website	Country	Address
Africa		
The Guardian	Nigeria	https://guardian.ng/
Vanguard	Nigeria	https://www.vanguardngr.com/
Asia		
Chosun Ilbon	South Korea	http://www.chosun.com/
Dainik Bhaskar	India	https://www.bhaskar.com/
Dawn	Pakistan	https://www.dawn.com/
Hürriyet	Turkey	http://www.hurriyet.com.tr/
Kompas	Indonesia	https://www.kompas.com/
People's Daily	China	http://en.people.cn/
South China Morning Post	Hong Kong	https://www.scmp.com/
Southern Weekly	China	http://www.infzm.com/
The Hindu	India	https://www.thehindu.com/
Europe		
Baltic Times	Baltic countries	https://www.baltictimes.com/
BBC	United Kingdom	https://www.bbc.com/
Corriere della Sera	Italy	https://www.corriere.it/
Diário de Notícias	Portugal	https://www.dn.pt/
Die Welt	Germany	https://www.welt.de/
Ekathimerini	Greece	http://www.ekathimerini.com/
El Mundo	Spain	https://www.elmundo.es/
El País	Spain	https://elpais.com/
Frankfurter Allgemeine Zeitung	Germany	https://www.faz.net/aktuell/
Irish Times	Ireland	https://www.irishtimes.com/
Le Figaro	France	http://www.lefigaro.fr/
Daily Mail Online	United Kingdom	https://www.dailymail.co.uk/home/index.html

The Guardian	United Kingdom	https://www.theguardian.com/international
Latin America		
Clarín	Argentina	https://www.clarin.com/
El Nacional	Venezuela	http://www.el-nacional.com/
El Universal	Mexico	https://www.eluniversal.com.mx/
Folha de São Paulo	Brazil	https://www.folha.uol.com.br/
La Nación	Argentina	https://www.lanacion.com.ar/
O Globo	Brazil	https://oglobo.globo.com/
Middle east		
Al Khaleej	UAE	http://www.alkhaleej.ae/portal
Al-Bayan	UAE	https://www.albayan.ae/
Al-Quds	Palestine	http://www.alquds.com/
Al-Rai	Jordan	http://alrai.com/
An-Nahar	Lebanon	https://www.annahar.com/
Globes	Israel	https://en.globes.co.il/en/
Haaretz	Israel	https://www.haaretz.com/
North America		
The Globe and Mail	Canada	https://www.theglobeandmail.com/
The Intercept	U.S.A	https://theintercept.com/
Oceania		
The Sydney Morning Herald	Australia	https://www.smh.com.au/
The Age	Australia	https://www.theage.com.au/

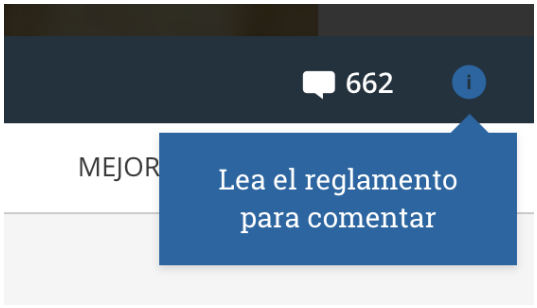
Social media included in the benchmarking that had a commenting section

Website	**Country**	**Address**
Baidu Tieba	China	https://tieba.baidu.com/index.html
DeviantArt	Global reach (U.S.A)	https://www.deviantart.com/
Flickr	Global reach (Canada)	https://www.flickr.com/
Instagram	Global reach (U.S.A)	https://www.instagram.com
LinkedIn	Global reach (U.S.A)	https://www.linkedin.com
Pinterest	Global reach (U.S.A)	https://pinterest.com/
Quora	Global reach (U.S.A)	https://www.quora.com/
Reddit	Global reach (U.S.A)	https://www.reddit.com/
Taringa	Argentina	https://www.taringa.net/
The Dots	United Kingdom	https://the-dots.com/
Trip Advisor	Global reach (U.S.A)	https://www.tripadvisor.com/
Tumblr	Global reach (U.S.A)	https://www.tumblr.com/
Twitter	Global reach (U.S.A)	https://twitter.com
Youtube	Global reach (U.S.A)	https://www.youtube.com

APPENDIX B: QUALITY GUIDELINES EXAMPLES

Este es un espacio para la construcción de ideas, y de opinión.
Se busca crear un foro de convivencia y reflexión, no un escenario de ataques al pensamiento contrario

Guidelines in El Espectador



Link to the guidelines in El Tiempo

Conversation (964)
Welcome to the HuffPost comments! Please keep the following in mind:

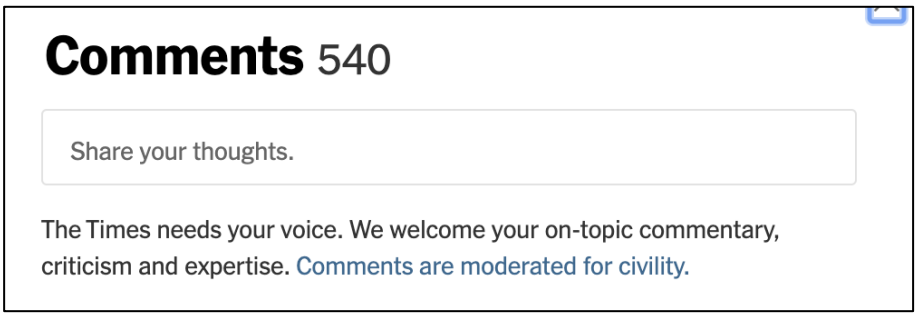
- Help us maintain a safe and welcoming space. Be polite, and avoid insults and threats. Stay on topic. Real people read your comments.
- Comments may be moderated before they are posted. Commenters who don't comply with our guidelines may be banned.
- Your comments may be used in HuffPost articles and may appear on HuffPost platforms.

For more information or support, please visit our Frequently Asked Questions.

