The effect of fear on language use

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Contents

Abstract

Objective: The present study examined how fear influences language use. Based on the feelings-as-information theory (Schwarz & Clore, 1983, 1988), we hypothesized that people experiencing a high-arousal negative affective state (specifically, fear) would use a more detail-oriented processing style than people experiencing a low-arousal positive affective state. We believed that this difference in processing style would lead to differences in language use. In accordance with two recent studies regarding affect and language use (Argaman, 2010; Beukeboom & Semin, 2006), we predicted that frightened people would use more pronouns, verbs, words related to affect, and words related to space, while non-frightened people would use more adjectives and nouns.

Methods: Sixty-nine participants either played the horror survival computer game *Slender: Prison* or the non-frightening adventure computer game *realMYST*. In both games, participants had to find a number of hidden objects and at the same time report where these hidden objects were. These reports were recorded under the pretence that a future participant would play the same computer game and would listen to the previous participant's report to find the hidden objects more easily. The mood manipulation was checked using questionnaires and cortisol measurements. We expected frightened participants to produce higher salivary cortisol concentrations during the experiment than non-frightened participants. Twenty-two participants were excluded because they did not get frightened while playing *Slender: Prison* or because they did get frightened while playing *realMYST*. Fourty-four participants' reports were transcribed and analysed using the Linguistic Inquiry and Word Count (LIWC) program (Pennebaker, Booth, & Francis, 2007).

Results: The analysis showed that frightened participants used significantly more pronouns, verbs, and words related to affect than non-frightened participants while reporting their gaming progress. No significant differences were found in the use of adjectives, nouns, and words related to space. Surprisingly, the frightened participants did not produce higher salivary cortisol concentrations during the experiment than the non-frightened participants.

Discussion: We conclude that fear causes at least three systematic differences in language use, namely the increased use of pronouns, verbs, and words related to affect. We argue that the frightened participants used more verbs than the non-frightened participants, because their negative affective state caused them to focus more on details. Consequently, they used more concrete predicates such as verbs (Beukeboom & Semin, 2006). Furthermore, we propose that the frightened participants used more pronouns and words related to affect than the non-frightened participants, because their feelings of fear caused them to be more self-focused, meaning that they paid more attention to their actions, thoughts, and feelings. The frightened participants probably were more self-focused because self-focus facilitates problem-solving, and fear is often triggered by problematic situations. An increased self-focus has been found to cause the increased use of (first person) pronouns and words related to affect before (Rude, Gortner, & Pennebaker, 2004). Future research should continue to examine how different affective states, and specifically, which features of affective states (such as valence, arousal, or self-focus), influence language use.

Keywords: affect; language use; feelings-as-information theory

Introduction

Everyday experiences suggest that how we feel influences what we say. For example, when we have a conservation with someone we dislike, we will ask that person few questions and discuss impersonal topics. However, when we have a conversation with a dear friend, we will ask him or her multiple questions and share our thoughts and feelings easily. In other words, our emotions and moods, both referred to as affect, impact our language use. Although there is a vast amount of research regarding how different affective states influence the paralinguistic features of our speech (for a review, see Scherer, 2003), only a small number of studies have examined how different affective states influence the content of our speech. For example, we know that frightened people talk at a higher pitch than non-frightened people (Scherer, 1986; Ververidis & Kotropoulos, 2006), but not if they also choose their words differently.

During the last decade, the research on affect and language use has frequently been related to a cognitive approach called the feelings-as-information theory (Schwarz & Clore, 1983, 1988; Schwarz, 1990). According to this theory, "people draw on their affective, cognitive, and bodily experiences as a source of information" (Schwarz & Clore, 2007, p. 386). The feelings-as-information theory argues that different feelings provide different types of information. For instance, fear provides information about the degree of perceived risk (Ortony, Clore, & Collins, 1988). Furthermore, the feelings-as-information theory claims that feelings influence people's information processing styles. For example, people in a positive mood process information more globally and heuristically, and have a broad range of attention, while people in a negative mood use a more detail-oriented, deliberate, and systematic processing style, and have a narrow focus of attention (Clark & Isen, 1982; Mackie & Worth, 1989; Schwarz, 1990). The feelings-as-information theory assumes that human cognition is tuned to meet the processing requirements posed by people's current situation, and that people's feelings alert what those situational requirements are (Schwarz, 2002). For example, a negative mood often signals a problematic situation, and thus causes people to adopt a detail-oriented processing style so that they focus on the specifics at hand. The process of cognitive tuning is important for achieving the best

possible outcome in any situation. For instance, when you suddenly see a poisonous snake in front of you, you will most likely remain unharmed if you focus on escaping the snake. However, if you also pay attention to the flowers around you and the clouds in the sky, you stand a bigger chance of getting bitten.

Most recent studies on affect and language use support the feelings-as-information theory. For example, when describing film scenes or autobiographical events, people in a positive mood use more abstract predicates, such as adjectives, while people in a negative mood use more concrete predicates, such as verbs (Beukeboom & Semin, 2006). In three of the four experiments conducted by Beukeboom and Semin, happy and sad film clips were used to induce the positive and negative moods, and in the fourth experiment participants were asked to remember a highly positive or negative life event. Beukeboom and Semin used the Linguistic Category Model (Semin & Fiedler, 1988) to assess the linguistic abstractness of the participants' language use. The Linguistic Category Model originally has been developed to classify language used in the interpersonal domain. Beukeboom and Semin considered adjectives to be more abstract than verbs, since adjectives "generalize across specific events and objects, and describe only the subject" (p. 555). For instance, the adjective "aggressive" in the sentence "John is aggressive" only provides a general description of John's behaviour, and summarizes several specific events without actually referring to those events. Beukeboom and Semin considered verbs to be more concrete than adjectives, because they provide more contextual detail. Since the Linguistic Category Model considers some verbs to be less concrete than others, Beukeboom and Semin divided the verbs into three categories. For instance, descriptive verbs such as "punch" in the sentence "John punches Tom" were considered to be the most concrete verbs, because they describe "a single, observable action and preserve perceptual features of the event" (p. 554), while state verbs such as "hates" in the sentence "John hates Tom" were considered to be the least concrete verbs, because they do not refer to a specific event. According to Beukeboom and Semin, the participants in a positive mood used more abstract predicates because their positive mood caused them to focus on the general features of the film scene or autobiographical event, while the participants in a negative mood used more concrete predicates because their negative mood

caused them to focus on the details.

