Beyond negation and verum: Can contrast license NPIs?

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Abstract. We present the results of an acceptability judgment experiment, which indicate that contrastive environments contribute to the licensing of (some) NPIs in the absence of conventional negative licensors. We relate the findings to previous claims that verum focus licenses (some) NPIs, a phenomenon which we argue is actually a sub-type of licensing by contrast. We provide a rough sketch of how Sailer's (2022) theoretical account of licensing by "negative side message" could be extended to the facts we observe in the cases of NPIs in contrastive environments.

Keywords: NPIs, contrast, acceptability judgment, verum focus

1. Introduction: NPIs without overt licensors

Negative polarity items (NPIs) are expressions that typically appear in the scope of negative operators (e.g. *not, nobody, never* etc). The sentence in (1) illustrates this distribution: the NPI *give a damn* appears in the scope of the negation particle *n't*. In these standard cases, the negative operator licenses the NPI. Without the negative expression to license the NPI, the sentence is ungrammatical, see (2).[1]

(1) You don't **give a damn**.

(2) * You **give a damn**.

However, there are some specific sentence environments that allow the presence of seemingly unlicensed NPIs. One such environment concerns sentences with verum focus. Sedivy (1990) observed that certain NPIs can appear in sentences with verum focus and without any potential negative licensors. This pattern is illustrated in (3): B's utterance contains the focussed auxiliary *do*, which expresses verum focus, and the otherwise unlicensed NPI *give a damn*. The fact that B's utterance is grammatical indicates that NPIs may surface in sentences with verum focus. It may be said that in this case, verum focus licenses the NPI.[2]

(3) A: You don't **give a damn**. B: I DO **give a damn**. (Sedivy, 1990: 98)

Sedivy (1990) furthermore observed that the distribution of NPIs in sentences with verum focus is nuanced: not all NPIs are licit in such sentences. An example of an NPI that cannot be licensed by verum focus is *ever* in (4). Despite the focussed auxiliary *did* in B's utterance, *ever* is not licensed. From this pattern, Sedivy (1990) concludes that only a specific subset of NPIs may be licit in sentences with verum focus, i.e. minimizer NPIs like *give a damn*, which denote

[1] Throughout this paper we use the following typographic conventions: NPIs appear in bold print and negative licensors are underlined. Focussed constituents, which will become relevant shortly, appear in small caps.

[2] We use the expressions "verum licensing" or "licensing by verum focus" as theory-neutral descriptions of the fact that (some) NPIs appear to be licit in sentences with verum focus. At this point, we remain agnostic about any potential underlying licensing mechanisms. In Section 4, we discuss one such possible underlying licensing mechanism, i.e. Sailer's (2022) approach of "negative side messages".

small amounts or refer to the low end of a scale. Other, non-minimizer NPIs such as *ever* are not licit in such sentences.

(4) A: Bert never kissed Marilyn Monroe.
B: *Bert DID **ever** kiss Marilyn Monroe. (Sedivy, 1990: 98)

For German, which will be the focus of this paper, Sailer (2022) has recently made similar observations: (some) minimizer NPIs like *ein Haar krümmen* 'bend a hair' can appear in rejections with verum focus and without a negative licensor, see (5). Sailer (2022) further observes that, like in English, verum focus does not seem to license all NPIs in German: non-minimizer NPIs like *jemals* 'ever' are ungrammatical with verum focus (and no other licensor), see (6).

(5) A: Alex ist total lieb und kann niemandem **ein Haar krümmen**.
Alex is totally nice and can nobody a hair bend
"Alex is super-nice and can't do harm to anyone."
B: Aber er HAT jemandem **ein Haar gekrümmt**. [...]
but he has to.someone a hair bent
"But he DID harm someone." (Sailer, 2022: 737)

(6) A: Alex ist total nett und kann niemandem **jemals** weh tun.
Alex is totally nice and can nobody ever pain do
"Alex is super-nice and can't ever do harm to anyone."
B: *Aber er HAT **jemals** jemandem weh getan. [...]
but he has ever to.someone pain done
Intended: "But he DID harm someone." (Sailer, 2022: 737)

This paper aims to reevaluate the potential NPI-licensing power of verum focus. While we agree with Sailer's (2022) grammaticality judgments concerning his examples (5) and (6) above, we consider it a possibility that verum focus itself does not play the crucial role in licensing the NPI in (5). Instead, we hypothesize that in those cases, where the NPI is grammatical (i.e. 5 but not 6), licensing might proceed by means of a more general mechanism that operates on the notion of contrast. In (5), this hypothetical contrast-based mechanism could license the apparently unlicensed NPI since B's utterance stands in a relation of polarity contrast to A's utterance. If this hypothesis is on the right track, the fact that the auxiliary in B's utterance is marked for verum focus would merely be an exponent of polarity contrast and in itself not contribute to the licensing of the NPI.