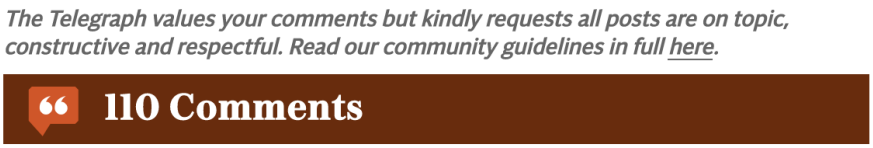
Guidelines in The Huffington Post

Bienvenue dans l'espace de réactions
Pour améliorer la qualité des échanges sous nos articles, ainsi que votre expérience de contribution, nous vous invitons à consulter nos règles d'utilisation.
Lire notre charte›

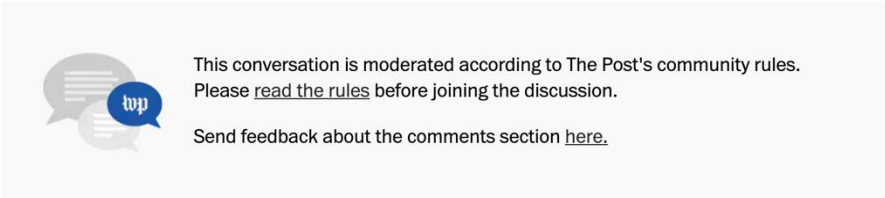
Link to the guidelines in Le Monde



Guidelines in The New York Times