Similarly, when people are asked to re-describe acts such as "I brush my teeth" and "I lock a door," people in a positive mood re-describe these acts more often in abstract and general *why* terms, while people in a negative mood more often use specific *how* terms (Beukeboom & Semin, 2005). Specifically, people in a positive mood often mention why the act is performed ("I lock the door **to prevent burglary**"), while people in a negative mood often mention how the act is performed ("I lock the door **by turning the key**"). Beukeboom and Semin considered *how* terms to be more detailed than *why* terms, because *how* terms often describe more specific acts than the main act (for example, "turning the key" is more concrete than "locking the door"), while *why* terms often describe more general acts than the main act (for example, "preventing burglary" is less concrete than "locking the door"). The positive and negative moods were induced using happy and sad films clips and the participants were asked to re-describe the acts in writing. Beukeboom and Semin conclude that a positive mood caused the participants to think of the acts they had to re-describe in a general way, while a negative mood caused the participants to think of the acts in a detail-oriented way.

Furthermore, people in a positive mood use more ambiguous speech when referring to objects than people in a neutral mood (Kempe, Rookes, & Swarbrigg, 2012). For instance, people in a positive mood use less modifying relative clauses when referring to one of two identical items within a game. Participants were asked to verbally provide instructions for prospective game testers, and the positive and negative moods were induced using happy and sad film clips. Kempe et al. suggest that because people in a positive mood use a less deliberate processing style, they are less likely to monitor how well their speech is aligned with the addressee's perspective. As a result, their language use is more ambiguous than the language use of people in a negative mood.

In sum, positive and negative moods trigger different processing styles, and these different processing styles cause differences in language use. Additionally, recent findings suggest that language use is not only influenced by the valence of the affective state (negative versus positive),

but also by the intensity or arousal level (low versus high). For example, when asked to write a personal report about a film clip, people in an intensely positive or negative mood use more intensifiers (never, very, really), first person singular pronouns, and repetitions than people in a less intensely positive or negative mood (Argaman, 2010). Also, people in an intensely positive mood use more words related to affect (such as anger, hate, happy) than people in a less intensely positive mood. These four different affective states were induced using film clips with varying degrees of happiness and sadness. Based on the results, Argaman concludes that different levels of arousal are associated with different kinds of language use. Unfortunately, Argaman does not explain why a higher level of arousal caused the increased use of intensifiers, first person singular pronouns, repetitions, and words related to affect. According to the feelings-as-information theory, arousal is a bodily experience and thus a type of information, meaning that it could influence people's information processing style, and subsequently, their language use. The informational value of arousal is that it signals importance and urgency (Clore & Schnall, 2005). Furthermore, arousal informs people what they should be paying attention to (Simon, 1967), and a high level of arousal is said to trigger a narrow focus of attention (Bacon, 1974; Easterbrook, 1959). Possibly, the high-arousal participants in Argaman's study used more intensifiers and words related to affect because their narrow focus of attention caused them to describe their feelings towards the film clips in a more detailed manner. We are not sure why the high-arousal participants also used more first person singular pronouns and repetitions. In the present study, we will test two of Argaman's findings in the hope of shedding light on this issue.

The present study will contribute to the research on affect and language use by examining how fear influences language use. To our knowledge, the relationship between fear and language use has not been examined before, even though fear is one of humans' fundamental emotions (Izard & Malatesta, 1987). We decided to compare the language use of frightened and non-frightened people, because the strong differences between these two affective states (high-arousal versus low-arousal, negative versus neutral-positive) suggest that frightened people would have a different information processing style than non-frightened people, and subsequently, a different

kind of language use. In order to discover the effects of fear on language use, we collected verbal reports of frightened and non-frightened participants, and compared these two groups on six linguistic categories. These reports were recorded while participants played a frightening (*Slender: Prison*) or non-frightening (*realMYST*) computer game. In both computer games, the participants had to collect a number of hidden objects, but in the game *Slender: Prison* there was also a monster present that would try to kill the participants. Participants were told that they had to report their gaming progress so that a future participant - who would play the same computer game - could find the hidden objects more easily. Participants were asked specifically to report where the hidden objects were, what they saw and where they went. In *Slender: Prison* these hidden objects were 8 pages, and in *realMYST* these hidden objects were 12 switches. We expected that playing *Slender: Prison* would trigger a negative high-arousal affective state (specifically, fear), while playing *realMYST* would trigger a positive low-arousal affective state.

Based on the feelings-as-information theory, we hypothesized that the participants playing *Slender: Prison* would have a more narrow focus of attention than the participants playing *realMYST*, since fear is a negative affective state. In accordance with the study by Beukeboom and Semin (2006), we predicted that the frightened participants would use more verbs, while the non-frightened participants would use more adjectives. In the study by Beukeboom and Semin, the verbs were divided in three categories based on their linguistic abstractness, but in this study we did not do so because of time constraints. Furthermore, we predicted that frightened participants would use more words related to space, while the non-frightened participants would use more nouns. Specifically, we expected frightened participants to focus more on the mains goals of the game (find the pages and avoid Slender), and thus to describe their route through the game (to the pages and away from Slender) more concretely. As a result, they would use more words related to space in their reports ("I go to the **left** and now I am **inside** a cell, no page here, so I exit through the **right** door"). On the other hand, we expected non-frightened participants to have a more broad focus of attention, and thus to pay more attention to the other objects within the game besides the switches. Consequently, they would use more nouns in their reports ("I see several **buildings** and a

tower with a **flag pole**"). Finally, in accordance with the study by Argaman (2010), we hypothesized that the frightened participants would use more words related to affect (such as afraid, love, and shit) and pronouns than the non-frightened participants, since fear is a high-arousal affective state.

Methods

Participants

Sixty-nine women were recruited via the Utrecht Institute of Linguistics participant database (M = 22.87 years, SD = 2.77 years, range = 11.33 years). A pilot study conducted beforehand showed that men got significantly less frightened while playing *Slender: Prison*, so they were not included in the actual study. All participants were monolingual, non-dyslexic Dutch native speakers. None of the participants had played *realMYST* or *Slender: Prison* before, and none of the participants played computer or video games more than two hours a month. Only women with little gaming experience were included to ensure that finding the hidden objects would not be too easy. Each session lasted around 35 minutes and participants received 5 euros for their participation. All participants knew in advance that they possibly had to play a frightening computer game. During the experiment, three participants were excluded due to technical problems. After the experiment, 21 participants were excluded from further analysis, because they did not get frightened while playing *Slender: Prison* or because they did get frightened while playing *realMYST*. One additional participant from the *realMYST* condition was excluded to make both groups equal in number, resulting in 2 groups of 22 participants each (*realMYST*: M = 23.04 years, SD = 2.16 years, range = 6.17 years, *Slender: Prison*: M = 22.96 years, SD = 3.23 years, range = 11.33 years).

