

# Reactions of Dutch Twitter users to terrorist attacks happening psychologically close by or far away.

Reacties van Nederlandse Twitter gebruikers op terroristische aanslagen, die psychologisch dichtbij of ver weg gepleegd zijn.

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## **Abstract**

The threat level for terrorist attacks in the Netherlands is four out of five, with a real chance of an attack. In other words, terrorism has become a sustainable threat towards society. However, there is limited research on the reactions of Dutch natives towards attacks that have already happened. Therefore, the current study examined whether there was a difference in reaction of Dutch natives towards recent attacks in Bagdad, Beirut, Brussels and Paris. More specifically, whether there was a difference in reaction to attacks that happened psychologically close (Brussels and Paris) compared to psychologically far away (Bagdad and Beirut). Six independent coders analyzed a corpus of Tweets on differences in general attitude and differences in use of content categories. The results showed that a neutral attitude was mostly evoked by both the attacks close by and far away. Furthermore, *news* was found more often as a content category for the attacks far away compared to close by. In addition, *personal experiences* and *expressing well wishes/requesting help* were found more often as a content category for the attacks close by compared to far away. For future research it could be examined whether different cultures react differently to terrorist attacks happening psychologically close by or far away.

## **Introduction**

Terrorist attacks have become a sustainable threat towards society over the last time period. Terrorism probably will remain a problem in the foreseeable future. As a result, it is becoming more generally accepted that it is a problem that must be dealt with in the 21<sup>st</sup> century (Procasky & Ujah, 2016). In addition, the National Coordinator for Security and Counterterrorism (2017) stated that the threat level in the Netherlands is four out of five, with a real chance of an attack. The Netherlands and the rest of the world have been confronted with attacks happening in Beirut, Bagdad, Brussels and Paris over the course of the last years. However, the attacks in Brussels (181.462) and Paris (253.054) received a lot more attention by Dutch tweeters than the ones in Bagdad (5.167) and Beirut (2.756) (number of Dutch tweets, collected via TwiNL, from the day of the attack up until a week later).

The current study will examine whether the psychological distance of the attacks influences the way Dutch users react to them on Twitter. As these terrorist attacks happen more frequently (Procasky & Ujah, 2016) and are getting closer in actual distance, it would be relevant to examine whether people express different attitudes in relation to when the attacks happen close by compared to far away. Expressing attitudes differently might suggest that tweeters are more fearful about attacks close by compared to far away. The government could react to this by giving necessary information about these attacks to reduce insecurities (Sunstein, 2003). Furthermore, it would be interesting to study whether people use different content categories – in other words, how they use the social medium – in their tweets when reacting on attacks happening close by opposed to far away. In order to answer these questions, a framework for content categories used at Twitter will be tested to find out in which way people use social media during a terrorist attack. In order to define which attacks are psychologically close in distance compared to far away, Construal Level Theory (CLT) will be explained in depth later on.

Firstly, it is important for the current study to define terrorist attacks. Vasterman, Yzermans and Dirkzwager (2005) define disasters as “acute, collectively experienced traumatic events with a sudden onset, and they can be both natural and man-made” (p.107). Therefore, terrorist attacks can be classified as disasters. As the cause of a terrorist attack is not natural, it would therefore be labelled a man-made disaster. The attacks in Beirut, Brussels, Bagdad and Paris were all labelled terrorist attacks by the media (Goldman & Yourish, 2015; Khomami, 2016). In order to define which attacks were close in psychological distance to The Netherlands compared to far away, an elaboration of CLT is required.

### *Construal Level Theory*

CLT is a theory that tries to explain the relationship between the construction of stimuli in the brain and the psychological distance of these stimuli. An object can be psychologically distant when it is remote in time (future or past) or space, when it refers to experiences of others (close or distant) or when it is likely or unlikely to occur (Liberman & Trope, 2008). In other words, psychological distance can be measured on four dimensions, which are spatially, temporally, socially and hypothetically.

The current study uses the spatial distance to define whether the attacks were psychologically close or far away from The Netherlands. Following the spatial distance from the Netherlands, Bagdad and Beirut are labelled as psychologically far away, whereas Brussels and Paris are labelled psychologically close. Although the spatial distance between the Netherlands and both the Eastern and Western cities is respectively far away and close by, it must be noted that for some Dutch tweeters Bagdad and Beirut may seem more psychologically close as they perhaps identify themselves more with this culture.

CLT can contribute to this study through clarifying whether people react differently when attacks happen far away or close by. CLT states that the different locations of the attacks will result in a different representation within the brain. Liberman and Trope (2008) state that CLT differs between lower-level construals and higher-level construals. The further away an event is removed from direct experience, the higher the level of construal is of that event. Therefore, the attacks in Bagdad and Beirut would be processed as high-level construals, as these happened far away from the Netherlands. The attacks in Brussels and Paris however, would be processed as low-level construals.

The current study will examine whether Twitter reactions of Dutch users differ in attitude when the attacks are processed as either a high-level or a low-level construal. It could for instance be the case, that more tweets containing a negative attitude would be found when attacks are processed as a low-level construal, in this case Brussels and Paris, compared to as a high-level construal, Beirut and Bagdad. An explanation might be given by Van Lent et al. (2016) and Lermer, Streicher, Sachs, Raue and Frey (2015), whose studies will be discussed in detail in the following paragraphs. Van Lent et al. (2016) found that low-level construals led to more fear for self, whereas Lermer et al. (2015) found that low-level construals led to a higher risk estimation. Although both these studies did not examine terrorist attacks, a similar effect might be found for terrorist attacks. This might result in more negatively toned tweets, due a higher risk estimation and a higher fear for self might lead to more negative feelings

towards an attack. Differences might be found between the use of content categories when attacks are processed as either a high-level or a low-level construal as well.