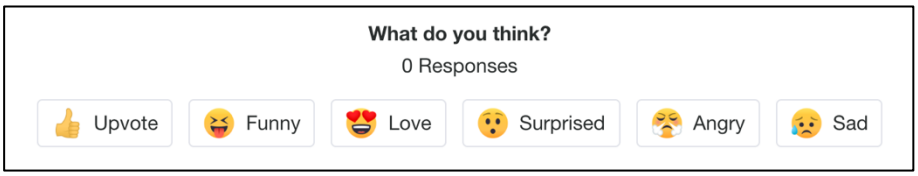


Guidelines in The Telegraph

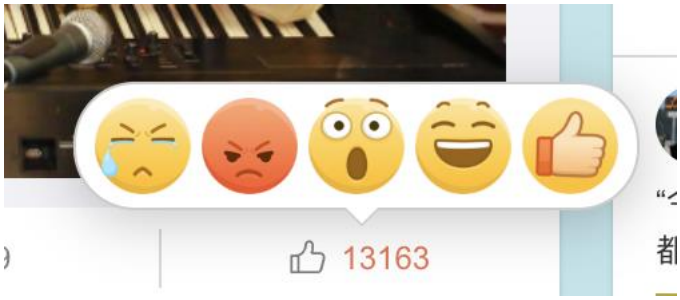


Link to the guidelines in The Washington Post

APPENDIX C: ENGAGEMENT MECHANISM EXAMPLES

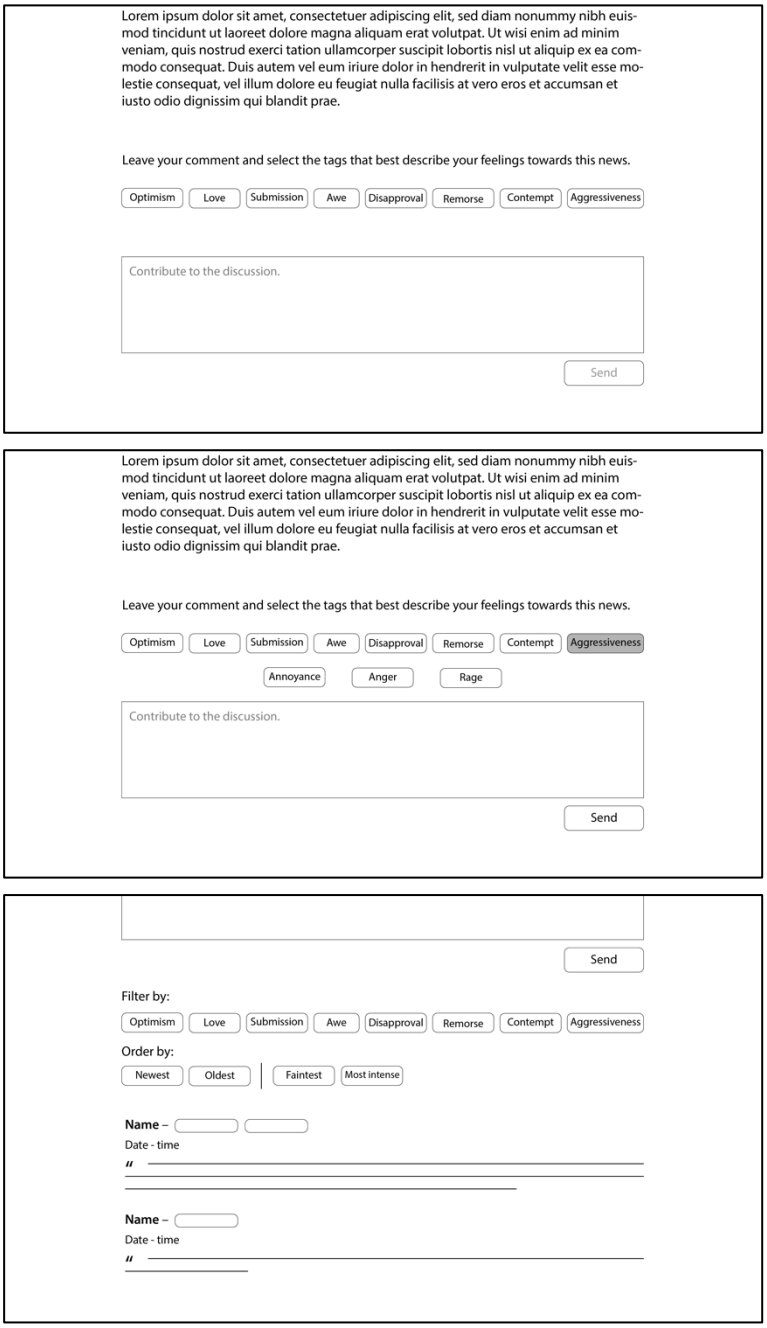


Reactions in The Philippine Daily



Reactions in Sina Weibo

APPENDIX D: STAGE 2 WIREFRAMES



