Radboud University

The effect of computer-mediated communication on the

expression of opinions

BA Thesis

03/07/2020

Eline Verlaat

S1010325

BA English Language and Culture

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Abstract

The aim of this study was to determine if computer-mediated communication (CMC) has a significant effect on the strength with which people express their opinions. Written CMC data and spoken face-to-face (F2F) data were generated through an online discourse production task (DPT) and an interview in which participants provided their opinion on a topic. This data was quantitatively analysed by scoring appraisal words for sentiment strength using AFINN, a sentiment lexicon. Hypothesized was that computer-mediated opinionated discourse would show a stronger sentiment than F2F discourse, largely because of anonymity and lack of social cues in CMC. A t-test was performed and showed a significant difference in sentiment strength between the computer-mediated and F2F opinionated discourse. A subsequent qualitative analysis was carried out to uncover underlying patterns and was done according to Appraisal theory (Martin & White, 2003). It was expected that computer-mediated discourse would show higher sentiment strength than F2F discourse when the same topic is addressed. Secondly, more modality tools are expected to be employed in F2F discourse. Results indeed showed a stronger sentiment in CMC discourse and a greater use of modality tools in F2F discourse. Most opinionated discourse research in CMC has been done on microblogs for marketing purposes and aimed to identify the orientation of microblog posts. This research is not interested in orientation, but in sentiment strength.

Keywords Computer-mediated communication · Electronically mediated communication · Appraisal Theory · Sentiment · Anonymity

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Introduction

Computer-mediated communication (CMC) has rapidly grown from emailing, just four decades ago, to a multitude of different forms of communication that mediate a considerable portion of our daily lives. CMC media such as microblogs and even comments sections have become popular platforms for people to freely share their opinions on, but it has also seen individuals expressing their opinions on divisive topics using intense language to express their opinions.

Extensive research has been done computer-mediated communication and their behavioural effects with comparison to face-to-face communication and with the immense popularity of microblogs, opinion mining of those blogs has seen an increased interest among researchers. However, few studies have considered the effect of CMC on the linguistic expression of opinion. Considering the significant role computer-mediated communication plays in our daily lives, it is beneficial to examine how language in CMC is used differently from traditional interpersonal communication as it could present consequences for people's communication and interpersonal relations.

This thesis will examine opinion expression in text-based CMC with the research question 'what is the effect of CMC on the intensity of opinion expression as opposed to their expression in spoken face-to-face communication?' To answer this question, a quantitative analysis is carried out in which appraisal words are scored for sentiment using the AFINN sentiment lexicon. A subsequent t-test will be done to determine whether there is significant difference between computer-mediated discourse (CMD) and face-to-face (F2F) discourse in sentiment strength. Hypothesized is that that computer-mediated opinionated discourse is stronger in sentiment than F2F discourse, largely because of two important features of CMC: anonymity and lack of social cues.

Following the quantitative analysis, a qualitative analysis will be carried out to uncover underlying patterns and differences in aggravation. The analysis was carried out utilizing the Appraisal framework (Martin & White, 2005). It was hypothesized that sentiment is stronger in CMD than in F2F discourse when opinionated sentences addressing the same topic are compared. Furthermore, modality tools are utilized more often to lessen the intensity of the opinion in F2F communication than in CMC.

Prior to the analyses, literature is reviewed on computer-mediated communication, its differences with interpersonal communication and the Appraisal theory. After the results from both analyses are presented, the findings will be discussed before finally arriving at the conclusion.

Literature Review

To contextualize this study on the effect of CMC on the expression of opinions, this chapter will first outline CMC, its advancement to prevalence and research in computer-mediated discourse (CMD). Subsequently, literature is reviewed on important features of CMC: anonymity, lack of social cues and written (versus spoken) discourse in light of their effects on communication are discussed. Then, a section will review research on opinionated discourse and politeness theory, respectively. Finally, appraisal theory and its applicability to this study are reviewed.

Computer-Mediated Communication

Decades of technological innovation have arrived at a place where communicating through computers is a common part of daily life for most people. Originally, CMC came in the form of written text. Examples of these text-based CMC media include email, forums, electronic bulletin boards and blogs (Herring & Androutsopoulos, 2015). These media provide asynchronous communication which allows users to communicate with each other, not in real-time but with delays.

Today, these text-based, asynchronous media have been enhanced by pictures, audio and video. CMC now include synchronous communication media with which users could talk in real-time, such as with audio and video (Herring & Androutsopoulos, 2015). Video conferencing is used as an online education tool in cases when geography is in the way of teachers communicating with their students in a traditional classroom setting, and organizations use it for meetings with colleagues that are not able to be in the same location. When the COVID-19 virus broke out at the start of 2020 and quickly developed into a pandemic, social distancing and even lockdown measures were taken by governments across

the globe to try and limit the spread. CMC media such as email, but most notably videoconferencing proved an important tool to continue with normal life as best as possible. Many people were suddenly dependent on CMC media to communicate with others.

Text messaging has become the most popular method of communicating and instant messaging apps have replaced the popularity of traditional text messaging through SMS. Apps that were initially not created to be an instant messaging app, are used as such through Direct Messaging (DM) functions (Instagram, Twitter, Snapchat). Conversations can also take place in the comment section under photos posted on Instagram, or in responses to tweets on Twitter. Twitter's main function is that of a microblog in which users can share short sentences, pictures and. Microblogs usually do not necessarily require responses (unlike instant messaging), instead it is a broadcasting medium that is meant for an audience instead of a single person.

CMD Research

CMC is the broad interdisciplinary study of computer-mediated communication, which includes the specialization of computer-mediated discourse (CMD). Herring and Androutsopoulos (2015) define this specialization as "the communication produced when human beings interact with one another by transmitting messages via networked or mobile computers, where "computers" are defined broadly to include any digital communication device" (p. 127). The first research on the language of CMC was done in the 1980s, but it was not until a decade later that the field was recognized. The prime concern with the growing popularity of CMD was that it might change the ways of communication, compared to traditional F2F communication (also called interpersonal communication) (Walther, 1992). The general thought during this first period of research was that CMD was a language variety or even a distinct new linguistic medium: *Internet-Slang* or *Netspeak* (e.g. Crystal, 2001;

Androutsopoulos, 2006). However, this binary way of categorizing has since been rejected for the most part. In her paper, Lievrouw (2009) traces this change in perception around CMC. She notes that the initial division of CMC communication and interpersonal communication has since been criticized with critics insisting that it "actually obscure[s] the shifting, contingent nature of communication in everyday experience, social formations, and culture" (Lievrouw, 2009, p. 303). The study of CMD has since made way for an approach that takes into account the differences between CMC media and CMC in different languages (Bieswanger, 2016).

Computer Mediated versus Interpersonal Communication

There are important features that mark key differences between computer-mediated communication and interpersonal communication. The features mentioned in this section are anonymity, social cues and written discourse (versus spoken discourse). For each feature, literature is reviewed in connection to CMC.

Anonymity in CMC

Different CMC media provide contexts for observing and analysing interactions (Herring & Androutsopoulos, 2015). One feature of many CMC media is the ability for its users to be anonymous and is often seen as the important difference between CMC communication and interpersonal communication. Anonymity has been written about extensively within the social sciences and has also been applied to communication (see Lelkes, 2012; Lapidot-Lefler, 2012; Silke, 2003). In the general public anonymity has often been pointed out to be what enables people to misbehave online. Anonymity is what people hide behind when saying things that they would never say to a person directly.

There is an ongoing debate about whether anonymity in CMC promotes negative behaviour such as disregard for norms and 'flaming' (verbal attacks to offend other users that may include profanity and insults) (Barreto & Ellemers, 2002). Barlett (2015) found that anonymity strongly predicted cyberbullying frequency. In a subsequent study, Barlett et al. (2016) found that aggressor-perceived anonymity predicts cyberbullying, in addition to a positive attitude towards cyberbullying. This is in line with the General Learning Model (GLM; Gentile et al. 2009) which posits an internal learning process. When an individual is continuously exposed to stimuli, certain knowledge and attitude structures are formed. With frequent exposure to cyberbullying (as the aggressor), the individual will likely learn that their behaviour goes unpunished as a result of the anonymity they experience.

