Hanna Valø Bjertnes

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Master's thesis in Language Studies with Teacher Education
Supervisor: Giosuè Baggio
May 2022

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Abstract

It is becoming increasingly clear that the online pictographs known as 'emojis' interact with the text they appear alongside in quite complex ways. The purpose of this project was to test the central theory presented in a recently developed semantic framework of face emojis that sentence-final face emojis target compositional sentences meaning and comment on how the target proposition bears on a contextually provided discourse value endorsed by the author. An acceptability judgement experiment was employed for this purpose and found that participants exhibit a clear preference for congruent relations between text and emoji. In this way, the project provides empirical evidence that there is a function of sentence-final face emojis in which they target compositional sentence meaning and comment on how the target proposition bears on the discourse value of the sentence. There were, however, indications that emojis interact with the linguistic material of a sentence in more complex ways than originally anticipated and further research is necessary to fully understand how emojis and text interact and how this affects integration and subsequent processing.

Acknowledgements

A young German teacher once told me: "At university, you can study whatever you want! Only what you like!". Looking back that was not *entirely* true. But then again, I did write my thesis on emojis, so maybe he wasn't entirely wrong.

So, there we have it. The much-anticipated conclusion to five not entirely uneventful years of hard work. A lot has happened since the email containing a rather vague idea that marked the start of this project was first sent to an engaged and enthusiastic PhD-candidate involved in the teaching of SPRÅK3100 – Research Methods in Linguistics and then to the person who would become my thesis supervisor in the fall semester of 2021. Since then, many Zoom meetings have been held, many more emails have been sent, and many hours have been spent on the floor of my humble $15m^2$ dwellings in an attempt to calm fickle nerves. While the amount of floor time was drastically reduced when I was generously granted a desk in a windowless room at Dragvoll in February 2022, I remain a staunch proponent of the calming effects of the floor, a surface I know always has my back.

I would first like to express my thanks to the second recipient of the email himself, my supervisor Professor Giosuè Baggio who provided the project with much-needed direction and whose feedback and guidance throughout have been invaluable. Were it not for him this project would have ended its life as an email. I must also thank Professor Patrick Grosz, one of the researchers behind the framework this thesis sought to test, who generously lent some of his limited time to assist in the development of the experiment and offered his expert insights to the analysis. Without the two of you, this endeavour would not have been possible.

I am also grateful to my classmate and partner in enabling excessive coffee expenditures-crimes, Sandra, for many constructive discussions and moral support. I feel it is also necessary to acknowledge the role of my family in my undertaking of this project; my dad for covering streaming-service expenses and my mom for always ensuring my fridge was stocked with cheese, and, of course, the cousin whose footsteps I have followed so closely in who took the time to proofread this thesis while in the midst of grading finals.

Thanks should also go to the individuals who volunteered to partake in the piloting of a very, very long survey, who made the life of my research participants a lot easier. Your sacrifice did not go unnoticed. Finally, I would like to extend a heartfelt thanks to everyone who participated in the behavioural experiment that formed the very backbone of this project. This thanks extends to all of those, known and unknown, who shared the participation request and survey-sign up, extending the project's reach beyond my limited social network, contributing to making this thesis a reality. Without the tireless efforts of my sister and friends, the survey would have reached an estimated 7 individuals, 4 of whom would likely not have met the participation requirements. So many thanks to you and your many friends to whom I am eternally grateful.

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1 Introduction: "Word" of the Year 😂

In 2015 Oxford Dictionaries elected the emoji known as "face with tears of joy" (😂) as the "*word of the year",* breaking tradition and effectively launching the year of the emoji[1]: "Emojis are no longer the preserve of texting teens – instead, they have been embraced as a nuanced form of expression, and one which can cross language barriers" (OxfordLanguages, 2015). Indeed, while emojis from the onset enjoyed relative levels of popularity in online discourse communities – constituting another characteristic feature of computer-mediated discourse (CMD) alongside other expressive mediums such as emoticons, kaomojis[2] and intricate slang – the pictographs rose to near-universal adoption levels following their introduction to the operating systems iOS in 2011 and Android in 2013 (McCulloch, 2019, pp. 175-183; McShane, Pancer, Poole, & Deng, 2021; Emogi Research Team, 2015). According to research carried out by Oxford University Press and SwiftKey, the "face with tears of joy" emoji made up over 20 percent of all emojis used in the UK in 2015, and 17 percent in the United States (OxfordLanguages, 2015). Moreover, overall, emoji use more than tripled in 2015 compared to the previous year leading some to suggest that the development signalled a paradigm shift in human communication and consciousness (Danesi, 2020; OxfordLanguages, 2015). Today emojis are more popular than ever before (Broni, 2021).

As the unconventionality of the 2015 "*Word of the year*" choice highlights, emojis are not words, despite occasionally exhibiting similar denotational properties. Rather, they are pictographs depicting a range of facial expressions, people, actions, and objects and while sometimes used in place of words, emerging evidence suggests that even in these instances emojis are not processed entirely like words (e.g., Cohn, Roijackers, Schaap, and Engelen, 2018; Gustafsson, 2017; Scheffler, Brandt, Fuente, and Nenchev, 2022). Nevertheless, many readers are able to seamlessly integrate emoji and text regardless of the position the emoji occurs in.

Moreover, emojis have been found to serve a range of purposes, suggesting that the integration of text and emoji is a complex and diverse phenomenon. Much of emojis' popularity has been attributed to the enhancement they provide CMD, particularly the way in which they serve to bridge the gap between face-to-face and written communication by capturing the non-verbal communication cues that characterise offline communication (Bai, Dan, Mu, & Yang, 2019; McCulloch, 2019, p. 185). Emojis have been found to convey voice inflection, facial expressions, as well as bodily gestures, emphatic stances, and implicature in CMD (Dresner & Herring, 2010; Huang, Yen, & Zhang, 2008; Kavanagh, 2016; McCulloch & Gawne, 2018; Yus, 2014).

Such findings suggest that the functions of emoji go beyond contributing simple emotive states and evidently indicate that readers, when encountering a message containing both text and an emoji, construct some kind of link between the emoji and the text which it accompanies allowing for the more independent contributions observed. In other words, the human language faculty accommodates emojis in a way that allows them to effectively perform these functions. However, the questions of *how* natural languages have expanded to include these new elements and *what* exactly constitutes the link or

[1] https://www.campaignlive.co.uk/article/2015-year-emoji/1377432
[2] Example: ╰(￣∀￣)╯

links allowing for the varied functions observed have only recently received attention in the field of linguistics and as such, remain largely unanswered. As emojis become increasingly popular, enjoying ever-wider use, these questions become progressively relevant.

The present project seeks to contribute to this aspect of the emerging linguistic understanding of emojis, taking a recently developed semantic framework of sentence-final face emojis by Grosz, Greenberg, De Leon, and Kaiser (2021), as its point of departure. This framework constitutes a particularly relevant contribution to the understanding of emojis for two reasons: First, in the past ten years, face emojis have persistently remained the most popular category of emojis, "😂" being the most popular emoji globally in 2021. Seven of the top ten emojis on Twitter in 2021 were face emojis, making face emojis a perhaps particularly interesting object of study within the wider field of emojis (Broni, 2021). Second, emojis generally appear most frequently near the end of a clause or sentence (Cramer, Juan, & Tetreault, 2016; Kralj Novak, Smailović, Sluban, & Mozetič, 2015). The framework developed by Grosz et al., therefore, describes a possible function of emojis that remains very close to naturalistic emoji use. Within their framework, Grosz et al., propose that sentence final face emojis comment on and, as such, are interpreted not only based on the target proposition but also based on how they comment on the desires, aspirations and hopes of the author, making emojis sensitive to linguistic content and associated framing effects.

This paper aims to examine these central claims empirically, thereby furthering the understanding of the processing of emojis in context. To this purpose, a set of experimental sentences containing different valency emojis was developed and employed in an acceptability judgement task, distributed as a digital survey. As such, this project seeks to extend the methods of linguistics to phenomena positioned at the cusp of language, positioning itself within the emerging field of super linguistics, asking the question: "to what extent do emojis target compositional sentence meaning and discourse values?".

1.2 The Structure

The first chapter of this thesis is dedicated to providing an outline of emojis, and their rise to popularity, as well as giving an account of what makes emojis objects of interest in linguistic research despite existing at the 'periphery' of traditional linguistic phenomena. The following chapter constitutes a review of the relevant literature with a particular focus on research investigating the processing and neural basis of emojis. Following the literature review, the works of Grosz, Kaiser, and Pierini (2021), E. Kaiser and P. Grosz (2021) and Grosz, Greenberg, et al. (2021) are presented, providing the necessary theoretical foundations for the present study. Methodology and design are then presented in chapter three, followed by data analysis. The findings of the analysis are then presented and discussed in greater detail in chapters six and seven, respectively, followed by some final observations on the limitations of the study.

2 Background and Motivation

2.1 The Origin of Emojis: Rise of a Tiny Giant

The word *emoji* is an English adaption of the Japanese 絵文字 – the *e* meaning "picture" and the *moji* meaning "character", hinting at the pictographs' origins. Emojis were initially developed in and for the Japanese mobile phone market. Particularly influential in this development was the telecommunications worker Shigetaka Kurita whose emoji forms came to dominate the market after the launch of the initial set in 1998 (Danesi, 2020). A decade later, Apple, in an attempt to increase its competitiveness in the Japanese market, released its own set of emojis, heavily influenced by the work of Kurita. At the time, emojis were exclusive to Apple's Japanese users, however, spread to users outside Japan through a number of workarounds neither supported nor endorsed by Apple, signalling an interest for emojis within a wider market (Burge, 2018). With the launch of iOS5 in 2011, emojis finally became available to Apple users worldwide. Android was soon to follow, launching emojis for users in 2013.

Since then, emojis have constituted a characteristic feature of contemporary computer-mediated discourse (CMD), particularly in informal communication. CDM has always had its peculiar features, donning intricate slang and modified spelling systems such as Leetspeak[3], as well as expressive pictographs preceding emojis such as emoticons and kaomojis, however, no feature has been adopted as widely and enjoyed sustained use to the extent of emojis (Broni, 2021; McCulloch, 2019, pp. 175-184). After multiple expansions and additions, emojis today represent people, actions, gestures, places, and objects as well as facial expressions, offering users a hitherto unprecedented expressive range. While popular since their advent, emojis reached near-universal adoption after their introduction to iOS and Android in the early 2010s and have continued to increase in popularity since (Danesi, 2020; McShane et al., 2021; Emogi Research Team, 2015).

2.2 Theoretical Motivations: Emojis and Super Linguistics

As a feature of written language, appearing primarily as an accompaniment to text, emojis could be said to exist at the periphery of language. This then begs the question of what it is that makes emojis an interesting object of study for linguistics, and perhaps in particular to formal linguistics and psycholinguistics, although they lie beyond standard linguistic objects of study. As mentioned in the introduction, despite emojis not being language per se, many readers seemingly effortlessly integrate emoji and text combinations. Moreover, many are able to do this regardless of the type of emoji, the position it occurs in, and the function the emoji serves in context. That is, readers can tell the difference between the contribution of the following emojis with relative ease:

[3]Leetspeak uses numbers and other symbols instead of conventional orthographic characters. "Leet" would for example be "733t" in Leetspeak

Table 1 Interpreting emojis

Text and Emoji	Emoji Function/Interpretation
I could really use some ☕ [coffee] right now	Substitution. The emoji is read simply as the word it is meant to substitute.
Ofc I'm going, I love hiking 🙃 [upside-down face]	Sarcasm. The upside-down smiling emoji triggers a sarcastic interpretation of the textual content. The sender does, in fact, *not* love hiking.
I'm so hungry 😩 [weary face]	Elaboration. The emoji contributes the sender's emotional stance on the textual proposition: they are hungry and upset about it.

This, as previously mentioned, indicates that readers establish a link between the emoji and the text it accompanies allowing for the more independent contributions observed. In other words, the language faculty accommodates emojis in a way that allows them to effectively perform the wide array of functions documented in emoji use, and it is precisely these qualities that have earned emojis as a phenomenon attention in formal linguistics and psycholinguistics in more recent years.

The interest in emojis as a research object of linguistics in many ways involves the expansion of linguistic methodology to a phenomenon beyond the traditional linguistic objects of study, positioning it within the emerging field of Super Linguistics. Super Linguistics refers to the application of linguistic methodology and linguistics-inspired methodology and the extension of formal linguistic theory to objects beyond the standard linguistics objects of study. The central argument in Super Linguistics is that studying meaning phenomena beyond traditional linguistic objects, such as birdsong, gestures, dance, comics and emojis, inevitably provides insights into properties of human cognition and beyond, contributing to the understanding of human language (Patel-Grosz, Mascarenhas, Chemla, & Schlenker, 2022, p. 48).

Furthermore, part of the motivation stems from the finding that some of these non-standard objects display characteristically linguistic behaviour in certain aspects of their use, particularly in terms of semantics. For instance, gestures, co- and pro-speech, in particular, have been observed to interact with compositional semantics in non-trivial ways (Schlenker, 2018b; Tieu, Schlenker, & Chemla, 2019). Depending on how and when they cooccur with verbal language, gestures are able to alter aspects of meaning and fully replace words as well as trigger inference in the same way words do (Schlenker, 2018a, 2018b). Crucially, emerging evidence suggests these behaviours are not exclusive to gestures but extend to other kinds of iconic enrichments including animations and emojis. (Grosz, Kaiser, et al., 2021; E. Kaiser & P. Grosz, 2021; Tieu et al., 2019). For an example of the described linguistic behaviours in gestures and emojis, see (1) and (2) below. These properties, amongst others, have been used to argue that it is necessary to expand the scope of formal semantics, incorporating non-standard meaning phenomena if one is to arrive at a complete theory of meaning in natural language and language processing (Schlenker, 2018b). While the conclusions presented both for the semantic properties of gestures and emojis are tentative, the preliminary findings nevertheless constitute interesting developments with potential implications for the cognitive sources of various semantic phenomena and thus, linguistic theory at large.

1a) “Haha, no worries! I got nervous, I thought "But I didn't train!"🏃
(from Grosz et al., 2021)

b) ⇝ Running is part of training (Elaboration)

c) ⇝ If author had trained, it would have involved running

2a) Little Johnny didn’t [punish]+SLAP his team mate (from Schlenker, 2018a)

b) ⇝ If Little Johnny had punished his team mate, slapping would have been involved

By extending linguistic theories and methods to emojis, it might be possible to examine what links readers construct between emojis and text in processing, in turn shedding light on how emojis and similar pictorial elements are integrated into human language and language processing. In this way, the study of the processing of emojis could ultimately shed light on and open similar lines of inquiry providing a greater understanding of how the human language faculty accommodates and integrates novel cultural additions and developments.

3 Literature Review: Perhaps Not a "Word" After All

Emojis have enjoyed attention from a variety of research fields since the onset. Since the release of the first set of emojis 20 years ago research into the various aspects of the online pictographs has been on the increase in a multitude of directions and fields including computer science, communication, marketing, psychology, education, and medicine (Bai et al., 2019). In Linguistics, as well as bordering fields, much of early research revolved around three central questions: why emojis were used, how they were used, and the impact(s) of their use (Y. Tang & Hew, 2019). While early research on the emoji's predecessor, the emoticon, focused primarily on their emotional effect and function, as emojis became more widely adopted, the focus shifted in the direction of contextual pragmatic functions and motivations (Bai et al., 2019; Li & Yang, 2018; Thompsen & Foulger, 1996). As a result, emojis have been found to function as markers of illocutionary force, manage politeness, signal sarcasm as well as serve as tone-modifiers, reinforcing the idea that emojis to some extent serve to compensate for the absence of non-verbal cues in written communication by clarifying intention (Darics, 2010; Dresner & Herring, 2010; Kavanagh, 2016; Li & Yang, 2018; Thompsen & Foulger, 1996; Thompson & Filik, 2016). However, due to their context-sensitivity, semantic diversity, and flexibility of interpretation, emojis have also been found to contribute to ambiguity (Sara R Jaeger, Roigard, Jin, Vidal, & Ares, 2019).

As emojis grew ever more popular, and multiple expansion sets were added, the question of whether emojis could become an independent language arose (Doble, 2015; McCulloch, 2019). This, as it was observed that, when combined, emojis could express subtler semantics and that they exhibited semantic similarity across languages (Barbieri, Kruszewski, Ronzano, & Saggion, 2016; López & Cap, 2017). Moreover, the position was especially motivated by the existence of emoji-only texts and the rise of "emoji narratives" posted in the Twitter tag #EmojiReads, in which literary works were retold in emoji[4]. The emoji texts constituted an interesting case because the distribution of emojis implied a systematic structure, a grammar, allowing readers to "read" the emoji texts in a similar way to the grammar of any natural language (Danesi, 2020, p. 77). This has since been refuted, as subsequent studies found that emojis exhibit little grammaticality on their own and need to be integrated with text to form complete meanings (Cohn, Engelen, & Schilperoord, 2019; Thamsen, 2019; Zhou, Hentschel, & Kumar, 2017). The "reading" of emoji narratives then, likely relied on the familiarity of the story, rather than any grammar inherent to the emojis. Moreover, in practice, users tend to use emojis as a supplement to text suggesting that it is primarily a paralanguage (Ai et al., 2017; Cramer et al., 2016; McCulloch, 2019, pp. 168-169).

In more sociolinguistically oriented research, the question of what factors influence emoji usage has been of particular interest. Emoji usage trends and attitudes have been found to vary along various demographic factors such as age, gender, and community as well as platform conventions (An, Li, Teng, & Zhang, 2018; Bai et al., 2019). Despite emojis being widely enjoyed, women are generally more positive to emojis and use them, particularly emotional emojis, more frequently than men (Chen et al., 2018; Prada et al., 2018). Similar results have been obtained when comparing younger and older individuals (Oleszkiewicz et al., 2017; Prada et al., 2018). That being said, while intuitively one

[4] An example of this type of translation is *Emoji Dick* by Fred Benenson.

might expect older individuals to use emojis less frequently, results are diverse and the effect has not been consistently documented across chatrooms (Fullwood, Orchard, & Floyd, 2013; Pérez-Sabater, 2018). A recent study by Susan Herring and Ashley Dianas (2020) in which English speaking social media users were asked to interpret the pragmatic function of emojis in context, however, found that respondents over 30, and particularly older men, more often failed to understand the emoji's function or interpreted it literally. This finding is interesting considering that previous studies examining age and gender differences did not ask participants to interpret emojis in context but rather employed self-report or corpus data. As such, it seems too soon to conclude that age is not a factor in emoji use just yet.

Since the late 2010s, a growing body of research has additionally focused on the semantic aspects and the psycholinguistic processing of emojis. These studies are motivated in large by questions such as to what extent emojis constitute linguistic items, what semantic functions they might serve, and how they compare to words in terms of processing. Different methods have been employed to explore these topics, both on- and off-line measures**.** In the following, findings from previous research, both behavioural and neurophysiological, are outlined.

3.1 Behavioural Studies

There are various ways to categorise emojis. While detailed subdivision is possible, emojis are usually described as falling into one of three categories: face emojis, activity emojis and object emojis. The various categories are presented in Table 2. There is some overlap between the latter two, and as such, following Grosz, Kaiser, et al. (2021), emojis falling in the object and activity categories, such as 🌻 [sunflower] and 🎣 [fishing] will here be referred to simply as activity emojis. An illustration of the simplified subdivision is presented in Table 3 below.