To test the assumption that CLT provides, Fujita, Henderson, Eng, Trope and Liberman (2006) conducted an experiment, hereby combining the two characteristics of CLT previously mentioned. It was tested whether spatially distant events can be associated with high-level construals, and whether spatial distance can be conceptualized as a dimension of psychological distance. The results of the study supported this assumption. When participants were asked to watch a six minute video that was said to be recorded either in Florence or Manhattan, they used more abstract language with the spatially distant location. The use of more abstract language might be an explanation for the fact that the distant location is processed as a high-level construal and therefore represented in the brain in an abstract manner. This is relevant for the current study as these results enforce the claim that spatially distant events (Bagdad and Beirut) are processed as high-level construals, and might therefore evoke different reactions of Dutch Twitter users compared to spatially close events (Brussels and Paris), which are processed as low-level construals. According to Fujita et al. (2006) high-level construals also lead to the use of more abstract language, which could result in mostly reporting *news* as a content category when posting about Bagdad and Beirut.

Besides the different use of language and perhaps therefore content categories, Van Lent et al. (2016) hypothesized that there would also be higher levels of public attention for increase in psychological closeness of events. This was examined for the Ebola outbreak and this hypothesis was confirmed. This is interesting for the current study as this can be seen partially reflected in the fact that more tweets were collected on the attacks close by in distance (Paris and Brussels) than the attacks far away in distance (Beirut and Bagdad). Furthermore, it was found that more fear for self was reported when events were perceived as closer in distance (low-level construal) (Van Lent et al., 2016). So when the Ebola pandemic was perceived as closer to the self and therefore processed as a low-level construal, a higher fear for self was reported. Even though the study of Van Lent et al. (2016) was on the Ebola pandemic and not on terrorist attacks, it could be that for terrorist attacks, attacks happening closer in distance lead to more fear for self, which therefore could result in more negatively toned tweets.

Furthermore, Lerner et al. (2015) published a study in which it was examined whether processing cues as low- or high-level construals had any influence on risk estimation. These results complement the findings by Van Lent et al. (2016) discussed earlier, which were on fear for self with the spread of the Ebola virus. Results revealed that a concrete mindset led to

higher risk estimates than an abstract mindset. Besides, an abstract mindset was proven to be advantageous for estimating extremely unlikely events, while a concrete mind set worked better for common events (Lermer et al., 2015). With the terrorist attacks, it might be the case that a concrete mindset will eventually lead to higher risk estimates, and this would probably be the case for attacks that happened close by, as these are low-level construals and therefore more concrete (Liberman & Trope, 2008). As attacks that happen close by are processed as low-level construals and therefore are reflected in a more concrete mindset, it might be that this will result in a situation being perceived as more dangerous. It can be argued that when a situation is perceived as more dangerous, this will result in more negative tweets. Therefore this research paper argues that attacks happening close by will result in more negative tweets. On the other hand, because attacks that happen far away are processed as high level-construals, this might lead to the situation being perceived as less dangerous and therefore result in less negative tweets and perhaps even more positive tweets.

Finally, Mollema et al. (2015) reported that sentiments for social media fit better with more personal and opinionated messages, compared to newspaper articles that are often more objective. Therefore it is argued that for content categories, personal interest and opinion would be a prevailing category for both far away and close by. However, as the attacks in Bagdad and Beirut were labelled high-level construals and would therefore be processed on an abstract level, it might be that more news would be reported on Twitter instead of personal interest and opinion. As Paris and Brussels were labelled low-level construals and therefore processed on a concrete level (Liberman & Trope, 2008), personal interest and opinion are expected to be expressed more often with these attacks.

Overall, from the research articles discussed above, it can be concluded that Bagdad and Beirut can be placed in the psychologically far away category according to CLT. On the other hand, Paris and Brussels can be placed in the psychologically close by category. As low level construals lead to more fear for self; a higher risk estimation; and more public exposure (Van Lent et al., 2016; Lermer et al., 2015), it is expected that more tweets containing a negative attitude will be found for the attacks close by. For the same reason, it is expected that *personal interest and opinion* will be found more often as a content category for attacks close by. Furthermore, due to high-level construals being processed as more abstract (Fujita et al., 2006), it is expected that more neutrally or positively toned tweets will be found for the attacks happening far away. In addition, for the same reason, it is expected that more *news* as a content category will be found for attacks far away. In the following section the use of Twitter as a corpus for sentiment analysis will be discussed.

### *Twitter as a corpus*

The corpus that was analysed for different sentiments will consist of tweets. Nowadays, Twitter is widely used to express public opinions. In the Netherlands, Twitter users grew from 6.000 in 2008 to 2.600.000 in 2016 (Van Zessen, 2016). With a total amount of 16.8 million inhabitants, this means that approximately 15,5% of all Dutch natives uses Twitter. People can use it to reflect on news items or other issues that are to be found shocking or of any interest. Twitter was established in July 2006 and had 319 million users according to statistics of the last quarter of 2016 (<https://about.twitter.com/company>). Spence, Lachlan, Ling, and Del Greco (2015), explain that Twitter users can connect with each other by following or being followed, where no reciprocity is required. With the growth of the platform additional functions were added. The notation RT stands for ReTweet, making it possible to repost a message from other users. When certain tweets get retweeted often, they get increasing attention of other Twitter users and might even be used for news coverage. Secondly, the symbol # is known as a hashtag and allows users to group tweets together, making it easier to search for groups of tweets. Lastly, with the use of the @-symbol it is possible for users to direct a question at other users or to answer a question.