Santana (2014) studied the effect of anonymity on civility in online newspaper comment sections. Comments from anonymous users were compared to non-anonymous users that were posted on online newspaper articles with the (debate-prone) topic of immigration. The comments were categorized as either uncivil, civil or neither/unclear. Results showed that anonymous commenters were significantly more likely to express their opinion in an uncivil comment (65% of uncivil comments were from anonymous users, while 35% of uncivil comments were from non-anonymous users).

Negative behaviour has also been found in studies on the effect of anonymity in groups. Several studies have been done on the effect of anonymity on group discussion. Anonymity has frequently been used in computer-mediated group discussion systems, with the idea that it encourages individual group members to participate equally and prevents the discussion from being dominated by a few members, which would encourage diverse opinions (Kahai et al., 1998). However, Haines et al.'s (2014) results from a laboratory study report that anonymity did lead to more overall participation, but that equality of member participation did not differ between anonymous and identified groups. This suggests that

anonymity does not motivate reluctant members to participate. The paper also reports less opinion change in the anonymous group compared to the identified group, suggesting that opinions expressed via CMC have less influence than opinions in interpersonal communication. Lastly, an increase in less socially desirable behaviour was observed in the anonymous group. This is in line with both Santana (2014, mentioned above) and a study by Halpern and Gibbs (2013) that found suppressed disinhibited behaviour by participants that were identified compared to less identified participants.

Deindividuation theories are often used to support the argument that CMC may lead to uninhibited behaviour (e.g. Zimbardo, 1969; Le Bon, 1995). Deindividuation is defined as a group phenomenon in which members do not see other individuals as individuals and act as if they were "submerged" in the group (Reinig & Mejias, 2004, p. 702). Bae (2016) adds to this that it is a "psychological state of decreased self-evaluation, causing anti-normative and disinhibited behaviour" (p. 301). However, she rightly notes that according to the deindividuation theory, individuals may experience reduced self-observation, but are still conscious of others and social norms. This theory then does not explain the presence of anti-normative behaviour in CMC. In an experimental study, Bae (2016) investigates the effect of anonymity on group identification and the correlation between group identification and disinhibited behaviour. She reports that anonymity promoted group identification and that it correlated negatively with disinhibited behaviour.

It should be noted that the deindividuation theory should be regarded carefully in the context of this study. The theory is best applied in research on individual's behaviour in groups rather than individuals and might therefore not be as usefully applied to this study.

Rheingold (1993) suggests CMC may encourage users to share more personal information about themselves. He writes, CMC "will by its nature (…) be a place where people often end up revealing themselves far more intimately than they would be inclined to

do without the intermediation of screens and pseudonyms." (p. 25). Walther (1996) reports that in some cases, CMC interactions can even transcend traditional F2F interactions in a way that anonymous CMC interactions aid deeper communication. He names this phenomenon 'hyperpersonal interaction'. This could suggest that people communicating via CMC would be more likely to share their opinion without restrictions posed by social norms.

When considering anonymity in CMC, it should also be noted that users are not truly anonymous. Information about the user such as IP addresses can be discovered. However, the perception of anonymity will result in the same behaviour.

Social Cues

The presence or absence of social cues has often been pointed out to be one of the defining differences between CMC and interpersonal communication. These social cues relay identifying information about an individual to another, such as emotion and status and are absent in text-based CMC media but not in F2F communication.

Papacharissi (2004) identified the increase in uncivil behaviour and 'flaming' (insults and profanity) to be the effect of a lack of cues in CMC, following previous studies that observed uninhibited communication (strong and inflammatory language) in CMC. Previous research suggested that because of the absence of cues (e.g. related to status) in combination with anonymity, individuals may experience greater equality (Edinger & Patterson, 1983) and are more likely show antisocial behaviour (Berger, 2015). Kiesler et al., (1984) agree with the notion that the absence of cues leads to equality because hierarchical information is hidden. What follows is a focus on the message instead of on the individuals themselves.

Siegel et al. (1986) also ascribe uninhibited behaviour to social cues: "The relative absence of social context information and social feedback in CMC might lead to uninhibited behavior because these gaps are not yet replaced by shared norms for conveying or

interpreting the social meaning of what is communicated." (p. 160). In this study, groups of three members were asked to reach a consensus: one group communicated face-to-face; the other through email. The CMC group showed a more equal participation from all members than the F2F group. They also showed more uninhibited behaviour.

Tanis and Postmes (2007) suggest that it is not the identifiability of oneself but more so the perception of other's identity cues that affect their behaviour and feelings. In F2F communication, where these cues are present, one might experience a restriction on self-presentation as a result of those cues (Walther, 2007). That means that CMC might allow individuals to shape their self-presentation more. Joinsen (2001) shows that participants that did not receive identifying cues disclosed more about themselves than participants that did receive these cues. In the experiment, participants were randomly allocated to a condition and each participant was asked to answer six personal questions. In the reciprocal condition, participants received personal, identifying information about the researcher; participants that were allocated to the non-reciprocal condition did not. Results showed self-disclosing information about the researcher led to lengthier self-disclosure from the participants.

Written versus Spoken Language

At the beginning of the 20th century, spoken language was seen as superior, relegating written language to a secondary status by influential descriptive linguists like Saussure. At the same time, other scholars argued written and spoken discourse have their own valid style. One limitation of these early studies on the comparison between spoken and written language is that written works (literature) were compared to speeches, that were written beforehand. Nevertheless, Borcher (1927, as cited in Chafe & Tannen, 1987) found differences. Speeches contained more imperatives, exclamations and references to the audience than written works.

A study in the 1960s compared ten professors' articles with their speech generated by interviewing them on their articles. DeVito (1964) found that written language had a greater idea density and more nouns and adjectives. This could certainly be because writing is long-lasting, as opposed to speech, thus it allows for greater meta-linguistic reflection and editing (Berman, 2002). Spoken language contained more self-reference, 'allness terms' (i.e. generalizations of quantity, e.g. *most people*; Berman, 2002) and 'consciousness of projection' (DeVito, 1964, as cited in Chafe & Tannen, 1987). Consciousness of projection is related to dialogistic positioning mentioned in the Appraisal theory (Martin & White, 2005). Speakers adjust their positioning to their respondents and are therefore aware of the type of language they use to manage their interpersonal relation. The Appraisal theory will be explained further in *Appraisal Theory*.

Dialogistic positioning is strongly connected to the presence of social cues. Allwood et al. (1992) discussed the effect of these cues and the possibility of simultaneous feedback between the speaker and respondent. Spoken interaction tends to be more orientated towards the respondent than in writing. This is because the speaker wants to elicit feedback from the respondent "respect to uptake, understanding, and attitudinal" (Allwood et al., 1992). The presence of social cues and simultaneous participation is also more conducive to more affective attitudes in speech (Berman, 2002). The aspect of Affect is also part of the Appraisal framework and will be discussed further in *Appraisal Theory* below.

Scholars today consider writing and speech to be situated on a continuum rather than being dichotomous (Biber, 1988). In CMD research this is reflected in the way scholars refer to a continuum from asynchronous to synchronous media where asynchronous media are closer to writing and synchronous media closer to speech. CMD, although sometimes written, can exhibit features of orality (Herring & Androutsopoulos, 2015). Squires (2016), however, states that scholar today have acknowledged that in the most important ways, computer-

mediated language is the same as the language outside of it and that there are no substantial differences purely between writing and speech.

Politeness Discourse

Brown and Levinson's (1987) theory on politeness is widely recognized in both linguistics and sociology. However, it is important to note that in recent years, scholars have criticized it for the generalization of western cultures and disregard of other cultures. Feng (2015) argued that face in East Asia is more relational and interdependent, while face in the West is more independent. She has proposed that politeness must be examined at a cultural level, as there are many cultural factors that contribute to politeness strategies. This criticism does not constitute a problem for this present study since the culture that is discussed is that of native English speakers in Western cultures.

Brown and Levinson's Politeness Theory poses that 'face' plays a central role in interactions, based on dramaturgical theories of Goffman (1972) in which he conceptualized that individuals are social actors who present themselves to others (perform) in daily life. Individuals employ linguistic, behavioural and gestural tools to present 'face', or self-image. Besides Goffman's dramaturgical theory about maintaining one's own face, politeness theory addresses 'face wants'— the desire that others will work to support the face of others. This is achieved by using utterances that take the feelings of others into consideration (Morand & Ocker, 2003). The types of utterances that can be employed are described in the *Engagement* section of *Appraisal Theory* below.