Table 2 Emoji categories (adapted from emojipedia.org)

Category	Example
Smileys & People	😄💀🤡👍💂🚶
Animals & Nature	🐒🐵🦝🌞🌻✨
Food & Drink	🍇🍞☕🍴
Activity	🎣⛷🎪🏆
Travel & Places	🏕⛰🏠🎇💵
Objects	💌⏰🎏💡
Symbols	❤️💮🔊🚾↕️✔️
Flags	🚩🏳️‍🌈

Table 3 Simplified subdivision of emojis

Category	Example
Face emojis	😄💂🥰🤡🤞💁🙇🙆
Activity emojis	☕🏆🎣❤️🌞🌻🚩⏰

In terms of the question of the extent to which emojis constitute linguistic items and their semantic aspects, promising insights have emerged from extensions of gestural

research. As previously mentioned in chapter 2.1, based on previous work on the semantics of gestures, Pasternak and Tieu (2022), found that emojis display characteristically linguistic behaviour in some aspects of their use. In an inferential judgement experiment, the authors found that emojis and gestures exhibit a remarkably similar inference pattern, with emojis displaying the same type of logical behaviour as that of co-speech gestures, and by extension, as words[5] (cf. Tieu, Pasternak, Schlenker, and Chemla, 2018).

The conclusions of the above study should, however, not be interpreted too generously. As pointed out by Hunter (2019), all the instances of co-speech gestures with negation provided in Schlenker (2018a) and Tieu et al. (2018), on which the above study was based, that give rise to conditional presuppositions involved an elaboration discourse relation. Thus, while the results of the above are promising, it seems the extent to which gestures and emojis both behave like words semantically is more limited than the conclusion might suggest.

A majority of studies exploring the topic of the processing of emojis fall within eye-tracking and self-paced reading paradigms. Studies generally fall into one of two categories in terms of the semantic relation the emoji enters into with regards to the text: substitution, or elaboration. Substitution refers to the substation of a word with an emoji e.g. "I want 🎂" (I want [cake]), whereas elaboration refers to instances in which emojis contribute something beyond the text, either commenting on content or mood, occurring before or after the text. Examples of elaborative emoji use include sentences such as "I can't get anything done before I have coffee ☕" or "School's closed tomorrow😁"/ "😁 School's closed tomorrow".

The substitution approach, which dominated the earliest investigations of the psycholinguistic processing of emojis from 2017 and 2018 (see e.g. Cohn et al., 2018; Gustafsson, 2017), dates back to a series of experiments predating emojis, conducted by Potter, Kroll, Yachzel, Carpenter, and Sherman (1986), investigating the processing differences between words and pictures. In five experiments using rebus sentences, shown using rapid visual representation, in which a pictured object replaced a word, Potter et al. found a general increase in reading time when words were substituted by pictures but no difference in comprehensibility (p.291). This was taken to indicate that meanings are represented in a general conceptual system rather than a purely lexical one in which conceptual retrieval occurs first, followed, if necessary, by lexical retrieval causing the increase in the naming tasks (p.292). Similar results were obtained in subsequent studies on emojis.

Gustafsson (2017) found that it took significantly longer for participants to read a text passage in which some words were replaced by emojis compared to reading times for plain text. Expanding on this, Cohn et al. (2018) documented the same increase in reading time, with the additional finding that incongruous substitutions incur an even greater processing cost as evident in the additional increase in reading time (p.4). Furthermore, in line with the findings of Potter et al., Cohn et al., found the multimodal sentences including emoji substitution and the plain text sentences to be equally

[5]Iconic emojis were tested in the same six environments as the preceding gesture study: unembedded, might, negation, each, none, and exactly one. Conditional inferences arose in negation and modal environments as well as universal conditional inferences in quantificational environments.

comprehensible to readers concluding that, while switches in modality might incur costs, multimodal messages are perceived as a singular semantic expression.

The same effects for reading time and comprehension were confirmed in a recent self-paced reading study by Scheffler et al. (2022). As in the above studies, Scheffler et al., employed a substitution approach, replacing a content word with an emoji. Scheffler et al., differ from the previous studies, however, in that they included an incongruent but homophonous emoji condition[6]. This was included to investigate to what extent emojis encode lexical meanings when used in a sentence context. By replacing the target word with an emoji depicting a homophonous noun, such as "mouse" (computer accessory) for "mouse" (animal), the authors found that the former can be interpreted correctly in context. This was taken to indicate that in some circumstances, emojis can activate an entire lexical entry, not merely the graphically encoded concept, including phonological information and thus do encode lexical meaning, suggesting that emojis are processed like images with conceptual retrieval occurring before lexical retrieval (cf. Potter et al., 1986).

Overall, previous research shows that reading times and naming times are longer for emojis, suggesting increased processing costs, but that emojis substituting for concrete nouns, and to some extent verbs, nevertheless are easily integrated with a sentence interpretation conceptually. It is, however, important to note that emojis exhibit different semantic relationships with the sentences and words they occur in place of and alongside, and substitution is not the only nor the primary use of emojis in practice (Na'aman, Provenza, & Montoya, 2017). In addition, the above studies examine only activity emojis although contrasting contributions and linguistic properties have been found in face and activity emojis, a point to which we will return (Barach, Srinivasan, Fernandes, Feldman, & Shaikh, 2020; Grosz, Kaiser, et al., 2021; E. Kaiser & P. G. Grosz, 2021).

Recent eye-tracking studies have, however, found corresponding results for elaborative activity and face emojis. Presenting stimuli with an activity emoji either semantically congruent or incongruent with a target word within a sentence – presented at the end of the sentence – Barach, Feldman, and Sheridan (2021) found similar differences in the processing of congruent and incongruent emojis as Cohn et al. (2018) above, as well as a generally increased total reading time for emojified sentences. Barach et al. (2021), found that congruent emojis were processed more rapidly as evident in the shorter first-fixation duration and shorter total fixation time on the congruent emojis compared with incongruent emojis, leading them to conclude that "emoji show a timeline of semantic processing similar to words" (p.8).

Similarly, in their investigation of emojis' effect on sentence emotionality, Robus, Hand, Filik, and Pitchford (2020) found that while the valence of a face emoji did not seem to influence reader perceptions of emotionality, the use of an emoji increased reading time, particularly in the sentence-final position. Nevertheless, the aim of this study was not primarily the examination of emoji processing, highlighting the need for further research to fully understand potential similarities and differences in the processing of activity and face emojis.

[6]Scheffler et al. (2022) stimuli example (translated and adapted)
Plain text: Tina will surely buy the *mouse* with the stripes
Emoji: Tina will surely buy the  with the stripes
Homophone: Tina will surely buy the  with the stripes

Thus, while emojis and words to some extent show similar sematic processing timelines, current evidence from behavioural and eye-tracking studies seems to indicate increased processing costs for emojis and potentially additional processing steps in the interpretation of semantically incongruent emojis compared to words.

3.2 Neurophysiological Studies: EEG

Both substitutive and elaborative emojis have also been investigated using neurophysiological methods, particularly electroencephalography (EEG) and have yielded similar results to their behavioural counterparts. EEG experiments examining the semantic processing of emojis have consistently found indications of increased effort in meaning retrieval and integration for emojis compared to words, an effect that is accelerated when the emoji is semantically incongruent (Ousterhout, 2017; Pfeifer, Armstrong, & Lai, 2022; M. Tang, Zhao, Chen, & Zhao, 2021; Y. Tang & Hew, 2019; Yang, Yang, Xiu, & Yu, 2021).

In two studies of the cognitive effects of emoji substitution, M. Tang, Chen, Zhao, and Zhao (2020)/(2021) found indications of inefficient semantic integration of emojis into a sentence as well as increased difficulties in meaning retrieval for emojis. In line with results from behavioural studies, they additionally found this effect was increased for semantically incongruent emojis as the incongruent words elicited robust N400 and P600 effects, while incongruent emojis elicited only a more conspicuous and sustained N400 effect (M. Tang et al., 2021). In a similar vein, their 2021 study of changes in EEG power found that incongruent emojis led to an increase in theta power (4-7 Hz) in the midfrontal occipital and bilateral temporal lobes whereas incongruent words led to a decrease. This was interpreted as suggesting a higher working memory load, form recognition, and retrieval in the semantic processing of emojis as well as a difference in the neuro-cognitive processes involved in the processing of emojis and words.

Similarly, in comparing the ERPs of words following a comma and an elaborative face emoji[7], Pfeifer et al. (2022) found that words following an emoji elicit larger N400 amplitudes, indicating a difference and increased difficulty in the processing of words that follow emojis. Pfeifer et al. (2022) outlined the following three possible interpretations of the increased processing costs, the two latter previously suggested also in behavioural studies: first, it could be that words following emojis require greater semantic integration than those following commas. Second, the effect could be indicative of multimodal integration, in line with the interpretation of Cohn et al. (2018). Or, third, the processing difficulty could be a result of the extralinguistic context provided by the emoji such as its role in setting the tone for the message, indications of which were evident in the findings of Robus et al. (2020) above.

The three interpretations suggested by Pfeifer et al. (2022) additionally serve to highlight a somewhat problematic tendency that characterises much of the existing research on emojis. A majority of studies, including those reviewed above, to a large extent neglect taking into consideration the function of the emoji in the experimental stimuli. That is, they do not adequately acknowledge the observed effects in light of the specific semantic relationship the emoji enters into in relation to the text. As previously stated, emojis exhibit different semantic relationships with the words that accompany them and the contexts they enter into (Na'aman et al., 2017). This means that the conclusions

[7] E.g., "Hey 😊 how are you?" Vs. "Hey, how are you?"

presented oftentimes fail to acknowledge their limited applicability as the emoji's semantic role is not thoroughly specified. This tendency is highlighted in a study examining emojis as used as markers of irony.

In an ERP study of emojis and communicative intent, Weissman and Tanner (2018) found that wink emojis (😉) used as markers of irony elicited larger P200 and P600 effects than both congruent and incongruent emojis, the same ERP response complex previously found in the processing of word-generated irony. Moreover, the presence and size of the participants' P600 effects were found to be linked with the likelihood of nonliteral interpretations. Based on these effects and the finding that the wink emoji could alter the perceived meaning of text from literal to ironic, Weissman and Tanner (2018) concluded that emojis used linguistically are processed like words in the respect that they trigger a reanalysis of the literal meaning of the sentence in the same way word-based irony does, and that they rely on the same set of processes involved in the processing of verbal irony. In addition, as follows from these findings, the authors concluded that emojis can alter sentence meaning.

This contrasts with the conclusions drawn in studies such as Yang et al. (2021) and Robus et al. (2020), who examined elaborative sentence-initial and sentence-final emojis respectively, arguing that emojis do not influence perceived sentence valency or emotionality, i.e., aspects of meaning. However, the stimuli used in Yang et al. (2021) did arguably not reflect naturalistic use of emojis, as they presented the emojis alongside a single word with no context, casting further doubt on the validity of their conclusions (p.4). It seems then, that what these two studies might indicate, is that emojis used elaboratively do not influence meaning, rather than emojis in general.

The arguments and evidence presented in Weissman and Tanner (2018) additionally align with an earlier idea presented in Dresner and Herring's (2010) paper *Functions of the Nonverbal in CMC: Emoticons and Illocutionary Force.* The authors here argue, similarly to Weissman and Tanner, that emoticons, like emojis, while often characterised as iconic indicators of emotion, have additional, more complex functions including constituting deliberate cues to the intention of what is being said. The more linguistic functions of emojis and emoticons have as such long been acknowledged; however, this acknowledgement has hitherto not been reflected in research on emojis to any significant extent.

Returning to the topic at hand, in a series of early experiments investigating the cognitive effects of both sentence-final elaborative face emojis and emoji substitution compared to pictures and videos, Ousterhout (2017) found that when kept simple, sentences with emojis produce semantic integration in a range of positions, though "relevance" (congruity) proved an important element in the integration process. Interestingly, Ousterhout also found indications that readers respond better to face emojis compared to other types of emojis, pictures, and videos (p.125). When this finding is considered in light of the most popular emojis consistently being face emojis, it is interesting that so much of current research on emojis and particularly emoji processing has been devoted to activity and otherwise substitutive emojis (Emojipedia, 2021).

To summarise, current research on the processing of emojis indicates that the processing of emojis, that being semantic integration or meaning retrieval, requires greater cognitive efforts than words, akin to the processing of pictures. There is, however, some emerging evidence that in performing certain linguistic functions, such as marking irony,

emojis are processed quite like words performing the same function. This, as these emojis have been found to trigger reanalysis reliant on the same set of processes involved in the processing of verbal irony (Weissman & Tanner, 2018.) Emojis have also been found to exhibit similarities to words in the sense that they in some circumstances can activate their entire lexical entry – rather than only the graphic concept they encode – including phonological information (Scheffler et al., 2022).

Nevertheless, it appears, as of the time of writing, that a majority of research efforts have been devoted to investigating substitutive use of emojis. This is perhaps not surprising considering the interest in the extent to which words and emojis differ. Word substitution is, however, but one of the semantic relationships emojis exhibit, and, as seen above, there are indications that the contributions of face and activity emojis, the latter of which is predominately used for substitution, differ from each other (Barach et al., 2020; Na'aman et al., 2017). Moreover, even when used elaboratively, face emojis and activity emojis display distinctive linguistic properties, something which has not been adequately acknowledged in much of previous research (Grosz, Kaiser, et al., 2021; E. Kaiser & P. G. Grosz, 2021).

4 The Linguistic Properties and Semantics of Face Emojis

Emojis primarily occur outside of the syntactic structure of the sentences or clauses they accompany, oftentimes at the end, serving what has herein been referred to as an elaborative function (cf. Dürcheid and Siever, 2017). Two related studies have provided first evidence of differential processing patterns between face and activity emojis in this position. In a recent corpus- and intuition driven exploration of sentence-final emojis, Grosz, Kaiser, et al. (2021) proposed that both face and activity emojis involve anaphoric dependencies. More specifically, they proposed that activity emoji exhibit discourse anaphoricity akin to third-person pronouns, interpreted based on discourse coherence (e.g., relations such as exploration and elaboration), and that face emojis exhibit first-person indexicality similar to expressives (e.g., wow, damn, yay) and are, as such, interpreted as expressing the attitudes of the first-person speaker.

In a subsequent study, these hypotheses were tested in a forced-choice reading experiment, asking participants what the emoji in a sentence provided information about (E. Kaiser & P. G. Grosz, 2021). Additionally, based on the large body of literature showing that psych verbs[8] create an expectation for explanation, the authors hypothesised that in the presence of a psych verb the interpretation would shift in favour of the experiencer argument for face emojis and the stimulus argument for activity emojis (E. Kaiser & P. G. Grosz, 2021, p. 1017). The results largely confirmed the hypotheses, providing first evidence of differential processing patterns between sentence-final face and activity emojis.

Expanding on this, further narrowing in on the specific functions of emojis, Grosz, Greenberg, et al. (2021) proposed a semantics of face emojis arguing that there is a use of face emojis in which they make an independent contribution to the accompanying text by commenting on how "the target proposition bears on a contextually provided discourse value endorsed by the author" (p.1), in essence, acting as propositional modifiers. Based on an analysis of positively and negatively valenced sentence-final face emojis (😊 and ☹) developed from introspection and prior corpus work, the authors show how properties of emoji-text relations are more semantically constrained than they might appear and highlight how emojis contribute more than general emotive states independent of the sentence.

In two case studies, Grosz, Greenberg, et al. (2021) argue that the independence approach to emojis is inadequate, demonstrating how face emojis preferentially comment on the immediately preceding clause and exhibit a specific context-sensitivity, specifically to discourse values, which embody the author's desires, aspirations or hopes. Case study one, *The Hunger*, illustrates the inadequacy of the independence approach, suggesting instead that emojis exhibit "simple targeting", as the positioning of the emoji within the text is not without impact on the reader's interpretation of it. In the case emojis simply convey a general emotive state, the authors argue, sentences (3) and (4) below should have the same interpretation (p.33):

(3) I'm really hungry 😟 just ordered some food.
(4) #I'm really hungry, just ordered some food. 😟

[8] Verbs expressing a mental state or event e.g., bore, frighten, disappoint

This is, as the authors show, not the case. Sentence (3) would generally be interpreted as the author being upset about being hungry, whereas in sentence (4) the author seems upset about having ordered food (Grosz, Greenberg, et al., 2021). Arguing that simple targeting explains the infelicity of (4), Grosz, Greenberg, et al. (2021) conclude that face emojis preferentially comment on the proposition of the immediately preceding clause.

Case study two, *The Game,* problematises the simple proposition-based analysis by demonstrating that emojis exhibit sensitivity to framing based on linguistic material in the accompanying text while maintaining that emojis comment on the text rather than being independent of it. *The Game* shows how the presentation of equivalent facts, that is, propositions with the same truth conditions, with different lexical items influences the acceptability of a positive emoji compared to a negative emoji, similar to framing effects:

(5) a. There's a 50% chance we'll win 😊 (50% chance of A)
    b. #There's a 50% chance we'll win ☹
(6) a. There's a 50% chance we'll lose ☹ (50% chance of ¬A)
    b. #There's a 50% chance we'll lose 😊

As the above example illustrates, the distribution of '😊' is asymmetrical despite the equivalence in (5) and (6), indicating that emojis are sensitive to how facts are presented (p.14). Moreover, Grosz, Greenberg, et al. (2021) additionally demonstrate how this judgement is reversed by the addition of the exclusive particle 'only' (see (7) and (8) below). Based on the observation that emoji acceptability is influenced by framing based on linguistic material (such as *win/lose* and *only*) in a way that is not predicted by the simple targeting hypothesis, the authors propose that the asymmetries are caused by the emojis' sensitivity to discourse values. Discourse values are elements of the context beyond the target proposition, which embody the desires, aspirations and hopes of the author and include any desirable outcomes (p. 16).

The argument is as follows: In the above example, the '😊'-emoji expresses an affective attitude about the target proposition relative to the goal of the author. As such, when the scenario in which victory is framed as probable, as achieved through the use of *win*, the use of '😊' is felicitous. '😊' becomes infelicitous, however, when the framing is reversed and victory is framed as improbable because the emoji then contrasts with the author's desire, which is victory. Similarly, in the case of 'only' reversal, the use of '😊' alongside 'win' is infelicitous because the use of 'only' frames the desirable outcome as improbable, meaning the positive emoji contrasts the desires of the author. In this way, the authors conclude that face emojis that enter into this type of relationship with their associated text function as propositional modifiers, "which comment on a target proposition in view of how it bears on a contextually given discourse value" (p.43).

(7) a. #There's only a 50% chance we'll win 😊
    b. There's only a 50% chance we'll win ☹
(8) a. #There's only a 50% chance we'll lose ☹
    b. There's only a 50% chance we'll lose 😊

While the authors recognise that developing an exact definition of discourse values will require further work, the above study constitutes a first attempt at developing a formal semantics of face emojis and is hence a valuable contribution to the emerging understanding and processing of emojis. As previously stated, the foundations of the framework presented in Grosz, Greenberg, et al. (2021) are based on introspection and prior corpus work, and while promising, will require further empirical corroboration to

substantiate the claims. The present study sets out to provide just this and thus contribute to the emerging understanding of emojis**.**

5 Methods

5.1 Design and Aims

This study aims to contribute to the emerging understanding of the linguistic aspects of emojis and emoji use. More specifically, it seeks to investigate the processing of emojis in context as they occur alongside text and test the hypothesis presented in the newly developed semantic framework of face emojis by Grosz et al. (2021) in which emojis are conceptualised as propositional modifiers. As stated in chapter 4, *Grosz et al.'s (2021*) second case study*, The Game,* illustrates how emoji acceptability is affected by framing based on linguistic material, specifically regarding valency and the use of *only.* This, the authors argue, suggests that sentence-final face emojis do not simply comment on the accompanying text independently of the linguistic material, but act as propositional modifiers, thereby targeting compositional sentence meaning as well as being affected by discourse values. In the case the emoji simply commented on the proposition of the preceding clause, (9) would not be perceived as infelicitous, despite the framing. The reading "The author is happy about there only being a 50% chance they'll win" would be acceptable without imagining any kind of context in which what is generally thought of as a desirable outcome, winning, would be undesirable.