The paper is structured as follows: in Section 2, we provide both introspective and corpus data on the behaviour of NPIs in contrastive environments. These data provide some evidence that at least some NPIs seem to be acceptable in contrastive environments without negative licensors, independently of verum focus. The discussion in Section 2 will also return to the sub-types of NPIs, and reveal a further potential confound for licensing by verum focus as put forward by Sedivy (1990) and Sailer (2022) relating to the larger discourse context. Based on the insights gained in Section 2, we formulate a number of empirical questions centering around the question of NPI licensing in absence of conventional negative licensors. We approach these questions by means of an acceptability rating experiment (Experiment 1, Section 3), which

illuminates the acceptability of NPIs in contrastive environments. To foreshadow the results, contrast goes some way to license at least some NPIs, but does not have quite the licensing power that conventional negative licensors have. Furthermore, there is no neat split between minimizer and non-minimizer NPIs in the acceptability patterns. In Section 4, we sketch an analysis based on our findings, outlining how Sailer's (2022) approach based on "negative side messages" in the utterance context might be extended from verum focus to contrast more broadly.

To examine the dependency between NPI licensing in Experiment 1 and "negative side messages", we conducted a second rating experiment (Experiment 2, Section 5). This experiment tested whether the preceding context in the materials of Experiment 1 triggered a "negative side message" that could enhance the acceptability of unlicensed NPIs. While the results suggest that the context overall likely carried such a message, the degree to which it was triggered did not correlate with the acceptability ratings, offering no clear support for the proposed analysis. Section 6 concludes.

2. The Role of Contrast in NPI Licensing

The reason for our hypothesis that not only verum focus but contrast in general provides the basis for NPI licensing stems from examples like (7). This example is similar to Sedivy's (1990) example in (3) above as B's utterance features the minimizer NPI *give a damn* in a sentence without a negative licensor. However, this sentence contains no verum focus but instead contrastive constituent focus on the subject *John*.

(7) A: You don't **give a damn**! B: No, but JOHN **gives a damn**.

Example (7) thus suggests that there are contrastive environments in which *give a damn* may appear without an additional negative licensor. This pattern of *give a damn* seems to be a novel observation and raises a number of empirical questions. First and foremost: is the behaviour of *give a damn* in (7) indicative of a more general pattern? In other words, can contrast itself be considered a licensor of NPIs?

Further, if we assume that contrast may indeed license at least some NPIs, the question as to its exact licensing potential arises. Is contrast on par with conventional negative licensors, or are there NPIs that are not licensed by contrast? Given our assumption that licensing by contrast encompasses licensing by verum focus as put forward by Sedivy (1990) and Sailer (2022), we expect the same asymmetry in licensing regarding minimizer vs. non-minimizer NPIs (see examples 3 to 6 in Section 1 above). However, we hypothesize that this division does not fully capture the licensing of contrast in general, or of verum focus in particular for that matter. For instance, in example (8), the NPI *sich beirren lassen* 'let oneself be swayed' appears to be grammatical under verum focus, even though it is a verbal NPI and not a minimizer.

(8) A: Sarah **lässt sich** nicht **beirren**.
Sarah lets REFL not sway
"Sarah cannot be swayed."

B: Doch, Sarah **LÄSST sich beirren**!
PART Sarah lets REFL sway
"Yes, Sarah CAN be swayed!"