Materials

Mood induction

Our goal was to induce two affective states among our two groups of participants: a negative high-arousal affective state (specifically, fear) and

a positive low-arousal affective state. A frightening and non-frightening computer game were used to induce these affective states for two reasons: they demand an active participation from the players, and they enable the examination of the direct interaction between affect and language use. In most studies regarding affect and language use (Argaman, 2010; Beukeboom & Semin, 2005, 2006; Kempe et al., 2012), participants are shown happy or sad film clips and given a language production task afterwards. In this study, the mood induction and the language production task took place at the same time.

The survival horror game *Slender: Prison* was used to frighten the participants. In this game, participants had to find eight pages in a dark and abandoned prison. While the participants searched for the pages, a monster called Slender would chase and try to kill them. Participants were told that if they died before finding all eight pages, they had to press Y to start over. Participants could not defend themselves in any way against Slender, so they were told to flee whenever they would see Slender or whenever the game would give them a sign that he was near (such as the flash of a static screen). An ominous thumping sound would start playing after collecting the first page, giving participants the idea that Slender was coming for them. Before playing the computer game, participants were given instructions about the game and their two tasks, namely finding the pages and reporting their gaming progress. We expected that these instructions would already frighten the participants, since they explained that the participants were about to play a horror survival game with a murderous monster.

The adventure game *realMYST* was used for the non-frightened group of participants. In this game, participants had to find 12 switches on a deserted and pleasant-looking island. In reality, there were only eight switches. Participants were led to believe that there were more switches so that they would continue searching and reporting their gaming progress if they found all eight switches before their playing time was over. The participants could explore several buildings, objects and tunnels on the island. The island also contained a few readable books and notes, but the participants were told that these were not relevant for finding the switches. We expected that playing *realMYST* would not frighten the participants,

because there were no threats within the game. Both *realMYST* and *Slender: Prison* had a first-person perspective and did not have any form of dialogue.

Mood manipulation check

The mood manipulation was checked using questionnaires and cortisol measurements. Participants had to fill out a questionnaire before and after playing the computer game. In the first section of the pre questionnaire, participants had to rate how they felt at the moment, and in the first section of the post questionnaire, participants had to rate how they had felt while playing *Slender: Prison* or *realMYST*. Both questionnaires included the same 15 affective states, such content, frustrated, and afraid. The participants could mark how much the mentioned affective state reflected their own affective state on a 5-point Likert scale ranging from "totally disagree" to "totally agree." We expected participants in the *Slender: Prison* condition to agree or totally agree with the item "I felt afraid while playing," and participants in the *realMYST* condition to disagree or totally disagree. The second section of the post questionnaire consisted of seven statements regarding the participants' report and the computer games, such as "I found the game easy" and "I found the game frightening." We expected participants in the *Slender: Prison* condition to agree or totally agree with the item "I found the game frightening," and participants in the *realMYST* condition to disagree or totally disagree.

Additionally, participants' salivary cortisol concentrations were measured twice. Cortisol is a hormone released by the hypothalamic-pituitary-adrenocortical (HPA) axis in response to stress. People produce more cortisol when they are anticipating or experiencing a distressful situation, for instance while they are being evaluated by others or when they have little control over a situation (Dickerson & Kemeny, 2004; Smyth, Ockenfels, Porter, Kirschbaum, Hellhammer, & Stone, 1998). Because fear is a particularly distressing emotion, we expected that participants playing *Slender: Prison* would produce more cortisol than participants playing *realMYST* during the experiment. Participants were asked to provide two saliva samples using Salivettes (Sarstedt, Nümbrecht, Germany); firstly, before the pre questionnaire, and secondly, after playing the computer

game. Participants were reminded by phone or text message to not eat, drink, smoke, or brush their teeth in the half hour prior to the experiment, because these activities could alter their salivary cortisol concentrations.

Confounding factors

Besides checking the mood manipulation with questionnaires and cortisol measurements, we wanted to take into account a possible confounding variable, namely the participants' different personalities. Research has shown that people's language use is strongly influenced by their personality traits (Hirsh & Peterson, 2009). For example, bloggers with an extravert personality have been found to use more words related to social processes (such as talk, meet, and friend) and words related to positive affect (such as fun, happy, and smile) than bloggers who did not have this kind of personality (Yarkoni, 2010). In this study, we decided to take into account how empathic the participants were, since we expected differences in empathy to lead to differences in language use. Specifically, we hypothesized that empathic participants' reports would be more detailed than less empathic participants' reports, because empathic participants would consider the perspective of their audience - a future participant playing the same computer game - more due to their empathic nature. We reasoned that empathic participants would try to provide a future participant with as much precise information as possible. We imagined that the effect of empathy on language use could be so strong that empathic participants playing *realMYST* would report their gaming progress in a more detailed manner than non-empathic participants playing *Slender: Prison*, even though their respectively positive and negative mood should have triggered a broad and narrow focus according to the feelings-as-information theory (Schwarz & Clore, 1983, 1988).

We included the Interpersonal Reactivity Index (IRI) (Davis, 1980, 1983) in the pre questionnaire to measure the participants' differences in empathy. The IRI was chosen because it measures four dimensions of empathy, namely perspective-taking, fantasy, empathic concern, and personal distress. Davis (1983) defines perspective-taking as the "tendency to spontaneously adopt the psychological point of view of others" (p. 113-114), fantasy as the "respondents' tendencies to transpose themselves imagina-

tively into the feelings and actions of fictitious characters in books, movies, and plays" (p. 114), empathic concern as the "'other-oriented' feelings of sympathy and concern for unfortunate others" (p. 114), and personal distress as the "'self-oriented' feelings of personal anxiety and unease in tense interpersonal settings" (p. 114). The items measuring these traits were 28 statements on a 5-point Likert scale ranging from "does not describe me well" to "describes me very well." Our plan was to correlate the participants' scores on these four dimensions with the differences found in their language use.

Procedure

Participants were seated in individual booths with a laptop, and were asked if they had eaten, drank, smoked, or brushed their teeth in the past half hour. If the participants had not, the experimenter explained to the participants how to use the Salivette. Participants were left on their own to collect the first saliva sample and to fill out the pre questionnaire. Afterwards, half of the participants received instructions corresponding to *realMYST*, and half of the participants received instructions corresponding to *Slender: Prison*. The instructions explained what kind of game the participants were about to play and the two assignments they had to fulfil. Specifically, they had to find a number of hidden objects (12 switches in *realMYST* or 8 pages in *Slender: Prison*) and at the same time describe where those hidden objects were by reporting what they saw and where they went. This report was recorded under the pretence that a future participant would play the same computer game and would listen to the participant's report to find the hidden objects more easily.