While face is present throughout interactions, there are moments when politeness is critical. These are moments of disagreement, criticizing, imposing and requesting something (Morand & Ocker, 2003). Important in this present study is to consider that giving one's

opinion can be such a moment in which there is possible disagreement from a (potential) respondent.

Appraisal Theory

Appraisal is a theory within Systemic Functional Linguistics on the evaluation of text. Martin and White (2005) used the Appraisal theory to create the Appraisal framework. The Appraisal theory was developed from Halliday's (1985) interpersonal semantics, an approach which focused on the semantics of a text rather than its grammar. Appraisal theory explores and explains all the evaluative uses of language, such as by which one would adopt a particular stance or position towards an object/topic or a (potential) respondent. The theory not only covers how language is used to adopt a certain attitude (attitudinal positioning) and to manage interpersonal relationships (dialogistic positioning).

The Appraisal framework identifies three aspects of appraisal: attitude, engagement and graduation.

Attitude

Attitude explores the attitudinal positioning of the speaker towards an object or topic. This attitudinal positioning explains how "attitudes, judgements and emotive responses are explicitly presented in texts and how they may be more indirectly implied, presupposed or assumed" (White, 2015). The Appraisal aspect of Attitude is subdivided into three sub-types: (1) Affect depicts evaluations referring to the internal mental state of the language user. For example, emotions such as anger, hate or love can be expressed in appraisal utterances. (2) Judgement evaluates an object with regards to ethical or social norms. For example, 'She is rather eccentric', which indicates a departing of conventions of behaviour. (3) Appreciation

assesses objects and individuals (but not human behaviour) by referencing their aesthetics and their value.

Engagement

Engagement addresses the different ways in which a speaker negotiates and adjusts their stance towards other speakers' perspectives. "It explores how the expression of attitudes and judgements is, in many instances, carefully managed so as to take into account the ever-present possibility of challenge or contradiction from those who hold differing views" (White, 2015). Many linguists agree that communication is not solely a matter of self-expression, but that all utterances, even in written monologues, take into account communicative interaction and consider all utterances to be dialogistic in some way. This dialogic positioning is concerned with managing interpersonal relations between a speaker and a (potential) respondent. Many utterance contain elements that play such an anticipatory role and operate by acknowledging that there are alternatives to their position. They do this by explicitly revealing that the utterance is their subjective position.

Speakers employ different modality tools to negotiate interpersonal relations: (1) evidentiality, to emphasize the subjectivity of the statement (e.g. *I think that; it seems; as far as I understand*); (2) boosting, to modify the force of a statement (e.g. *certainly; of course, really, so*); (3) hedging, to avoid sounding too sure of oneself (e.g. *perhaps, seem, tend*). Hedging is also seen as a politeness strategy within the politeness theory by Brown and Levinson (1987). It is employed "to make one's opinion safely vague" (p. 116).

As discussed in the previous chapter, anonymity and the lack of social cues that is present in CMC could cause behaviour that does not fit social norms. One might not feel the need to adhere to these norms and take special effort to be polite. Consequently, the

expectation is that CMC would exhibit less dialogistic tools than in F2F communication where a respondent is present.

Graduation

This present study aims to reveal a difference in sentiment strength in opinion expression between CMC and F2F communication. Attitude explores the attitudinal position of language users and is therefore a fitting framework to explore these differences in language use regarding opinions. However, to measure sentiment strength, only identifying the differences will not suffice. Graduation is an aspect of Appraisal that describes how language functions to intensify or diminish the force of an utterance. These utterances can be viewed as having degrees of intensity and are viewed on a scale from low degree of intensity to a higher degree. Adjectives can also alter the intensity of an utterance (e.g. *slightly* dumb, *very* abrupt).

Studies in the past have quantified the intensity of words by assigning them values. Korenek and Šimko (2014) created an Appraisal taxonomy based on the Appraisal framework by assigning graduation values to appraisal words. As many studies before, they used this to identify the orientation of a text. Sentiment analysis has often been used to investigate public opinion through analysis of newspaper articles, film reviews and more recently microblogs. The focus of these studies has often been on identifying the orientation (sometimes called polarity) of text, i.e. whether they conveyed a positive, negative or neutral attitude towards the subject (e.g. Balahur et al., 2013; Fang & Zhan, 2015); Pak & Paroubek, 2010).

However, this present study will attempt to measure the sentiment strength of texts, disregarding their orientation. A similar method as Korenek and Šimko (2014) is employed in which appraisal words are given values according to a lexicon.

Methodology

In order to answer the research question "what is the effect of CMC on the expression of opinions as opposed to spoken F2F communication?", opinionated discourse from both a written CMC and spoken F2F environment was generated to compare sentiment strength. Computer-mediated opinionated discourse was generated using a discourse production task (DPT) in an anonymous online survey to mimic a CMC environment. Spoken F2F opinionated discourse was generated through interviews, simulating traditional communication.

Appraisal words were scored for sentiment strength using the sentiment lexicon AFINN. The total sentiment scores of the CMC data and the F2F data were compared using a t-test. A subsequent qualitative analysis aimed to find underlying patterns of aggravation.

Participants

All participants were native English speakers and their ages varied between 18 and 23. Participant recruitment occurred via snowballing of various social networks to identify a pool of native English speakers. All participants were students and were from either Canada, the United states or Ireland. Because of the COVID-19 measures, the alternative of video calling instead of F2F contact allowed for the inclusion of participants that did not live in the Netherlands. All participants were asked in advance if they would be available for both an online survey and a short interview. Each participant was required to complete both parts of the study in order for their results to be included. Initially, fifteen potential participants were sent an invitation to participate. After four participants responded, a reminder was sent to the others which generated three more participants, making a total of seven participants.

Empirical Method

An anonymous online survey via Qualtrics was used to generate the written data (see Appendix A). This provides an environment in which the participant can provide an opinion without the affect or fear of identification and simulates the anonymous environment that can be found on microblogging websites. An anonymous link send participants to the survey where their anonymity was reiterated. A discourse production task (DPT) required participants to provide an elongated monologue on their opinion on one of three topics: *weed legalization, gay couples adopting* and *blackface.* This choice was given to them to ensure they could write the minimum of 200 words that was required. To ensure every participant completes the word-minimum, they were unable to go to the next page and complete the survey. Prior to the DPT, a number of questions about news intake were added as a means to misdirect participants. This subtle deception was employed so that their focus would not lie solely on the DPT. These questions purposely have no added value for the study and were disregarded in the analysing process. Questions regarding name and other identifying details were omitted to make the generated data anonymous and make the survey feel anonymous to the participants. The anonymity of the survey was also emphasized in the survey introduction. Two last questions were included to control for the level of emotion the participants feel about the subject: "How passionate are you about the subject?" and "How much did you know about the subject beforehand?". For both questions a Likert scale was provided ranging from 1: Not at all/Nothing to 5: Very much/A lot.

After completing the survey, an interview was set up ensuring there was at least one day in between completing the survey and the interview. Ideally, the F2F data would have been generated through real F2F communication, but COVID-19 and the subsequent measures prohibited the opportunity to do so in such a setting. Instead, video calling (Skype)

was chosen as the alternative as it provides spoken language and, most importantly, an environment in which the participant is not anonymous and interacts with a person.

The interview generated spoken data that was recorded and transcribed (see Appendix B). The interview started with a short introduction before the main question is asked. The participant was asked to recall which topic they chose in the survey and then to give their opinion again. During this, the interviewer did not speak but held eye contact and reacted non-verbally by nodding or shaking their head. This indicates interaction without interrupting the participant. Finally, they were asked whether they have learned anything about the topic during the time between the survey and this interview. This made sure their opinion had not changed since the survey.

Although CMC includes video calling, this study will disregard this medium. The focus instead lies on CMC that generates written text. Because this study was born out of the observation that opinions are expressed strongly in anonymous environments, the aim was to recreate this environment in the written part of the study.