Lastly, we see an additional confounding factor in the repeated use of the NPI in discourse. The dialogue examples presented thus far all followed the identical pattern: A's utterance introduces the NPI in question by means of conventional licensing by negation. B's utterance then re-mentions the NPI in the absence of a negative licensor. It is in these examples not inconceivable that the initial, conventionally licensed use of the NPI facilitates its repeated use, even when subsequent uses do not co-occur with conventional licensors. We call this (hypothetical) mechanism "anaphoric licensing". The schematic representations in (9) and (10) illustrate the differences between verum focus/contrast licensing and this hypothesized "anaphoric licensing". Notice that in (10), the verum focussed constituent is of no relevance to the licensing of the NPI within the same utterance.[3]

(9) Licensing by verum focus à la Sedivy (1990) and Sailer (2022)
A: You don't **give a damn**. B: I DO **give a damn**.
conventional licensing verum licensing

(10) Possible alternative licensing mechanism: "anaphoric licensing"
A: You don't **give a damn**. B: I DO **give a damn**.
conventional licensing "anaphoric" licensing

We shall add the empirical question of "anaphoric licensing" to the list of questions we aim to investigate in this paper. In sum, we are confronted with the three questions in (11).

(11) **Research questions** (RQs)
1. Can contrast license NPIs?
2. Does licensing by contrast affect different (types of) NPIs differently (e.g. minimizers vs. non-minimizers)?
3. Does "anaphoric licensing" play a role?

2.1. Preliminary corpus evidence

Turning back to German, we find some preliminary evidence concerning our research questions in Schaebbicke's (2024) corpus study on the distribution of NPIs. Schaebbicke (2024) lists cases where NPIs appear in contrastive contexts: for example, in (12) the NPI *sich deuteln lassen* 'to leave room for interpretation' appears in a non-negated clause which contrasts with the following negated clause. Importantly, the negation in the adjacent clause cannot take scope over the unlicensed NPI in the first clause. Instead, the contrast between the two clauses seems to give rise to the acceptability of the otherwise unlicensed NPI in the first clause.

(12) Am Mordparagraphen **lässt sich deuteln**, an der Strafprozessordnung nicht.
on.the murder.paragraph lets REFL interpret on the criminal.procedure.code not
"The murder paragraph leaves room for interpretation, the code of criminal conduct does not." (Die Zeit, 28/1977)[4]

[3] We chose to illustrate the two potential licensing mechanisms with Sedivy's (1990) English verum focus example (3) above. The point applies in an identical manner to Sailer's (2022) German example in (5) above, as well as to NPIs in sentences with constituent focus like (7) above.

[4] `https://www.zeit.de/1977/28/neun-schlaege-mit-dem-kuechenbeil/seite-6`

This corpus example thus provides evidence that, as per our Research Question 1 above, contrast may actually play a role in the licensing of NPIs. However, the example is not entirely clear when it comes to the exact source of the contrast. The sentence undoubtedly involves a contrastive relation between the PP-constituents *am Mordparagraphen* vs. *an der Stafprozessordnung*, but it also involves polarity contrast between the two clauses. It can thus not be ruled out that there is an intended reading with verum focus in the first clause (i.e. ... LÄSST *sich deuteln*), which in effect means that this example does not provide a clear basis for determining whether contrast in general or polarity contrast plus verum focus specifically is responsible for licensing the NPI.

Example (12) is especially relevant for our Research Questions 2 and 3: *sich deuteln lassen* is not a minimizer NPI, but a verbal NPI, suggesting that non-minimizer NPIs may be licensed by contrast (RQ2). This finding strengthens the introspective judgment we report above that some non-minimizers can be licensed by contrast. Further, the sentence (and larger discourse context) does not involve multiple mentions of the NPI, which rules out "anaphoric licensing" (RQ3).

Additionally, Schaebbicke (2024) identified cases of NPIs licensed by contrast in which the contrastive relation seems to be implicit. For example, in (13) the unlicensed (non-minimizer) NPI *wahrhaben wollen* 'to want to acknowledge' appears in the second clause without a conventional licensor. Schaebbicke (2024) classifies this example as contrastive, even though it does not explicitly feature contrasting constituents or a pair of clauses contrasting in polarity. Instead, as Schaebbicke (2024) argues, the unlicensed NPI contrasts with a negative implicature ("negative side message" in Sailer's, 2022 terms) arising in the utterance context, which in turn gives rise to the acceptability of the otherwise unlicensed NPI. The "negative side message" is given in (14). We return to "negative side messages" and their role for the licensing of NPIs in Section 4. Crucially, even though the clause hosting the NPI in (13) and the "negative side message" in (14) contrast in polarity, verum focus cannot be responsible for the licensing in this case because the required focus marking on the modal would result in a pragmatic anomaly (... #WOLLTE *er das endlich auch wahrhaben*).