Furthermore, Kwak, Lee, Park and Moon (2010) state that because tweets can be retweeted, this makes Twitter a new medium of information dissemination. As tweets can be retweeted, the bar is lowered for users to share important updates on terrorist attacks or other important news items. Nevertheless, to form a reliable corpus, Twitter users should participate in trending topics. Kwak et al. (2010) found this amount of users to be reasonably high, with over 8 million out of the then 41 million users participating in conversations on trending topics. For the Netherlands it was found that 864.000 people use Twitter on a daily basis (Oosterveer, 2016). Again, with this fairly large amount of users conversing about trending topics, Twitter can be used as a medium to spread news quickly.

However, there is a disadvantage to the use of Twitter as a corpus. Although Twitter does have a large amount of active users, the platform is not a perfect representation of the population. Nevertheless, as the audience of this microblogging platform grows every day, it can be considered a useful source to try and include the largest possible part of the population (Pak & Paroubek, 2010). Twitter's audience is represented by users from many countries, although users from the U.S. are prevailing (Pak & Paroubek, 2010). Even though this study focuses on Dutch tweets only, the fact that a lot of people from different countries use Twitter strengthens the claim that Twitter users form a reasonably accurate representation of the

population. The above is useful for the current study as this will make it easier to generalize results across the population.

Besides, Vasterman et al. (2005) propose that media can play a frame-setting role, regarding the role both traditional and social media can have in relation to disasters. The media have the power to dramatize, simplify or give a one-sided view of occurring disasters. Placing tweets poses this possibility as well, however it is more difficult to gain ground with your way of framing unless your tweet is retweeted frequently. This stresses the importance of relatively new social media sites such as Twitter. On Twitter it might be possible to encounter different views than the ones reported by traditional media. Therefore the relevance for the current study is that instead of a one-sided view, multiple views will occur within the corpus of collected tweets and will therefore form a better representative for the population. This could lead to the use of more *personal interest and opinion* as a content category, for both high-level (Bagdad and Beirut) and low-level (Paris and Brussels) construals if these multiple views are actually found to be represented.

In addition, Takahashi, Tandoc and Carmichael (2015) note that social media can be of particular importance next to traditional media when it comes to reporting on disasters. In 2013, Twitter launched a new service called Twitter Alerts, that should prioritize information during crises provided by credible sources when other communication channels are not accessible. Facebook established a similar service in 2014, called Safety Check, which makes it possible for users to mark whether they are safe during a disaster. The establishment of these services exemplifies the relevance given to social media during times of crises. Kaigo (2012) examined this for the great East Japan earthquake in March 2011. Due to power loss, traditional media could not be used and web-enabled phones and smartphones became the primary devices for media access in the first few hours after the earthquake. The results of the study of Kwak et al. (2010) confirm this, as they found that social media can report earlier on events than traditional media. Kaigo's (2012) research examined Twitter's potential to spread false rumours during these disasters. However, it was found that this was not what happened. Instead, Twitter played a prosocial role during the disaster. Again, this stresses the importance of social media during disasters and therefore the relevance for the current study, as it might be the case that traditional media are not yet able to report on attacks as a result of technical difficulties. Therefore it could happen that social media would be the only medium that would be able to report on terrorist attacks immediately after these have occurred.

Additionally, Twitter can not only report on attacks from the first moment on, but the usage of the medium also spikes during disasters and other large events according to Sweetser

and Metzgar (2007). Sweetser and Metzgar (2007) stated that social media use augments during disasters as people seek immediate and in-depth information. Since Twitter has made its tweets and user statistics public, it is possible for software programs to track these spikes. Interesting to note for the current study is that there was a big difference regarding the size of the spikes for the attacks close by and far away. As mentioned earlier, a lot more tweets were collected for the attacks happening close by in comparison to the attacks happening far away.

Lastly, Burnap et al. (2014) found that tweets containing a negative attitude were to propagate less long during the time of events than tweets containing a positive attitude. This is interesting for the current study as Burnap et al. examined a terrorist attack as well, namely the Woolwich attack in London (2013). Whilst in this study the survival rate of tweets will not be examined, it might be interesting to learn whether this shorter survival rate will also result in less negative tweets, as the data for the current study was collected over the time period of a week.

Overall, Twitter can form a reliable corpus (Pak & Paroubek, 2010) for the current studies according to the studies described above. Not only can information be spread very quickly after an attack via Twitter (Kaigo, 2012; Kwak et al., 2010), multiple views about the attacks will also be represented (Vasterman et al., 2005). In addition, negative tweets propagate less longer than positive tweets (Burnap et al., 2014), which could result in finding less negative tweets overall in the current study.