(9) #There's only a 50% chance we'll win 😊

This creates the grounds for the present study's research question which is as follows:

"To what extent do emojis target compositional sentence meaning and discourse values?"

In the case the above observations accurately describe the semantics of face emojis, we would expect readers' judgement of a given emoji's acceptability to align with the felicity conditions described in *The Game* case study (given below in Table 4). In order to test this expectation, and thereby investigate the research question of the present study, a set of stimuli closely resembling the examples presented in the win/lose example presented in Grosz et al.'s second case study was developed and used as the basis for an acceptability judgement experiment. The study was designed in accordance with data protection legislation and is approved by the Norwegian Centre for Research Data (NSD).

Table 4 Stimuli conditions adapted from Grosz, Greenberg, et al. (2021, pp. 13-14)

Congruent	Incongruent	Congruent 'only'	Incongruent 'only'
There's a 50% chance we'll win 😊 There's a 50% chance we'll lose☹	There's a 50% chance we'll win ☹# There's a 50% chance we'll lose😊#	There's only a 50% chance we'll lose😊 There's only a 50% chance we'll win ☹	There's only a 50% chance we'll win 😊# There's only a 50% chance we'll lose☹#

5.2 Developing the Materials

The initial motivation for this master's project was the investigation of the neural basis of semantic processing of emojis, and the original plan was for the relevant data to be gathered using electroencephalography, comparing ERP responses to emojis in congruent and incongruent conditions. As such the experimental stimuli were developed to accommodate a number of restrictions imposed by factors known to affect the N400 and general requirements of the measuring of event related potentials. To ensure comparable readings in terms of the ERPs across items and conditions, restrictions are imposed on sentence length and the consistency of the syntax to limit spillover effects and minimise eye movement. It is for these reasons that while the sentences included in the materials closely resemble the form of the sentences in the original *Game* case study, few of them exceed twelve words and an adverbial phrase precedes the emoji, which in an ERP setting would have been the critical word, separating it from the valency word thereby limiting spill-over effects.

Table 5 Modified sentence example

Original Format	Adapted Format
There's a 50% chance we'll win 😀	There's a 50% chance we'll win tomorrow 😀

Given the extensive resources required for an EEG experiment as well as the uncertainty of recruitment and lab situation due to the ongoing pandemic, behavioural approaches were kept in mind as an option should EEG prove unfeasible. This, as off-line data is normally employed to refine experimental materials and nevertheless would contribute valuable data and insights to emerging theory. As the situation remained unpredictable, EEG became unfeasible, and efforts were redirected to developing a behavioural study using the same materials. Electing to employ the materials as they were, keeping the restrictions imposed on them by the requirements of EEG experiments was done with both time and future research in mind. Redoing the experimental stimuli would be time-consuming and leaving the materials unchanged would enable reuse of the materials should EEG become viable in the future.

In addition to the unpredictability caused by the pandemic, an unresolved issue with the materials also motivated the choice of a behavioural methodology. Within the materials containing 'only', there are differences in the syntactic structure[9]. For the materials to be employed in an EEG experiment, this difference would have to be resolved, as required by the design constraints. Such a solution was not found.

5.3 The Materials

The stimuli were developed through two rounds. First, following the composition of the *win/lose* example from the Grosz et al., (2021) case study, a list of word pairs with contrasting valency was constructed. The final list consisted of 84 pairs composed of either verbs or adjectives. To ensure there were no considerable discrepancies in the frequencies of any given word in a pair, the frequency of the words was assessed using NoWaC. NoWaC, Norwegian Web as Corpus, is a web-based Bokmål corpus developed by the Text Laboratory at the University of Oslo, containing about 700 million tokens

[9] For some of the 'only' items the particle occurs before the verb and for some, after, as required by Norwegian grammar. E.g., "Bilmekanikeren sa det bare er 50%...." [The mechanic said there 'only is'…] and "Det er bare 50%....» [There 'is only'…]

collected from .no domains between late 2009 and early 2010 (Guevara, 2010). While the corpus' considerable size and the diversity of its source materials are what made it suitable for the present purpose, the variability of the accuracy of the automatic tagger caused some challenges, particularly in the case of misclassified homonyms. This problem was particularly prominent for the item "besto/strøyk" (passed/failed) as the latter lemma is especially polysemic, taking on meanings such as "to stroke", "to cross out", and "to iron" amongst others, in addition to the target meaning "to fail". In a randomised sample of 100 instances of the lemma in NoWaC, the target meaning constituted only 18% of the results. While this is quite the extreme example, it nonetheless serves to illustrate the issue. Nevertheless, the overall reliability of the searches encouraged the choice of leaving the more problematic lemmas as were and letting the pilot data determine whether they presented an issue.

Second, based on these 84 word pairs, the sentences composing the experimental stimuli were constructed. The sentences were constructed in Norwegian, more specifically in Bokmål, partly in collaboration with an additional native speaker and student at the Department of Language and Literature at NTNU to further ensure the well-formedness and comprehensibility of the items. This was necessary, in part, due to the aforementioned need to accommodate the requirements of textual stimuli for EEG experiments. For part of the sentences, inspiration was drawn from previous work done within the framing literature, in particular Levin, Schneider, and Gaeth (1998), Holleman and Pander Maat (2009), and Wong and Kwong (2005).

Based on the word pairs, 168 declarative sentence pairs with a congruent sentence-final facial emoji were constructed in which each of the original 84 word pairs occurred twice. Both sentences denoted the same proposition, differing only in the inclusion of the exclusive particle 'only' (Norwegian 'bare'). Following, the sentences were duplicated and the emojis were edited to create an incongruent emoji condition for each item. The use of congruent and incongruent here refers to the correspondence and appropriateness of the emoji as decided by the valency word in the normal condition, and the consequent reversal of this relation in the 'only' condition. That is to say, as illustrated in *the Game* case study, a positive valency word garners a positive emoji. The use of the word 'only' reverses this relation, leaving the negative face emoji the appropriate choice despite the positive valency word. Similarly, a negative valency word garners a negative face emoji, and the exclusive particle 'only' again reverses this. As such, the experiment implied four conditions: (1) neutral congruent (2) neutral incongruent (3) 'only' congruent and (4) 'only' incongruent. In essence, these elements emulate the discourse values of the sentences as they indicate the goals or outcomes desired by the speaker/sender.

Prior to the pilot study, the experimental stimuli were, as such, composed of 168 sentence quadruples, totalling 672 sentences. The sentences took one of two forms, either simple declaratives or declaratives with an embedded clause. The two forms are exemplified in (8a) and (8b) below. The distribution between the two forms was relatively even, with a slight majority of simple declaratives.

(8a) "50% av kundene var fornøyde i går 😊"
[50% of the customers were happy yesterday 😊]

(8b) "Det er 50% sjanse for at det slutter å regne i løpet av turen»
[There's a 50% chance that it'll stop raining during the hike 😊]

Four lists were then created, each consisting of 168 of the experimental sentences, such that each list contained two sentences from each word pair, one with the positive valency word and one with the negative. The lists were then randomised.

While emojis are becoming an increasingly common feature of digitally mediated communication, they remain primarily predominate in text- or instant messaging. To make the stimuli appear more naturalistic to the respondents it was therefore decided to present them as text messages, using the familiar text message bubble (Figure 1). In preparation for the pilot study and the study itself, all the experimental sentences were therefore converted to image files in which they appear as text messages, using the converter website *ifaketextmessage.com*. While the website allows for the creation of fake iMessage messages, that is, iOS-based text messages, any distinct iOS features were removed, retaining only the text bubble which is similar across most operative systems. In this way, the stimuli were framed as messages from friends, and their acceptability as based on to what degree the respondents would perceive any given message as "natural" coming from a friend.

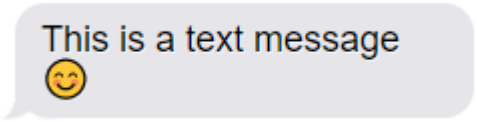


Figure 1 Text message bubble

5.4 The Pilot

The pilot study included a total of eight participants, two participants per list, and was administered through Google Forms. The four lists were used to make four acceptability judgement surveys in Google Forms. The linear scale answer option was used to construct a seven-point Likert scale where 1 indicated the item was not acceptable and 7 indicated it was acceptable. The participants were asked to use the scale to assess the appropriateness of the emoji based on the sentence presented and were instructed on how to approach the scale wherein acceptable equalled "*something a friend or I myself would be likely to produce*" i.e., natural.

This method was chosen based on the fact that the semantic framework of face emojis by Grosz, Greenberg, et al. (2021) predicts that acceptability will correspond to a sentence's felicity conditions as determined by the target proposition and the endorsed discourse values (p.34). That is, the framework predicts a difference in acceptability between a sentence-final face emoji that corresponds to the target position and the endorsed discourse values of the preceding text and one that does not. As the present study seeks to test precisely this prediction in examining the extent to which emojis target compositional sentence meaning and discourse values, acceptability judgements constitute an appropriate method.

In order to ensure none of the sentences were interpreted as ironic or sarcastic, the instructions additionally made the participants aware that all sentences were to be understood as genuine i.e., instances of literal language use (Appendix B). This was done based on the knowledge that emojis are frequently used to mark figurative language use, and on the fact that a sarcastic reading was likely to reverse the acceptability judgement, confounding the results (Bai et al., 2019; McCulloch, 2019, pp. 167-168). This is also

why the choice was made in early developments of the stimuli to use the *smiling face with smiling eyes* emoji (😊) rather than the more basic *slightly smiling face* emoji (🙂) because the latter, particularly amongst youths and young adults, is frequently used to mark sarcasm. An example of a survey question is included below (Figure 2).

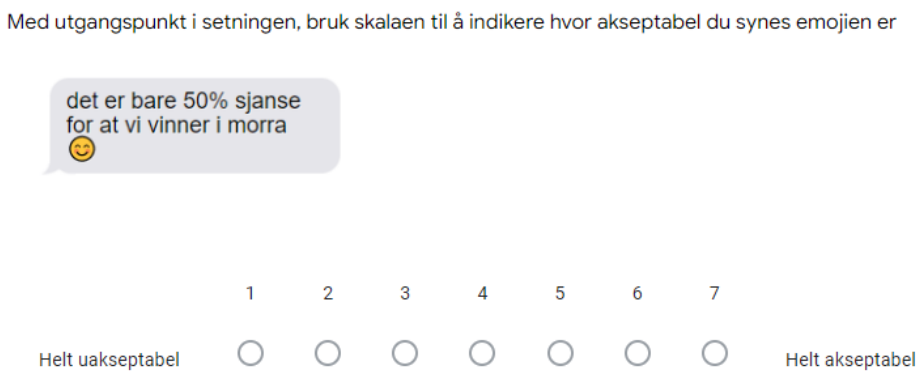


Figure 2 Example survey question

The pilot study was administered in two rounds. The initial plan was to have only one participant per list for the pilot, however, for one of the lists, a larger than anticipated number of the judgements were unexpected. To ensure that this was not due to an issue inherent to the items in the particular list, a second group of pilot participants was recruited. All the pilot participants were female, between the ages of 21 and 33 (mean age 24.4 years) whose only native language was Norwegian. All participants volunteered to take part in the pilot, without promise of compensation and were encouraged to contribute any additional feedback they might have.

The purpose of the pilot was twofold. The primary purpose was to test the experimental stimuli to ensure their quality and identify any unclear and therefore unsuitable items. In addition, as previously mentioned, some items whose relative frequency could not be adequately assessed using NoWaC were retained in the dataset with the intention of determining whether a possible frequency discrepancy would affect the results. The second purpose was to test and refine the adequacy and clarity of the instructions and the time estimate given for the completion of the survey.

Based on the pilot data, a preliminary set of potentially problematic items was identified. Any instance of an item that had received an acceptability judgement of 3 or *below* in the congruent condition, regardless of the presence of 'only' was recorded. Similarly, any items in the incongruent condition, regardless of the presence of 'only', that received an acceptability judgement of 5 or *above* was recorded. This as items in the congruent condition were expected to receive high scores and items in the incongruent condition, low scores. In short, items receiving judgements differing from their expected judgement were recorded. In the case a given recorded item had received unexpected judgements by two participants across different lists it was consequently added to a list of problematic items.

Given the limited number of pilot participants per survey, the following final exclusion criteria were adopted: In the case, an experimental sentence in the list of problematic items received an unexpected assessment, defined as an acceptability judgement of two or below in the congruent condition and six or above in the incongruent condition, by

both participants across two lists that item – meaning the pair the sentence belonged to along with the sentences constituting its other conditions – was to be excluded from the final dataset. As a result of the pilot study, 34 items were removed, totalling 272 experimental sentences. This left 50 items (400 experimental sentences) for the final experiment, effectively reducing the total number each participant would be expected to assess from 168 to 100. The list of excluded items can be found in Appendix A. The remaining 50 items were deemed as giving a sufficient number of stimuli for continuing the behavioural experiment without editing any problematic items or constructing new ones.

5.5. The Final Materials and Experiment

5.5.1 Participants

The final experiment was, like the pilot study, administered in google forms, using the same seven-point Likert scale with the stimuli displayed in image format simulating text messages. The data was collected over a three-month period spanning from December 2021 to March 2022. A total of 42 individuals between the ages of 18 and 45 participated in the survey. Two of the responses were, however, removed prior to data processing, as one was a mistakenly submitted blank and the other was incomplete. After removing incomplete submissions, the experiment included a total of 40 participants, 32 women, 7 men and a non-binary individual, all of whom had Norwegian as their native language. The participants had a mean age of 23.78 years, ranging from 18 to 45.

5.5.2 Procedure

The participants were recruited through an online sign-up form, the link to which was distributed and shared on a variety of online platforms and by email. The sign up included general information about the study as well as information about the participation criteria, specifically native language, and age. Upon signing up, that being expressing an interest in participating in the study, the participants were sent a link to one of the four surveys electronically. Participation in the study was voluntary and the participants were informed that the sign up was not binding nor were they obligated to finish the survey once started. Moreover, they were informed that the contact information requested as part of the sign up (email address) would be deleted once the data collection stage was concluded. Participants were also informed at this stage that in the case of questions they were encouraged to contact the master's student or advisor. Within the allotted period, a total of 83 signed up for the study. Upon accessing the survey, a more thorough description of the project was provided along with a consent form to which the participants were asked to consent before beginning the survey. The sign-up information along with the description and consent form included in the surveys are included in Appendix B.

The final survey differed from the pilot in that a section on emoji familiarity and use was added prior to presenting the core experimental stimuli. The section included the addition of six survey questions designed to estimate the participants' familiarity with emojis, adapted from the Emoji Language Fluency questionnaire (previously employed by van Leiden, 2019, and Thamsen, 2019). While familiarity, as determined by how often a person is exposed to and uses emojis, has not previously been found to significantly influence interpretation, current data is limited due to the relatively short period since emojis emerged as a research topic (see e.g. Sara R. Jaeger et al., 2018; Thamsen,

2019; van Leiden, 2019). As such, it was nevertheless decided to control for familiarity. The emoji familiarity questions are included in Appendix C.

After completing the emoji familiarity section, the participants were provided with instructions on the acceptability judgement task and how to approach the scale as described in the pilot chapter. As previously stated, each participant was asked to assess a total of 100 experimental sentences on a seven-point Likert scale where 1 indicated the item was not acceptable i.e., unnatural, and 7 indicated it was acceptable i.e., something a friend or they themselves were likely to produce.

5.6 Data Analysis

To reiterate, the semantic framework of face emojis developed by Grosz et al., predicts that acceptability judgements will correspond to felicity conditions (2021, p.34). That is, ratings are expected to be higher for congruent items and lower for incongruent items. The acceptability judgement task was administered through google forms and included 40 participants between 18 and 45 (mean age 23.78) divided between four lists consisting of 100 experimental sentences each. The participants were asked to pertain to the items as instances of literal language use and assess the acceptability of the sentence on a 7-point Likert Scale. The survey data was downloaded from the individual surveys in google forms. Initial processing was done in excel and included calculating the emoji familiarity score for each participant as well as formatting the data in preparation for subsequent analysis in R.

The emoji familiarity rating was based on self-report data and consisted of questions adapted from the Emoji Language Fluency questionnaire. The section was intended to provide an indication of how frequently the participants send and receive emojis. The section included two additional questions intended to provide a gauge of how accurate the participants' use and understanding of emojis were. All the questions were answered on a scale ranging from 1 to 5. The questions are attached in appendix C. A mean familiarity score was calculated for each participants based on their responses to the items.

To test the predictions of the framework, a linear mixed-effects regression model was fit with *rating* as the outcome variable, with fixed effects of *congruency*, *'only', emoji familiarity*, and *age* as well as an interaction between *congruency* and *'only'* using the lme4 package in R (v1.1-26;Bates et al.,2015). *Participant* and *sentence number* were included as random effects. The fit of the model was subsequently assessed using repeated-measures ANOVA.

6 Results

The purpose of the present analysis was to examine the relationship between perceived sentence acceptability, congruency, and 'only' reversal in order to test the claim presented in Grosz, Greenberg, et al. (2021) that there is a function of emojis in which they go beyond commenting on sentence emotionality, targeting compositional sentence meaning and discourse values (p.14). The hypothesis predicts that the acceptability of a sentence containing an emoji performing this function will correspond to the sentence's felicity conditions as determined by the target proposition and associated discourse values (p.34). In the data material applied, the discourse value was captured in the framing of the items. This was achieved through the manipulation of valence and the presence of the exclusive particle 'only', in line with the example material presented in Grosz, Greenberg, et al. (2021) as previously outlined in the materials section and chapter 4.

6.1 Descriptive Statistics

The participants consistently assessed their emoji familiarity as high, with an average score of 4.25 out of 5. No participant rated their familiarity below 3.5. The results are summarised in Table 6 below.

Table 6 Emoji familiarity

N	Mean	Std Dev	Min	Max
40	4.25	0.29	3.5	5

Preliminary analyses provide initial support for the framework. The mean rating of items in the congruent conditions, both neutral and 'only' was higher than that of the incongruent items (Table 7), suggesting a main effect of congruency. The effect is slightly smaller in the 'only' condition, but still considerable (Table 7).