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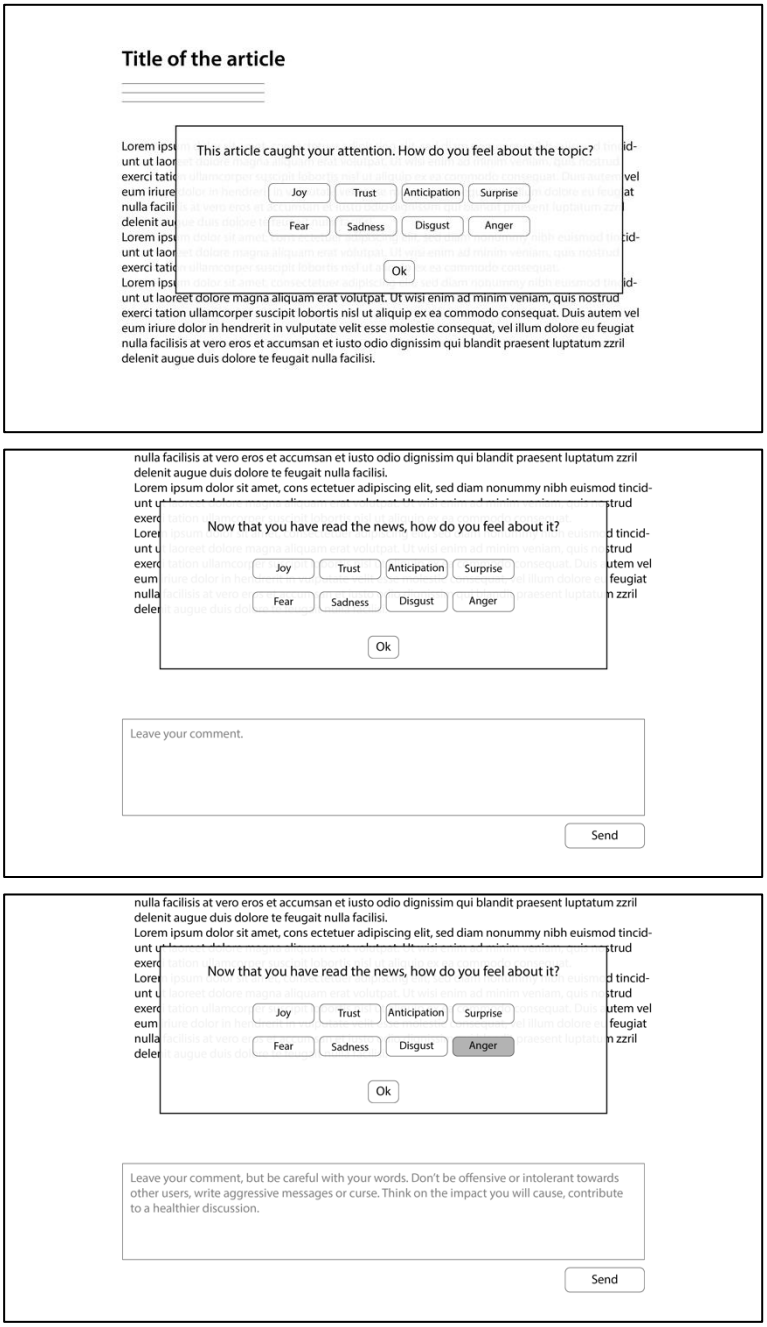
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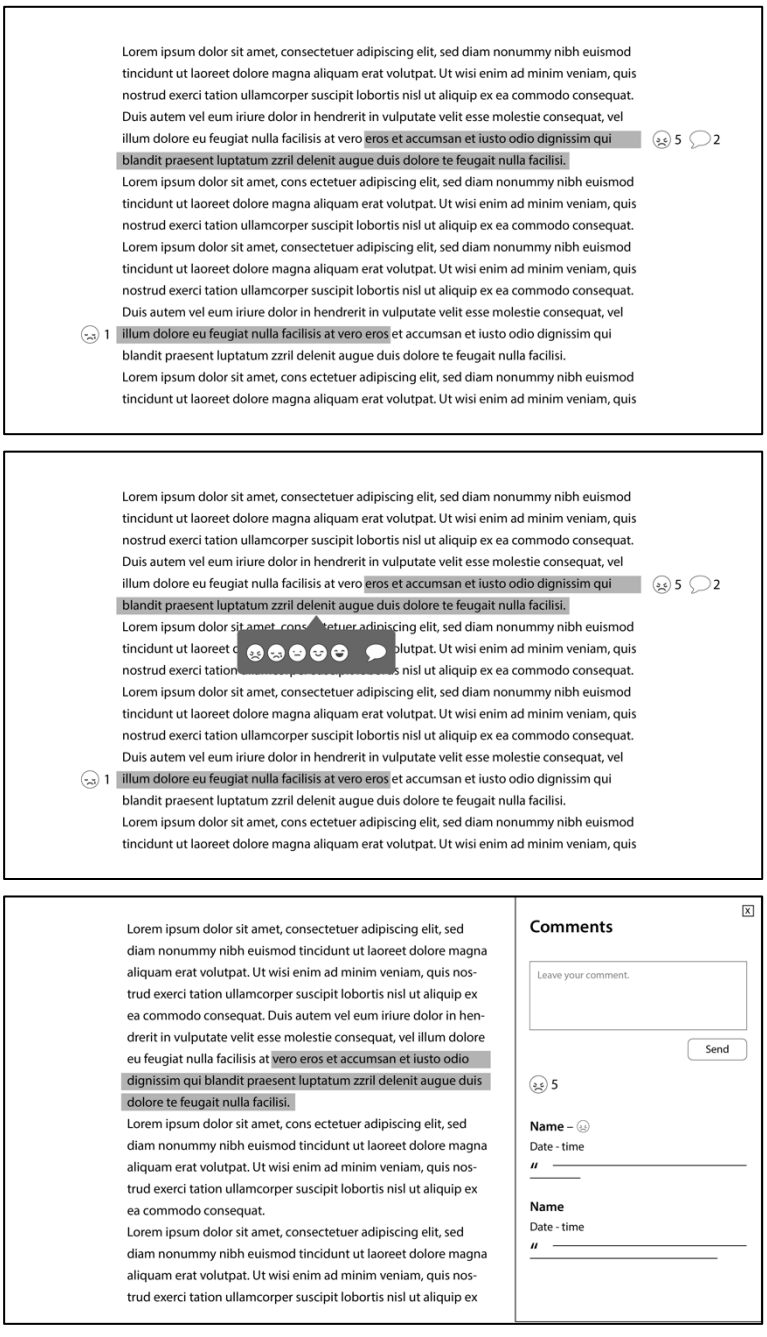
Design 2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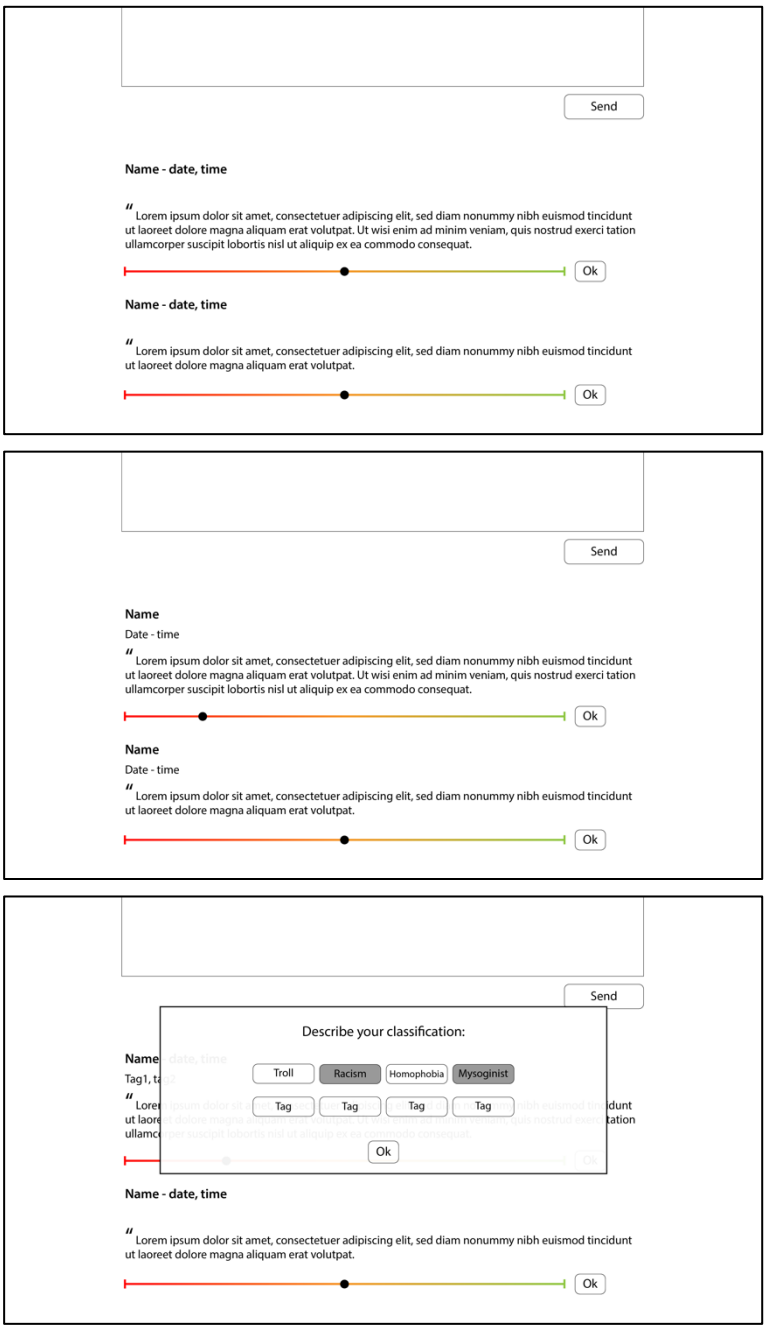
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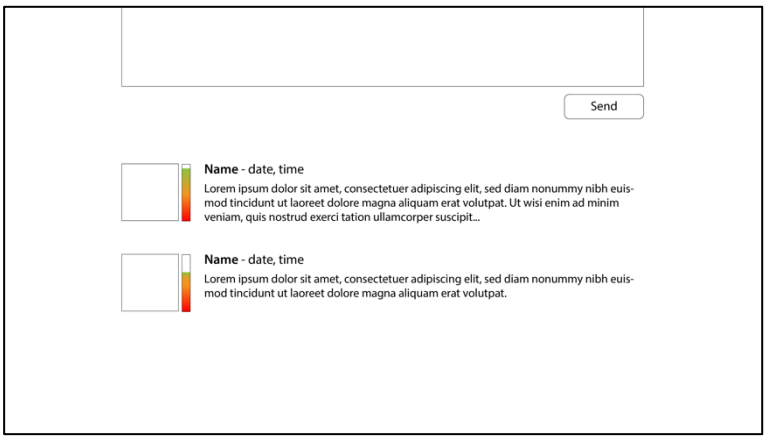
Design 4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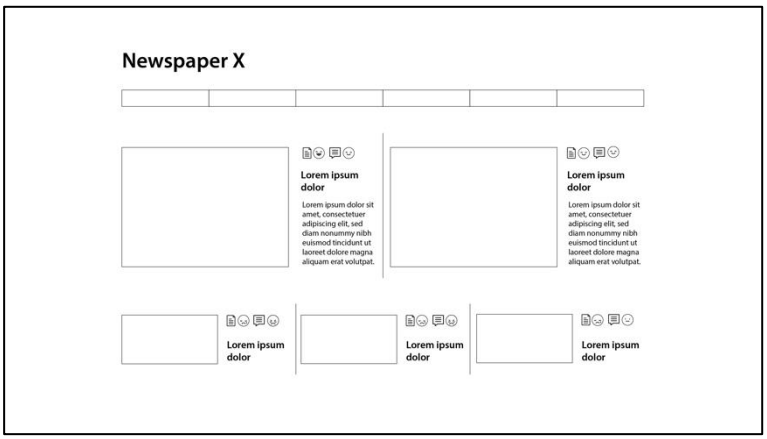