### *Overview*

The studies described above show that low-level construals lead to more fear for self; more public attention (Van Lent et al., 2016); and a higher risk estimation (Lermer et al., 2015). The current study argues that low-level construals (Paris and Brussels), as they lead to more fear for self and a higher risk estimation, will lead to more negatively toned tweets and more *personal interest and opinion* as a content category. It is expected that low-level construals will lead to more *personal interest and opinion* as a content category, as the close by attacks are perceived as closer to the self, which might lead to more interest in the attack as a result of a higher fear for self (Van Lent et al., 2016) and a higher risk estimation (Lermer et al., 2015). Moreover, this study will examine whether more positively or neutrally toned tweets will be used with high-level construals (Beirut and Bagdad), perhaps as a result of lower risk estimation and fear for self. Although the studies of Van Lent et al. (2016) and Lermer et al. (2015) were not on the same topic of the current study, it would be interesting to see whether these factors are of any influence on general attitude and content categories of tweets. In

addition, high-level construals, lead to the use of more abstract language (Fujita et al., 2006). The current study investigates whether the use of more abstract language with high-level construals will lead to more *news* as a content category. In addition, it is expected that high-level construals will lead to more *news* as a content category as high-level construals are perceived as less close to the self, which might result in a more objective tone of voice. Moreover, content category use on Twitter has so far only been examined for natural disasters (Takahashi et al., 2015 (Typhoon Hayan); Chew & Eysenbach, 2010 (H1N1 pandemic)). Nevertheless, the categories that will be examined are adapted from the frameworks of Takahashi et al. (2015), and Chew and Eysenbach (2010). Therefore this study can deliver an addition to theory as the framework will now be applied to a man-made disaster. Besides, the differences in attitude in Tweets have so far only been studied in relation to the Islam (Magdy, Darwish & Abokhodair, 2015), as opposed to differences in general attitude, which will be researched in the current study. A content analysis will be performed on the corpus of tweets to analyze the claims mentioned above and to evaluate whether the tweets contained a positive, negative or neutral attitude.

The following research question and hypotheses were conducted:

*RQ1: In which aspects do the reactions of Dutch people differ with respect to terrorist attacks that are psychologically close or far away in distance?*

*H1: More negatively toned tweets will be found when the terrorist attacks happen closer in distance compared to far away in distance.*

*H2: More positively or neutrally toned tweets will be found when the terrorist attacks happen far away in distance compared to close by in distance.*

*H3: The content category "personal interest and opinion" will be found more often when attacks happen close by in distance compared to far away in distance.*

*H4: The content category "news" will be found more often when attacks happen far away in distance compared to close by in distance*

## **Method**

### *Materials*

The corpus consisted of 442.439 Dutch tweets. There were 253.045 tweets collected on the Paris attacks, 181.462 for Brussels, 2.765 for Beirut and 5.167 for Bagdad. The search terms that were used to retrieve the tweets were respectively Paris, Brussels, Beirut and Bagdad. The tweets on the Paris attacks were collected between 13/11/2015 and 19/11/2015; Brussels between 22/03/2016 and 28/03/2016; Bagdad between 03/07/2016 and 09/07/2016; and Beirut between 12/11/2015 and 18/11/2015. For all the attacks, tweet collection started at the day of the attack until one week after, as it was expected that the majority of tweets would be posted in this time period (Burnap, 2014). The tweets on the attacks in Bagdad and Beirut were labelled the large psychological distance group, due to the spatial distance with the Netherlands. On the other hand, for the same reason, tweets on the attacks in Paris and Brussels were labelled the small psychological distance group. The tweets were collected via a large database that has been collecting approximately 40% of tweets written in Dutch since 2014, TwiNL (<https://twinl.surfsara.nl/#q-2>). The sample consisted of 3600 Dutch tweets, 900 for each of the terrorist attacks. The sampling of the tweets occurred randomly, by using the randomize function of Microsoft Excel. In addition, the relevance of the tweets was checked by the coders. If a tweet was not related to the attacks, the tweet was labelled irrelevant and was not coded.

### *Procedure*

Before the tweets were coded, the researchers composed a codebook. The codebook included the definition of the different variables and the assigned codes for each of the variables. The different coders tested whether the codebook worked by coding 75 tweets each. Hereafter the researchers agreed that the codebook did not need adaptations for the actual sample.

The tweets were coded by six different coders, all students of Communication- and Information Sciences at Radboud University in Nijmegen. Each coder coded 800 tweets in total, 200 for each terrorist attack. One-third of all the tweets was double coded by two different coders to assure interrater-reliability.

For the first variable, the general attitude of the tweet, the tweets were coded on whether they contained a positive (code = 1) a neutral (code = 2) or a negative attitude (code = 3). The definitions of attitude can be found in Table 1 on the following page. The procedure described above is a form of sentiment analysis. When sentiments are analysed by software

especially designed for this, like machine learning techniques, it has been proven difficult to correctly code a sentiment or an attitude when a text features mostly positive words, but the general sentiment of a text is negative (Pang, Lee & Vaithyanathan, 2002). Therefore, for the current study, it was chosen to work with human coders. For the definition of positive and negative attitudes the definitions of O'Connor, Balasubramanyan, Routledge and Smith (2010) were adapted to make them more suitable for the current study. O'Connor et al. (2010) define a message "as positive if it contains any positive word and negative if it contains any negative word" (p. 124). For the definitions in the current study, the fact that the overall sound of the tweet should be positive/negative was added. Besides, for the definition of the neutral attitude, the definition used by Magdy, Darwish and Abokhodair (2015) was adapted. A neutral attitude is therefore defined as a tweet that is reporting news without stating an opinion.

Table 1. Definition of the different attitudes.