Table 7 Means and standard deviations across conditions

	Neutral		'Only'	
	Mean	Std Dev	Mean	SD
Congruent	6.028000	1.273121	4.789899	2.030680
Incongruent	3.385385	2.028017	2.801980	1.877412

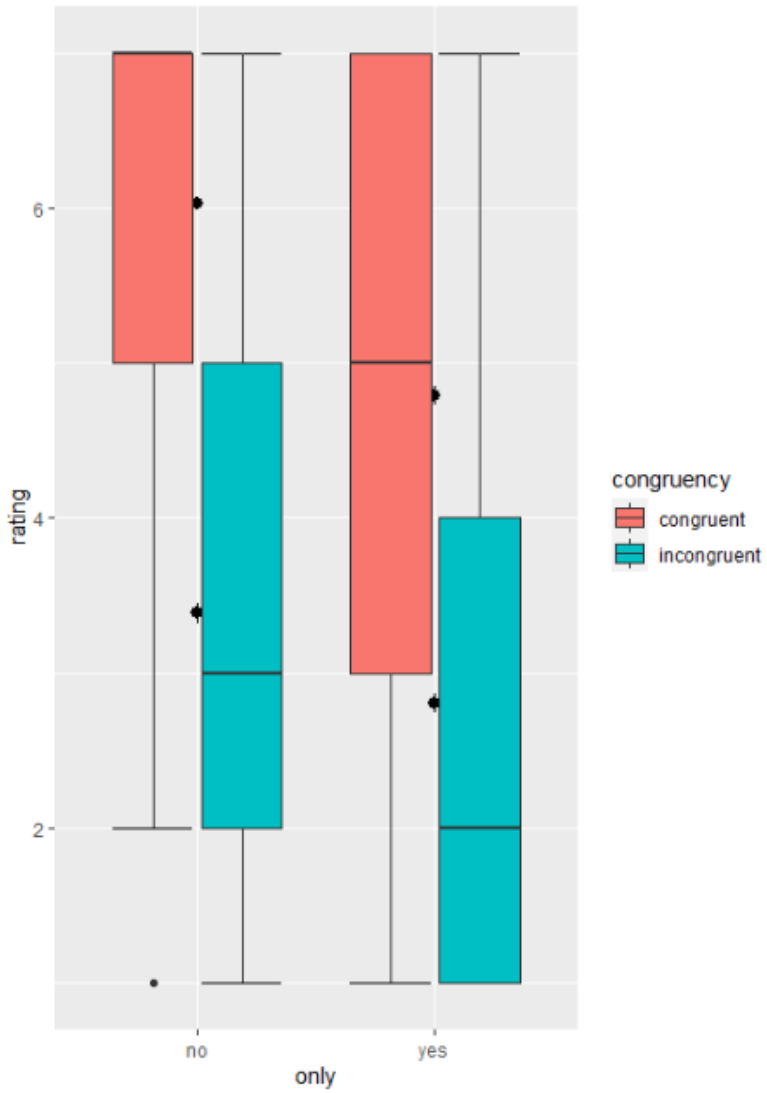


Figure 3 Ratings boxplot

The amount of variation in the data is notable given the consistently high emoji familiarity of the participants. This asymmetry is somewhat unexpected. While emoji familiarity, as previously stated, has not been found to have any significant effect in previous studies (Thamsen, 2019; van Leiden, 2019), there is reason to suspect that the unexpected asymmetry observed is partly a result of a lack of construct validity. Particularly the latter items in the emoji familiarity section are likely to have been ill-suited. This is addressed in the discussion.

In addition to the main effect of congruency, there appears to be a tendency for the participants, on average, to be more accurate, that is, in line with expectations, in their judgements of neutral congruent items and incongruent 'only' items compared with their counterparts. As Figure 4 illustrates, these preliminary observations suggest that judgements of incongruous 'only' items more consistently tend towards lower ratings, whereas the ratings of their congruous counterparts, in comparison, exhibit an increased degree of variation. The opposite trend is observable in the neutral condition, in which

the rating of congruent items is more consistent than that of incongruent items, suggesting an interaction between congruency and the presence of the exclusive particle 'only'.

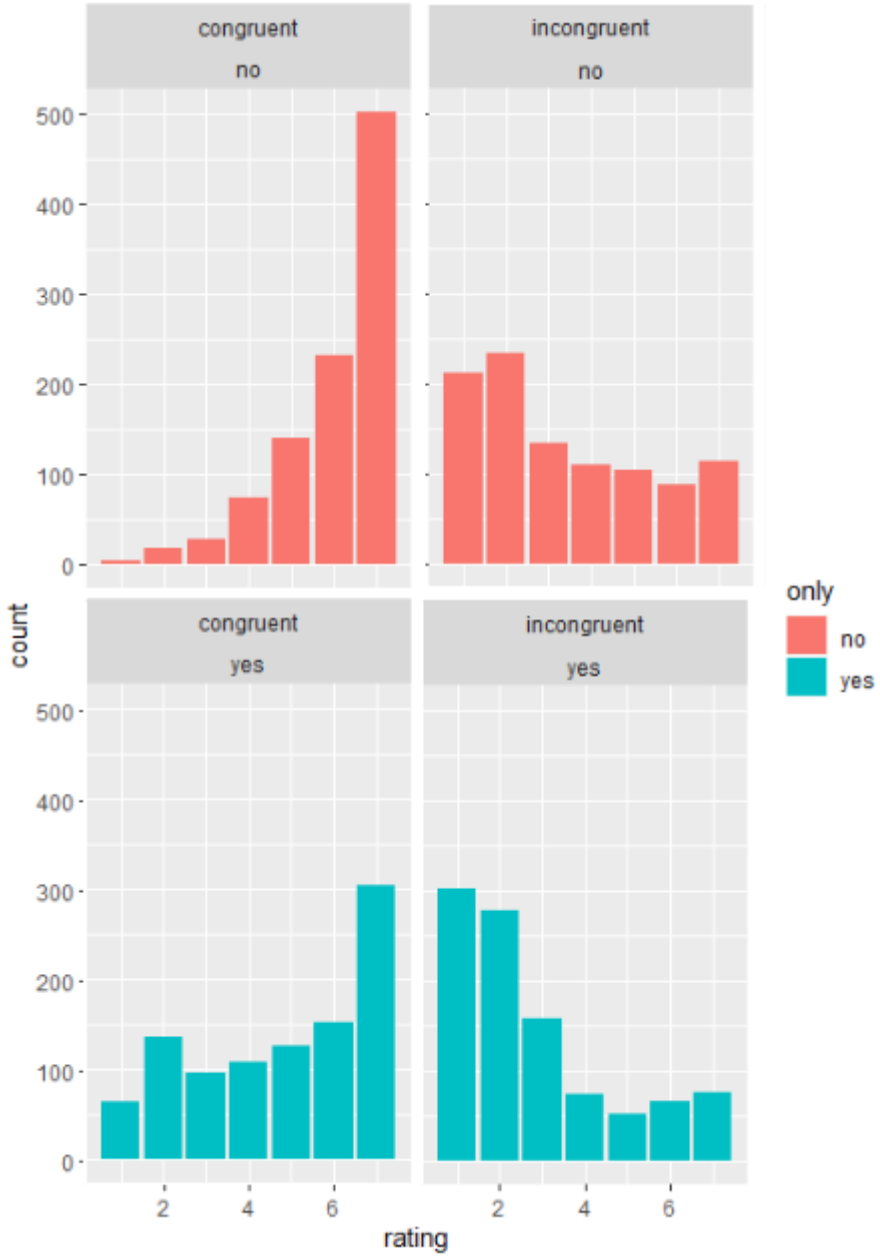


Figure 4 Ratings across conditions

6.2 Inferential Statistics

Subsequent analyses further substantiate the hypothesis presented in the framework by Grosz, Greenberg, et al. (2021) and confirm the observations above. The regression analysis showed a main effect for congruency, meaning participants consistently found incongruent items to be less acceptable than congruous items ($t=-10.539$, $p<0.001$). Interestingly, a similar, albeit smaller effect was found for sentences containing 'only', in which the presence of 'only' would decrease the perceived acceptability of the sentence

(t=-5.329, p<0.001). As observed in the preliminary analyses above, an interaction was found between congruency and the presence of 'only' (t=2.123, p<0.05). The interaction entails that the effect of 'only' on acceptability overall was negative, but it was smaller for incongruent items with 'only' compared to congruent items with 'only'. The latter findings are not predicted by the hypothesis and are discussed further below. No effect was found for age or emoji familiarity.

The subsequent ANOVA conducted to test the fit of the model showed that congruency, 'only' and the congruency- 'only' interaction all yielded significant effects. Tables 8 and 11 present the results of the regression analysis and ANOVA, respectively.

Table 8 Regression table

Fixed effects	Estimate	St. Error	df	t	p
Intercept	5.920117	1.399803	35.653529	4.229	0.000156
Incongruency	-2.827656	0.268316	87.289559	-10.539	< 2e-16
Only	-1.421048	0.266684	88.565989	-5.329	7.46e-07
Emoji Familiarity	0.056763	0.290857	35.047186	0.195	0.846396
Age	-0.001795	0.024447	35.578099	-0.073	0.941890
Incongruency*Only	1.033547	0.486873	64.241305	2.123	0.037627

Table 9 Fixed effects corelation

Fixed Effects	Correlation				
Incongruency	-0.161				
Only	-0.160	0.842			
Emoji Familiarity	-0.886	-0.047	-0.047		
Age	-0.470	0.255	0.254	0.030	
Incongruency*Only	0.160	-0.919	-0.918	0.050	-0.277

Table 10 Random effects

Random Effects	Variance	Sd
Sentence number	0.9230	0.9607
Participant	0.5053	0.7109
Residual	1.9833	1.4083

Table 11 ANOVA

ANOVA	Df	Sum Sq	Mean sq	F	p
Congruency	1	5293	5293	1832.15	< 2e-16
Only	1	807	807	279.37	< 2e-16
Congruency*Only	1	104	104	36.04	2.1e-09
Residuals	3956	11428	3		

7 Discussion

The purpose of the present experiment/study was to test the central claim presented in Grosz, Greenberg, et al. (2021) that there is a function of sentence-final face emojis in which they act as propositional modifiers, exhibiting sensitivity to the particularities of the linguistic features of the text it appears alongside as well as contextual information captured in the associated discourse values. The research question being:

> "To what extent do emojis target compositional sentence meaning and discourse values?"

To this purpose, an acceptability judgement experiment was conducted with the intention of examining the extent to which emojis, as stipulated, target compositional sentence meaning and discourse values. The experiment consisted of sentences of either positive or negative valence, with or without the exclusive particle 'only', ending with a face emoji either congruent or incongruent with the valency of the sentence. The presence of 'only' was expected to reverse the felicity condition of the sentence. For an example of the conditions consult Table 12 below.

Table 12 Stimuli conditions

Congruent	Incongruent	Congruent 'only'	Incongruent 'only'
There's a 50% chance we'll win 😊 There's a 50% chance we'll lose☹	There's a 50% chance we'll win ☹# There's a 50% chance we'll lose😊#	There's only a 50% chance we'll lose😊 There's only a 50% chance we'll win ☹	There's only a 50% chance we'll win 😊# There's only a 50% chance we'll lose☹#

The experiment showed that participants exhibit a clear preference for congruent relations between text and the accompanying emoji when asked to assess the acceptability of sentences containing a sentence-final face emoji, as these were consistently rated higher than their incongruent counterparts. This finding indicates that emojis in this position and with this specific function *do* target compositional sentence meaning and are sensitive to how the target proposition bears on the discourse values endorsed by the author, as predicted in the framework presented by Grosz et a. (2021).

In addition to the main effect of congruency, a significant effect of 'only' was found. The effect entailed that the presence of 'only' on average decreased the perceived acceptability of an item. While this effect does not follow directly from the predictions of the framework, as the effect of congruency was expected to be the same regardless of the presence of 'only', it is perhaps not entirely unexpected. In an acceptability judgement task, the judgement is inevitably provided during or after the processing of the sentence, as such, it is likely affected by a similar selection of factors as sentence processing (Sprouse, 2018, p. 7). One such factor is complexity. It is possible that at least part of the observed effect of 'only' arose from the increased complexity the inclusion of the exclusive particle caused. As these items were more challenging to

process, they were consequently also more difficult to assess, resulting in more conservative ratings for items with 'only'.

In a similar vein, it could be that emojis appear less frequently alongside 'only'-constructions and that congruency as a result was less easily determined. It would be possible to examine this suspicion using e.g., the Twitter API to construct a corpus of relevant data. Such an endeavour is, however, outside the scope of the present project. Moreover, such a project would likely be more successful were the experiment conducted in English, as the API is more adept at correctly retrieving and categorising English tweets.

However, a perhaps more plausible cause of the observed effect of 'only' could be the inferences and search for context the somewhat unexpected inclusion of 'only' triggers. It could be argued that the addition of 'only' to a sentence without preceding context is not without consequence due to the inherent unpredictability of the addition. While the items were constructed with the intention to minimise associated expectations[10], and the participants were instructed to interpret the sentences as instances of literal language use, the lack of preceding context for the 'only' items could have strengthened the inference that there was a prior expectation compared to the neutral items. That is, the presence of 'only' triggered the inference that the outcome described in the sentence failed to meet the sender's expectations being lower on some salient scale, which in turn influenced the judgements. Consider the following examples:

(10) Sam is a BA student
(11) Sam is only a BA student

While both (10) and (11) are grammatical and semantically well-formed sentences, (11) not only communicates that Sam is a BA student and no more than a BA student but also that this is low on some salient scale, triggering a search for preceding context and the described scalar inference. The same goes for the experimental sentences. Compare e.g., (12) and (13) below. If this is the case, acceptability judgements for all sentences with a sentence-final face emoji that additionally include the exclusive particle 'only' would be expected to receive lower ratings than their no- 'only' counterparts. This is an enquiry for future research.

(12) 50% of the customers were happy yesterday 😊
(13) Only 50% of the customers were happy yesterday ☹

If the above is the case and the addition of 'only' without context reduces acceptability, due to the inherent implausibility of the addition, and this reduction is cumulative with the reduction of acceptability due to incongruency it is relevant asking whether the resulting reduction is linear. In the case the addition of the exclusive particle shifts the range of acceptability – compressing it – the returned effect sizes may not be interpretable as the relative reduction resulting from incongruency might be the same in both the neutral and the 'only' condition. That is, despite the reported effect sizes for incongruency and 'only' being different the relative difference in acceptability might be

[10] For example, an item that was discarded in early developments described the number of invited vs. coming guests for an event. This item was discarded precisely because of the expectation that the majority of guests will attend an event such as a birthday or a wedding and the use of 50% was then likely to lower the overall acceptability of this item compared to other items with no such explicit expectation.

the same. The range of acceptability for the items with the exclusive particle might simply have been compressed causing the observed difference in the raw numbers.

Regardless of the above, the analysis additionally showed an interaction between incongruency and the presence of 'only' that, similar to the effect of 'only', did not follow from the predictions of the framework. To reiterate, the interaction entailed that the negative effect of the presence of 'only' was mitigated in incongruent items. A possible explanation could be that sentences that, without 'only', are negatively valenced are perceived as at odds with conventional use when the 'only' reverses the valence and a congruent emoji is included (i.e., 😊). While there are currently no data to substantiate this claim, whereas a sentence such as "only 50% of my vacation days were sunny ☹" (in Norwegian) intuitively[11] appears to be in line with conventional use, the same is arguably not the case when the valence is reversed. A sentence such as "only 50% of my vacation days were rainy 😊" used literally arguably appears to be less in line with conventional use, and less plausible or appropriate than something like "only 50% of my vacation days were rainy 🙃/🙄" in which the emoji signals a sarcastic reading.

Given the above, this could entail that while the relative reduction of acceptability is the same in the neutral and the 'only' condition, it is slightly exaggerated for the items in the congruent condition. This, because of the perceived unconventionality of positive valence items with 'only' that without 'only' would have had the opposite valence, a perception that would have affected the judgements of congruous items in the 'only' condition, in particular. As such, it could be that the issue is not necessarily that *incongruous* items with 'only' received *higher* ratings, but rather that *congruous* items with 'only' received *lower* ratings.

The lack of effect for age was likely caused by the limited range of ages represented in the sample. While the observed effect of age in previous research has been varied, there are indications that age is a factor in both emoji use and interpretation, in which older individuals are less accurate when interpreting emojis in context (Bai et al., 2019; Herring & Dainas, 2020; Prada et al., 2018). While the age of the participants in the present study ranged from 18 to 45, only three of the forty participants in the sample were 30 years or older, which appears to be the threshold for the onset of any expected negative effect of age (Herring & Dainas, 2020). As such, the participants' age was likely too concentrated to adequately capture any possible effect of age. Moreover, the majority of the participants were women, for whom the negative effect of age generally seems to be reduced (Chen et al., 2018; Herring & Dainas, 2020; Prada et al., 2018). As such the question of whether the interpretation of this function of emoji is contingent on age remains undetermined.

Emoji familiarity, as previously mentioned, has not been found to be a relevant factor in previous studies in which a rendition of the Emoji Language Fluency questionnaire has been applied (e.g. Thamsen (2019); van Leiden (2019)). Such was the case also for the present study.

There is, however, reason to suspect that this is, at least in part, a result of weak construct validity. As outlined in chapter 5.5.2 the emoji familiarity section of the survey

[11] This is based on native speaker intuition and an observed tendency for sentences with 'only' such as e.g. "only half of my plants died over the course of the summer" ["bare halvparten av plantene mine døde I løpet av sommeren"] to be used sarcastically particularly when the sentence without 'only' would have a negative valence.

consisted of six questions, the first two asked the respondents to provide an estimate of how frequently they send and receive emojis to assess how often the participants are exposed to emojis and thereby an approximate familiarity. The following two questions asked the respondents how they perceive emojis (attitude) and to assess their emoji competence. The final two items were intended as a control of the latter of the two previous questions. Here, the participants were asked how often they misunderstand emojis and how often they are misunderstood when sending emojis (see Appendix C). These items likely fail to capture the intended aspects of use as they do not appropriately account for similarities in communication, therein emoji conventions, within groups (An et al., 2018; Bai et al., 2019). This issue, arguably, further extends to the section at large particularly as the items all pertain to personal communication. That is, the participants are overall likely to assess themselves as competent and experiencing few miscommunications when primarily considering exchanges in which they communicate with someone who uses emojis in a way similar to themselves. As such, there is reason to question the validity of the obtained emoji familiarity scores in the present study as they might be artificially high.

Should the above not be the case, there is nevertheless not enough variation in the present data to determine any effect of emoji familiarity. Moreover, given the findings of studies such as Herring and Dainas (2020), Oleszkiewicz et al. (2017), and Prada et al. (2018) in which men and older participants were found to be less positive to emojis, use them less frequently, and be less accurate in their interpretations of emojis it seems unwise to discount any effect of emoji familiarity at present despite the obtained results.

Given the unpredicted effect obtained for 'only' as well as the observed interaction between incongruency and items with 'only', post hoc analyses were carried out in order to examine possible relevant patterns in the data. More specifically, the original model was updated twice, first adding an additional variable accounting for the valency of the emoji that appeared as part of the stimuli (i.e., 😊 or ☹) and then a three-way interaction between congruency, 'only' and emoji valency. Both the additions yielded significant effects. A positive effect was found for negative emojis (☹), and a negative effect was found for the three-way interaction between incongruency, 'only' and a negative emoji.

The difference in effect for the positive (😊) and negative (☹) emoji, in which a sad emoji garnered higher ratings, could possibly be due to a difference in the threshold at which an emoji of a given valence is licensed. In the case the threshold for a negative emoji is lower than for a happy emoji, that is a given situation more easily licenses the use of a negative emoji, these are results we would expect to see. The issues of conventionality and figurative language discussed above could also be contributing factors here. The question of whether the threshold for negative emojis is lower than for happy emojis is, however, a question for future research.

The three-way interaction complicates the picture further, showing that the relationship between acceptability and congruency depends on both the presence of 'only' and the valency of the emoji in ways not anticipated by the framework. The perhaps most surprising aspect of this interaction is the fact that the presence of 'only' and '😊' *decreases* the acceptability of congruent items in the data. While it is possible that part of this effect could be explained by the issue of figurative language use discussed above, further research is necessary to substantiate such a suspicion as well as establish the extent to which the observed effect extends beyond the present data.