If the participants understood both assignments, the experimenter started the recording software (*Audacity* and *Fraps*) and the appropriate computer game. The experimenter explained the game controls to the participants and the participants were left to play on their own for minimally 10 minutes. While the participants played, their speech was recorded with a headset and the light in the booth was switched off. The light was switched off to enhance the feelings of fear of the participants playing *Slender: Prison*, though participants were told that the absence of light would improve the visibility of the computer screen. Once the partic-

ipants' time was up, the experimenter informed them that they could stop playing. Participants were asked to submit a saliva sample for the second time and to fill out the post questionnaire. Lastly, the participants signed a signature list and received their compensation. After the participants had left, the experimenter put the used Salivettes in a nearby freezer.

Transcription selections and analysis

The participants' reports were transcribed orthographically. Partial words ("There is a **pa-**, page."), filled pauses ("I see a, **uh**, a switch."), and interjections ("**Aaah**, the monster!") were not included in the transcriptions. Unintelligible words were replaced with the nonsense word xxx. From each transcription 500 words were selected for further analysis. We chose to analyse selections instead of the full reports because of two reasons. Firstly, we wanted each participant to be represented by the same amount of language output, and secondly, we did not have the time to check the transcriptions of all the full reports, especially since several reports were over 1800 words. The number of 500 words was chosen based on the word count of the shortest report (589 words). Each selection started after the participants had found the first hidden object, and ended maximally 10 minutes after the start of the participants' report. If participants found the first hidden object a few minutes before the 10 minutes mark and said less than 500 words in those minutes, then their selection was complemented with speech used directly before finding the first object. One participant in the *Slender: Prison* condition did not find any pages at all, and her selection was started at the beginning of her report.

Every transcription selection was as continuous as possible. However, if differences in language use were clearly caused by game-related differences, this speech was omitted from the selections, since we were only interested in fear-related differences in language use. Firstly, speech would be left out whenever Slender blocked the participants' way or was in the same room as the participant ("Shit, the monster! He is chasing me!"). Secondly, speech would be left out whenever Slender killed the participant and the participant saw the game over screen ("I just died. I am waiting for the game to start again."). Thirdly, speech would be omitted whenever participants would read a book, note, or page within the game out loud

("Someone has written 'No one survives' on this page."). Lastly, speech would be left out whenever participants used an object that was only present or usable in one of the computer games ("I am in a control room now, let's see what happens if I press these buttons."). Exceptions to this last rule were the opening of doors and the use of staircases and tunnels in *realMYST*, since these actions were necessary for participants to explore the island. Another exception was the use of a flashlight in *Slender: Prison*. By default, the main character in *Slender: Prison* had a flashlight in his hand and participants could switch this flashlight on and off. We preferred including the participants' language use while they used the flashlight, since their speech did not seem greatly influenced by it, and since the flashlight was a subtle fear-inducing element of the game (participants were led to believe that the flashlight would flicker if Slender was near).

The Dutch version of the Linguistic Inquiry and Word Count (LIWC) program (Pennebaker, Booth, & Francis, 2007) was used to analyse the 44 transcription selections of 500 words. The LIWC is a lexical frequency software that counts how often words from predefined categories are used in a text. From the Dutch version, three categories were selected, namely pronouns, words related to affect, and words related to space. Nineteen words were added to the categories pronouns and words related to space, because several basic words such as *we*, *left*, and *backwards* were missing from these predefined categories. Additionally, several pronouns were removed from the category pronouns so that it only consisted of first and second person pronouns. Third person pronouns such as *he* and *they* were excluded because there was no other character present in *realMYST* while there was one in *Slender: Prison*. Hence, including third person pronouns would have led to game-related differences in language use, since participants playing *realMYST* would have no reason to use these pronouns while participants playing *Slender: Prison* would.

In contrast to Argaman (2010), we decided to include second person pronouns in the category pronouns besides first person pronouns. In Argaman's study, participants were given a non-communicative assignment (they had to write a personal report about a film clip), and thus it was logical that they would mostly use first person pronouns ("**I** liked the movie, it made **me** feel happy"). In this study, the participants were given

a communicative assignment, and because of that we expected them to use both first and second person pronouns ("Okay, **you** don't have to check the library, **I** went in there and **I** did not see a switch"). Since the Dutch version of the LIWC did not have predefined categories for adjectives and nouns, the adjectives and nouns in the transcription selections were tagged manually and added as two new categories. Furthermore, the verbs within the LIWC dictionary did not match the verbs used in the transcription selections, so the verbs in the transcription selections were listed manually and added as a new category to the LIWC as well.

Results

Mood manipulation check

Firstly, we looked at the participants' responses to the fear-related items in the post questionnaire, namely "I felt afraid while playing" and "I found the game frightening." Surprisingly, *Slender: Prison* and *realMYST* had not always induced the predicted moods. For instance 18.2% of the *Slender: Prison* participants disagreed or totally disagreed with the item "I felt afraid while playing," and 15.2% of the *realMYST* participants agreed with the item "I found the game frightening." We decided to exclude the participants whose moods had not been manipulated as expected. Specifically, we only included participants from the *Slender: Prison* group that had agreed or totally agreed with the fear-related items, and only participants from the *realMYST* group that had disagreed or totally disagreed with these items. This selection left 22 participants from the *Slender: Prison* group and 23 participants from the *realMYST* group. One additional participant from the *realMYST* group was excluded to make both groups equal in number. This participant was chosen based on her poor intelligibility.

Because *realMYST* had not always induced the predicted mood, we decided to use the post questionnaires to check if the 22 participants from the *realMYST* group had experienced a positive mood while playing the game. After all, the goal of *realMYST* had been to trigger a positive low-arousal affective state. The participants' responses to the post questionnaire showed

that participants in the *realMYST* condition had felt significantly more content than participants in the *Slender: Prison* condition while playing the game ($U(42) = 71$, $Z = -4.18$, $p < .001$). Additionaly, participants in the *realMYST* condition had rated their computer game as being more fun than participants in the *Slender: Prison* condition ($U(42) = 89,5$, $Z = -3.68$, $p < .001$). However, the mean ranks for these items respectively were 30.27 and 29.43, meaning that on average participants playing *realMYST* had answered "neither agree nor disagree" to the statements "I felt content while playing" and "I found the game fun." So, the computer game *realMYST* seemingly triggered a neutral affective state instead of a positive one. For now, we will assume that the difference in valence between the frightened and non-frightened group was significant enough to trigger two different information processing styles, but in the discussion we will suggest what the consequences might be of this failed mood induction.