<b>Attitude</b>	<b>Definition and example</b>
1. Positive	If the tweet contains any positive words and the overall sound of the tweet is positive. Example: "RT @HildaRaasing: Wat een enorm respect verdienen de hulpverleners in Parijs! Laten we het niet gewoon vinden wat zijn daar doen onder extr..." (What respect do the rescuers in Paris deserve! Let's not take for granted what they are doing under...)
2. Neutral	Tweet that is reporting news without stating an opinion. Example: "IS eist aanslagen Parijs op: De Islamitische Staat (IS) heeft zaterdag de verantwoordelijkheid opgeëist voor d... " (ISIS claims attacks in Paris: On Saturday, ISIS claimed responsibility for...)
3. Negative	If the tweet contains any negative words and the overall sound of the tweet is negative. Example: "Wat een ontzettend kortzichtig item in het @Nosjournaal over de minuut stilte in Parijs!" (What an incredibly short-sighted item @Nosjournal posted on the minute of silence in Paris!)

For the second variable, content categories, two frameworks were used and adapted into one framework deemed most fit for the current study. The frameworks used were provided by

Takahashi (2015) and Chew and Eysenbach (2010), which can be found in Appendix 1 and 2. The tweets containing *news* were coded as 1, *personal experiences* as 2, *personal interest and opinion* as 3, *expressing well-wishes and requesting help* as 4, and *miscellaneous* as 5. The definitions of the different content categories can be found in Table 2.

Table 2. Definition of the content categories of social media use.

Content category	Description and example
1. News	The tweet includes news, updates and information on the terrorist attack. This can also be a link to a relevant article. The tweet can be factual or non-factual. Example: "RT @RTLnieuws: Het dodental van de aanslag in een drukke winkelstraat in Bagdad is opgelopen tot 250." (The death toll of the Bagdad attack in a busy shopping street has risen to 250)
2. Personal experiences	The tweet includes a direct (personal) or indirect (family/friends) experience with the attack or the social/economic consequences of the attack. Example: "RT @WietseAerden: Gevonden op de trein naar Brussel. Thnx aan de Mensen die de getroffensten steun geven! #BrusselsAttacks #Brussels <a href="https://...">https://...</a> " (Found in the train to Brussels. Thnx to all the people giving the victims support!)
3. Personal interest and opinion	The tweet contains an opinion of a Twitter-user on the attacks, the situation, the news or reactions to the attack; or states that he/she wants more information about the attack. Example: "@iamzero juist. Wie hield een minuut stilte Voor Beiroet?" (Right. Who held silence for a minute for Beirut?)

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4. Expressing well-wishes and requesting help	The tweet expresses emotions, concerns or wishes, memorializes victims, tries to raise money or offers help (or requests help). Example: "RT @mishacollins: Brussel, onze harten zijn met jullie." (Brussels, our thoughts are with you)
5. Miscellaneous	The tweet does not contain information related to the attack or does not fall into one of the above categories.

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The interrater reliability of the variable "attitude" was moderate:  $\kappa = .54, p < .001$  (Landis & Koch, 1977, p.165). The interrater reliability of the variable "content category" was substantial:  $\kappa = .68, p < .001$  (Landis & Koch, 1977, p.165). For the tweets where the two coders did not agree on either or both of the variables, the researcher chose the answer that seemed most suitable after analysing the tweets again. The most common disagreement of the coders regarding the coding of the different attitudes, was on whether a tweet contained a negative or neutral attitude. An example of where this occurred was with the tweet "IS pleegt dodelijkste aanslag in Bagdad in bijna een jaar <https://t.co/Q0kDWfACS5>" (ISIS most deadly attack in Bagdad in nearly a year), which was coded as neutral after reassessment, as the researchers judged this as a neutral news item instead of a negative personal opinion. Regarding the content categories, there was not a specific type of disagreement that occurred most often. Coders sometimes disagreed on for instance whether a tweet included *personal experiences* or *personal interest and opinion*; or whether a tweet included *news* or *expressing well-wishes/requesting help*. For example, the tweet "RT @fritswester: Benieuwd of na aanslag Bagdad met zoveel doden en gewonden Irakese vlag halfstok gaat op gemeentehuizen en minuut stilte K..." (RT @fritswester: Curious whether the Iraqi flag will go halfway at city halls after the Bagdad attack with so many deaths and a minute of silence K..) was coded as *personal interest and opinion* by some, and as a *personal experience* by others. As this was a retweet and it explicitly stated curiosity (because of the word curious), researchers chose to code this as the content category *personal interest and opinion*.

### *Statistical treatment*

A Chi-square test was performed to analyse H1 and H2, to examine whether there was any relation between attitude and psychological distance. A second Chi-square test was performed to analyse H3 and H4, to examine whether there was any relation between social media uses and psychological distance.

**Results**

A Chi-square test was conducted to test H1 and H2. The test showed no significant relation between the psychological distance of the terrorist attacks and the general attitude of the tweets ( $\chi^2(2) = 1.24, p = .538$ ). As a result, there was no significant evidence found supporting either H1 or H2. Regarding H1, which stated that more negatively toned tweets would be found when the terrorist attacks happened closer in distance compared to far away in distance, Table 3 shows that 29% of the tweets that were found for the attacks that happened far away had a negative attitude, and 30.1% of the tweets that were found for the attacks that happened close by had a negative attitude. In addition, regarding H2, which stated that more positively or neutrally toned tweets would be found when the terrorist attacks happen far away in distance compared to close by in distance, Table 3 shows that 9.9% of tweets on far away attacks had a positive attitude, compared to 10.5% of tweets on attacks close by containing a positive attitude. Furthermore, 61.2% of the tweets on attacks far away had a neutral attitude, compared to 59.4% of tweets having a neutral attitude for the attacks close by.