Both the above observations are interesting; however, nothing definitive can be said at present. Further research is necessary to determine the robustness and underlying causes of the results of the analyses. Nevertheless, these findings serve to illustrate that the interplay between emojis and text might be more complex than initially thought.

7.1 Limitations

There are, in particular, three limitations that need addressing. First, while the present results are promising, the sample size and profile are likely to limit their representativeness. Second, the extensive nature of the administered survey is potentially cause for concern in regard to fatigue effects and third, the lack of fillers.

As previously indicated, while the sample size is reasonable for a first test of the proposed framework, the sample profile could potentially limit the representativeness of the results. The participants were primarily young women around 24. This sample homogeneity entails that the results are primarily representative of groups found to be proficient emoji users i.e., young adults and younger women. While this does not negate the core findings of the study – that there is indeed a function of sentence-final face emojis in which the emoji targets compositional sentence meaning and exhibits sensitivity to discourse values – the question of whether the understanding of this function is contingent on age, as has been observed for other emoji functions (cf., Herring and Dainas, 2020) remains unanswered.

Given the length of the survey administered, a second possible limitation concerns the extent to which fatigue affected the acceptability judgements (Sprouse, 2018). All the experimental sentences were structurally similar, and each participant was tasked with assessing 100 sentences. A few participants have, since completed the experiment, indicated that the survey was quite long, leading them to feel somewhat fatigued in the latter parts. This potential confound is of particular concern here because the individual lists appeared in the same order for all participants. However, fatigue effects have been found to have little impact on acceptability judgement ratings and the distribution of sentences' mean ratings gives no indication of fatigue effects in the present study (Juzek, 2015).

A final point that needs addressing is the lack of fillers. While comparison with sentences without emojis was not strictly necessary to test the predictions of the framework, filler sentences in line with sentences employed in M. Tang et al. (2020) would likely have enabled a more nuanced understanding of the results. One of the conditions included in Tang et al. (2020) employed sentences in which the information provided by the emoji was provided in text format e.g., "I successfully passed the final exam, and I felt very 😊"/ "I successfully passed the final exam, and I felt very happy". Although the emoji here serves more as a substitute for the word "happy" than providing an independent contribution, an addition similar to this approach could have allowed for a better understanding of the effect of the presence of 'only' and, by extension, potentially the interaction between incongruency and 'only'. This, as the text-only fillers would, presumably, have provided grounds for comparison, revealing to what extent the effects were a result of increased complexity in the 'only' condition which would have been beneficial as complexity is a factor known to affect acceptability judgements (Sprouse, 2018).

8 Summary and Conclusion

Emojis constitute an increasingly popular feature of computer-mediated discourse. However, as a feature of written language, appearing primarily as an accompaniment to text, they could be argued to exist at the periphery of language. Despite not being language, nor words, per se, many readers integrate emoji and text combinations seemingly effortlessly regardless of the type of emoji, its position, and the function it serves in context, skilfully discerning and interpreting the many contributions emojis make. As such, in encountering an emoji, readers evidently construct a kind of link between the emoji and the text it appears alongside.

Inadequate acknowledgement of the role of the function and type of emoji examined in much of previous research on emojis has to some extent prevented a close examination of what exactly constitutes this link. However, emerging evidence suggest differential processing of object and face emojis. Moreover, a recently developed framework of the semantics of face emojis by Grosz, Greenberg, et al. (2021) makes a first attempt at explicating the link constructed between text and an accompanying sentence-final face emoji proposing that sentence-final face emojis comment on and are interpreted based on the target proposition and how they comment on the desires, aspirations and hopes of the author (discourse values), making emojis sensitive to linguistic content and associated framing effects.

The present project sought to test the hypothesis presented in the above framework through an acceptability judgement experiment. The research question was:

> "To what extent do emojis target compositional sentence meaning and discourse values?"

The findings support the central claims presented in Grosz, Greenberg, et al. (2021), providing empirical evidence that there is a function of sentence-final face emojis in which they target compositional sentence meaning and comment on how it bears on a contextually provided discourse value endorsed by the author.

While aspects of the sample to some extent limit the generalisability of the results, leaving the question of any contingency on age and familiarity with emojis unanswered, the project contributes valuable insights into the emerging understanding of the linguistic aspects and processing of emojis in context. Future research would nevertheless benefit from a larger and more diverse sample to best ensure representativeness.

The popularity of emojis does not appear to be on the decline as the pictographs remain an omnipresent part of daily text-based communication on a global basis. The work of Grosz, Greenberg, et al. (2021), and by extension, this project, represent a promising development in the emerging understanding of how this cultural phenomenon is integrated with text in processing, opening interesting lines of inquiry regarding the accommodation of iconic enrichments in the human language faculty. That being said, only a few emojis are covered in the presented framework and present study, leaving many emojis to be examined and much to be discovered.

References

Ai, W., Lu, X., Liu, X., Wang, N., Huang, G., & Mei, Q. (2017). *Untangling emoji popularity through semantic embeddings.* Paper presented at the Proceedings of the International AAAI Conference on Web and Social Media.

An, J., Li, T., Teng, Y., & Zhang, P. (2018, 2018//). *Factors Influencing Emoji Usage in Smartphone Mediated Communications.* Paper presented at the Transforming Digital Worlds, Cham.

Bai, Q., Dan, Q., Mu, Z., & Yang, M. (2019). A Systematic Review of Emoji: Current Research and Future Perspectives. *Frontiers in Psychology, 10*. doi:10.3389/fpsyg.2019.02221

Barach, E., Feldman, L. B., & Sheridan, H. (2021). Are emojis processed like words?: Eye movements reveal the time course of semantic processing for emojified text. *Psychonomic Bulletin & Review, 28*(3), 978-991. doi:10.3758/s13423-020-01864-y

Barach, E., Srinivasan, V., Fernandes, R., Feldman, L. B., & Shaikh, S. (2020). *It's not Just What you Tweet, it's how you Tweet It.* Paper presented at the 7th European Conference on Social Media ECSM 2020, Larnaca, Cyprus

Barbieri, F., Kruszewski, G., Ronzano, F., & Saggion, H. (2016). *How cosmopolitan are emojis? Exploring emojis usage and meaning over different languages with distributional semantics.* Paper presented at the Proceedings of the 24th ACM international conference on Multimedia.

Bates, D., Mächler, M., Bolker, B., & Walker, S. (2015). Fitting Linear Mixed-Effects Models Using lme4. *Journal of Statistical Software, 67*(1). doi:https://doi.org/10.18637/jss.v067.i01

Broni, K. (2021). Top Emoji Trends of 2021. Retrieved from https://blog.emojipedia.org/top-emoji-trends-of-2021/

Burge, J. (2018). Apple Emoji Turns 10 Retrieved from https://blog.emojipedia.org/apple-emoji-turns-10/

Chen, Z., Lu, X., Ai, W., Li, H., Mei, Q., & Liu, X. (2018). *Through a gender lens: learning usage patterns of emojis from large-scale android users*. Paper presented at the 2018 World Wide Web Conference on World Wide Web, Lyon. https://dl.acm.org/doi/abs/10.1145/3178876.3186157

Cohn, N., Engelen, J., & Schilperoord, J. (2019). The grammar of emoji? Constraints on communicative pictorial sequencing. *Cognitive Research: Principles and Implications, 4*(1), 33. doi:10.1186/s41235-019-0177-0

Cohn, N., Roijackers, T., Schaap, R., & Engelen, J. (2018). *Are emoji a poor substitute for words? Sentence processing with emoji substitutions.* Paper presented at the CogSci.

Cramer, H., Juan, P. d., & Tetreault, J. (2016). *Sender-intended functions of emojis in US messaging*. Paper presented at the Proceedings of the 18th International Conference on Human-Computer Interaction with Mobile Devices and Services, Florence, Italy. https://doi.org/10.1145/2935334.2935370

Danesi, M. (2020). *The semiotics of Emoji : the rise of visual language in the age of the Internet*.

Darics, E. (2010). Politeness in computer-mediated discourse of a virtual team. *Journal of Politeness Research, 6*(1), 129. doi:https://doi.org/10.1515/jplr.2010.007

Doble, A. (2015). UK's fastest growing language is... emoji Retrieved from https://www.bbc.com/news/newsbeat-32793732

Dresner, E., & Herring, S. C. (2010). Functions of the Nonverbal in CMC: Emoticons and Illocutionary Force. *Communication Theory, 20*(3), 249-268. doi:https://doi.org/10.1111/j.1468-2885.2010.01362.x

Dürscheid, C., & Siever, C. M. (2017). Beyond the alphabet–communcataion of emojis. *Kurzfassung eines (auf Deutsch) zur Publikation eingereichten Manuskripts*.

Emojipedia. (2021). Emoji Statistics Retrieved from https://emojipedia.org/stats/

Fullwood, C., Orchard, L. J., & Floyd, S. A. (2013). Emoticon convergence in Internet chat rooms. *Social Semiotics, 23*(5), 648-662.

Grosz, P., Greenberg, G., De Leon, C., & Kaiser, E. (2021). A semantics of face emoji in discourse *[Manuscript submitted for publication], lingbuzz/005981*.

Grosz, P., Kaiser, E., & Pierini, F. (2021). *Discourse anaphoricity and first-person indexicality in emoji resolution.* Paper presented at the Proceedings of Sinn und Bedeutung.

Guevara, E. R. (2010). *NoWaC: a large web-based corpus for Norwegian.* Paper presented at the Proceedings of the NAACL HLT 2010 Sixth web as corpus workshop.

Gustafsson, V. (2017). Replacing words with emojis and its effect on reading time. *USCCS 2017, 73*.

Herring, S. C., & Dainas, A. R. (2020). Gender and Age Influences on Interpretation of Emoji Functions. *Trans. Soc. Comput., 3*(2), Article 10. doi:10.1145/3375629

Holleman, B. C., & Pander Maat, H. L. W. (2009). The pragmatics of profiling: Framing effects in text interpretation and text production. *Journal of Pragmatics, 41*(11), 2204-2221. doi:https://doi.org/10.1016/j.pragma.2008.09.038

Huang, A. H., Yen, D. C., & Zhang, X. (2008). Exploring the potential effects of emoticons. *Information & Management, 45*(7), 466-473. doi:https://doi.org/10.1016/j.im.2008.07.001

Hunter, J. (2019). Relating gesture to speech: reflections on the role of conditional presuppositions. *Linguistics and Philosophy, 42*(4), 317-332. doi:10.1007/s10988-018-9244-0

Jaeger, S. R., Roigard, C. M., Jin, D., Vidal, L., & Ares, G. (2019). Valence, arousal and sentiment meanings of 33 facial emoji: Insights for the use of emoji in consumer research. *Food research international, 119*, 895-907.

Jaeger, S. R., Xia, Y., Lee, P.-Y., Hunter, D. C., Beresford, M. K., & Ares, G. (2018). Emoji questionnaires can be used with a range of population segments: Findings relating to age, gender and frequency of emoji/emoticon use. *Food Quality and Preference, 68*, 397-410. doi:https://doi.org/10.1016/j.foodqual.2017.12.011

Juzek, T. (2015). *Acceptability judgement tasks and grammatical theory.* University of Oxford,

Kaiser, E., & Grosz, P. (2021). Anaphoricity in emoji: An experimental investigation of face and non-face emoji. *Proceedings of the Linguistic Society of America, 6*, 1009. doi:10.3765/plsa.v6i1.5067

Kaiser, E., & Grosz, P. G. (2021). Anaphoricity in emoji: An experimental investigation of face and non-face emoji. *2021, 6*(1), 15. doi:10.3765/plsa.v6i1.5067

Kavanagh, B. (2016). Emoticons as a medium for channeling politeness within American and Japanese online blogging communities. *Language & Communication, 48*, 53-65.

Kralj Novak, P., Smailović, J., Sluban, B., & Mozetič, I. (2015). Sentiment of Emojis. *PLoS One, 10*(12), e0144296-e0144296. doi:10.1371/journal.pone.0144296

Levin, I. P., Schneider, S. L., & Gaeth, G. J. (1998). All Frames Are Not Created Equal: A Typology and Critical Analysis of Framing Effects. *Organ Behav Hum Decis Process, 76*(2), 149-188. doi:10.1006/obhd.1998.2804

Li, L., & Yang, Y. (2018). Pragmatic functions of emoji in internet-based communication---a corpus-based study. *Asian-Pacific Journal of Second and Foreign Language Education, 3*(1), 16. doi:10.1186/s40862-018-0057-z

López, R. P., & Cap, F. (2017). *Did you ever read about frogs drinking coffee? investigating the compositionality of multi-emoji expressions.* Paper presented at the Proceedings of the 8th Workshop on Computational Approaches to Subjectivity, Sentiment and Social Media Analysis.

McCulloch, G. (2019). *Because Internet: Understanding how language is changing* London: Vintage.

McCulloch, G., & Gawne, L. (2018). Emoji Grammar as Beat Gestures. *Language @ Internet, 17*(2). Retrieved from http://nbn-resolving.de/urn:nbn:de:0009-7-48882

McShane, L., Pancer, E., Poole, M., & Deng, Q. (2021). Emoji, Playfulness, and Brand Engagement on Twitter. *Journal of Interactive Marketing, 53*, 96-110. doi:https://doi.org/10.1016/j.intmar.2020.06.002

Na'aman, N., Provenza, H., & Montoya, O. (2017). *Varying Linguistic Purposes of Emoji in (Twitter) Context.* Paper presented at the Proceedings of ACL 2017, Student Research Workshop, Vancouver, Canada

Oleszkiewicz, A., Karwowski, M., Pisanski, K., Sorokowski, P., Sobrado, B., & Sorokowska, A. (2017). Who uses emoticons? Data from 86 702 Facebook users. *Personality and individual differences, 119*, 289-295.

Ousterhout, T. (2017). *Investigation of the semantic priming effect with the N400 using symbolic pictures in text.* Paper presented at the Proceedings of the 4th European and 7th Nordic Symposium on Multimodal Communication (MMSYM 2016), Copenhagen, 29-30 September 2016.

OxfordLanguages. (2015). Word of the Year 2015. Retrieved from https://languages.oup.com/word-of-the-year/2015/

Pasternak, R., & Tieu, L. (2022). Co-linguistic content inferences: From gestures to sound effects and emoji. *Quarterly Journal of Experimental Psychology, 0*(0), 17470218221080645. doi:10.1177/17470218221080645

Patel-Grosz, P., Mascarenhas, S., Chemla, E., & Schlenker, P. (2022). Super Linguistics: an Introduction Retrieved from https://ling.auf.net/lingbuzz/005242

Pérez-Sabater, C. (2018). Emoticons in Relational Writing Practices on WhatsApp: Some Reflections on Gender. *Analyzing Digital Discourse*.

Pfeifer, V. A., Armstrong, E. L., & Lai, V. T. (2022). Do all facial emojis communicate emotion? The impact of facial emojis on perceived sender emotion and text processing. *Computers in Human Behavior, 126*, 107016. doi:https://doi.org/10.1016/j.chb.2021.107016

Potter, M. C., Kroll, J. F., Yachzel, B., Carpenter, E., & Sherman, J. (1986). Pictures in sentences: understanding without words. *J Exp Psychol Gen, 115*(3), 281-294. doi:10.1037//0096-3445.115.3.281

Prada, M., Rodrigues, D. L., Garrido, M. V., Lopes, D., Cavalheiro, B., & Gaspar, R. (2018). Motives, frequency and attitudes toward emoji and emoticon use. *Telematics and Informatics, 35*(7), 1925-1934. doi:https://doi.org/10.1016/j.tele.2018.06.005

R Core Team. (2019). R: A Language and Environment for Statistical Computing. Vienna, Austria: R Foundation for Statistical Computing. Retrieved from https://www.R-project.org/

Robus, C. M., Hand, C. J., Filik, R., & Pitchford, M. (2020). Investigating effects of emoji on neutral narrative text: Evidence from eye movements and perceived emotional valence. *Computers in Human Behavior, 109*. doi:10.1016/j.chb.2020.106361

Scheffler, T., Brandt, L., Fuente, M. d. l., & Nenchev, I. (2022). The processing of emoji-word substitutions: A self-paced-reading study. *Computers in Human Behavior, 127*, 107076. doi:https://doi.org/10.1016/j.chb.2021.107076

Schlenker, P. (2018a). Gesture projection and cosuppositions. *Linguistics and Philosophy, 41*(3), 295-365.

Schlenker, P. (2018b). What is Super Semantics?*. *Philosophical Perspectives, 32*(1), 365-453. doi:https://doi.org/10.1111/phpe.12122

Sprouse, J. (2018). Acceptability judgments and grammaticality, prospects and challenges. In N. Hornstein (Ed.), *Syntactic Structures after 60 years* (Vol. 60, pp. 195-224). Berlin: De Gruyter Mouton.

Tang, M., Chen, B., Zhao, X., & Zhao, L. (2020). Processing network emojis in Chinese sentence context: An ERP study. *Neurosci Lett, 722*, 134815-134815. doi:10.1016/j.neulet.2020.134815

Tang, M., Zhao, X., Chen, B., & Zhao, L. (2021). EEG theta responses induced by emoji semantic violations. *Scientific Reports, 11*(1), 1-9.

Tang, Y., & Hew, K. F. (2019). *Emoticon, Emoji, and Sticker Use in Computer-Mediated Communication: A Review of Theories and Research Findings* (Vol. 13).

Team, E. R. (2015). *2015 Emoji Report*. Retrieved from https://cdn.emogi.com/docs/reports/2015_emoji_report.pdf

Thamsen, L. (2019). *Imact of linearity on emoji sequences* (Master Thesis). Tilburg University Retrieved from http://arno.uvt.nl/show.cgi?fid=148608

Thompsen, P. A., & Foulger, D. A. (1996). Effects of pictographs and quoting on flaming in electronic mail. *Computers in Human Behavior, 12*(2), 225-243. doi:https://doi.org/10.1016/0747-5632(96)00004-0

Thompson, D., & Filik, R. (2016). Sarcasm in Written Communication: Emoticons are Efficient Markers of Intention. *Journal of Computer-Mediated Communication, 21*(2), 105-120. doi:https://doi.org/10.1111/jcc4.12156

Tieu, L., Pasternak, R., Schlenker, P., & Chemla, E. (2018). Co-speech gesture projection: Evidence from inferential judgments. *Glossa*.

Tieu, L., Schlenker, P., & Chemla, E. (2019). Linguistic inferences without words. *Proceedings of the National Academy of Sciences, 116*(20), 9796-9801. doi:doi:10.1073/pnas.1821018116

van Leiden, R. (2019). *Putting aside your emojis: The effect of multimodal relationships on the processing of emojis in computermediated communications.* (Master Thesis). Tilburg University Retrieved from http://arno.uvt.nl/show.cgi?fid=150245

Weissman, B., & Tanner, D. (2018). A strong wink between verbal and emoji-based irony: How the brain processes ironic emojis during language comprehension. *PLoS One, 13*(8), e0201727-e0201727. doi:10.1371/journal.pone.0201727

Wong, K. F. E., & Kwong, J. Y. Y. (2005). Comparing two tiny giants or two huge dwarfs? Preference reversals owing to number size framing. *Organizational Behavior and Human Decision Processes, 98*(1), 54-65. doi:https://doi.org/10.1016/j.obhdp.2005.04.002

Yang, J., Yang, Y., Xiu, L., & Yu, G. (2021). Effect of emoji prime on the understanding of emotional words–evidence from ERPs. *Behaviour & information technology*, 1-10. doi:10.1080/0144929X.2021.1874050

Yus, F. (2014). NOT ALL EMOTICONS ARE CREATED EQUAL. *Linguagem em (Dis)curso, 14*, 511-529. Retrieved from http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1518-76322014000300511&nrm=iso

Zhou, R., Hentschel, J., & Kumar, N. (2017). *Goodbye text, hello emoji: Mobile communication on WeChat in China.* Paper presented at the Proceedings of the 2017 CHI conference on human factors in computing systems.