Secondly, we examined if participants playing *Slender: Prison* had produced more salivary cortisol during the experiment than participants playing *realMYST*. We expected that feelings of fear would lead to higher cortisol concentrations. Two paired samples *t*-tests were conducted to compare the pre and post cortisol measurements of the frightened and non-frightened participants. An alpha level of .05 was used. As shown in table 1, the cortisol levels of the *realMYST* group decreased significantly during the experiment, confirming that they had experienced a low-arousal affective state. Unlike what we had hypothesized, the cortisol levels of the *Slender: Prison* group did not increase significantly during the experiment. Surprisingly, there even was a near significant decrease in their salivary cortisol concentrations. These measurements imply that participants in the *Slender: Prison* condition did not feel frightened while playing the computer game. Since this claim is not supported by the participants' responses to the post questionnaire and the participants' behaviour during the experiment (for instance, a couple of participants screamed in fear while playing *Slender: Prison*, and several participants mentioned afterwards that they thought the game was frightening), we believe that there was a mismatch between the participants' affective states and salivary cortisol concentrations. In the discussion, we will suggest why this mismatch occurred.

Table 1: Results of the paired *t*-tests comparing the groups' pre and post salivary cortisol concentrations (nmol/L)

Group		Pre-measurement		Post-measurement				
	n	*M*	*SD*	*M*	*SD*	*t*	*df*	*p*
realMYST	22	11.80	6.60	10.20	4.42	2.83	21	**.010**
Slender: Prison	22	12.39	6.17	11.24	4.36	1.83	21	.082

Fear and language use

We conducted eight independent samples *t*-tests to compare the groups' use of the six linguistic categories. Table 2 shows the results of these tests and the corresponding descriptive statistics. The means and standard deviations are shown in percentages, 100% being equal to 500 words. So, for example, on average there occured 11.1 adjectives in the transcription selections of the participants playing *realMYST*, and 8 adjectives in the transcription selections of the participants playing *Slender: Prison*. An alpha level of .05 was used for all tests. Because this study has an exploratory nature, the alpha level was not adjusted to solve the problem of multiple comparisons. The *t*-tests show that the frightened participants used significantly more words related to affect, pronouns, and verbs than the non-frightened participants. No significant differences were found in the use of adjectives, nouns, and words related to space.

Table 2: Results of the independent *t*-tests comparing the groups' use of the six linguistic categories (percentages)

| Category | Group | | | | | | |
| | *realMYST* | | *Slender: Prison* | | | | |
	M	SD	M	SD	t	df	p
Adjectives	2.22	1.58	1.60	0.77	1.65	30.36	.109
Affect	0.65	0.45	1.41	1.15	-2.90	27.27	**.007**
Nouns	12.36	1.80	11.04	3.16	1.71	42	.095
Pronouns	10.35	2.10	11.65	1.56	-2.33	42	**.025**
Space	9.15	1.49	8.36	2.44	1.30	42	.202
Verbs	16.55	1.57	17.76	2.13	-2.14	42	**.038**

In the next three sections, excerpts from the participants' reports are shown to give an idea of what the language use of the frightened and non-frightened participants looked like. We only included excerpts that illustrated the use of words related to affect, pronouns, and verbs, since the frightening and non-frightening participants used these linguistic categories in a significantly different way. In the following examples, the first sentence shows an excerpt from a participant's report, and the second sentence shows a loose translation of this excerpt. The relevant words within the excerpts are shown in bold in both sentences.

Words related to affect

Participants playing *Slender: Prison* used significantly more words related to affect than participants playing *realMYST*. The transcription selections suggest that participants playing *Slender: Prison* mostly used words related to affect to describe their affective states and opinions, as shown in (1) and (2). On the other hand, participants playing *realMYST* mostly used words related to affect to describe objects and actions, as shown in (3) and (4).

(1) ***Slender: Prison:*** *God, ik ben **bang** dat ie komt. Ik steek over en ga daar de cel in. Maar daar is ook niks. Het is best **spannend**.*

Slender: Prison: 'God, I am so afraid that Slender will show up. I cross the hallway and go into the cell there. But there is nothing there. This game is quite **tense**.'

(2) **Slender: Prison:** *Dit is echt niet **leuk**. Kan ook zo weinig zien in deze gangetjes. Ik weet echt niet waar ik heen moet. Ben ik nou, waar ben ik eigenlijk net heen geweest? **Kut**.*

'This game is not **fun** at all. I can see so little in these hallways. I really don't know where I have to go. Where did I just come from? **Shit**.'

(3) **realMYST:** *Kan een beetje om de om het tandwiel heen lopen, maar der zit niks achter verder. Het is wel een **mooi** uitkijkpunt natuurlijk, maar ik zie niet meer schakelaars vanaf hier.*

'I can walk a little bit around the gear wheel, but there is nothing behind it. It's a **beautiful** viewpoint of course, but I don't see any more switches from here.'

(4) **realMYST:** *Daar kom ik eigenlijk maar **moeilijk** langs, dus ik ga, ik ga terug de trap af. Ik ga iets anders proberen.*

'I find it **difficult** to pass by here, so I go, I go back down the stairs. I am going to try something different.'

Pronouns

Participants playing *Slender: Prison* used significantly more pronouns than participants playing *realMYST*, as shown in (5) till (8). The transcription selections suggest that "I" was the most frequently used pronoun by both groups. We performed a Pearson correlation analysis to examine if the use of pronouns was positively correlated with the use of words related to affect, since people often refer to themselves while expressing their feelings, as shown in (1). We found that there was only a weak positive correlation between the two linguistic categories ($r(42) = .16$, $p = .30$), suggesting that an increased use of words related to affect did not automatically lead to an increased use of pronouns.

(5) **Slender: Prison:** *En nu loop **ik** verder. **Ik** zie een stalen deur maar die kan **ik** denk **ik** niet openmaken. **Ik** loop nu door. **Ik** ga deze cel in.*

'And now **I** continue walking. **I** see a steel door, but **I** don't think **I** can open it. **I** keep walking. **I** go into this cell.'

(6) **Slender: Prison:** *En nu ga **ik** rennen. En nu ga **ik** gewoon, **ik** ging naar links en naar links volgens **mij**, en **ik** ga dan aan het eind van de*

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*hal ga **ik** naar rechts.*

'And now **I** am going to run. And now **I** will just, **I** went left twice **I** think, and then **I** will go to the right at to the end of the hallway **I** will.'

(7)   ***realMYST:*** *Ook deze schakelaar staat aan. En dan ga **ik** weer naar binnen, ook daar weer is geen schakelaar. Dus tot nu toe is nog nergens binnen een schakelaar geweest.*

'This switch is on as well. And then **I** go inside again, there is no switch as well. So, none of the buildings contain switches so far.'