Table 3. The observed count and the percentages of negative, positive and neutral tweets for attacks close by and far away in distance.

	<b>Close by</b>		<b>Far away</b>	
	Count	% within distance	Count	% within distance
<b>Positive</b>	177	10.5	174	9.9
<b>Neutral</b>	998	59.4	1080	61.2
<b>Negative</b>	506	30.1	511	29

To test H3 and H4, a second Chi-square test was conducted. The test showed a significant relation between content categories and the psychological distance of the terrorist attacks ( $\chi^2(4) = 133.88, p <.001$ ). The results for the variable content categories can be found in Table 4 on the following page. *Personal interest and opinion* occurred relatively more often for the attacks far away (37.6%) compared to close by (34.4%). Therefore there is no supporting evidence for H3, which hypothesized that *personal interest and opinion* would be

found more often for attacks happening close by compared to far away. *News* occurred significantly more often for the attacks far away (54.3%) compared to close by ( $p < .001$ , Bonferroni correction; 44.3%). This result provides evidence for H4, which hypothesized that *news* would be found more often for attacks happening far away compared to close by. In addition, regarding the other content categories, *personal experiences* occurred significantly more often for the attacks happening close by (8.3%) compared to far away ( $p < .001$ , Bonferroni correction; 1.8%), and *expressing well wishes/requesting help* was found significantly more often for attacks happening close by (12.1%) compared to far away ( $p < .001$ , Bonferroni correction; 6.1%). Lastly, the content category *miscellaneous* was found significantly more often for the attacks happening close by (0.8%) compared to far away ( $p < .001$ , Bonferroni correction; 0.3%).

Table 4. The observed count and the percentages of the use of content categories with attacks happening close by and far away in distance.

	<b>Close by</b>		<b>Far away</b>	
	Count	% within distance	Count	% within distance
<b>News</b>	745 <sub>a</sub>	44.3	959 <sub>b</sub>	54.3
<b>Personal experiences</b>	140 <sub>a</sub>	8.3	31 <sub>b</sub>	1.8
<b>Personal interest and opinion</b>	579 <sub>a</sub>	34.4	663 <sub>a</sub>	37.6
<b>Expressing well wishes/requesting help</b>	204 <sub>a</sub>	12.1	107 <sub>b</sub>	6.1
<b>Miscellaneous</b>	13 <sub>a</sub>	0.8	5 <sub>b</sub>	0.3

## Conclusion

The purpose of this study was to examine whether there were any aspects in which the reactions of Dutch people differ with respect to terrorist attacks that are psychologically close or far away in distance. In order to achieve this, the following research question and hypotheses were conducted:

*RQ1: In which aspects do the reactions of Dutch people differ with respect to terrorist attacks that are psychologically close or far away in distance?*

*H1: More negatively toned tweets will be found when the terrorist attacks happen closer in distance compared to far away in distance.*

*H2: More positively or neutrally toned tweets will be found when the terrorist attacks happen far away in distance compared to close by in distance.*

*H3: The content category 'personal interest and opinion' will be found more often when attacks happen close by in distance compared to far away in distance.*

*H4: The content category 'news' will be found more often when attacks happen far away in distance compared to close by in distance*

The results indicated that there were significant differences in these reactions regarding four of the five content categories. Regarding H1 and H2, which were both on the variables attitude and psychological distance, no significant relation was found. It stood out that users mostly showed a neutral attitude in their tweets, both for the attacks happening far away and close by.

For H3 and H4, which focused on the variables content category and psychological distance, a significant relation was found. *News* occurred significantly more often for attacks far away compared to close by. *Expressing well-wishes/requesting help* and *personal experiences* on the other hand, were found significantly more often for attacks close by compared to far away. Overall, *personal interest and opinion* and *news* prevailed for both the attacks far away and close by.

Concluding, the answer to the current study's research question – In which aspects do the reactions of Dutch people differ with respect to terrorist attacks that are psychologically close or far away in distance? – it can be said that there are significant differences in reactions of Dutch Twitter users, but only for content categories. In addition, Dutch tweeters mostly

show a neutral attitude opposite the attacks; wanted to share or provide information about the attacks; or get more information about the attacks.

## Discussion

Van Lent et al. (2016) found that when events happened closer by, more fear for self was reported, whereas Lermer et al. (2015) found a higher risk estimation when events happened closer by. No such relation was found between general attitude and psychological distance. Negatively toned tweets were not found more often with terrorist attacks happening close by in distance compared to far away in distance. Instead, the amount of negative tweets was fairly equal for attacks happening close by and far away. This was true for positively and neutrally toned tweets as well, which were found approximately equally often for attacks far away or close by.

Overall, tweets mostly contained a neutral attitude for both far away and close by. An explanation for this could be that *news* was the prevailing content category for close by and far away. As *news* is mostly objective and neutral in tone (Mollema et al., 2015), a neutral attitude is probably found more often with *news* as a prevailing category. *News* being the prevailing content category for both far away and close by might also be an explanation for not finding more positively toned tweets for attacks happening far away compared to close by.

Nevertheless, the attacks that happened closer by received a lot more attention in general, with 253.045 tweets for Paris and 181.462 for Brussels, than the ones that happened far away in psychological distance, with 2.765 for Beirut and 5.167 for Bagdad. An explanation for this might be found in the results of Van Lent et al.'s (2016) study, in which it was found that events (in this case the Ebola pandemic) happening closer by get more public attention. The same might be true for terrorist attacks, as the attacks that were perceived as happening close by, got more attention than the attacks perceived as happening far away. Nevertheless, this did not lead to differences in general attitude for attacks close by compared to far away. This might be explained by the findings of Burnap et al. (2014). In their studies it was found that tweets containing a negative attitude were to propagate less long during the time of events than tweets containing a positive attitude. It might have been so that less negative tweets were found when the attacks happened far away compared to close by, due negative tweets were propagated less long.