Appendix

Appendix A: Pilot Items and Experimental Items

Pilot Items (Excluded)

50% av møtedeltakerne opplevde møtet som nyttig i dag 😊

Prisen på varen har blitt økt med 50% fra i går 😕

det er 50% sjanse for at seriens gjerningsmann innrømmer drapet i sesongfinalen 😊

50% glemmer tannbørste når de reiser 😕

det er bare 50% sjanse for at den nysådde planta spirer innen neste uke 😊#

det er 50% sjanse for at seriens gjerningsmann fornekter drapet (i sesongfinalen) 😕

det er bare 50% sjanse for at isen smelter før vi kommer fram ☹️#

50% av møtedeltakerne opplevde møtet som meningsløst (unyttig) i dag ☹️

bare 50% av alle edelstener solgt i verden var ekte i fjor 😊#

bare 50% av dagene har obligatorisk oppmøte neste år ☹️#

bare 50% strøyk på teoriprøven forrige uke 😕#

50% av søknadene ble avslått i fjor ☹️

50% av papirflyene i barnehagen fløy i går 😊

det er bare 50% sjanse for at isen forblir frossen til vi kommer fram 😊#

50% av pilene i bueskyting treffer målskiva 😊

Den oppsatte tragedien fikk bare 50% av publikum til å le i går 😕#

bare 50% av gjestene syntes maten smakte godt i går 😊#

bare 50% av spillerne fanget ballen i går 😊#

50% husker tannbørste når de reiser 😊

bare 50% av publikum syntes filmen var morsommere enn boka 😊#

bare 50% sa de nye stolene var ukomfortable sist ☹️#

bare 50% av publikum syntes filmen var kjedeligere enn boka 😕#

bare 50% av oss ble oppsagt i går ☹️#

50% av bildene fra turen ble bra da vi printet dem 😊

det er 50% sjanse for at klærne er skitne etter vask ☹️

50% av de inviterte møtte opp i tide 😊

bare 50% av leserne misforsto innholdet i teksten 😟#

bare 50% av oss ble ansatt i går 😊#

50% av kundene var fornøyde i går 😊

50% av pilene skutt i bueskyting bommer målskiva 😟

bare 50% besto teoriprøven forrige uke 😊#

bare 50% av gjestene syntes maten smakte vondt i går 😟#

50% av politiets pågripelser resulterte i arrestasjon i fjor 😟

50% av bildene i huset henger rett fremdeles 😊

50% av politiets pågripelser resulterte i løslatelse i fjor 😊

bare 50% av leserne forsto innholdet i teksten 😊#

bare 50% av dagene har frivillig oppmøte neste år 😊#

det er 50% sjanse for at klærne er rene etter vask 😊

50% av buksene fra i fjor er for brede i år 😊

50% av tilskuerne sa forestillingen var skuffende etterpå 😟

50% syntes eksamensoppgaven var vanskelig i år 😟

50% av buksene fra i fjor er for smale i år 😟

50% av bildene i huset henger skeivt fremdeles 😟

50% av kundene var misfornøyde i går 😟

50% av butikkene holder åpent i morra 😊

50% av de inviterte meldte frafall i tide 😟

50% av butikkene holder stengt i morra 😟

Den oppsatte tragedien fikk bare 50% av publikum til å gråte i går 😊#

det er bare 50% sjanse for å svare galt på spørsmålet 😟#

det er bare 50% sjanse for at den nysådde planta råtner innen neste uke 😟#

50% av søknadene ble akseptert i fjor 😊

50% av bildene fra turen ble dårlige da vi printet dem 😟

bare 50% av alle edelstener solgt i verden var falske i fjor 😟#

50% av papirflyene i barnehagen krasjet i går 😟

det er bare 50% sjanse for å svare rett på spørsmålet 😊#

bare 50% sa de nye stolene var behagelige sist 😊#

50% syntes eksamensoppgaven var enkel i år 😊

50% av tilskuerne sa forestillingen var imponerende etterpå 😊

50% av anklagene om plagiat ble motbevist i ettertid 😊

Prisen på varen har blitt redusert med 50% fra i går 😊

bare 50% av spillerne mistet ballen i går 😟#

bare 50% av bordene er for høye for stolene 😊#

det er 50% sjanse for at flokken inkluderer ulvevalpen 😊

bare 50% av bordene er for lave for stolene 😟#

det er bare 50% sjanse for at renta synker den neste uka 😟#

det er 50% sjanse for at flokken ekskluderer ulvevalpen 😟

det er bare 50% sjanse for at renta stiger den neste uka 😊#

50% av anklagene om plagiat ble bevist i ettertid 😟

det er bare 50% sjanse for at seriens gjerningsmann innrømmer drapet (i sesongfinalen) 😟

det er 50% sjanse for at renta stiger den neste uka 😟#

bare 50% sa de nye stolene var ukomfortable sist 😊

50% av butikkene holder stengt i morra 😊#

bare 50% av bildene i huset henger rett fremdeles 😟

bare 50% av de inviterte møtte opp i tide 😟

bare 50% av dagene har obligatorisk oppmøte neste år 😊

50% av oss ble ansatt i går 😟#

det er 50% sjanse for at isen forblir frossen til vi kommer fram 😟#

50% av søknadene ble avslått i fjor 😊#

50% sa de nye stolene var behagelige sist 😟#

bare 50% av gjestene syntes maten smakte vondt i går 😊

bare 50% husker tannbørste når de reiser 😟

50% besto teoriprøven forrige uke 😟#

Den oppsatte tragedien fikk bare 50% av publikum til å le i går 😊

det er bare 50% sjanse for å svare galt på spørsmålet 😊

det er bare 50% sjanse for at flokken inkluderer ulvevalpen 😕

bare 50% syntes eksamensoppgaven var enkel i år 😕

bare 50% av oss ble oppsagt i går 😊

bare 50% av kundene var fornøyde i går 😕

50% av bildene i huset henger skeivt fremdeles 😊#

det er 50% sjanse for å svare rett på spørsmålet 😕#

50% av de inviterte meldte frafall i tide 😊#

Prisen på varen har blitt økt med bare 50% fra i går 😊#

bare 50% av søknadene ble akseptert i fjor 😕

bare 50% av leserne misforsto innholdet i teksten 😊

50% glemmer tannbørste når de reiser 😊#

bare 50% av spillerne mistet ballen i går 😊

50% av publikum syntes filmen var morsommere enn boka 😕#

bare 50% av bordene er for lave for stolene 😊

det er 50% sjanse for at flokken ekskluderer ulvevalpen 😊#

bare 50% av pilene skutt i bueskyting treffer målskiva 😕

50% av leserne forsto innholdet i teksten 😕#

50% av møtedeltakerne opplevde møtet som meningsløst (unyttig) i dag 😊#

det er bare 50% sjanse for at isen smelter før vi kommer fram 😊

bare 50% av tilskuerne sa forestillingen var imponerende etterpå 😕

50% av anklagene om plagiat ble motbevist i ettertid 😕#

50% av buksene fra i fjor er for smale i år 😊#

det er bare 50% sjanse for at publikum applauderer etter forestillingen 😕

det er bare 50% sjanse for at renta synker den neste uka 😊

det er 50% sjanse for at den nysådde planta spirer innen neste uke 😕#

Prisen på varen har blitt redusert med 50% fra i går 😕#

50% syntes eksamensoppgaven var vanskelig i år 😊#

50% av bordene er for høye for stolene 😕#

50% av alle edelstener solgt i verden var ekte i fjor 😕#

bare 50% av politiets pågripelser resulterte i arrestasjon i fjor 😊#

50% av spillerne fanget ballen i går 😕#

det er 50% sjanse for at seriens gjerningsmann fornekter drapet (i sesongfinalen) 😊#

bare 50% av alle edelstener solgt i verden var falske i fjor 😊

bare 50% av butikkene holder åpent i morra 😕

Den oppsatte tragedien fikk 50% av publikum til å gråte i går 😕#

bare 50% av buksene fra i fjor er for brede i år 😕

bare 50% av papirflyene i barnehagen fløy i går 😕

50% av bildene fra turen ble dårlige da vi printet dem 😊#

50% av kundene var misfornøyde i går 😊#

50% av politiets pågripelser resulterte i løslatelse i fjor 😕#

50% av dagene har frivillig oppmøte neste år 😕#

bare 50% strøyk på teoriprøven forrige uke 😊

bare 50% av anklagene om plagiat ble bevist i ettertid 😊#

50% av gjestene syntes maten smakte godt i går 😕#

bare 50% av publikum syntes filmen var kjedeligere enn boka 😊

50% av papirflyene i barnehagen krasjet i går 😊#

det er bare 50% sjanse for at klærne er rene etter vask 😕

det er 50% sjanse for at klærne er skitne etter vask 😊#

bare 50% av møtedeltakerne opplevde møtet som nyttig i dag 😕

50% av pilene skutt i bueskyting bommer på målskiva 😊#

det er bare 50% sjanse for at den nysådde planta råtner innen neste uke 😊

bare 50% av bildene fra turen ble bra da vi printet dem 😕

bare 50% av tilskuerne sa forestillingen var imponerende etterpå 😊#

50% besto teoriprøven forrige uke 😊

bare 50% av butikkene holder stengt i morra 😕#

det er 50% sjanse for at den nysådde planta spirer innen neste uke 😊

bare 50% av kundene var fornøyde i går 😊#

Den oppsatte tragedien fikk 50% av publikum til å gråte i går 😊

bare 50% av buksene fra i fjor er for smale i år 😕#

50% av gjestene syntes maten smakte vondt i går 😕

bare 50% av bildene i huset henger skeivt fremdeles 😟#

50% av leserne misforsto innholdet i teksten 😟

Den oppsatte tragedien fikk 50% av publikum til å le i går 😟

det er bare 50% sjanse for at flokken ekskluderer ulvevalpen 😟#

50% strøyk på teoriprøven forrige uke 😟

50% av spillerne mistet ballen i går 😟

det er bare 50% sjanse for at flokken inkluderer ulvevalpen 😊#

bare 50% av buksene fra i fjor er for brede i år 😊#

bare 50% av butikkene holder åpent i morra 😊#

det er 50% sjanse for å svare galt på spørsmålet 😟

bare 50% av papirflyene i barnehagen krasjet i går 😟#

det er 50% sjanse for at den nysådde planta råtner innen neste uke 😟

det er bare 50% sjanse for at klærne er skitne etter vask 😟#

bare 50% av bildene fra turen ble bra da vi printet dem 😊#

50% av leserne forsto innholdet i teksten 😊

bare 50% av pilene skutt i bueskyting treffer målskiva 😊#

50% sa de nye stolene var ukomfortable sist 😟

bare 50% av bildene i huset henger rett fremdeles 😊#

bare 50% glemmer tannbørste når de reiser 😟 #

bare 50% av pilene skutt i bueskyting bommer målskiva 😟#

Prisen på varen har blitt redusert med bare 50% fra i går 😊#

bare 50% av møtedeltakerne opplevde møtet som meningsløst (unyttig) i dag 😟#

50% av alle edelstener solgt i verden var ekte i fjor 😊

bare 50% av kundene var misfornøyde i går 😟 #

Prisen på varen har blitt økt med bare 50% fra i går 😟

50% av oss ble ansatt i går 😊

bare 50% av de inviterte møtte opp i tide 😊#

det er bare 50% sjanse for at klærne er rene etter vask 😊#

bare 50% av anklagene om plagiat ble bevist i ettertid 😟

bare 50% av politiets pågripelser resulterte i arrestasjon i fjor 😟

bare 50% av bildene fra turen ble dårlige da vi printet dem 😟#

det er 50% sjanse for at renta synker den neste uka 😟

50% sa de nye stolene var behagelige sist 😊

bare 50% av de inviterte meldte frafall i tide 😟#

det er 50% sjanse for at renta stiger den neste uka 😊

bare 50% av politiets pågripelser resulterte i løslatelse i fjor 😊#

50% av gjestene syntes maten smakte godt i går 😊

bare 50% av søknadene ble akseptert i fjor 😊#

50% av bordene er for høye for stolene 😊

bare 50% av møtedeltakerne opplevde møtet som nyttig i dag 😊#

50% av publikum syntes filmen var kjedeligere enn boka 😟

50% av bordene er for lave for stolene 😟

det er bare 50% sjanse for at seriens gjerningsmann innrømmer drapet (i sesongfinalen) 😊#

bare 50% av anklagene om plagiat ble motbevist i ettertid 😊#

50% av oss ble oppsagt i går 😟

det er 50% sjanse for at isen forblir frossen til vi kommer fram 😊

50% av alle edelstener solgt i verden var falske i fjor 😟

bare 50% av søknadene ble avslått i fjor 😟 #

bare 50% av papirflyene i barnehagen fløy i går 😊#

bare 50% syntes eksamensoppgaven var vanskelig i år 😟#

50% av spillerne fanget ballen i går 😊

det er 50% sjanse for å svare rett på spørsmålet 😊

det er 50% sjanse for at isen smelter før vi kommer fram 😟

bare 50% syntes eksamensoppgaven var enkel i år 😊#

bare 50% husker tannbørste når de reiser 😊#

50% av publikum syntes filmen var morsommere enn boka 😊

det er bare 50% sjanse for at seriens gjerningsmann fornekter drapet (i sesongfinalen) 😟#

bare 50% av tilskuerne sa forestillingen var skuffende etterpå 😟#

50% av dagene har frivillig oppmøte neste år 😊

50% av dagene har obligatorisk oppmøte neste år 😕

Den oppsatte tragedien fikk bare 50% av publikum til å gråte i går 😕

bare 50% glemmer tannbørste når de reiser 😊

50% av bildene i huset henger rett fremdeles 😕#

bare 50% av alle edelstener solgt i verden var ekte i fjor 😕

bare 50% av møtedeltakerne opplevde møtet som meningsløst (unyttig) i dag 😊

Prisen på varen har blitt økt med 50% fra i går 😊#

bare 50% av de inviterte meldte frafall i tide 😊

det er 50% sjanse for at flokken inkluderer ulvevalpen 😕#

50% av spillerne mistet ballen i går 😊#

50% husker tannbørste når de reiser 😕#

det er bare 50% sjanse for at klærne er skitne etter vask 😊

det er bare 50% sjanse for at den nysådde planta spirer innen neste uke 😕

bare 50% av bildene fra turen ble dårlige da vi printet dem 😊

bare 50% av leserne forsto innholdet i teksten 😕

det er 50% sjanse for at den nysådde planta råtner innen neste uke 😊#

bare 50% av papirflyene i barnehagen krasjet i går 😊

bare 50% syntes eksamensoppgaven var vanskelig i år 😊

50% sa de nye stolene var ukomfortable sist 😊#

50% av buksene fra i fjor er for brede i år 😕#

bare 50% av dagene har frivillig oppmøte neste år 😕

50% av politiets pågripelser resulterte i arrestasjon i fjor 😊#

bare 50% av publikum syntes filmen var morsommere enn boka 😕

Prisen på varen har blitt redusert med bare 50% fra i går 😕

det er 50% sjanse for at renta synker den neste uka 😊#

50% av kundene var fornøyde i går 😕#

bare 50% av buksene fra i fjor er for smale i år 😊

bare 50% av oss ble ansatt i går 😕

bare 50% av gjestene syntes maten smakte godt i går 😕

det er bare 50% sjanse for at seriens gjerningsmann fornekter drapet (i sesongfinalen) 😊

50% av møtedeltakerne opplevde møtet som nyttig i dag 😟#

bare 50% sa de nye stolene var behagelige sist 😟

50% syntes eksamensoppgaven var enkel i år 😟#

det er 50% sjanse for at isen smelter før vi kommer fram 😊#

50% av alle edelstener solgt i verden var falske i fjor 😊#

bare 50% av spillerne fanget ballen i går 😟

50% av leserne misforsto innholdet i teksten 😊#

bare 50% av bildene i huset henger skeivt fremdeles 😊

50% av søknadene ble akseptert i fjor 😟#

50% av pilene i bueskyting treffer målskiva 😟#

50% av dagene har obligatorisk oppmøte neste år 😊#

bare 50% av tilskuerne sa forestillingen var skuffende etterpå 😊

bare 50% av anklagene om plagiat ble motbevist i ettertid 😟

50% strøyk på teoriprøven forrige uke 😊#

det er bare 50% sjanse for at flokken ekskluderer ulvevalpen 😊

50% av bordene er for lave for stolene 😊#

det er bare 50% sjanse for at renta stiger den neste uka 😟

bare 50% av kundene var misfornøyde i går 😊

50% av tilskuerne sa forestillingen var imponerende etterpå 😟#

50% av publikum syntes filmen var kjedeligere enn boka 😊#

bare 50% av politiets pågripelser resulterte i løslatelse i fjor 😟

50% av butikkene holder åpent i morra 😟#

50% av gjestene syntes maten smakte vondt i går 😊#

det er 50% sjanse for at klærne er rene etter vask 😟#

bare 50% av butikkene holder stengt i morra 😊

Den oppsatte tragedien fikk 50% av publikum til å le i går 😊#

det er 50% sjanse for å svare galt på spørsmålet 😊#

50% av papirflyene i barnehagen fløy i går 😟#

50% av de inviterte møtte opp i tide 😟#

bare 50% av bordene er for høye for stolene 😟

det er bare 50% sjanse for å svare rett på spørsmålet 😟

50% av oss ble oppsagt i går 😊#

50% av anklagene om plagiat ble bevist i ettertid 😊#

det er bare 50% sjanse for at isen forblir frossen til vi kommer fram 😟

det er 50% sjanse for at seriens gjerningsmann innrømmer drapet (i sesongfinalen) 😟#