Analytical Method

For the analysis of the generated data, a method was used similar to that of Korenek and Šimko (2014). In their study they outline a method used to categorize a large set of microblog posts as containing either positive, negative or neutral sentiment. They set out to calculate the appraisal score for each post which would then indicate their category. Their method was based on the appraisal theory and followed suggestions that were made in Martin and White (2005) to create an appraisal taxonomy. Korenek and Šimko (2014) collected the eight hundred words from Martin and White and extended the taxonomy further by identifying synonyms for each individual word through WordNet. Each entry was subsequently given an appraisal value (0 to 5); the higher the value, the stronger it fit in the

category. Values could be negative, following the polarity and orientation category of the appraisal method. Unlike Korenek and Šimko (2014), this study analyses only a small data set. A full appraisal taxonomy was therefore not created but instead a commonly used sentiment lexicon was utilized to assign values to appraisal words. Several sentiment word lists exist that are labelled with sentiment strength, such as ANEW (Bradley & Lang, 1999), SentiWordNet and SentiStrength (Thelwall et al., 2010). AFINN (Nielsen, 2011) is a sentiment lexicon that assigns values from -5 to +5 (-5 to -1 for negative sentiment; 1 to 5 for positive sentiment; 0 for neutral sentiment) according to sentiment strength. It was an expansion on ANEW with the addition of microblog-specific words. AFINN was eventually chosen for this study for this reason.

The generated data set of the spoken data was cleaned through the deletion of stop words (e.g. *like; you know*) and faulty starts. In both the written and spoken data that was generated, sentences that did not include an opinion but contained factual information were present. These sentences that did not relate to the topic and that did not contain an opinion were deleted. Remaining sentences (from capital letter to full stop) were split into sentence segments on commas and linking words (e.g. *and; such as; so*) (see Appendix C and D). In the third step, targets are identified in the sentence segments. Knowing the targets is important as not all sentimental words in a sentence are connected to the topic of the sentence. Therefore, only the ones collocated with a target are taken into consideration when assigning sentiment values. After identifying the targets, the appraisal words that align with targets are assigned a sentiment value according to the AFINN lexicon.

Consider the following example that clarifies the steps described. The first row contains a sentence segment extracted from the written data which has already been prepared and of which was established that it contains an opinion. The second row identifies the target

of that sentence (t) and the appraisal word (A). The third row contain the sentiment values. Sentiment values within the segment are combined to make the segment score.

1	so	it	really	doesn't	matter	again	what	the	gender	of	the	parent	are.
2			A		A				t				
3			1		1								

Different from Korenek and Šimko (2014), this study is not interested in defining the orientation of opinionated discourse, but in the sentiment strength. Negative sentiment values as found in the AFINN lexicon are therefore not considered as a negative value; only their degree of strength is included, as shown in line 3 in the example below.

1	I	think	the	idea	that	gay	couples	wouldn't	be	able	to	adopt	is	ridiculous.
2				t										A
3														(-)3

In the next step, sentence segments belonging to a complete sentence are combined. In the example below, sentence segments 15.1 and 15.2 are both parts of complete sentence 15. The sum of the sentence segment scores make the total sentence score. The segments below have a sentiment value of 1 and 2 respectively, making the total sentence sentiment score 3.

15	15.1	I believe that every person is entitled to equal rights	1
	15.2	and someone's sexuality most certainly should not be a factor in that matter.	2

The final sentiment score of the data set (i.e. the complete survey answer of an individual participant and, separately, the complete answer given in the interview) is the sum of these sentence scores.

Although this method closely followed that of Korenek and Šimko (2014), their method used a large Twitter data set and was therefore largely analysed using a computer. The small data set in this study did not require such measures. Instead, appraisal words were manually scored using the online AFINN-96 tool and sentence and final sentiment scores were calculated manually as well.

Statistical Method

An f-test comparing the spoken data scores to the written data scores was performed to determine whether or not the null hypothesis can be rejected. The t-test that was chosen is a one-tailed independent t-test assuming equal variance. This t-test allows for the comparison of two independent sample groups and assumes no difference between the variances of the sample groups. It determines whether or not there is evidence for assuming a significant difference between the CMC sentiment strength and sentiment strength of traditional F2F interaction.

Qualitative Method

In addition to the quantitative analysis, a qualitative analysis was carried out for an in-depth study to uncover underlying patterns of aggravation. The Appraisal sentences were analysed according to the Appraisal framework (Martin & White, 2005). This framework considers two types of positioning: the attitudinal positioning and the dialogical positioning.

The attitudinal positioning was examined by comparing sentences from CMC and F2F communication in which similar matters are discussed. The sentences were compared with regard to the sentiment strength/intensity degree of appraisal words according to the aspect of Attitude and Graduation in the Appraisal framework.

The dialogical positioning was examined according to the aspect of Engagement in the Appraisal framework. More specifically, both discourses were considered in their use of modality tools which speakers/writers might employ to negotiate interpersonal relations. CMC and F2F sentences were compared considering the modality tools Evidentiality, Boosting and Hedging.

The use of these modality tools gave insight in the context in which speakers are most concerned about their potential respondent, i.e. whether their perceived anonymity takes away the concern about managing interpersonal relations.

Results

Quantitative Results

The CMC responses to the DPT were downloaded from Qualtrics and the F2F responses were transcribed and cleaned prior to the extraction of opinionated sentences. Opinionated sentences were important into Excel and split into segments where possible to aid the analysis. Segments belonging to a complete sentence were combined after the appraisal words were assigned a value according to the AFINN lexicon. The sum of these sentence segments made the sentence sentiment score.

Hypothesized was that computer-mediated opinionated discourse would show a stronger sentiment than F2F discourse. A t-test was employed to test this hypothesis. First, an f-test was performed and failed to reject the null hypothesis, suggesting that the difference between the two samples is not significant. Consequently, a one-tailed t-test was performed assuming equal variance and a null hypothesis to determine whether sentiment is stronger in CMC than in F2F communication. The 25 CMC sentence sentiment scores ($M = 1.92$, $SD = 1.73$) compared to the 23 F2F sentence sentiment scores ($M = 1.13$, $SD = 1.29$) showed significantly higher sentiment strength, $t(46) = 1.78$, $p = .04$.

The mean response length of the DPT was 240 words with no significant outliers. A minimum of 200 words was required. The mean text length of the interviews was 218.6 words (after cleaning), with four significant outliers. Two texts of 86 words from which three opinion sentences each were extracted. One text of 487 words, which also contained three opinion sentences. The majority of this text consisted of factual information without any opinions. And one text of 349 words which contained 7 opinion sentences. These texts are indicated in Table 1.

The highest sentence score was a 6 in CMC sentence 3 compared to the highest F2F sentence score of 3 in sentences 6, 12 and 18. More sentences had a neutral score of 0 in F2F sentences, with 11 neutral sentences, than CMC sentences, where 8 sentences had a neutral score. Table 1 shows the sentence scores for both CMC and F2F texts.

Control questions were in place to control for any circumstances that might influence a participant's response. Each participant indicated to be moderately passionate about their topic of choice with an average score of 3.8 on a scale from 1 to 5, not including one outlier who rated their passion for the topic with a 2. However, this number did not result in reluctancy to give their opinion seriously. All participants rated their prior knowledge about the topic to be either a 3 or a 4 (on a scale from 1 to 5). One participant wrote their response to all three topics by briefly giving their opinion on each within the span of 219 words. This response was included in the appraisal analysis since the response included the expression of opinion.

Sentence number	CMC Sentence Score	F2F Sentence Score	F2F outlier word count
1	3	2	
2	5	2	
3	**6**	0	86
4	3	1	
5	1	0	
6	0	**3**	
7	0	2	
8	0	0	
9	2	0	
10	2	2	487
11	3	0	
12	2	**3**	
13	2	0	86
14	2	0	
15	3	0	
16	4	0	
17	2	0	349

18	0	**3**
19	0	1
20	0	2
21	0	0
22	1	1
23	0	
24	3	
25	4	

CMC score per text	F2F score per text
14	4
4	1
7	5
13	5
2	0
1	0
7	7

Table 2: Total sentiment scores

per text.

Table 1: Sentiment scores for CMC and F2F opinion sentences.

Each colour block represents an individual participant.

Qualitative Results

The appraisal sentences were analysed according to the Appraisal framework (Martin and White, 2005). First, sentences from the CMC texts are compared to those from the F2F texts examining their sentiment strength in their attitudinal positioning. Then, their dialogical positioning is considered by looking for instances of meta-discursivity (such as hedging and boosting) and comparing those instances in CMC and F2F communication. Lastly, the surprising instance of profanities is presented.

Attitude

CMC sentences and F2F sentences were examined to find utterances in which similar matters were discussed. Table 3 below shows an overview of these sentences, their sentiment scores and their topics.