Design 5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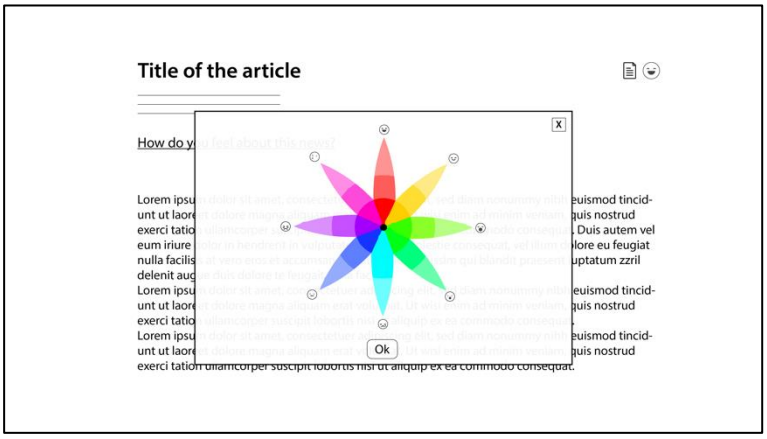
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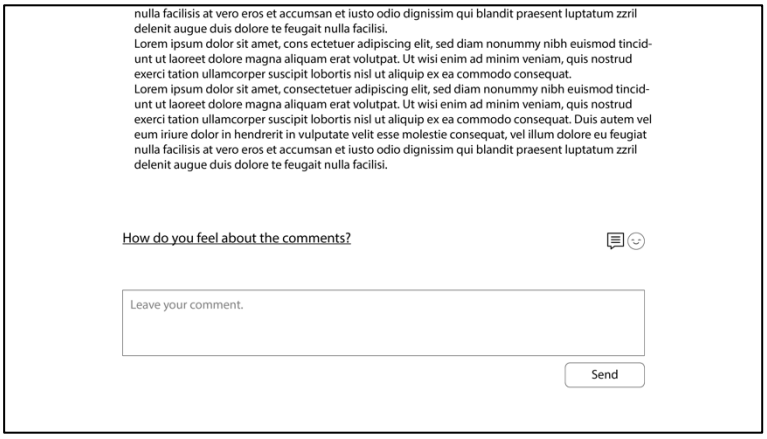
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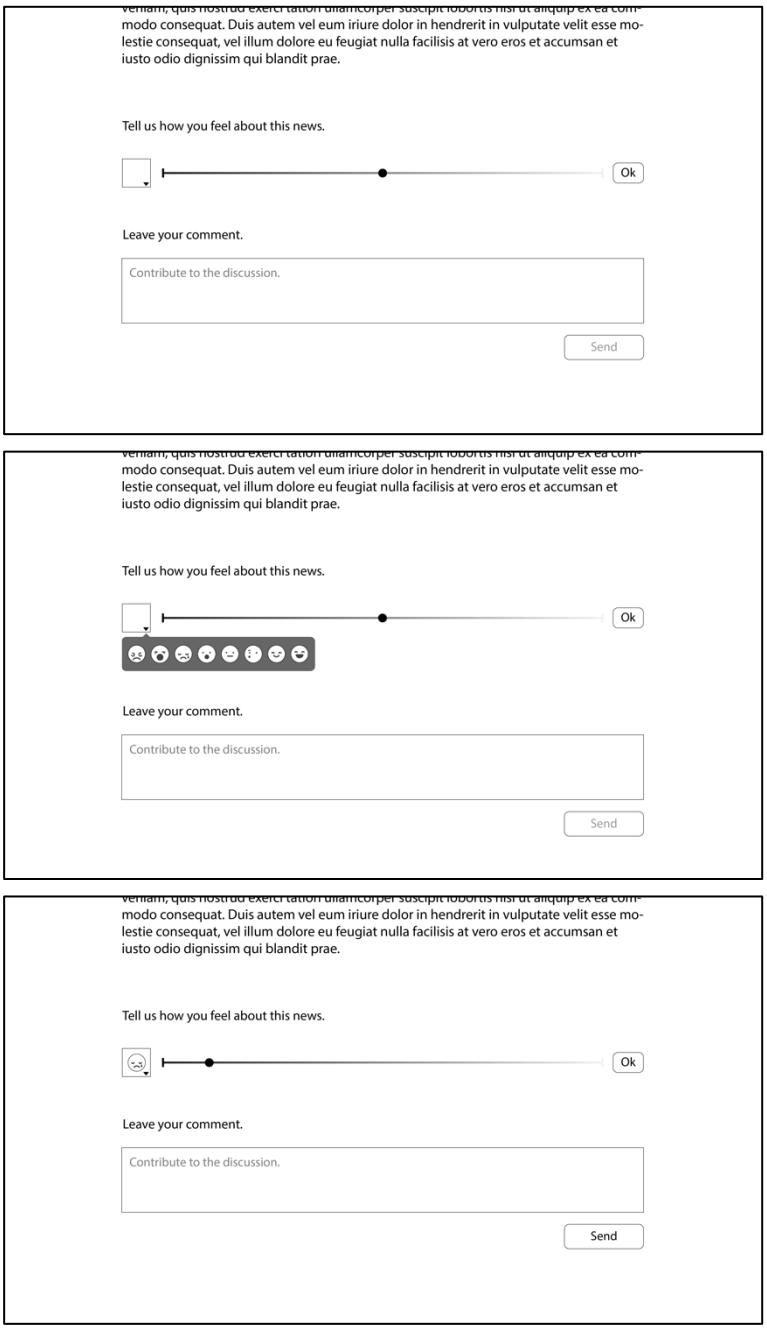
How do you feel about the comments?
Leave your comment.
Send