50% av bildene fra turen ble bra da vi printet dem 😟#

bare 50% av pilene skutt i bueskyting bommer målskiva 😊

bare 50% besto teoriprøven forrige uke 😟

bare 50% av søknadene ble avslått i fjor 😊

Experimental Items (Final)

bare 50% av alle ungdommer er i arbeid pr i dag 😊#

bare 50% av store industrier vil ødelegge naturområdet 😟#

50% av barn roter mens foreldrene er borte 😟

det er bare 50% sjanse for at det slutter å regne i løpet av turen 😊#

det er 50% sjanse for at vi får fri festivahelga 😊

det er bare 50% sjanse for at vi vinner i morra 😊#

50% har fått avslag på jobben de søkte på 😟

det er bare 50% sjanse for regn senere 😟#

50% av de som forsøkte seg på oppgava feilet denne uka 😟

det er bare 50% sjanse for at toget er forsinket senere 😟#

bare 50% av alle hunder er snille statistisk sett 😊#

bare 50% av robotene i konkurransen unngikk hindrene 😊#

50% av forbrukerne syns den nye oppskriften ga sprøere knekkebrød enn før 😊

50% av de som har sett filmen sier de mislikte (hatet) den 😟

det er bare 50% sjanse for at klatreren mislykkes med toppturen 😟#

Biebestanden har bare økt 50% i år 😊#

bare 50% av tiltakene vil føre til økt tilstedeværelse i fremtiden 😊#

50% av forbrukerne syns den nye oppskriften ga mykere knekkebrød enn før 😟

det er bare 50% sjanse for sol senere 😊#

bare 50% av store industrier vil bevare naturområdet 😊#

50% av bilførere over 90 har ugyldig førerkort 😟

Bilmekanikeren sa det er 50% sjanse for at bilen stopper igjen 😟

50% av gjestene må jobbe dagen bryllupet er 😟

bare 50% av bilene vi leide hadde tom tank i går 😟#

bare 50% av de som jobber her er sure bestandig 😟#

bare 50% av hengebroene i spillet brister ved kryssing 😟#

50% av norske fjellveier er utrygge pr i dag 😟

det er bare 50% sjanse for at klatreren lykkes med toppturen 😊#

det er bare 50% sjanse for at toget er i rute senere 😊#

bare 50% av frisørkundene ble skuffet over resultatet 😟#

50% av alle ektepar skiller seg etter noen år 😟

bare 50% av frisørkundene ble begeistret for resultatet 😊#

bare 50% av klærne er våte ut av trommelen 😟#

50% av kommentarer som omtalte politikere på nett var slemme i år 😟

50% av de som har sett filmen sier de likte den 😊

50% av kommentarer som omtalte politikere på nett var hyggelige i år 😊

det er bare 50% sjanse for at vi taper i morra 😟#

bare 50% av feriedagene var solfylte i år 😊#

bare 50% av eksamenene er gjennomført for i år 😊#

det er 50% sjanse for at publikum buer etter forestillingen 😟

det er 50% sjanse for at ferien blir kortere enn antatt 😟

50% av dugnader tar lengre tid enn antatt 😟

bare 50% av bilene vi leide hadde full tank i går 😊#

50% av alle ektepar fornyer løftene etter noen år 😊

50% av dugnader tar kortere tid enn antatt 😊

bare 50% syns trender i samfunnsutviklingen er betryggende nå om dagen 😊#

bare 50% av tallerkenene på kjøkkenet er rene i dag 😊#

bare 50% av alle hunder er slemme statistisk sett 😟#

det er 50% sjanse for at vaskemaskinen blir ødelagt i dag 😟

50% av norske fjellveier er trygge pr i dag 😊

bare 50% av alle hjemmelagde kort blir beholdt hvert år 😊#

bare 50% av gjestene på hotellet bestemte seg for å avbryte oppholdet 😟#

bare 50% av eksamenene gjenstår for i år 😟#

det er 50% sjanse for at vaskemaskinen blir fikset i dag 😊

bare 50% av klærne var stygge på moteshowet i går 😟#

bare 50% av tallerkenene på kjøkkenet er skitne i dag 😟#

formuen vokste med 50% i år 😊

50% av beboerne i blokka vil forby utendørs røyking framover 😊

50% av innholdet på streamingtjenesten er utilgjengelig i Norge 😟

50% av de som forsøkte seg på oppgava lyktes denne uka 😊

bare 50% av feriedagene var regnfulle i år 😟#

regjeringen har bare lyktes i å nå 50% av årets klimamål 😊#

50% av de spurte syns tiltakene forverret situasjonen 😟

bare 50% av testpersonene syntes den nye kremen virket beroligende på utslettet 😊#

bare 50% av klærne var pene på moteshowet i går 😊#

bare 50% av klærne er tørre ut av trommelen 😊#

50% av barn rydder mens foreldrene er borte 😊

50% syntes informasjonskampanjen var forvirrende sist 😟

bare 50% av robotene i konkurransen krasjet i hindrene 😟#

bare 50% av politikere sier de vil begrense støttetilbudet 😟

bare 50% syns trender i samfunnsutviklingen er alarmerende nå om dagen 😟#

50% av alle kjøpte husplanter lever året etter 😊

50% av beboerne i blokka vil tillate utendørs røyking framover 😟

det er 50% sjanse for at de nye tiltakene bidrar til forbedring av boforholdene 😊

bare 50% av de som jobber her er blide bestandig 😊#

50% har fått tilbud om jobben de søkte på 😊

regjeringen har bare feilet i å nå 50% av årets klimamål 😟#

bare 50% av tiltakene vil føre til økt fravær i fremtiden 😟#

50% av alle kjøpte husplanter er døde året etter 😟

50% av de spurte syns tiltakene forbedret situasjonen 😊

det er bare 50% sjanse for at det fortsetter å regne i løpet av turen 😟#

Bilmekanikeren sa det er 50% sjanse for at bilen starter igjen 😊

50% av de omplasserte villkattene er (fremdeles) ville etter et år 😐

50% av bilførere over 90 har gyldig førerkort 😊

det er 50% sjanse for at publikum applauderer etter forestillingen 😊

det er 50% sjanse for at de nye tiltakene hindrer (forhindre) forbedring av boforholdene 😟

bare 50% av politikere sier de vil utvide støttetilbudet 😊#

bare 50% av alle ungdommer er arbeidsledig pr i dag 😟#

Biebestanden har bare minket 50% i år 😟#

bare 50% av gjestene på hotellet bestemte seg for å forlenge oppholdet 😊#

bare 50% av alle hjemmelagde kort blir kastet hvert år 😟#

50% syntes informasjonskampanjen var informativ sist 😊

det er 50% sjanse for at ferien blir lengre enn antatt 😊

bare 50% av søkerne er ukvalifisert for jobben 😟#

bare 50% av søkerne er kvalifisert for jobben 😊#

50% av de omplasserte villkattene er tamme etter et år 😊

formuen krympet med 50% i år 😟

bare 50% av hengebroene i spillet bærer ved kryssing 😊#

50% av innholdet på streamingtjenesten er tilgjengelig i Norge 😊

bare 50% av testpersonene syntes den nye kremen virket agiterende på utslettet 😟#

bare 50% av gjestene på hotellet bestemte seg for å avbryte oppholdet 😊

50% av forbrukerne syns den nye oppskriften ga mykere knekkebrød enn før 😊#

det er bare 50% sjanse for at klatreren mislykkes med toppturen 😊

50% syntes informasjonskampanjen var forvirrende sist 😊#

50% av innholdet på streamingtjenesten er utilgjengelig i Norge 😊#

det er 50% sjanse for at toget er i rute senere 😟#

Biebestanden har økt 50% i år 😟#

bare 50% av klærne er våte ut av trommelen 😊

bare 50% av eksamenene gjenstår for i år 😊

bare 50% av alle ektepar fornyer løftene etter noen år 😟

50% av tiltakene vil føre til økt tilstedeværelse i fremtiden 😟#

bare 50% av bilene vi leide hadde tom tank i går 😊

bare 50% av gjestene får fri dagen bryllupet er 😟

bare 50% av alle hjemmelagde kort blir kastet hvert år 😊

bare 50% av alle kjøpte husplanter lever året etter ☹️

50% av feriedagene var solfylte i år 😟#

50% av gjestene må jobbe dagen bryllupet er 😊#

50% av norske fjellveier er utrygge pr i dag 😊#

bare 50% av tiltakene vil føre til økt fravær i fremtiden 😊

det er 50% sjanse for sol senere 😟#

50% av tallerkenene på kjøkkenet er rene i dag 😟#

50% av hengebroene i spillet bærer ved kryssing 😟#

det er bare 50% sjanse for at ferien blir lengre enn antatt 😟

bare 50% av testpersonene syntes den nye kremen virket agiterende på utslettet 😊

bare 50% har fått tilbud om jobben de søkte på 😟

det er 50% sjanse for at vaskemaskinen blir ødelagt i dag 😊#

bare 50% av alle hunder er slemme statistisk sett 😊

det er 50% sjanse for at vi vinner i morra 😟#

bare 50% av robotene i konkurransen krasjet i hindrene 😊

det er bare 50% sjanse for regn senere 😊

bare 50% av de som har sett filmen sier de likte den 😟

bare 50% av de omplasserte villkattene er tamme etter et år 😟

bare 50% av de som forsøkte seg på oppgava lyktes denne uka 😟

det er 50% sjanse for at klatreren lykkes med toppturen 😟#

50% av de spurte syns tiltakene forverret situasjonen 😊#

bare 50% av politikere sier de vil utvide støttetilbudet 😟

50% av klærne er tørre ut av trommelen 😟#

bare 50% av norske fjellveier er trygge pr i dag 😟

det er 50% sjanse for at de nye tiltakene hindrer (forhindre) forbedring av boforholdene 😊#

det er bare 50% sjanse for at toget er forsinket senere 😊

regjeringen har lyktes i å nå 50% av årets klimamål 😟#

50% av gjestene på hotellet bestemte seg for å forlenge oppholdet 😟#

bare 50% av feriedagene var regnfulle i år 😊

50% av alle hunder er snille statistisk sett 😟#

det er 50% sjanse for at ferien blir kortere enn antatt 😊#

bare 50% av alle ungdommer er arbeidsledig pr i dag 😊

bare 50% syns trender i samfunnsutviklingen er alarmerende nå om dagen 😊

Bilmekanikeren sa det bare er 50% sjanse for at bilen starter igjen 😟

bare 50% av kommentarer som omtalte politikere på nett var hyggelige i år 😟

50% av barn roter mens foreldrene er borte 😊#

50% av frisørkundene ble begeistret for resultatet 😟#

bare 50% av de spurte syns tiltakene forbedret situasjonen 😟

Bilmekanikeren sa det er 50% sjanse for at bilen stopper igjen 😊#

50% av alle ektepar skiller seg etter noen år 😊#

bare 50% av hengebroene i spillet brister ved kryssing 😊

det er bare 50% sjanse for at vaskemaskinen blir fikset i dag 😟

50% av de omplasserte villkattene er (fremdeles) ville etter et år 😊#

det er bare 50% sjanse for at vi taper i morra 😊

50% av alle ungdommer er i arbeid pr i dag 😟#

bare 50% av klærne var stygge på moteshowet i går 😊

bare 50% av tallerkenene på kjøkkenet er skitne i dag 😊

50% av store industrier vil bevare naturområdet 😟#

bare 50% av søkerne er ukvalifisert for jobben 😊

bare 50% av de som forsøkte seg på oppgava lyktes denne uka 😊#

50% av testpersonene syntes den nye kremen virket beroligende på utslettet 😟#

50% av bilene vi leide hadde full tank i går 😟#

bare 50% av innholdet på streamingtjenesten er tilgjengelig i Norge 😟

bare 50% av store industrier vil ødelegge naturområdet 😊

50% har fått avslag på jobben de søkte på 😊#

50% av beboerne i blokka vil tillate utendørs røyking framover 😊#

det er 50% sjanse for at det slutter å regne i løpet av turen 😟#

50% av bilførere over 90 har ugyldig førerkort 😊#

50% av de som jobber her er blide bestandig 😟#

Bare 50% av forbrukerne syns den nye oppskriften ga sprøere knekkebrød enn før 😟

det er bare 50% sjanse for at det fortsetter å regne i løpet av turen 😊

50% av eksamenene er gjennomført for i år 😟#

det er 50% sjanse for at publikum buer etter forestillingen 😊#

bare 50% av bilførere over 90 har gyldig førerkort 😕

50% av søkerne er kvalifisert for jobben 😕#

50% av kommentarer som omtalte politikere på nett var slemme i år 😊#

50% syns trender i samfunnsutviklingen er betryggende nå om dagen 😕#

bare 50% av dugnader tar kortere tid enn antatt 😕

50% av alle hjemmelagde kort blir beholdt hvert år 😕#

bare 50% av de som jobber her er sure bestandig 😊

50% av dugnader tar lengre tid enn antatt 😊#

det er bare 50% sjanse for at de nye tiltakene bidrar til forbedring av boforholdene 😕

50% av de som har sett filmen sier de mislikte (hatet) den 😊#

50% av politikere sier de vil begrense støttetilbudet 😊#

formuen vokste bare med 50% i år 😕

bare 50% av barn rydder mens foreldrene er borte 😕

bare 50% av frisørkundene ble skuffet over resultatet 😊

Bare 50% av beboerne i blokka vil forby utendørs røyking framover 😕

formuen krympet med 50% i år 😊#

bare 50% syntes informasjonskampanjen var informativ sist 😕

50% av robotene i konkurransen unngikk hindrene 😕#

regjeringen har bare feilet i å nå 50% av årets klimamål 😊

50% av klærne var pene på moteshowet i går 😕#

Biebestanden har bare minket 50% i år 😊

50% av alle kjøpte husplanter er døde året etter 😊#

50% av tilskuerne sa forestillingen var skuffende etterpå 😊#

Biebestanden har minket 50% i år 😕

bare 50% av gjestene får fri dagen bryllupet er 😊#

50% av testpersonene syntes den nye kremen virket beroligende på utslettet 😊

det er 50% sjanse for regn senere 😕

bare 50% av norske fjellveier er trygge pr i dag 😊#

bare 50% av alle kjøpte husplanter lever året etter 😊#

bare 50% av kommentarer som omtalte politikere på nett var hyggelige i år 😊#

50% av feriedagene var solfylte i år 😊

50% av alle hjemmelagde kort blir kastet hvert år 😟

det er bare 50% sjanse for at ferien blir lengre enn antatt 😊#

bare 50% av innholdet på streamingtjenesten er utilgjengelig i Norge 😟#

Bilmekanikeren sa det bare er 50% sjanse for at bilen starter igjen 😊#

Bare 50% av beboerne i blokka vil forby utendørs røyking framover 😊#

bare 50% får avslag på jobben de søkte på 😟#

det er bare 50% sjanse for at vaskemaskinen blir ødelagt i dag 😟#

50% av feriedagene var regnfulle i år 😟

50% av hengebroene i spillet bærer ved kryssing 😊

det er 50% sjanse for at vi vinner i morra 😊

50% syns trender i samfunnsutviklingen er alarmerende nå om dagen 😟

bare 50% av dugnader tar lengre tid enn antatt 😟#

bare 50% av bilførere over 90 har ugyldig førerkort 😟#

bare 50% av de som forsøkte seg på oppgava lyktes denne uka 😊#

bare 50% av innholdet på streamingtjenesten er tilgjengelig i Norge 😊#

det er bare 50% sjanse for at de nye tiltakene hindrer (forhindre) forbedring av boforholdene 😟#

50% av robotene i konkurransen krasjet i hindrene 😟

50% av alle ungdommer er i arbeid pr i dag 😊

det er bare 50% sjanse for at de nye tiltakene bidrar til forbedring av boforholdene 😊#

50% av søkerne er ukvalifisert for jobben 😟

50% av de som jobber her er sure bestandig 😟

50% av alle hjemmelagde kort blir beholdt hvert år 😊

50% av de som jobber her er blide bestandig 😊

bare 50% syntes informasjonskampanjen var forvirrende sist 😟#

bare 50% av barn rydder mens foreldrene er borte 😊#

det er 50% sjanse for at vi taper i morra 😟

50% av frisørkundene ble skuffet over resultatet 😟

det er bare 50% sjanse for at vaskemaskinen blir fikset i dag 😊#

50% av klærne er våte ut av trommelen 😕

50% av alle hunder er slemme statistisk sett ☹️

50% av robotene i konkurransen unngikk hindrene 😊

50% av alle hunder er snille statistisk sett 😊

bare 50% av norske fjellveier er utrygge pr i dag 😕#

bare 50% av alle ektepar fornyer løftene etter noen år 😊#

bare 50% av de som har sett filmen sier de mislikte (hatet) den ☹️#

50% av politikere sier de vil begrense støttetilbudet 😕

50% av bilene vi leide hadde full tank i går 😊

50% av politikere sier de vil utvide støttetilbudet 😊

det er bare 50% sjanse for at publikum buer etter forestillingen ☹️#

bare 50% syntes informasjonskampanjen var informativ sist 😊#

50% av tallerkenene på kjøkkenet er rene i dag 😊

det er 50% sjanse for at klatreren lykkes med toppturen 😊

bare 50% har fått tilbud om jobben de søkte på 😊#

50% av eksamenene gjenstår for i år 😕

bare 50% av barn roter mens foreldrene er borte 😕#

50% av søkerne er kvalifisert for jobben 😊

50% av gjestene på hotellet bestemte seg for å avbryte oppholdet 😕

bare 50% av de spurte syns tiltakene forbedret situasjonen 😊#

det er bare 50% sjanse for at publikum applauderer etter forestillingen 😊#

50% av tiltakene vil føre til økt fravær i fremtiden 😕

Biebestanden har økt 50% i år 😊

50% av klærne var stygge på moteshowet i går 😕

bare 50% av alle kjøpte husplanter er døde året etter 😕#

50% av bilene vi leide hadde tom tank i går 😕

det er 50% sjanse for at toget er i rute senere 😊

det er 50% sjanse for at det slutter å regne i løpet av turen 😊

det er 50% sjanse for at klatreren mislykkes med toppturen 😕

bare 50% av dugnader tar kortere tid enn antatt 😊#

det er 50% sjanse for sol senere 😊

Bare 50% av beboerne i blokka vil tillate utendørs røyking framover 😟#

det er 50% sjanse for at det fortsetter å regne i løpet av turen 😟

det er 50% sjanse for at toget er forsinket senere 😟

50% av gjestene på hotellet bestemte seg for å forlenge oppholdet 😊

bare 50% av gjestene må jobbe dagen bryllupet er 😟#

50% syns trender i samfunnsutviklingen er betryggende nå om dagen 😊

bare 50% av kommentarer som omtalte politikere på nett var slemme i år 😟#

regjeringen har feilet i å nå 50% av årets klimamål 😟

50% av alle ungdommer er arbeidsledig pr i dag 😟

50% av frisørkundene ble begeistret for resultatet 😊

det er bare 50% sjanse for at ferien blir kortere enn antatt 😟#

50% av hengebroene i spillet brister ved kryssing 😟

50% av tiltakene vil føre til økt tilstedeværelse i fremtiden 😊

50% av store industrier vil ødelegge naturområdet 😟

50% av testpersonene syntes den nye kremen virket agiterende på utslettet 😟

Bilmekanikeren sa det bare er 50% sjanse for at bilen stopper igjen 😟#

bare 50% av de som forsøkte seg på oppgava feilet denne uka 😟#

bare 50% av de som har sett filmen sier de likte den 😊#

bare 50% av de omplasserte villkattene er tamme etter et år 😊#

bare 50% av alle ektepar skiller seg etter noen år 😟#

50% av klærne var pene på moteshowet i går 😊

bare 50% av de omplasserte villkattene er (fremdeles) ville etter et år 😟#

formuen krympet bare med 50% i år 😟#

50% av klærne er tørre ut av trommelen 😊

Bare 50% av forbrukerne syns den nye oppskriften ga mykere knekkebrød enn før 😟#

Bare 50% av forbrukerne syns den nye oppskriften ga sprøere knekkebrød enn før 😊#