The results show that in most cases when the same topic is discussed, CMC sentences have higher sentiment strength that those in F2F communication. Which is in line with the hypothesis. However, there are a few instances in which F2F sentences have higher sentiment

strength than those in CMC. These are indicated in the table in bold. In two instances (1; 2), intensifying adjectives were used that increased the sentiment of the sentences, whereas the related CMC sentence does not contain intensifiers (3):

(1) so, it <u>really</u> doesn't matter again what the gender of the parents are.

(2) when kids <u>really</u> don't care the gender of the parent**.**

(3) it __ doesn't matter if their parents are the same gender

Differences in sentiments scores were largely due to Judgements. Subjects of a sentence were assessed in terms of their regard to social norms and specifically how they deviate from those norms. The underlined words in the extracts from CMC show the evaluation of ethical and social norms:

(4) Many children have <u>unsuitable</u> heterosexual parents

(5) I think the idea that gay couples wouldn't be able to adopt is <u>ridiculous</u>.

(6) To hinder these children's opportunity to be adopted based on sexuality is <u>unjust</u> and <u>unfair</u>.

The F2F sentence related to these, show no such evaluation.

Words of Affect did not feature in CMC discourse nor in F2F discourse. Words of Appreciation were also not present in either.

One important note must be made and that is that not all appraisal words are present in the AFINN lexicon. The appraisal word 'injuring' in the F2F sentence (7) was not in the lexicon. This word has not been assigned a sentiment value although it could certainly be argued that it should have a relatively high sentiment value.

(7) And then the other thing is you're also <u>injuring</u> children from the opportunity of being adopted by cutting out a large part of the adoption market

Topic	CMC Sentences	Score	F2F Sentences	Score
Gay adoption; gender	it doesn't matter if their parents are the same gender	0	**so, it really doesn't matter again what the gender of the parents are.**	**2**
			when kids really don't care the gender of the parent.	**3**
Gay adoption; suitable parents	Many children have unsuitable heterosexual parents	2	just cause a straight couple can have a child easier doesn't necessarily mean they're gonna be better parents	0
Gay adoption; options	They already have fewer options of ways to have kids so to limit that even further makes so little sense	1	It's harder for gay couples to have kids to begin with so we shouldn't limit the ways that they can have kids	0
			we should make it as easy as possible	0
Gay adoption; ability to adopt	I think the idea that gay couples wouldn't be able to adopt is ridiculous.	3	My opinion is that I think they should be able to adopt.	0
	they should be allowed to adopt like any straight couple.	0	I thought that there was basically no reason that gay couples shouldn't adopt kids	0
	Allowing same-sex couples to adopt children is not only a personal right	0		
	there is no good reason for it to not be legal	2	I think that anyone should be able to adopt	0
Gay adoption; rights	I believe that every person is entitled to equal rights	1	I don't think that anyone should be treated differently or have less rights than me	0
			Especially because I live in America that I consider that a constitutional right that everyone should have equal rights	1
Gay adoption; hindering adoption	To hinder these children's opportunity to be adopted based on sexuality is unjust and unfair.	4	And then the other thing is you're also injuring children from the opportunity of being adopted by cutting out a large part of the adoption market	0
Gay adoption; family definition in society	Gay couples should be allowed to adopt children because society needs to begin normalizing families with same-sex parents	0	**I hope that in the future that it will shift from family being a rigid definition of two heterosexual parents with either one or two kids**	**2**

Gay adoption;	The idea of the ideal family unit is inherently alienating to those who don't fit the mould	2	Not only do I think that there's such a rigid definition of what it means to be like a nuclear family	2

Table 3: Appraisal sentences and sentiment scores in CMC and F2F communication discussing similar topics which are presented to the left. F2F sentences with higher sentence scores than their CMC counterparts are in bold.

Engagement

CMC and F2F sentences were examined for their dialogistic positioning by considering the modality tools speaker may employ to negotiate interpersonal relations.

Evidentiality. More evidentiality utterances were found in F2F appraisal sentences than in CMC sentences. All sentences that contained evidentiality are in Table 4 below.

In almost half of the F2F sentences, evidentiality utterances are combined with appraisal words that have a higher sentiment score. Consider the following examples in which evidentiality utterances are underlined and appraisal words are in bold.

(8) Not only do I think that there's such a **rigid** definition of what it means to be like a nuclear family

(9) I think our generation **really** doesn't care that much unless they have parents that have really **drilled** it into their brain.

There is a difference between the contexts in which evidentiality utterances are used in CMC and F2F communication. In CMC texts these utterances are mostly used at the beginning of the text as a starting point to expand on their statement, or at the end of a text to restate their opinion. In F2F sentences participants also used these utterances in other opinionated sentences. CMC texts contained significantly more appraisal sentences that were void of evidentiality utterances:

(10) they should be allowed to adopt like any straight couple.

(11) This is a meager claim

(12) there is no good reason for it to not be legal

CMC Sentences	F2F Sentences
<u>I think</u> the idea that gay couples wouldn't be able to adopt is **ridiculous**.	Not only do <u>I think</u> that there's such a **rigid** definition of what it means to be like a nuclear family
<u>I believe</u> that every person is **entitled** to equal rights	<u>I hope</u> that in the future that it will shift from family being a **rigid** definition of two heterosexual parents with either one or two kids
<u>I don't think</u> marijuana is as bad as some of the other drugs out in the world such as meth and heroin.	<u>My opinion is</u> that I think they should be able to adopt.
if it's in a controlled environment and people use it safely and don't get consumed by other drugs then yes <u>I think</u> it should.	Especially because I live in America that <u>I consider</u> that a constitutional right that everyone should have equal rights
as <u>I believe</u> they should have the same right to have a family, as heterosexual couples do	<u>I thought</u> that there was basically no reason that gay couples shouldn't adopt kids
<u>I think</u> it's fine to leave him as he is	<u>I don't think</u> that anyone should be treated differently or have less rights than me
	<u>I think</u> that anyone should be able to adopt
	<u>I think</u> that if you're willing to open up your heart and your home to someone you **definitely** should
	<u>I don't believe</u> that belongs in you know government and all that stuff.
	<u>I think</u> it's also **very much** a generational thing
	<u>I think</u> our generation **really** doesn't care that much unless they have parents that have really **drilled** it into their brain.

Table 4: CMC and F2F sentences containing evidentiality utterances, which are underlined. Appraisal words are in bold.

Boosting. Boosters can be used to intensify the force of a statement. Both CMC and F2F texts contained boosters (underlined in Table 5). However, a difference can be observed, once again, in the context. The F2F sentences below, in addition to boosters, contain evidentiality utterances (in bold). This combination was not observed in CMC sentences.

(13) <u>Especially</u> because I live in America that **I consider** that a constitutional right that everyone should have equal rights

(14) **I think** that if you're willing to open up your heart and your home to someone you <u>definitely</u> should

(15) **I think** it's also <u>very much</u> a generational thing

(16) **I think** our generation <u>really</u> doesn't care that much unless they have parents that have really drilled it into their brain.

It should be noted that boosters were also evaluated in the quantitative analysis and were assigned a sentiment value.

CMC Sentences	F2F Sentences
They already have fewer options of ways to have kids so to limit that even further makes <u>so little</u> sense	<u>Especially</u> because I live in America that **I consider** that a constitutional right that everyone should have equal rights
but it also moves our society towards <u>greater</u> acceptance and understanding.	when kids <u>really</u> don't care the gender of the parent.
Children are <u>far more</u> beneficial in an adoptive home	so it <u>really</u> doesn't matter again what the gender of the parents are.
and someone's sexuality <u>most certainly</u> should not be a factor in that matter.	**I think** that if you're willing to open up your heart and your home to someone you <u>definitely</u> should
or it will cause a <u>great deal</u> of damage.	that <u>really</u> limits your view and that means that it might be religious, it might not be, but that's just like a fear
But what's <u>most</u> exciting about the legalization of the drug is the new types of business that will emerge	**I think** it's also <u>very much</u> a generational thing
	I think our generation <u>really</u> doesn't care that much unless they have parents that have really drilled it into their brain.

Table 5: CMC and F2F sentences containing boosting utterances, which are underlined. Evidentiality utterances are in bold.