Design 6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Tell us how you feel about this news.
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Leave your comment.
Contribute to the discussion.
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Leave your comment.
Contribute to the discussion.
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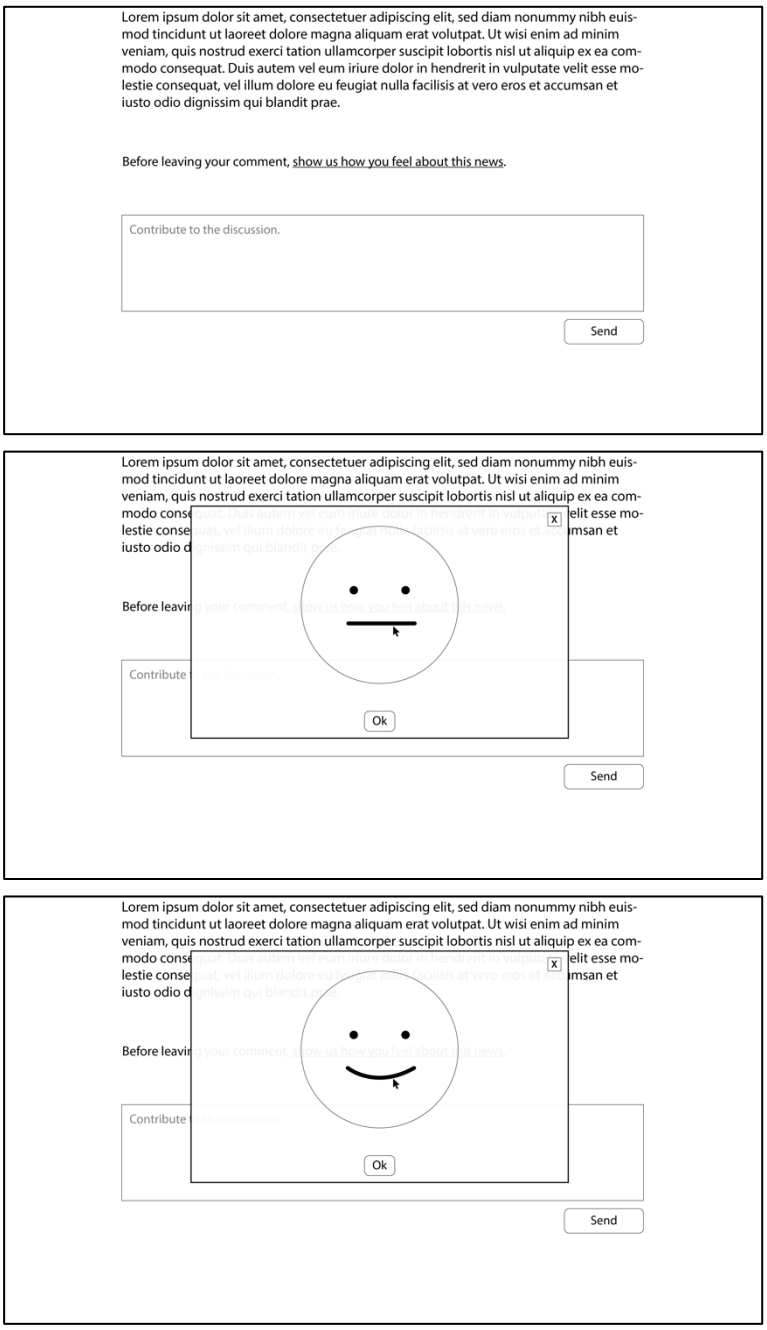
Design 7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Contribute to the discussion.
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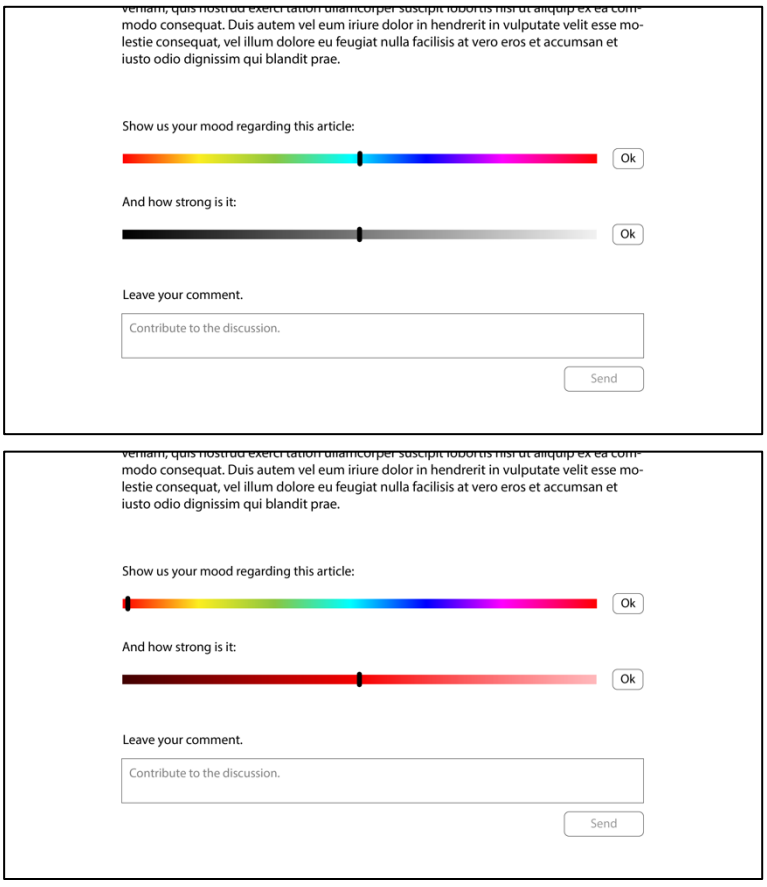
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Show us your mood regarding this article:
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And how strong is it:
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Leave your comment.
Contribute to the discussion.
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Leave your comment.
Contribute to the discussion.