(8)   ***realMYST:*** *En dan kom **je** bij een grote tandwiel, daar staat nog een schakelaar. Dat zou de achtste alweer zijn. Even een rondje lopen over het platform.*

'And then **you** arrive at a big gear wheel, there is another switch there. That would be number eight already. Let's walk around the platform.'

Verbs

Participants playing *Slender: Prison* used significantly more verbs than participants playing *realMYST*. As expected, both groups of participants mostly used verbs to describe their movements and the presence or absence of objects within the game. However, as shown in (9) till (12), participants playing *realMYST* did so less frequently than participants playing *Slender: Prison*. We performed a Pearson correlation analysis and found that there was a moderate negative correlation between the use of verbs and nouns ($r(42)$ = -.58, $p < .001$), suggesting that a decreased use of verbs leads to an increased use of nouns. This finding is supported by the excerpts shown in (11) and (12).

(9)   ***Slender: Prison:*** *En, ik **ga** rechtdoor de cel tegenover me in. Nee, hier **is** weer niks, we **lopen** weer rechtdoor. En de eerste afslag **ga** ik naar, naar rechts. Even **kijken**, nou. Hier **is** ook weer niets, dus we **lopen** gewoon rechtdoor.*

'I **enter** the cell right in front of me. No, there **is** nothing here again, we **continue walking** straight ahead. At the next crossroads I **go** to, to the right. Well, let's **see**. There **is** nothing here as well, so we **continue walking** straight ahead.'

(10) **Slender: Prison:** *Ik **loop** maar even rechtdoor, ik **ga** nu de eerste links. Nou **ben** ik weer in een cel. Ik **ga** hier maar even uit. Ik **loop** nu weer in de grote hal.*

'I **walk** straight ahead for a little bit, I **take** the first left turn now. Now I **am** in a cell again. I **go** out of the cell. I **am walking** in the main hall again.'

(11) **realMYST:** *Bij de eerstvolgende kruising **zie** ik aan de rechterkant nog een hendel. Dan **loop** ik, naast de, naast die hendel **staat** een gebouwtje, heel donker.*

'At the right side of the next crossroads I **see** another switch. Then I **walk** to, next to the, next to that switch **is** a building, a very dark building.'

(12) **realMYST:** *En dan weer het paadje af, recht vooruit, dezelfde koers. Dan **komen** we bij het water. En dan **is** er, een eilandje met een schakelaar.*

'And then off the little path again, straight ahead, same direction. Then we **arrive** at the water. And here there **is** a little island with a switch.'

Confounding factors

Lastly, we checked if the participants' use of pronouns, verbs, and words related to affect was influenced by individual differences in empathy among the participants. The Interpersonal Reactivity Index (IRI) (Davis, 1980, 1983) was used to measure how empathic the participants were. We had predicted that empathic participants would take the perspective of their audience (a future participant) more, and thus would have a more detailed language use even if they were in a positive mood. The four subscales of empathy measured by the IRI were perspective taking, fantasy, empathic concern, and personal distress. A series of Pearson correlation analyses showed that there were only weak to moderate correlations between the four dimensions of empathy and the three linguistic categories, as can be seen in table 3. Correlation coefficients with a p lower than 0.05 are shown in bold.

Table 3: Correlations between the four IRI subscales and the three linguistic categories

	Perspective taking	Fantasy	Empathic concern	Personal distress
Affect	**-.34**	**.37**	.13	**.31**
Pronouns	.08	-.20	.10	-.11
Verbs	-.04	.07	.05	.10

The highest positive correlation was found between the subscale fantasy and the linguistic category words related to affect ($r(42)$ = .37, p = .014). Since the subscale fantasy measures "respondents' tendencies to transpose themselves imaginatively into the feelings and actions of fictitious characters in books, movies, and plays" (Davis, 1983, p. 114), we propose that participants who were more caught up by the computer games used more words related to affect because they were more emotionally affected by the games. Furthermore, a positive correlation was found between the subscale personal distress and the linguistic category words related to affect ($r(42)$ = .31, p = .043), meaning that the tendency of experiencing distress in stressful situation leads to an increased use of words related to affect as well. A negative correlation was found between the subscale perspective taking and the linguistic category words related to affect ($r(42)$ = -.34, p = .023). In other words, participants who tend to spontaneously adopt the psychological point of view of others used less words related to affect. Possibly, participants who scored high on perspective taking realized that their own affective opinions (for instance, "I don't like this game" or "I am so happy that I found a switch") were not useful for a future participant, and thus used less words related to affect.

All in all, the correlation coefficients shown in table 3 suggest that three dimensions of empathy (namely, fantasy, perspective-taking and personal distress) influenced the participants' use of words related to affect. However, we think that these correlations do not imply that the use of words related to affect was influenced by individual differences in empathy alone. No significant differences were found between the two groups' scores on the subscales fantasy ($t(42)$ = -.74, p = .46), perspective-taking ($t(42)$ = .89, p = .38), or personal distress ($t(42)$ = -.66, p = .52), meaning that the two groups of participants were not significantly different from each other regarding these three dimensions of empathy. So, despite the moderate

correlations present in this data, we think it is safe to claim that the groups' different use of words related to affect was caused by fear rather than individual differences in empathy.

Discussion

The results of this study show that participants playing the frightening computer game *Slender: Prison* used significantly more words related to affect, pronouns, and verbs than participants playing the non-frightening computer game *realMYST* while reporting their gaming progress. Both groups of participants used adjectives, nouns, and words related to space equally. In sum, these result suggest that fear causes at least three systematic differences in language use, namely the increased use of words related to affect, (first and second person) pronouns, and verbs.

How do these results relate to the findings of previous studies regarding affect and language use? Firstly, based on the feelings-as-information theory (Schwarz & Clore, 1983, 1988), we predicted that the frightened participants would use more words related to space, while the non-frightened participants would use more nouns. Specifically, we expected that frightened participants would describe their route through the game more concretely due to their narrow focus of attention, and that non-frightened participants would pay more attention to the other objects within the game than the switches due to their broad focus of attention. However, frightened participants and non-frightened participants did not use these linguistic categories differently. These results suggest that fear does not influence the use of nouns or words related to space.