Hedging. Hedging was present in few F2F sentences and none were present in CMC sentences. In line with the hypothesis, F2F sentences contained more hedging. The following sentences present all hedging instances:

(17) I thought that there was <u>basically</u> no reason that gay couples shouldn't adopt kids

(18) it has <u>some certain</u> health benefits as well**.**

(19) that really limits your view and that means that it <u>might</u> be religious, it <u>might</u> not be, but that's just like a fear

Profanities

One person identified themselves by revealing they were Irish in both the CMC text and the interview. This person notably had a high sentiment score in their CMC text (a total score of 14 in three opinionated sentences). Because of his identification, this score could be compared to his F2F sentiment score. The F2F score was significantly lower, with a total score of 5 in three opinionated sentences. Also striking was his use of profane language in the interview. Twice did he use a derivative of 'fuck'. Once as the adjective 'fucking' in 'you're fucking 25' and a second time as 'fuckers' to refer to people who perform illegal abortions. He does not refer to these people who perform illegal abortions in the CMC text, but he does refer to illegal abortions themselves with highly sentimental words, 'backstreet', 'abhorrent' and 'dangerous'.

Discussion

The aim of this study is to determine if CMC has a significant effect on the strength with which people express their opinions. The analysis of generated opinionated discourse of CMC and F2F communication answers the research question: 'what is the effect of CMC on the intensity of opinion expression as opposed to their expression in spoken face-to-face communication?' Hypothesized was that that computer-mediated opinionated discourse would show a stronger sentiment than F2F discourse, largely because of anonymity and lack of social cues in CMC. The results from both analyses show a significant difference in sentiment strength between computer-mediated and F2F opinionated discourse, with CMD having higher sentiment than F2F discourse. In addition, the qualitative analysis saw the application of the Appraisal theory to uncover differences in aggravation. Results show that CMD has higher sentiment strength than F2F discourse when the same topic is addressed. It also shows a greater use of modality tools in F2F discourse that would lessen the intensity of the opinion, as was expected.

Anonymity is considered a defining feature between CMC and F2F communication, since F2F communication is nearly impossible to have while not being identified. However, any CMC media do allow users to hide their identity. Various studies found that anonymity in CMC resulted in uninhibited behaviour, (e.g. Santana, 2014; Halpern & Gibbs, 2013) which may present itself in the form of strong, intensified language. The results from the quantitative analysis where appraisal words were scored on their sentiment value indeed show such intensified language. The qualitative analysis examines and compares the attitudinal positioning of the discourses (according to the Appraisal framework) and finds that all appraisal utterances can be categorized in the Attitude- sub-type of Judgement which evaluates an object/subject with regards to ethical and social norms. Furthermore, no utterances of the Affect sub-type are found in either the CMD or F2F discourses. Given that

the topics participants were presented with were related to ethicality and social norms, the sub-type of Judgement is unsurprising. The absence of the Affect sub-type might also be explained by the presented topics as the topics likely did not touch participants personally and emotionally and therefore did not elicit an emotional responses.

Uninhibited, uncivil and less socially desirable behaviour has also been pointed out to be the effect of a lack of social cues in CMC (Papacharissi, 2004; Siegel et al., 1986; Berger, 2015). Papacharissi (2004) also identifies an increase in 'flaming' to be caused by a lack of cues. Though such extreme language might be present in some media of CMC, flaming was not expected in this present study. Individuals who express themselves with such extremely intense language are often a small group of individuals who have very passionate opinions on the particular subject they write about. This present study presents participants with subjects that would evoke an opinion but were not likely elicit extremely strong opinions insofar that they would evoke flaming. Instead, this study considers people in general and the way they express their opinion on topics they are not specifically passionate about.

A lack of social cues is also suggested to cause greater equality among people in an interaction (Edinger & Patterson, 1983), which shifts the focus from the individuals themselves to the message (Kiesler et al. 1984). This would suggest that anonymity and social cues in CMC seem to have such an effect that the concern with maintaining an interpersonal relation with a respondent is lessened. Many linguists hold that utterances in communications are always, in some way dialogistic, including written monologues (without actual respondents). It was therefore expected that the qualitative analysis in this present study should reveal that F2F communication shows more utterances that function to negotiate interpersonal relations, but that these utterances would not be completely absent from CMC. The analysis considers the dialogistic positioning of sentences in CMC and F2F

communication by examining how participants employ different tools of modality. The results show more use of modality utterances than CMD.

Two interesting patterns emerge in how these modality tools were employed in F2F discourse. Firstly, evidentiality utterances appear more in CMD and when they do they are often combined with appraisal words that have a high sentiment value. This suggests the speaker's apparent need to emphasize the subjectivity of their statement before expressing an opinion of high intensity to manage the interpersonal relation. Similarly, although boosters were not expected in F2F discourse, they often appear together with evidentiality utterances in F2F discourse. Boosting utterances are equally present in both CMD and F2F discourse.

A striking result that is somewhat counterintuitive is the presence of profanities in the F2F discourse. Both instances were from the same participant. Such strong word use is not expected in F2F discourse; however, social cues inform the speaker of the identity and the social norms of the respondent. The speaker might have assessed the respondent (the interviewer) and concluded that such language would be acceptable.

The results from this research implicated a difference in language surrounding opinion expression between CMC and F2F communication. It should be noted, however, that the seven participants constitute an insufficient sample size which does not allow for the results to be generalized. This small sample size did allow for an in-depth qualitative analysis within the scope of this Bachelor thesis.

Ideally, interviews would have been taken in a traditional face-to-face setting. Due to COVID-19 measures interviews were instead conducted via video calling. This could cause different results than when interviews were done traditionally. However, this research assumes anonymity to be a large influence on opinion expression in CMC. Video calling insured identifiability mimicking traditional interpersonal communication as closely as possible.

Since opinions via CMC were conducted anonymously, the data did not allow for a comparison of the CMD with the F2F discourse from one individual. Further research can be done to find specific in-person differences and to establish what results can be generalized. Furthermore, computerized analysis would be able to score appraisal words automatically which would allow for a larger data set to be analysed. However, targets and appraisal words will still have to be identified by researchers beforehand similar to the method used in Korenek and Šimko (2014). Lastly, these findings can have implications for studies in which opinions are examined. Researchers will have to consider what medium will be used to generate opinions and how their findings will be interpreted.

Conclusion

This thesis set out to answer the research question: 'what is the effect of CMC on the intensity of opinion expression as opposed to their expression in spoken face-to-face communication?' Hypothesized was that computer-mediated opinionated discourse will be stronger in sentiment than F2F discourse, largely because of anonymity and lack of social cues in CMC. To answer the question, a quantitative analysis was first carried on generated written data via CMC and spoken data via F2F communication. Opinionated sentences were extracted from both discourses and an analysis was carried out in which appraisal words in opinionated sentences were assigned sentiment values according to the AFINN lexicon. A subsequent t-test showed a significant difference in the sentiment strength of CMD and F2F discourse, with CMD discourse showing a higher degree of intensity in appraisal words.

To uncover underlying patterns and differences in aggravation, a qualitative analysis was carried out. The analysis was carried out utilizing the Appraisal framework on attitudinal and dialogistic positioning as a guide. It was hypothesized that sentiment strength will be higher in CMD than in F2F discourse when opinionated sentences addressing the same topic are compared. Furthermore, modality tools are utilized more often to lessen the intensity of the opinion in F2F communication than in CMC. The results were consistent with the hypotheses.

Anonymity and the absence of social cues as influential features of CMC contributed to the use of more intense appraisal words in CMD than was used in F2F discourse. Concern with maintaining and negotiating an interpersonal relation with a respondent presented itself in a greater use of modality utterances in F2F discourse. This concern was suggested to be of lesser importance in CMC as the focus is shifted from the individuals themselves to the message when social cues are absent. This dialogical positioning in F2F discourse was clearly

seen in the use of evidentiality utterances such as *I think* and *I believe*. A pattern appeared in F2F discourse where relatively strong appraisal words were often 'compensated' with evidentiality utterances so as to maintain an interpersonal relation.

These results provided an answer to the aforementioned question about the effects of CMC on the intensity of opinion expression.

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Appendices

Appendix A

Discourse Production Task responses

This Appendix contains the complete DPT responses and participant's answer to the control questions to the right.