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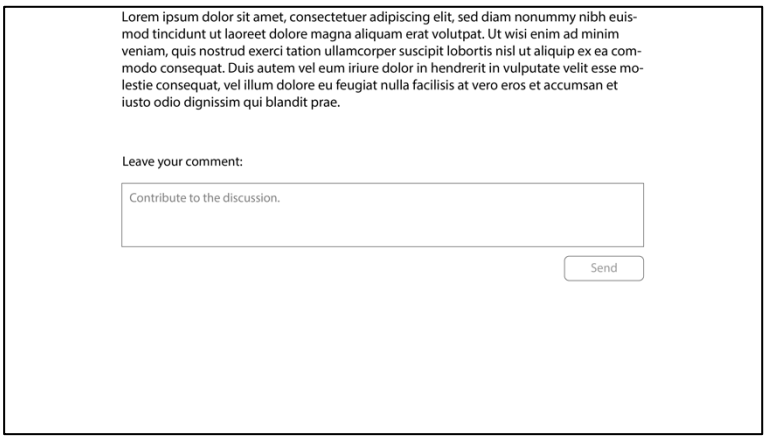
Design 9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Contribute to the discussion.
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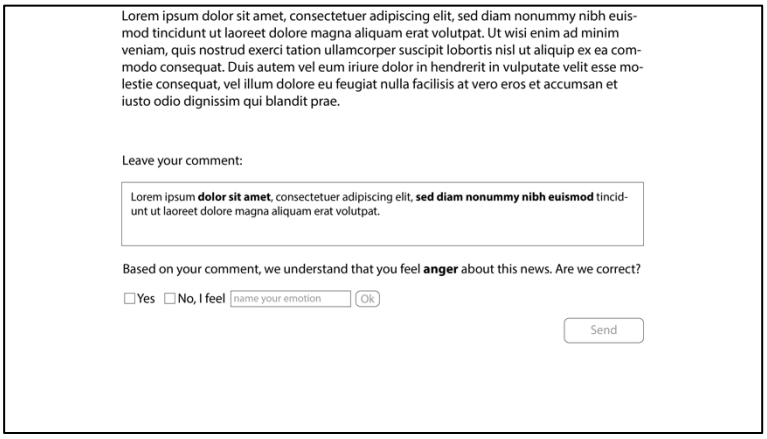
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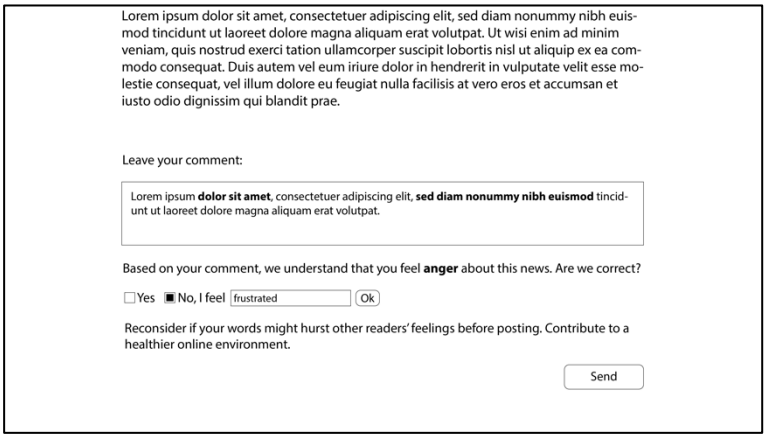
Based on your comment, we understand that you feel anger about this news. Are we correct?
Yes
No, I feel
name your emotion
Ok
Send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Leave your comment:
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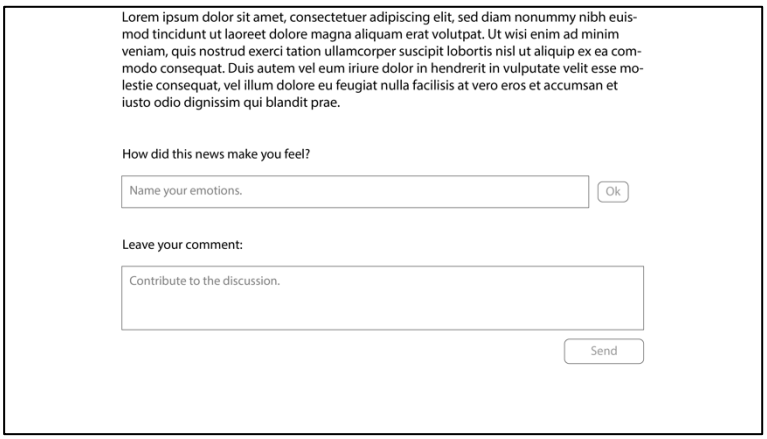
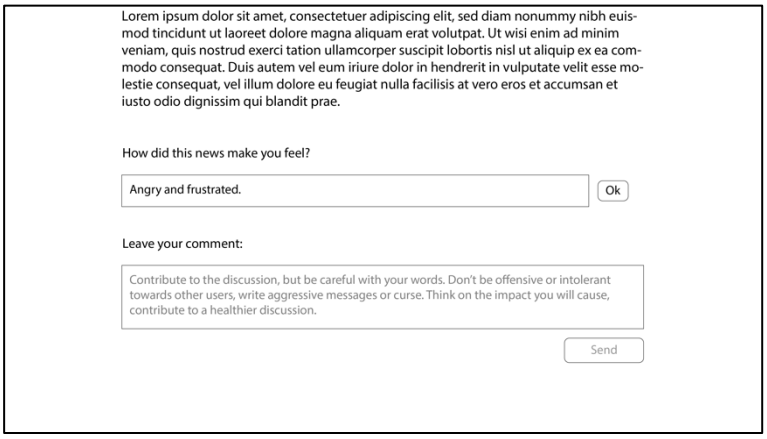
Based on your comment, we understand that you feel anger about this news. Are we correct?
Yes
No, I feel
frustrated
Ok
Reconsider if your words might hurst other readers' feelings before posting. Contribute to a healthier online environment.
Send