For *personal interest and opinion* it was hypothesized that this category would be found more often for attacks happening close by compared to far away. However, no significant differences for this category were found. An explanation for this might be that tweets about the attacks far away sometimes showed annoyance about the difference in media coverage for the attacks close by compared to far away. For instance, a tweet about the

Bagdad attacks said: “RT @JacquesHappe: Geen voorpaginanieuws. Geen minuut stilte. Niet westers genoeg? "Dodental aanslag Bagdad loopt op tot 292" <https://t.co/u...>” (No headliner. No minute of silence. Not Western enough? "Death toll Bagdad rises up to 292"). Therefore, a larger amount than expected was coded as *personal interest and opinion* for the tweets on the attacks far away.

Furthermore, Vasterman et al. (2015) stated that with social media, multiple views of people were usually represented instead of one objective view. This can be seen reflected in the results of the current study, as *personal interest and opinion* was a prevailing category – together with *news*– for both close by and far away. Besides, Chew and Eysenbach (2010), who performed a content analysis of tweets during the H1N1 outbreak, found personal opinion to be one of the prevailing categories as well. In their study, personal opinion was found third most often, namely 740 times (out of 5395 tweets). Therefore the results of the current study are in line with Chew and Eysenbach’s (2010) results, as *personal interest and opinion* and personal opinion were prevailing categories in both the studies. In addition, the results of both studies support the claim of Vasterman et al. (2015) that with social media, multiple views of people are usually represented.

Moreover, the content category *news* was found significantly more often with attacks far away compared to close by. Therefore the results provided evidence for H4, as it was expected that *news* would be found more often with attacks far away compared to close by. These findings could be explained by the results found in Fujita et al.’s (2006) study, in which psychologically distant events lead to the use of more abstract language. In addition, Mollema et al. (2015) stated that news articles are usually written in an objective manner. *News* might therefore be found more often with attacks that happen far away.

Besides, the findings regarding *news* being one of the prevailing content categories, were in line with both Chew and Eysenbach (2010) and Takahashi et al. (2015). Chew and Eysenbach’s (2010) content category "resources" was found in 2840 out of 5395 tweets, whereas Takahashi et al.’s (2015) content category "second-hand reporting" was found in 43.4% of the tweets in their sample. The substantial Cohen’s Kappa for the variable content categories showed that the adapted frameworks of Chew and Eysenbach (2010) and Takahashi et al. (2015) were applicable to the variables used in the current study.

Lastly, the content categories *personal experiences* and *expressing well wishes/requesting help* were found significantly more often for attacks close by compared to far away. Although not hypothesized, these results are in line with the assumption that CLT provides (Lieberman & Trope, 2006), that low-level construals – the attacks close by – are

represented concretely in the brain. In addition, if the attacks are perceived as psychologically close, more fear for self and a higher risk estimation is reported (Van Lent et al., 2016; Lerner et al., 2015). As attacks close by are perceived as more concrete; evoke more fear for self; and evoke a higher risk estimation, *personal experiences* and *expressing well wishes/requesting help* would be expected to occur more often compared to attacks far away, which are less concrete; evoke less fear for self; and evoke less risk estimation. In addition, there is a larger possibility of a Dutch Twitter user actually being at the location of the attack due to smaller spatial distance. Three Dutch natives got injured at the Paris attacks (Algemeen Dagblad, 2016), and three Dutch natives got killed at the Brussels attacks (Moerman, 2016). On the other hand, no Dutch natives got injured or killed at the Beirut or Bagdad attacks (Van Loon, 2016; Algemeen Dagblad, 2016). Therefore, *personal experiences* and *expressing well wishes/requesting help* could have been found more often due to a higher amount of victims tweeters could identify themselves with.

### *Limitations*

Firstly, the Cohen's Kappa was moderate for general attitude and sustainable for content categories (Landis & Koch, 1977, p.165). A higher Kappa would be necessary so that the results of the study would be more reliable and better generalizable across the population. Furthermore, the coders were not always certain whether tweets were actually posted by Dutch natives. During the coding process coders noted that, especially with the tweets about the Brussels attack, a fair amount of tweets seemed to be tweeted by a Belgian user or were written in Flemish. As a result it was sometimes difficult to judge whether the tweets were from Dutch or Belgian origin, as it could have been retweets of the Belgian tweets by Dutch users. It might be that Belgians experience a different psychological distance to the attacks compared to Dutch natives, for instance because of differing cultural dimensions (Hofstede, 1984). Additionally, TwiNL collects only 40% of all tweets written in Dutch, which narrows the population (<https://twinl.surfsara.nl/#q-2>). A final limitation of the current study was the use of Twitter as a corpus. Although 864.000 Dutch natives use Twitter, this number represents approximately 5% of the whole population (Oosterveer, 2016). As a result it can be claimed that this is not a representative sample for the whole population.