	DPT Responses	Previous knowledge about topic?	How passionate?
1	Weed Legalisation (an Irish perspective) There's a few ways to look at it. It's very similar to a lot of landmark legal changes of the last few decades. For example the prohibition laws in the early twentieth century in the US, and the abortion referendum in Ireland in 2018. Legal or not, in the US people were drinking and brewing alcohol and it was an underground, unregulated mess. There was even paddle steamers that took American passengers out to international waters where they would gamble and drink legally out of the clutches of US territorial restrictions. In Ireland, you had two women every single day flying to the UK to avail of the legal abortion services there, as they could not access it at home. And that was just the people who could afford it. Backstreet abortions done by abhorrent and dangerous means we're commonplace in the "developed" Ireland pre-referendum. Abortion existed, legal or not. So, by legalising it, it is safer and regulated. By legalising and regulating, mothers are no longer dying in desperate, dangerous operations, and in America the power and money was taken away from the gangs that thrived on the black market alcohol sales. Legalising weed will have the same effect. It ensures the supply is safer and can be tested and it's producers kept accountable. It also takes the revenue and power away from the gangs who import the weed (and everything else) to the country because it becomes easier and safer to access legally. Thanks for coming to my TED talk.	4	3

2	I think the idea that gay couples wouldn't be able to adopt is ridiculous. They already have fewer options of ways to have kids so to limit that even further makes so little sense. Anybody who goes through the process of adopting a kid must really want one, because it's a long and complicated process, and there's a good chance they'll care for the kid well, and adoption agencies exist to make sure of this. That is no different whether the couple is straight or gay. A kid needs loving and supportive people to care for them, not specific genders for their parents. They'll be introduced to people of all genders out in the world or at school so it doesn't matter if their parents are the same gender. Kids are more accommodating and accepting than people give them credit for, they just want to be loved, it will make little difference to them if their parents are the same gender. Finally, so many kids need adopting, why would we limit who can adopt them? As long as the couple can show the adoption agency they'll be caring and capable parents, they should be allowed to adopt like any straight couple.	3	4
3	Gay couples should be allowed to adopt children because society needs to begin normalizing families with same-sex parents. There has been an increase in positive attitudes regarding members of the LGBT community, and the next step is towards the normalization of these families. Historically, a married heterosexual couple in a nuclear configuration has been the standard for what it means to be a family, but its definition is changing rapidly. The idea of the ideal family unit is inherently alienating to those who don't fit the mould. This can also be said of families effected by divorce, death, adopted families, and other unconventional, non-nuclear setups. The governmental systems put into place are made with these traditional families in mind, which means there are a large number of individuals that aren't being taken care of or considered. Minorities have often been left out of the conversation, or in some cases, systematically oppressed. The same can be said for non-traditional families and relationships. By making families with same-sex parents normal, it requires society to have an open mind about the types of relationships there can be and not have a singular view of others. Allowing same-sex couples to adopt children is not only a personal right, but it also moves our society towards greater acceptance and understanding.	4	4
4	I would say that I am most in favor of same-sex couples being granted the legal right to adopt children just as a same-sex couple would. For a number of years, the privilege of same-sex couples and their ability to adopt children has been a ubiquitous matter of discussion. There is an argument that the presence of two same-sex parents could potentially alter the adopted child's public and sexual life. This is a meager claim as sexual orientation is not and should not be the foundation determining an individual to be a competent parent. Many children have unsuitable heterosexual parents. Many studies have been performed by various psychiatric associations determining that sexual orientation is indeed a choice and bearing a specific sexual orientation is not indicative of mental illness or incompetence. To those who argue children being raised by same-sex couples will be emotionally and psychologically affected,	3	4

	the alternative is to leave these children to remain in foster care, affording them no permanency or stability. Children are far more beneficial in an adoptive home rather than living through the ambiguity and variability of foster care. Once again, any argument against a same-sex couple's competence to be a parent has been refuted by many scientific studies. I believe that every person is entitled to equal rights and someone's sexuality most certainly should not be a factor in that matter. Being born and raised in America, discriminating against someone based on gender, religion, race, disability or sexual orientation is unconstitutional. There's a great deal of children that are looking for a loving and caring family to adopt them. To hinder these children's opportunity to be adopted based on sexuality is unjust and unfair.		
5	The first and most basic reason that marijuana should be legalized is that there is no good reason for it to not be legal from a certain point of view individual's deserve the right to be able to make their own choices if they wish to use the drug or not the government only has the right to limit those choices if the individual's actions endanger someone else this does not apply to marijuana. There are certain agencies believe marijuana shouldn't be legalized though because there are no hardcore evidences that marijuana is an effective drug as medicine. Weed has been around for many years alongside other illegal drugs that are not entirely viable to one's health but It is to be believed that cancer patients use it to cope with severe pain when other pain killers don't work as effectively wich I think is true. Though there are some down sides to having marijuana but you'll only really notice the downside if an individual smokes it everyday. Marijuana can make you lazy have a loss of brain cells and the come down off of it can cause an individual to have mood swings but if you can control yourself to not smoke it everyday of your life though I know it isn't as easy for some people to just stop I don't think marijuana is as bad as some of the other drugs out in the world such as meth and heroin. So in terms of if weed should be legalized I would have to say if it's in a controlled environment and people use it safely and don't get consumed by other drugs then yes I think it should.	3	4
6	Out of the three options given to me, I would be most passionate about allowing gay couples to adopt, as I believe they should have the same right to have a family, as heterosexual couples do. It's just basic fairness. Regarding the other two options, I don't really have much of an opinion about them. I'm Irish, and so we don't have the same holiday traditions here, I've heard of Black Pete, and I don't think it has rascist connotations, but I can see why there might be some disagreement. I think it's fine to leave him as he is. Lastly regarding weed legalisation, I don't smoke, so I can't really defend its benefits, but I know people who enjoy it recreationally. I don't know what the discussion is in the Netherlands about it, but if it's not causing harm, then who cares? It might be an idea to treat it the same way as alcohol, both are drugs, but alcohol is regulated by the government. I know I was only supposed to choose one topic, but I'm not good at fully expressing my opinions in essays as I'm concise. So to reiterate what I think is the more important topic, is the right for gay couples to adopt, because I'm an advocate for equality. I hope this helps.	3	4

| 7 | Weed legislation is one of the most interesting topics to me as a young adult. Weed in the states has just recently been legalized in some states while its still a class one federal drug in other states. The legislation behind this legalization on the substance needs to be amended immediately, or it will cause a great deal of damage. The biggest problem is that some one in states that have legal weed can have and use the product, but if the drive to the neighboring state that has not yet legalized it and they are caught with possession of the substance they can get in serious trouble. The United States government should intervene and legalize it for the country instead of allowing countries to decide if they should realize it or not. Looking over at the business effects of legalization of marijuana, the field will grow rapidly in the immediate future but will taper off gradually. I am predicting this because weed is going to lose its sexy feature and become more mainstream. Since it's going to become so regular and easily accessible people are not going to be looking for a lot of it later in the future hence the tapering off. But what's most exciting about the legalization of the drug is the new types of business that will emerge, all the new services and products. | 4 | 2 |

Appendix B

Transcription of interview responses

1	I think obviously gay couples should be able to adopt, because it's progressing our world forward or society. Because as soon as that's done we can move past that and start focusing on greater issues. Not only do I think that there's such a rigid definition of what it means to be a nuclear family or what it means to be a family in general. And I think that once that definition kind of expands to other things, a non-traditional family would include someone with a single parent or someone with I don't know there was a death in the family. Maybe it needs to be a family based on an older sibling having to take care of a younger sibling because there is no parent figure, just something that. I hope that in the future that it will shift from family being a rigid definition of just two heterosexual parents with either one or two kids or something that to something greater that a lot of the population you know is involved in families that, so. And including gay families, that's what I was kinda talking about.
2	My opinion is that I think they should be able to adopt. Especially because I live in America that I consider that a constitutional right that everyone should be have equal rights what they want to and that that shouldn't be dependent upon sexuality or disability or gender or whatever else. You know discriminating against someone's birth. And then the other thing is you're also injuring children from the opportunity of being adopted by cutting out a large part of the adoption market if you will.
3	I thought that there was basically no reason that gay couples shouldn't adopt kids, when there's so many kids that need adopting, when kids really don't care the gender of the parent. And they just want someone to love and support them and take care of them however that'll be. And that if a couple goes through the long process of adopting kids, cause it's not easy, that must mean that they do really want the child. So, you don't know for sure but it's a pretty good sign that they'll be good parents, so it really doesn't matter again what the gender of the parents are. It's harder for gay couples to have kids to begin with so we shouldn't limit the ways that they can have kids, we should make it as easy as possible. And I think I may have touched on the fact that just cause a straight couple can have a child easier doesn't necessarily mean they're gonna be better parents, so there's that comparison as well.
4	From an Irish perspective, cause obviously it's not legal here, I thought about the benefits of legalizing versus, legal versus non legal and the effects and advantages that it has. I compared it to for example you had prohibition in the states in the nineteen tens and twenties when there was a big purist movement and they outlawed drinking and alcohol and brewing and consumption. And even though they outlawed it, people kept distilling and producing and distributing it anyway. And there was gangs and things that were capitalizing of off it more than anyone else, because they had the infrastructure to scale up the operation underground as it were. And there's even. I heard of stories of paddle boats going out of the south coast of the deep south of America that would go into international waters where the laws didn't apply and they'd just set up casinos and breweries and things and did all just drink and gamble, completely legally afterward and they pack it all up and come in and that was it. So, it just shows that that didn't stop it. Regardless of the concerns people had about whether alcohol was good or bad, it was happening anyway. So then when they legalized it they were able to get tax revenue from the sale of it legally and they were able to regulate it and control it and actually keep it within the bounds of the law, which ended up being