Secondly, in accordance with the study by Beukeboom and Semin (2006), we predicted that the frightened participants would use more concrete predicates such as verbs, since they would experience a negative affective state. Additionally, we predicted that the non-frightened participants would use more abstract predicates such as adjectives, since they would experience a positive affective state. The results of this study are partly in accordance with the findings of Beukeboom and Semin. Specifically,

participants playing *realMYST* did not use significantly more adjectives, but participants playing *Slender: Prison* did use significantly more verbs. Possibly, the results by Beukeboom and Semin are not matched completely because the affective state of the participants playing *realMYST* was not positive enough; the participants' responses to the post questionnaire indicated that they experienced a neutral affective state instead of a positive one while playing *realMYST*. Another explanation is that the Linguistic Category Model (Semin & Fiedler, 1988) - the model that Beukeboom and Semin used for assessing the linguistic abstractness of their participants' language use - did not correctly assess the abstractness of our participants' language use in some cases. For example, according to the Linguistic Category Model adjectives are abstract predicates and indicate a broad focus of attention (Beukeboom & Semin, 2006), but in this study participants could have used adjectives to describe one particular object in a detailed manner, which would indicate a narrow focus of attention ("I found a **small**, **blue**, and **wooden** switch"). This mismatch probably occurred because the Linguist Category Model originally has been developed to classify language used in the interpersonal domain. The participants in this study were given a interpersonal language task, but the computer games, and especially *realMYST*, most likely were not interpersonal enough.

Lastly, in accordance with the study by Argaman (2010), we predicted that the frightened participants would use more pronouns and words related to affect than the non-frightened participants. Argaman found that people in an intensely positive or negative mood use more first person singular pronouns than people in a less intensely positive or negative mood, and that people in an intensely positive mood use more words related to affect than people in a less intensely positive mood. The results of this study replicate the findings of Argaman (2010); participants experiencing the high-arousal affective state (specifically, fear) also used more first and second person pronouns and words related to affect than participants experiencing the low-arousal affective state.

We can easily explain why the frightened participants in this study used more verbs than the non-frightened participants; their negative affective state triggered a narrow focus of attention, and this narrow focus caused them to use more concrete predicates such as verbs. However, it is difficult

to explain why the frightened participants used more pronouns and words related to affect than the non-frightened participants. As mentioned before, Argaman (2010) does not explain why a high level arousal caused the increased use of pronouns and words related to affect, and in a way, we are also unable this question. There is no obvious link between the effects of arousal on people's information processing style and these two linguistic categories. For example, we know that arousal signals importance and urgency (Clore & Schnall, 2005), and that it informs people what they should be paying attention to (Simon, 1967), but why these features would cause the increased use of pronouns and words related to affect is unclear. So, we propose that something else than the difference in arousal caused the increased use of pronouns and words related to affect in this study. In the next sections, we will discuss two alternative explanations.

A first explanation is that the frightened participants used more words related to affect because they regulated their emotions more than the non-frightened participants. Emotion regulation is the process of initiating, maintaining, or changing the occurrence, intensity, or duration of your affective state (Thompson, 1994). One known emotion regulation technique is affect labeling, also known as putting your feelings into words (Lieberman, Eisenberger, Crockett, Tom, Pfeifer, & Way, 2007). Examples of this emotion regulation technique are saying "This is **frightening**" or "I am **scared**" while you are frightened. Possibly, participants playing *Slender: Prison* used more words related to affect, because they used the technique affect labeling more often than participants playing *realMYST*. After all, participants playing *Slender: Prison* experienced an intense negative affective state that would be pleasant to down-regulate, while participants playing *realMYST* experienced a neutral affective state that did not require any emotion regulation. Unfortunately, this explanation does not account for the increased use of pronouns by the frightened participants. One could argue that participants who regulated their emotions more would use more pronouns as well ("**I** am scared"), but we already discovered that there only was a weak positive correlation between these two linguistic categories ($r(42) = .16$, $p = .30$).

A second explanation that accounts for both the increased use of pronouns and words related to affect is that the frightened participants were

more self-focused than the non-frightened participants. In the introduction of this paper, we talked about a broad and narrow focus of attention. According to the feelings-as-information theory, a broad focus of attention is triggered by positive affective states, and a narrow focus of attention is triggered by negative affective states. However, several negative affective states such as depression and anxiety are also known to trigger a different kind of focus, namely an increased self-focus (Wine, 1980). Self-focus is attention that people consciously direct towards themselves (Carver, 1979). In other words, self-focused people pay more attention to their own actions, thoughts, and feelings. A high level of self-focus can facilitate problem-solving and the pursuit of goals (Pyszczynski & Greenberg, 1987), but excessive self-focus is associated with several emotional disorders (Harvey, Watkins, Mansell, & Shafran, 2004).

The participants playing *Slender: Prison* probably were more self-focused than the participants playing *realMYST*, since they were faced with a more problematic situation. Specifically, they had to find eight hidden objects and at the same time avoid a murderous monster, while participants playing *realMYST* only had to find twelve hidden objects. As argued by the feelings-as-information theory (Schwarz & Clore, 1983, 1988), different affective states trigger different processing styles, because human cognition is tuned to meet the processing requirements posed by people's current situation, and because people's feelings alert what those situational requirements are (Schwarz, 2002). When people are frightened, their feelings of fear are often triggered by a negative and impactful situation. Fear most likely causes people to monitor their actions, thoughts, and feelings more consciously so that they can correct themselves quickly if they are not acting accordingly to the situation. An example of not acting accordingly to the situation in this study would be walking towards Slender instead of running away from him. We propose that an increased self-focus helps frightened people to achieve the best possible outcome in their fear-inducing situation. So, we think that fear causes people to become more narrow-focused ('There is a poisonous snake right in front of me!'), but also more self-focused ('I should not make any sudden movements and stop breathing so loudly').

Could the frightened participants' increased self-focus have caused their increased use of pronouns and words related to affect? As mentioned in the results, the frightened participants mostly used words related to affect to describe their affective state and opinions, and both groups of participants used the first person pronoun "I" the most frequently. Although models about self-focus do not specifically predict the increased use of these two linguistic categories, other studies concerning language use and negative affective states have found supportive results. For instance, depressed people use more first person pronouns and words related to negative affect in personal essays than non-depressed people (Rude, Gortner, & Pennebaker, 2004), and the poetry of suicidal poets contains more first personal pronouns than the poetry of non-suicidal poets, though no differences were found in the use of words related to affect (Stirman & Pennebaker, 2001). These results support our claim that the frightened participant in this study used more pronouns and words related to affect because they were more self-focused than the non-frightened participants.