regjeringen har lyktes i å nå 50% av årets klimamål 😊

50% av tallerkenene på kjøkkenet er skitne i dag 😟

bare 50% av bilførere over 90 har gyldig førerkort 😊#

formuen vokste bare med 50% i år 😊#

50% av eksamenene er gjennomført for i år 😊

bare 50% av de spurte syns tiltakene forverret situasjonen 😕#

50% av store industrier vil bevare naturområdet 😊

bare 50% av de som har sett filmen sier de mislikte (hatet) den 😊

50% av feriedagene var regnfulle i år 😊#

formuen vokste med 50% i år 😕#

bare 50% av innholdet på streamingtjenesten er utilgjengelig i Norge 😊

50% av klærne var stygge på moteshowet i går 😊#

50% av eksamenene gjenstår for i år 😊#

det er 50% sjanse for at det fortsetter å regne i løpet av turen 😊#

bare 50% av bilene vi leide hadde full tank i går 😕

Bilmekanikeren sa det er 50% sjanse for at bilen starter igjen 😕#

bare 50% har fått avslag på jobben de søkte på 😊

bare 50% av robotene i konkurransen unngikk hindrene 😕

50% av beboerne i blokka vil forby utendørs røyking framover 😕#

bare 50% av alle ektepar skiller seg etter noen år 😊

det er bare 50% sjanse for at toget er i rute senere 😕

50% av barn rydder mens foreldrene er borte 😕#

det er 50% sjanse for at vaskemaskinen blir fikset i dag 😕#

Bare 50% av beboerne i blokka vil tillate utendørs røyking framover 😊

50% av bilførere over 90 har gyldig førerkort 😕#

bare 50% av klærne er tørre ut av trommelen 😕

bare 50% av de spurte syns tiltakene forverret situasjonen 😊

det er bare 50% sjanse for sol senere 😕

bare 50% av norske fjellveier er utrygge pr i dag 😊

bare 50% av alle kjøpte husplanter er døde året etter 😊

bare 50% av alle hjemmelagde kort blir beholdt hvert år 😕

regjeringen har bare lyktes i å nå 50% av årets klimamål 😕

50% av innholdet på streamingtjenesten er tilgjengelig i Norge 😕#

50% av gjestene på hotellet bestemte seg for å avbryte oppholdet 😊#

50% av bilene vi leide hadde tom tank i går 😊#

bare 50% av testpersonene syntes den nye kremen virket beroligende på utslettet 😕

bare 50% syntes informasjonskampanjen var forvirrende sist 😊

bare 50% av de som forsøkte seg på oppgava feilet denne uka 😊

50% av de som har sett filmen sier de likte den 😕#

bare 50% av barn roter mens foreldrene er borte 😊

50% av norske fjellveier er trygge pr i dag 😕#

bare 50% av de omplasserte villkattene er (fremdeles) ville etter et år 😊

50% av klærne er våte ut av trommelen 😊#

det er bare 50% sjanse for at vi vinner i morra 😕

bare 50% syns trender i samfunnsutviklingen er betryggende nå om dagen 😕

50% syntes informasjonskampanjen var informativ sist 😕#

bare 50% av tiltakene vil føre til økt tilstedeværelse i fremtiden 😕

bare 50% av de som jobber her er blide bestandig 😕

50% av store industrier vil ødelegge naturområdet 😊#

Biebestanden har minket 50% i år 😊#

det er 50% sjanse for at de nye tiltakene bidrar til forbedring av boforholdene 😕#

bare 50% av gjestene på hotellet bestemte seg for å forlenge oppholdet 😕

bare 50% av frisørkundene ble begeistret for resultatet 😕

formuen krympet bare med 50% i år 😊

50% syns trender i samfunnsutviklingen er alarmerende nå om dagen 😊#

50% av robotene i konkurransen krasjet i hindrene 😊#

bare 50% av bilførere over 90 har ugyldig førerkort 😊

50% av kommentarer som omtalte politikere på nett var hyggelige i år 😕#

50% av testpersonene syntes den nye kremen virket agiterende på utslettet 😊#

regjeringen har feilet i å nå 50% av årets klimamål 😊#

det er bare 50% sjanse for at publikum buer etter forestillingen 😊

Bare 50% av forbrukerne syns den nye oppskriften ga mykere knekkebrød enn før 😊

50% av de omplasserte villkattene er tamme etter et år 😕#

50% av de spurte syns tiltakene forbedret situasjonen 😟#

bare 50% av eksamenene er gjennomført for i år 😟

det er 50% sjanse for at ferien blir lengre enn antatt 😟#

bare 50% av politikere sier de vil begrense støttetilbudet 😊#

50% av de som forsøkte seg på oppgava lyktes denne uka 😟#

det er 50% sjanse for regn senere 😊#

det er 50% sjanse for at klatreren mislykkes med toppturen 😊#

50% av gjestene får fri dagen bryllupet er 😟#

det er bare 50% sjanse for at ferien blir kortere enn antatt 😊

50% av dugnader tar kortere tid enn antatt 😟#

bare 50% av feriedagene var solfylte i år 😟

det er bare 50% sjanse for at det slutter å regne i løpet av turen 😟

bare 50% av gjestene må jobbe dagen bryllupet er 😊

50% av frisørkundene ble skuffet over resultatet 😊#

bare 50% av hengebroene i spillet bærer ved kryssing 😟

50% av alle ungdommer er arbeidsledig pr i dag 😊#

50% av forbrukerne syns den nye oppskriften ga sprøere knekkebrød enn før 😟#

50% av de som jobber her er sure bestandig 😊#

50% av politikere sier de vil utvide støttetilbudet 😟#

bare 50% av alle hunder er snille statistisk sett 😟

50% av alle ektepar fornyer løftene etter noen år 😟#

50% har fått tilbud om jobben de søkte på 😟#

bare 50% av dugnader tar lengre tid enn antatt 😊

det er bare 50% sjanse for at vaskemaskinen blir ødelagt i dag 😊

50% av alle hunder er slemme statistisk sett 😊#

50% av alle hjemmelagde kort blir kastet hvert år 😊#

bare 50% av store industrier vil bevare naturområdet 😟

bare 50% av tallerkenene på kjøkkenet er rene i dag 😟

Biebestanden har bare økt 50% i år 😟

det er bare 50% sjanse for at de nye tiltakene hindrer (forhindre) forbedring av boforholdene 😊

det er bare 50% sjanse for at klatreren lykkes med toppturen 😕

50% av hengebroene i spillet brister ved kryssing 😊#

50% av tallerkenene på kjøkkenet er skitne i dag 😊#

bare 50% av søkerne er kvalifisert for jobben 😕

bare 50% av klærne var pene på moteshowet i går 😕

50% av søkerne er ukvalifisert for jobben 😊#

50% av alle kjøpte husplanter lever året etter 😕#

det er 50% sjanse for at vi taper i morra 😊#

det er 50% sjanse for at publikum applauderer etter forestillingen 😕#

bare 50% av kommentarer som omtalte politikere på nett var slemme i år 😊

Bilmekanikeren sa det bare er 50% sjanse for at bilen stopper igjen 😊

det er 50% sjanse for at toget er forsinket senere 😊#

bare 50% av alle ungdommer er i arbeid pr i dag 😕

50% av tiltakene vil føre til økt fravær i fremtiden 😊#

Appendix B: Sign Up information, Task Description and Consent form

Sign Up Information

Takk for at du har valgt å delta i undersøkelsen. Nedenfor vil du bli bedt om å fylle inn epostadressen din. Denne vil bli brukt til å dele lenken til undersøkelsen som du så kan ta når det passer best for deg. Undersøkelsen tar ca. 20-25 minutter. Epostadressen din vil bli slettet så fort vi begynner å behandle data.

Linken vil bli sent til deg fra følgende epostadresse:
Hannavb@stud.ntnu.no

I undersøkelsen vil du bli bedt om å vurdere ulike setninger som inneholder en emoji. Mer informasjon er tilgjengelig i selve undersøkelsen. Påmeldingen er ikke bindene.

Dersom du fullfører undersøkelsen og ønsker det, kan du bli med i trekningen av midtbykort (gavekort) som takk for deltakelsen.

Task Description

Tusen takk for at du har valgt å delta i denne undersøkelsen!

I det følgende vil du få se et utvalg setninger, en etter en, som alle inkluderer en emoji.

Setningene forestiller tekstmeldinger mellom bekjente, hvor du er mottaker. For noen av setningene vil det i forkant bli presentert en kontekst som meldingen inngår i, i en egen tekstboks. Alle setningene har et oppriktig meningsinnhold, de er ikke sarkastisk eller ironisk ment.

Med utgangspunkt i setningen, bruk skalaen til å indikere hvor akseptabel du synes emojien er på en skala fra 1 (helt uakseptabel) til 7 (helt akseptabel).

Hva betyr det at emojien er akseptabel?

Se for deg at du i virkeligheten mottok meldingen fra en venn. Dersom du intuitivt synes emojibruken i setningen er OK, er emojien mer akseptabel. Motsatt, dersom du synes emojien ikke passer, er den mer uakseptabel.

Undersøkelsen tar omtrent 20 minutter.

Undersøkelsen har ingen tidsbegrensning og svarene dine blir lagret slik at du kan fortsette der du slapp. Du kan når som helst avslutte undersøkelsen ved å lukke nettleservinduet.

English Task Description:

Thank you for participating in this survey!

In the following you will be presented with a selection of sentences, one by one, each including an emoji.

The sentences are meant to represent texts between acquaintances, of which you are the recipient. The content of the sentences is meant to be genuine, not sarcastic or ironic.

Based on the emoji, use the scale to indicate how acceptable you find the emoji from 1 (unacceptable) to 7 (acceptable)

What does it mean for the emoji to be acceptable?

Imagine that you received the message from a friend. If you intuitively think the emoji-use is OK, then the emoji is more acceptable. Opposite, if you think the emoji does not fit, it is unacceptable.

The survey takes approximately 20 minutes.]

Consent Form (Norwegian)

Vil du delta i forskningsprosjektet: ”Processing of emojis in context”?

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å undersøke hvordan emojier prosesseres i hjernen når vi leser. I dette skrivet få du informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formålet med prosjektet:

Prosjektet utgjør en mastergrad i engelsk språkvitenskap ved NTNU, institutt for språk og litteratur, og har som formål å bidra til forståelsen av hvordan emojier forstås og brukes sammen med tekst.

Hvis du velger å delta i undersøkelsen vil dette innebærer at du gjennomfører en såkalt "acceptability judgement"-test. Dette er en undersøkelse hvor du blir bedt om å vurdere hvor akseptable et utvalg setninger er på en gitt skala. Undersøkelsen gjennomføres elektronisk og alle setningene er på norsk.

Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke samtykket tilbake uten å oppgi noen grunn. Alle dine personopplysninger vil da bli slettet. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

Alle personopplysninger som samles inn, vil kun bli brukt til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket. Opplysningene behandles basert på ditt samtykke.

De eneste som vil ha tilgang til opplysningene du oppgir vil være de inngående i prosjektet, Hanna Bjertnes (student) og Giosuè Baggio (veileder).

Navnet og kontaktopplysningene dine vil bli erstattet med en kode lagret adskilt fra øvrige data og vil bli anonymisert fortløpende. Alt datamateriale lagres som sagt med begrenset tilgang.

Opplysningene anonymiseres når prosjektet avsluttes/oppgaven er godkjent, noe som etter planen er juni 2023. Etter prosjektslutt vil vi slette koblingsnøkkelen og personidentifiserbare opplysninger fjernes, omskrives eller grovkategoriseres.

Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke personopplysninger som er registrert om deg, og å få utlevert en kopi av opplysningene,
- å få rettet personopplysninger om deg,

- å få slettet personopplysninger om deg, og
- å sende klage til Datatilsynet om behandlingen av dine personopplysninger.

Appendix C: Emoji Familiarity Items

1. Hvor ofte sender du meldinger med emojier?
    a. Aldri-veldig sjeldent- sjeldent-av og til-ofte-veldig ofte

2. Hvor ofte mottar du meldinger med emojier?
    a. Aldri-veldig sjeldent- sjeldent-av og til-ofte-veldig ofte

3. Generelt, hvordan opplever du å sende og motta emojier?
    a. hovedsakelig negativt - noe negativt - både og - noe positivt - hovedsakelig positivt

4. Hvordan vil du vurdere din egen emojiforståelse?
    a. Veldig lav- noe lav - nøytral - noe høy - veldig høy

5. hvor ofte opplever du at du har misforstått en emoji du har mottatt
    a. Aldri-veldig sjeldent- sjeldent-av og til-ofte-veldig ofte

6. hvor ofte opplever du at en emoji du har sendt har blitt misforstått
    a. Aldri-veldig sjeldent- sjeldent-av og til-ofte-veldig ofte

(7: vedig ofte: hver dag) (2: veldig sjelden: mindre enn en gang i uka)

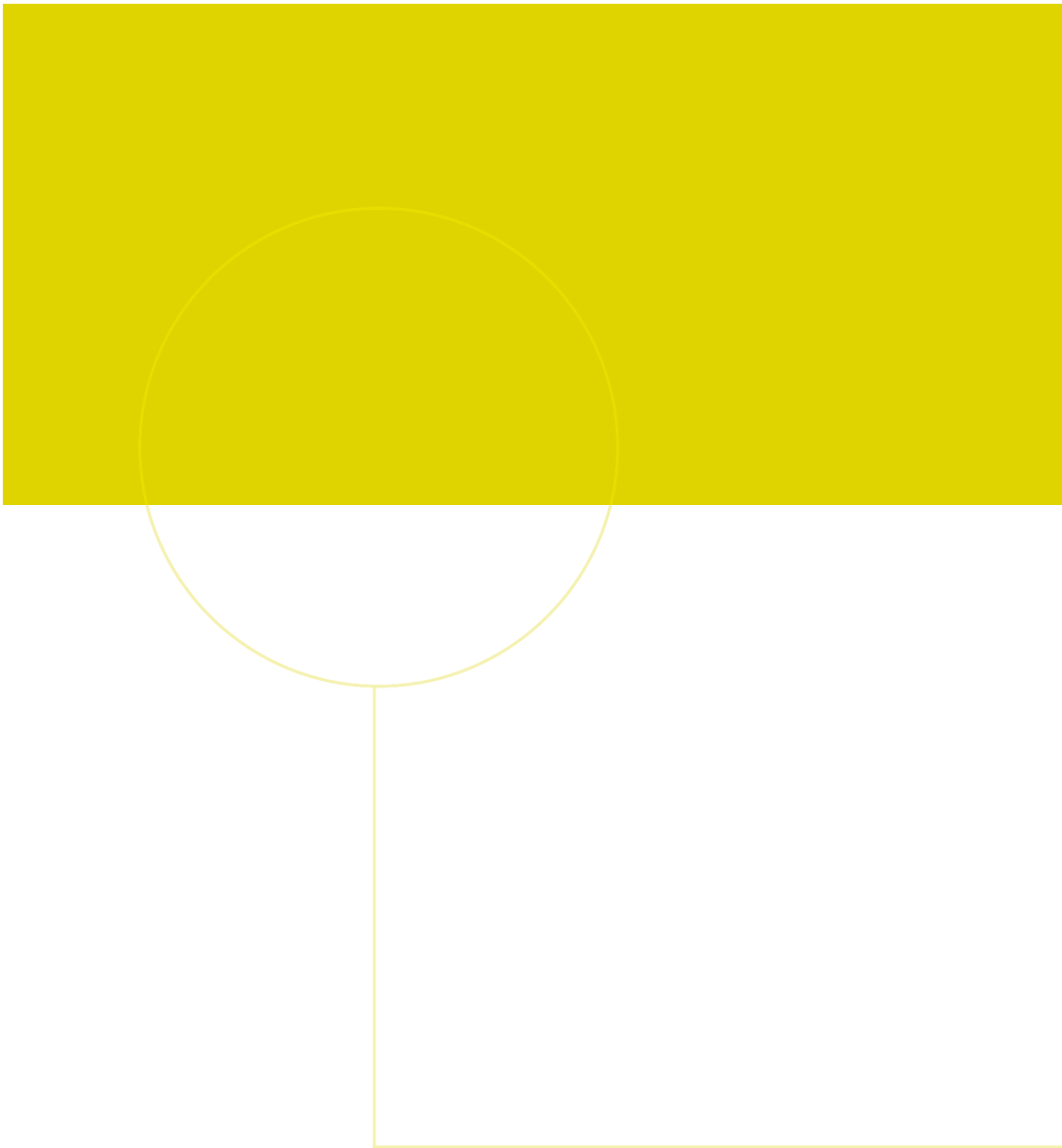
Relevansskriv (Lektor)

Etter at arbeidet med masteroppgaven nå er endt, er det særlig tre sider ved arbeidet og prosessen som skiller seg ut som kanskje spesielt relevant for mitt kommende virke som lektor. Disse sidene anser jeg som å gå utover de relevante erfaringene med å gjennomføre et større forskningsprosjekt som i helhet har satt meg bedre i stand til å utøve forskningsbasert praksis og gitt med nødvendige verktøy til å kontinuerlig utvikle denne praksisen.

Masteroppgaven utgjør for de fleste studenter, meg selv inkludert, det største selvstendige arbeidet i studieløpet. Selv om arbeidet med prosjektet i seg selv utvilsomt er krevende, kommer det en ekstra utfordring i det å måtte strukturere sin egen studiehverdag til en grad som opp til påbegynnelsen av masteroppgaven har vært ukjent når forelesninger og seminarers strukturerende tilstedeværelse i stor grad faller bort. Samtidig befinner lektorutdanningen i engelsk kanskje i særposisjon blant de humanistiske lektorløpene ved NTNU i den forstand at i begge semestrene dedikert til arbeid med masteroppgaven går det to emner parallelt med masteremnet. Selv om dette bidrar struktur til et ellers ustrukturert sisteår, medfølger det også en ytterlig belastning man til tider gjerne skulle vært for uten. Likevel, denne typen utfordring er ikke ukjent i lærerhverdagen, hvor man gjennomgående er forventet å veksle mellom selvstendighet og samarbeid, og å utvikle og tilegne seg kompetanse på mange områder parallelt. Selv om denne oppbygningen har bydd på utfordringer, og til tider har blitt opplevd som svært frustrerende er det min formening at det å måtte mestre balansegangen mellom emner og masterarbeid vil være en nyttig erfaring, om ikke en direkte forberedelse for virket som lektor.

Den andre siden ved masterarbeidet jeg ønsker å trekke frem som relevant for virket som lektor kommer av den særegne perioden arbeidet fant sted i. Selv om pandemien nå, formelt, virker å være på hell og mange har gått tilbake til en tilnærmet normal hverdag, ble arbeidet med denne oppgaven påbegynt da Trondheim og NTNU stengte ned i første omgang. Av denne grunn har mye av veiledningen og diskusjonene rundt prosjektets retning og teoretiske forankring med veileder og ekstern veileder foregått digitalt. Dette var selvfølgelig ikke den eneste utfordringen pandemien medførte med tanke på prosjektet, men jeg sitter igjen med et inntrykk av at disse erfaringene til sammen har bidratt til å gjøre meg løsningsorientert og tilpasningsdyktig i større grad en tidligere så vel som motstandsdyktig. Kvaliteter jeg uten tvil tror vil komme godt med videre.

Det siste punktet jeg ønsker å trekke frem omhandler de perspektivene man tar med seg ved å skrive i et nytt og fremvoksende felt. Temaet for masteroppgaven min, emojier, er noe ukonvensjonelt, og utgjør et relativt nytt interesseobjekt i akademia og da særlig i formell semantikk og språkprosessering. Den voksende interessen for fenomenet reflekterer forskningssamfunnets og teoriens stadige utvikling. Selv om dette gjelder for forskning for øvrig opplever jeg at denne holdningen har vært kanskje spesielt fremtredende i arbeidet med masteroppgaven og tematikken som inngår i den. Dette er også holdninger som etterstrebes i skolens og læreres virke. På denne måten tror jeg disse erfaringene vil bidra positivt til både min undervisningspraksis, holdning til endring, utvikling og ikke minst utprøving.



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