	more safe. A similar thing then , more than a hundred years later, we had the abortion referend in Ireland where we legalized abortion by public vote and that again, similar situation, people had concerns over whether or not it was safe or good or ethical, but regardless of whether it was or not or what the concerns were, it was still happening. People would fly to England to go out of Irish jurisdiction to get an abortion instead. and so by legalizing it then, they're able to regulate it and keep it in Ireland and make it safer and people weren't going off to dodgy fuckers in alleyways and you know it was better overall. I think by the same token, whatever your hang-ups are about the ethics or the health benefits or the culture around weed and legal weed: it's still happening anyway. And the only people who are profiting from it are gangs and traffickers who are abusing the money that you know you're fucking 25 you're having it at a party with your friends, they're using that money to also bring in cocaine and trafficking and smuggling and things that. So, it's not as harmless as we think. So, if you legalize it then, tax revenue and you'd be able to regulate it and it would take the money and the power away from the gangs and keep it more out in the open and more safer.
5	Well, jeez I don't even have much of an opinion. I think it's fair. That's literally the main reason. I don't think that anyone should be treated differently or have less rights than me. If I should duff someone, I wouldn't say no to someone else doing it. I don't believe that I should tell someone else what they should do or how they live their lives or whatever it is. So, when it comes to, if they want to do that, let them do it.
6	I have an on and off opinion about weed legalization. Because it has some certain benefits, certain health benefits as well. So, cancer patients they use it to help with severe pain. But then I also see it as a pathway to get into other big drugs methamphetamine or cocaine if you see what I mean. I believe it's a gateway drug. Cause certain types of people have different mindsets to those drugs some people take it for antidepressants, to make them feel better if they're depressed. Or some help it to relieve stress, if they're feeling really stressful and calm down. I take it sometimes for when I've got a big event coming on. But then there's other people in the world who use it for no reason and they just take it because they want to and it's their only source of happiness. And then when weed stops working for them, they find other drugs, such as cocaine and meth.
7	I think that anyone should be able to adopt. Pretty much what I said was you never get to pick who your parents are, so who knows if you got adopted by someone and to say that your parents aren't gay and then to have a pair of parents that adopt you, you don't know. And plus, kids who are going into adoption, either their parents couldn't take care of them or they didn't want to take care of them so they're lucky to have these people who wanted kids so bad that they're willing to adopt someone that they aren't biologically connected to. I think a lot of people who are looking to adopt and they are in a male-male or female-female or transgender relationship or whatever, I think that if you're willing to open up your heart and your home to someone you definitely should. And for people to say that they shouldn't be allowed to, just based on your sexuality, preferences, that really limits your view and that means that it might be religious, it might not be, but that's just a fear. people who are- they're afraid of what they don't know and that's why they're "oh I don't that". But they don't want to see it, they wanna ban it. But I don't believe that belongs in you know government and all that stuff. I hate to admit this, but I'm from a family that doesn't accept that stuff. I think it's also very much a generational thing. I think our generation really doesn't care that much unless they have parents that have really drilled it into their brain. I mean I'm also from a little more of a liberal area where if I was to be down south I would say, not that my

opinion would be different, but I would've known more people's opinion, would be voicing it much louder. Especially cause a lot of them down south are very religious very into the church don't anything that, don't wanna see it, people have been burned over it, that type of thing.

Appendix C

CMC Appraisal Sentence Segments

This Appendix contains CMC Appraisal sentence segments generated with a DPT and their sentiment scores to the right.

1	Legal or not, in the US people were drinking and brewing alcohol and it was an underground, unregulated mess.	3
2	Backstreet abortions done by abhorrent and dangerous means were commonplace in the "developed" Ireland pre-referendum.	5
3.2	mothers are no longer dying in desperate, dangerous operations,	6
4	I think the idea that gay couples wouldn't be able to adopt is ridiculous.	3
5	They already have fewer options of ways to have kids so to limit that even further makes so little sense	1
6.2	it doesn't matter if their parents are the same gender	0
7	they should be allowed to adopt like any straight couple.	0
8	Gay couples should be allowed to adopt children because society needs to begin normalizing families with same-sex parents	0
9	The idea of the ideal family unit is inherently alienating to those who don't fit the mould	2
10	Minorities have often been left out of the conversation, or in some cases, systematically oppressed	2
11.1	Allowing same-sex couples to adopt children is not only a personal right	0
11.2	but it also moves our society towards greater acceptance and understanding.	3
12	This is a meager claim	2
13	Many children have unsuitable heterosexual parents	2
14	Children are far more beneficial in an adoptive home	2
15.1	I believe that every person is entitled to equal rights	1
15.2	and someone's sexuality most certainly should not be a factor in that matter.	2
16	To hinder these children's opportunity to be adopted based on sexuality is unjust and unfair.	4
17.2	there is no good reason for it to not be legal	2
17.4	individual's deserve the right to be able to make their own choices if they wish to use the drug or not	0

18	I don't think marijuana is as bad as some of the other drugs out in the world such as meth and heroin.	0
19.2	if it's in a controlled environment and people use it safely and don't get consumed by other drugs then yes I think it should.	0
20.3	as I believe they should have the same right to have a family, as heterosexual couples do	0
21	It's just basic fairness	0
22	I think it's fine to leave him as he is	1
23.2	but if it's not causing harm, then who cares?	0
24.2	or it will cause a great deal of damage.	3
25	But what's most exciting about the legalization of the drug is the new types of business that will emerge	4

Appendix D

F2F Appraisal Sentence Segments

This Appendix contains F2F Appraisal sentence segments generated with an interview and their sentiment scores to the right.

1	Not only do I think that there's such a rigid definition of what it means to be like a nuclear family	2
2	I hope that in the future that it will shift from family being a rigid definition of two heterosexual parents with either one or two kids	2
3	My opinion is that I think they should be able to adopt.	0
4	Especially because I live in America that I consider that a constitutional right that everyone should have equal rights	1
5	And then the other thing is you're also injuring children from the opportunity of being adopted by cutting out a large part of the adoption market	0
6.1	I thought that there was basically no reason that gay couples shouldn't adopt kids	0
6.3	when kids really don't care the gender of the parent.	3
7.2	so it really doesn't matter again what the gender of the parents are.	2
8.1	It's harder for gay couples to have kids to begin with so we shouldn't limit the ways that they can have kids	0
8.2	we should make it as easy as possible	0
9.2	just cause a straight couple can have a child easier doesn't necessarily mean they're gonna be better parents	0
10.2	and it was better overall	2
11.2	whatever your hang-ups are about the ethics or the health benefits or the culture around weed and legal weed: its still happening anyway	0
12.2	it would take the money and the power away from the gangs and keep it more out in the open and more safer	3
13	I think it's fair	0
14.2	I don't think that anyone should be treated differently or have less rights than me	0
15	if they want to do that, let them do it.	0
16.2	I have an on and off opinion about weed legalization.	0
17	I think that anyone should be able to adopt	0
18.2	so they're lucky to have these people who wanted kids so bad that they're willing to adopt someone that they aren't biologically connected to.	3

19.2	I think that if you're willing to open up your heart and your home to someone you definitely should	1
20.2	that really limits your view and that means that it might be religious, it might not be, but that's just like a fear	2
21.2	I don't believe that belongs in you know government and all that stuff.	0
22	I think it's also very much a generational thing	1
23	I think our generation really doesn't care that much unless they have parents that have really drilled it into their brain.	4