However, we should not forget that Argaman (2010) also found this pattern of language use for a positive affective state. Specifically, Argaman found that people in an intensely positive or negative mood use more first person singular pronouns than people in a less intensely positive or negative mood, and that people in a intensely positive mood use more words related to affect than people in less intensely positive mood. According to our explanation, this would mean that the participants in the intensely positive or negative mood were more self-focused than the participants in the less intensely positive or negative mood. Perhaps intensely positive or negative moods cause people to be more self-focused because a high level of arousal indicates that there is something important to gain or to lose in their current situation, meaning that they should act accordingly to achieve the best possible outcome. This explanation would suggest that affective states with a low level of arousal, such as depression, trigger an increased self-focus for a different reason. In sum, we suggest that several affective states, that are different in valence and arousal, are associated with an increased self-focus and subsequently, cause the increased use of (first person) pronouns and words related to affect.

Our proposal in its current form is not that strong, partly because the present study has several limitations. The first and foremost limitation of this study is that two different computer games were used to induce the two affective states. We did so because we were unable to find a computer game that was both frightening and non-frightening. The differences between *realMYST* and *Slender: Prison*, such as the gaming environment (small island versus big prison) and the game's difficulty (easy versus difficult), possibly caused several game-related differences in language use. We tried to exclude these game-related differences in language use by omitting third person pronouns from the linguistic category pronouns beforehand (since there was no other character present in *realMYST* while there was one in *Slender: Prison*), and by excluding language use from the transcription selections that was clearly caused by differences between the games. Despite these measures, we cannot completely guarantee that the increased use of verbs, pronouns, and words related to affect has been caused by a difference in fear rather than differences between the two computer games.

Another limitation of this study is that our mood induction technique did not succeed according to our own standards. We predicted that the participants playing *Slender: Prison* would produce higher salivary cortisol concentrations during the experiment than the participants playing *realMYST*, since people produce more cortisol when experiencing a distressful situation (Dickerson & Kemeny, 2004; Smyth, Ockenfels, Porter, Kirschbaum, Hellhammer, & Stone, 1998). Surprisingly, the cortisol levels of the participants playing *Slender: Prison* did not increase significantly during the experiment, suggesting that the participants were not frightened by the computer game. On the other hand, the participants' responses to the post questionnaire and their reports suggest that they did feel frightened while playing *Slender: Prison*. Possibly, the mismatch between the participants' affective states and salivary cortisol concentrations occurred because the time between the pre and post measurement was too short. On average, there were nearly 25 minutes between the two measurements (M = 24.61, SD = 2.7). Salivary cortisol concentrations have been found to increase after 20 minutes of anticipating and experiencing a stressful event (Kirschbaum, Pirke, & Hellhammer, 1993). We expected that the participants would feel anxious or frightened while (i) reading the instructions,

(ii) learning the game controls, and (iii) playing the game. We expected the first two phases to induce fear, because the instructions explained the participants that they were about to play a horror survival game, and because the participants were already exposed to the game while they were explained the controls. Taken together, these three phases took up to 20 minutes. However, the participants possibly only felt frightened while playing the game. If this is true, the time between the two cortisol measurements would be too short after all. Another possibility is that the participants already felt anxious or frightened when they arrived at the experiment. Participants had to sign up for this study on a website that mentioned that participants possibly had to play a frightening computer game. The anticipation of possibly having to play a frightening computer game perhaps caused participants to already have high salivary cortisol concentrations at the start of the experiment.

We recommend future research to avoid these limitations, and to further examine if an increased self-focus causes the increased use of (first person) pronouns and words related to affect. Also, we recommend other researchers to consider using computer games to induce affective states. As discussed above, the computer games had their limitations, but they did make it possible to examine the direct interaction between fear and language use. Specifically, the participants in this study performed a language production task while they played a frightening or non-frightening computer game. In most other studies regarding affect and language use, moods are induced first (for example, by showing a happy or sad film clip) and language tasks are given afterwards (Argaman, 2010; Beukeboom & Semin, 2005, 2006; Kempe et al., 2012). As a result, the induced moods can wear off before the language production task is over, causing researchers to examine a different affective state than the one they expected. In the present study, the horror survival game *Slender: Prison* ensured that the participants were constantly frightened while they performed their language production task. Moreover, some participants even seemed to get more frightened as time passed by. For example, one participant told the experimenter that she got more frightened of Slender after he had killed her for the first time. Computer games could induce many affective states, because there is large variety of games with adjustable settings. For instance, many computer games allow you to choose the difficulty

of the game, making it easy to elicit affective states such as boredom (by changing the settings of a computer game to easy) and frustration (by changing the settings of the same computer game to impossible).

Furthermore, it would be interesting to examine the relationship between affect and language use in a social setting. Participants in most studies regarding affect and language use have to perform a language task while they are on their own (Argaman, 2010; Beukeboom & Semin, 2005, 2006; Kempe et al., 2012), while in our daily lives we mostly use language in the company of others. Language use could be examined in a social setting by asking participants to take part in a negotiation game. An actor would be hired for the role of the other negotiator, and the actor's goal would be to annoy, anger, or frustrate the participant by being rude and uncompromising. The language output of the participant during the negotiation game could be transcribed and analysed as in the current study. Additionally, future studies regarding affect and language use could consider taking into account the role of emotion regulation, for example by asking the participants if they consciously regulated their emotions during the task. For instance, it would be interesting to know what part of language use is influenced by fear and what part of language use is influenced by people's attempts to down-regulate this affective state.

In sum, the results of this study suggest that fear causes at least three systematic differences in language use. Specifically, frightened participants used more (first and second person) pronouns, verbs, and words related to affect than non-frightened participants while they were playing a computer game and reporting their gaming progress at the same time. Frightened participants' negative affective state caused them to have a narrow focus of attention and pay more attention to details, and thus use more concrete predicates such as verbs (Beukeboom & Semin, 2006; Schwarz & Clore, 1983, 1988). Possibly, frightened participants used more pronouns and words related to affect because they were more self-focused than non-frightened participants, meaning that they paid more attention to their actions, thoughts, and feelings. Frightened participants probably were more self-focused because fear is often triggered by problematic and challenging situations, and self-focus facilitates problem-solving. Because human cognition is tuned to meet the processing requirements posed by

people's current situation (Schwarz, 2002), it is only logical that fear would trigger an increased self-focus. By being self-focused, the frightened participants could correct themselves quickly if they were not acting accordingly to the situation (for example, by walking towards Slender instead of running away from him). The proposal that an increased self-focus leads to the increased use of (first person) pronouns and words related to affect is supported by two other studies regarding affect and language use (Rude, Gortner, & Pennebaker, 2004; Stirman & Pennebaker, 2001). Future research should continue to examine how different affective states, and specifically, which features of affective states (such as valence, arousal, or self-focus), influence language use. By studying the relationship between affect and language use, we can learn more about the dynamics between language, affect, and cognition.

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