Design 10





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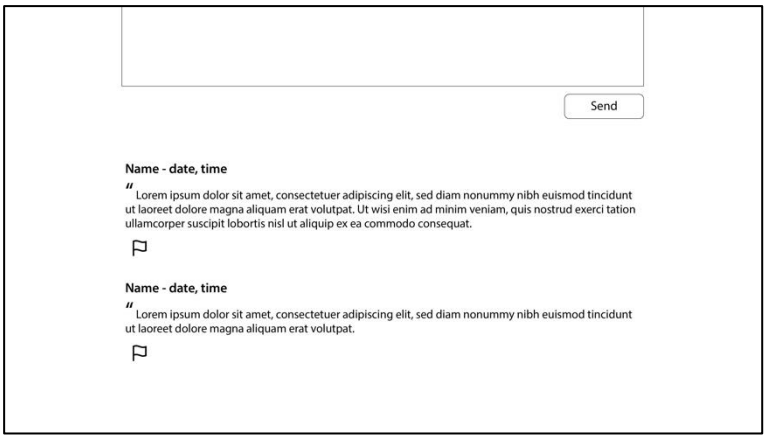

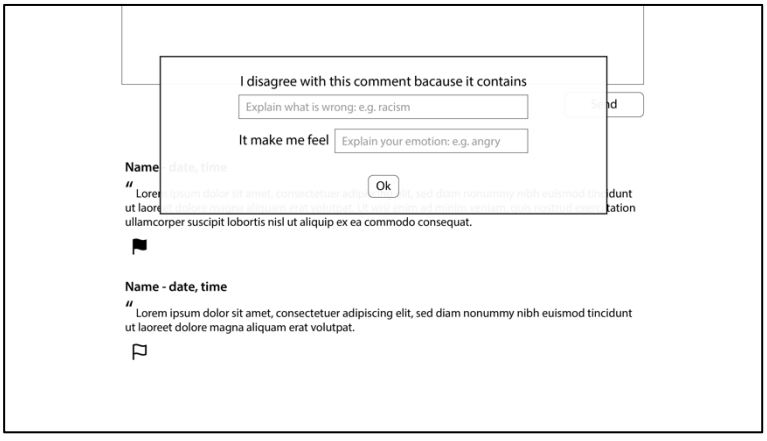

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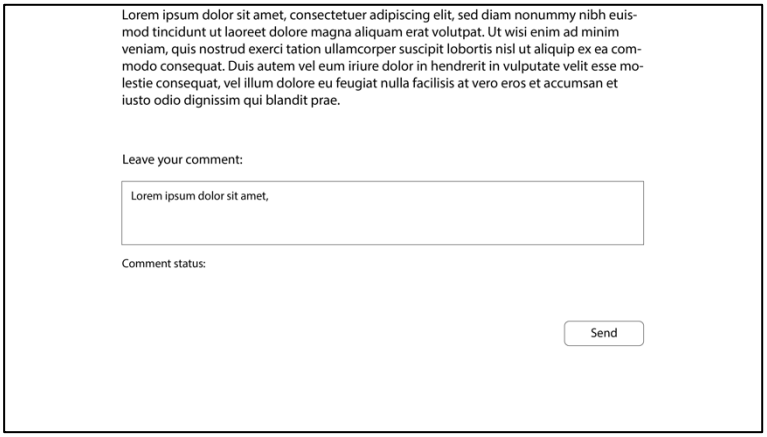
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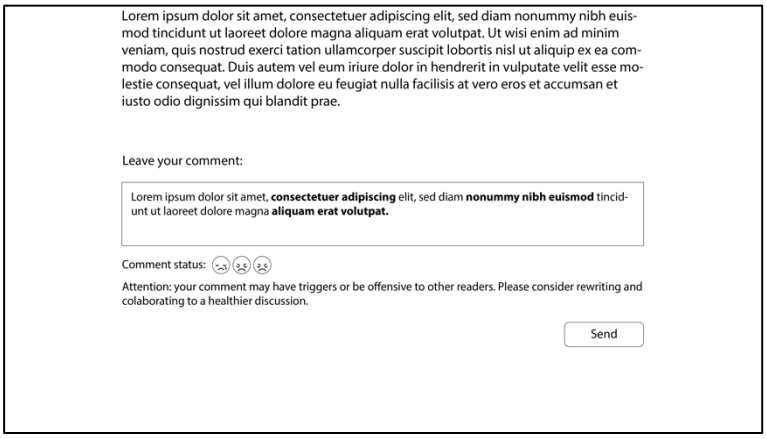
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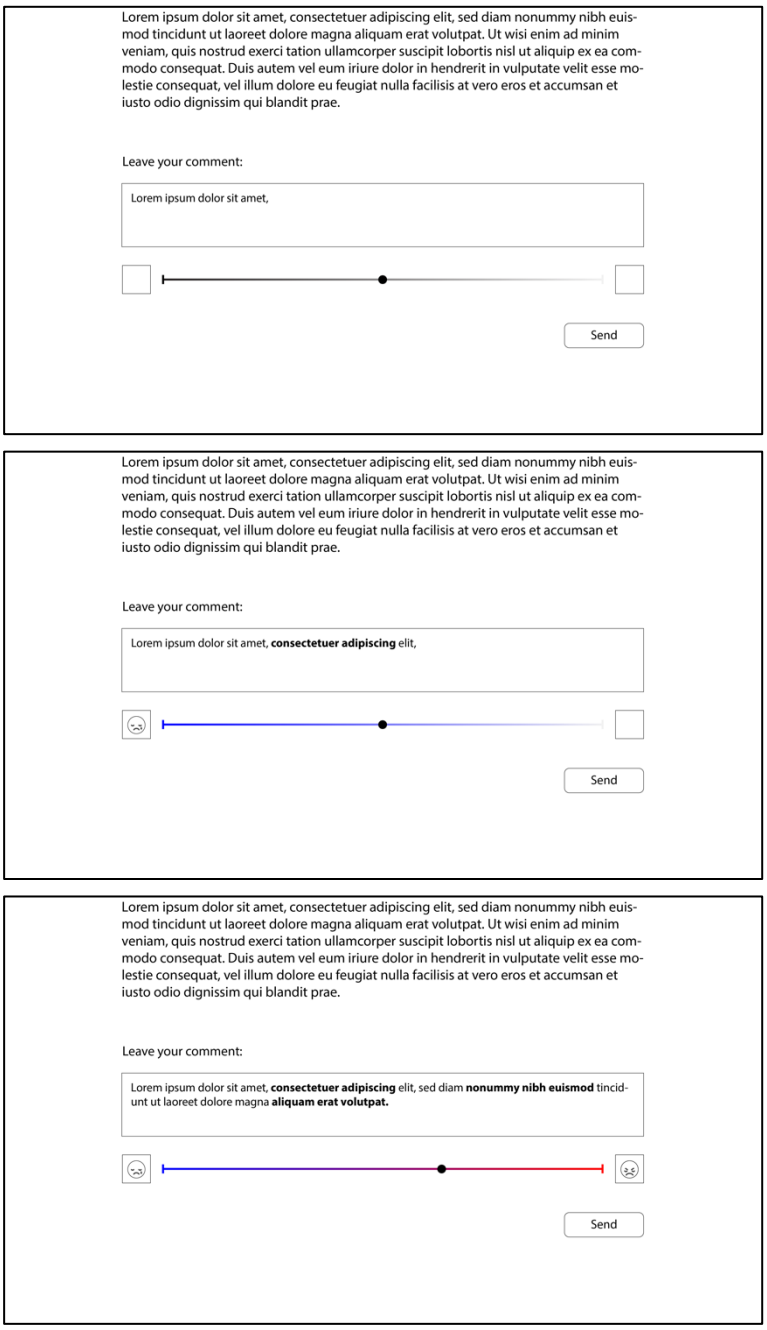
Attention: your comment may have triggers or be offensive to other readers. Please consider rewriting and colaborating to a healthier discussion.
Send

Design 13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Design 14

APPENDIX E: BACKGROUND QUESTIONNAIRE

Tampere University
Tampere University of Applied Sciences

BACKGROUND QUESTIONNAIRE

Gender: ( ) male ( ) female ( ) other: _____ Age: _____

Nationality: _____

Field background: _____

Occupation: _____

How many hours a day (approximately) you spend in social media? _____

What kind of content do you usually post/share? _____

_____

How frequently do you read news online? (one choice)
( ) several times a day ( ) once a day ( ) once a week ( ) at least once a month ( ) rarely

How often do you comment on news articles/posts? (one choice)
( ) always ( ) very often ( ) sometimes ( ) rarely ( ) never

How often do you interact/engage with other comments? (one choice)
( ) always ( ) very often ( ) sometimes ( ) rarely ( ) never

Which news sources you most commonly check? (e.g. Yle, BBC, The New York Times...)

_____

_____

Test team fills in:

Group ID: _____ Participant ID: _____

APPENDIX F: DESIGN ANIMATIONS

Check from:

https://www.dropbox.com/sh/gbcq7r5rp5p7zju/AAAM41lB-u61_Zipw9FrZB_Ea?dl=0