### *Suggestions for future research*

For future research it would be necessary to acquire a higher Cohen's Kappa, to generalize results across the population. This could be achieved by setting sharper definitions within the frameworks and for attitudes. In addition, coders could be given more time to practice with coding. Furthermore, in a follow-up study it could be examined whether other types of attitude, for instance attitude towards media coverage of attacks psychologically close or far away, would evoke more negative or positive attitudes. Besides, as it was claimed that news messages can be linked to a neutral attitude, future research could examine whether this claim is true. In addition, as Burnap et al. (2014) found that negative tweets were to propagate less long, further research could examine whether less tweets with a negative attitude would be found a week after an attack close by or far away compared to one day after an attack. Moreover, future research could examine whether the framework could be applied to the social media use of Twitter on another topic, – for instance national elections – to see whether different content categories will be used on these topics compared to terrorist attacks. Furthermore, if a follow-up study used TwiNL as a database again it would be interesting to examine whether there are any differences in psychological distance for Dutch and Belgian natives based on these differing cultural dimensions. Lastly, future research could examine whether Twitter users from different countries would react differently to terrorist attacks happening far away compared to close by, as their perceived psychological distance might differ as well on the basis of for instance cultural dimensions (Hofstede, 1984).

### *Implications*

The current study contributes to theory by testing a framework for content categories that had only been applied to natural disasters before, which has been proven to work quite accurately again. In addition, due to this framework it has been found that Twitter users use different content categories for attacks happening close by compared to far away. A practical implication of *news* being a prevailing category, could be that Twitter could form a reliable source of information when traditional media would not yet be able to report on an attack. An example of when this happened was with the East Japan earthquake in March 2011 (Kaigo, 2012). Moreover, as *news* was found significantly more often far away compared to close by, Twitter could serve as medium to spread news quickly about terrorist attacks happening far away. Furthermore, due no differences were found in general attitude between attacks happening far away and close by, it could be inferred that attacks happening close by

compared to far away do not evoke different attitudes. The general attitude was mostly neutral, both for the attacks happening close by and far away.

Concluding, the current study found that reactions of Dutch Twitter users differ for attacks happening close by compared to far away. However, this difference was found for content categories only. It was expected to find a difference in general attitude opposite the attacks close by compared to far away as well, due to a difference in psychological distance, lamentably, such a difference was not found.

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## Appendices

### Appendix 1: Framework of uses of social media during a disaster (Takahashi et al., 2015).

<b>Categories of social media use</b>	<b>Description</b>
<b>Reporting on the situation from a personal perspective</b>	This use includes providing and receiving disaster preparedness information and disaster warnings from a personal perspective. This includes informing others about one's own condition and location
<b>Reporting on the situation (secondhand reporting)</b>	This use includes signaling and detecting disasters; documenting and learning what is happening in the disaster; and delivering news coverage of event
<b>Requesting help</b>	Tweets of users sending requests for immediate help or assistance during and after the event
<b>Coordinating relief efforts</b>	Includes raising and developing awareness of the event; donating and receiving donations; identifying and listing ways to help or volunteer; and providing disaster response information
<b>Providing mental counseling</b>	Providing and receiving disaster mental/behavioral health support
<b>Criticizing the government</b>	Tweets discussing sociopolitical causes and implications of and responsibility for events
<b>Expressing well wishes and memorializing</b>	Expressing emotions, concerns, well-wishes; memorializing victims; and providing information about disaster response, recovery, and rebuilding
<b>Discussing causes</b>	Includes discussions of scientific, religious, and other causes that explain the event
<b>(Re)connect community members</b>	Tweets discussing how individuals reconnected with community members after the event, as well as forging new community connections as a result of the event

## Appendix 2: Descriptions and Examples of Content Categories (Chew and Eysenbach, 2010).

Content	Description	Example Tweets
Resource	Tweet contains H1N1 news, updates, or information. May be the title or summary of the linked article. Contents may or may not be factual.	<i>"China Reports First Case of Swine Flu (New York Times): A 30-year-old man who flew from St. Louis to Chengdu is.. <a href="http://tinyurl.com/rdbhcg">http://tinyurl.com/rdbhcg</a>"</i> <i>"Ways To Prevent Flu <a href="http://tinyurl.com/r4l4cx">http://tinyurl.com/r4l4cx</a> #swineflu #h1n1"</i>
Personal Experience	Twitter user mentions a direct (personal) or indirect (e.g., friend, family, co-worker) experience with the H1N1 virus or the social/economic effects of H1N1.	<i>"Swine flu panic almost stopped me from going to US, but now back from my trip and so happy I went :-)"</i> <i>"Oh we got a swine flu leaflet. clearly the highlight of my day"</i> <i>"My sister has swine flu!"</i>
Personal Opinion and Interest	Twitter user posts their opinion of the H1N1 virus/situation/news or expresses a need for or discovery of information. General H1N1 chatter or commentary.	<i>"More people have died from Normal Flu than Swine flu, its just a media hoax, to take people's mind off the recession"</i> <i>"Currently looking up some info on H1N1"</i> <i>"Swine flu is scary!"</i>
Jokes/Parody	Tweet contains a H1N1 joke told via video, text, or photo; or a humorous opinion of H1N1 that does not refer to a personal experience.	<i>"If you're an expert on the swine flu, does that make you Fluent?"</i>
Marketing	Tweet contains an advertisement for an H1N1-related product or service.	<i>"Buy liquid vitamin C as featured in my video <a href="http://is.gd/y87r">http://is.gd/y87r</a> #health #h1n1"</i>
Spam	Tweet is unrelated to H1N1	<i>"musicmonday MM lamarodom Yom Kippur Polanski Jay-Z H1N1 Watch FREE online LATEST MOVIES at <a href="http://a.gd/b1586f">http://a.gd/b1586f</a>"</i>

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