(13) Georgiens Präsident ist vom Volk gestürzt worden.
Georgia-GEN president is by.the people brought.down AUX.PASSIVE

Nach einigem Zögern **wollte** er das endlich auch **wahrhaben**.
after some hesitation wanted he that finally also acknowledge

"The president of Georgia was brought down by the people. After some hesitation, he finally wanted to acknowledge it."(Berliner Zeitung, 24 November 2003)[5]

(14) Negative side message: The president did not want to acknowledge it for a long time.

In sum, Schaebbicke's (2024) corpus data – a selection of which has been presented here in (12) and (13) – suggests that NPIs in contrast may be a comparatively broad phenomenon, at least in German. In relation to the three RQs in (11) above, the examples suggest that 1) NPIs may surface in contrastive environments generally and are not restricted to verum focus, 2) the phenomenon extends beyond minimizer NPIs, and 3) NPIs in contrast are not

[5] https://www.berliner-zeitung.de/archiv/erinnerungen-an-den-herbst-89-li.877453

limited to the repeated use of the NPI and thus not dependent on "anaphoric licensing". The second corpus example (13) shows that even an indirect form of contrast, in which a contrastive relation is formed with implicit utterance content (i.e. "negative side messages"), may suffice to license NPIs. The corpus examples thus offer valuable insights into the potential scope of NPIs in contrastive environments. To deepen these insights and better isolate the factors influencing NPI licensing, we conducted an acceptability experiment. The next section presents this experiment, whose results largely align with Schaebbicke's (2024) corpus findings.

3. Experiment 1: Testing the Licensing Potential of Contrast

To investigate whether contrast contributes to the licensing of German NPIs (i.e. our Research Question 1, see the list in 11 above), we conducted an acceptability judgment experiment. The experiment had a 2×2 factorial design, with the two factors contrast (contrastive vs. no contrast) and licensing (conventional negative licensor present vs. absent). Example (15) illustrates the four resulting conditions with a sample item containing the NPI *sich beirren lassen* 'let oneself be swayed'. The experimental items consisted of two clauses, which in the contrastive conditions were connected with the adversative conjunction *aber* 'but' and furthermore contrasted in their lexical meaning (e.g. being insecure vs. not letting oneself be swayed in 15). In the non-contrastive conditions, the two clauses were joined with the expression *und auch* 'and also', and the lexical materials formed no contrast (e.g. being confident vs. letting oneself not be swayed in 15).[6]

(15) **Sample item in the four experimental conditions**

a. Condition 1: Contrastive + conventionally licensed

Sarah ist eigentlich eine sehr unsichere Frau,
Sarah is usually a very insecure woman

aber bei wichtigen finanziellen Entscheidungen **lässt** sie **sich** nicht **beirren**.
but with important financial decisions lets she herself not sway

"Usually, Sarah is a very insecure woman, but when it comes to important financial decisions, she cannot be swayed."

b. Condition 2: Non-contrastive + conventionally licensed

Sarah ist eigentlich eine sehr selbstbewusste Frau,
Sarah is usually a very confident woman

und auch bei wichtigen finanziellen Entscheidungen **lässt** sie **sich** nicht **beirren**.
and also with important financial decisions lets she REFL not sway
"Usually, Sarah is a very confident woman, and when it comes to important financial decisions, she cannot be swayed, either."

[6]The full materials, results and analyses to Experiments 1 and 2 are available on OSF: `osf.io/kvb8d`.

c. Condition 3: Contrastive + not conventionally licensed

Sarah ist eigentlich eine sehr selbstbewusste Frau,
Sarah is usually a very confident woman

aber bei wichtigen finanziellen Entscheidungen **lässt** sie **sich** **beirren**.
but with important financial decisions lets she herself sway

"Usually, Sarah is a very confident woman, but when it comes to important financial decisions, she can be swayed."

d. Condition 4: Non-contrastive + not conventionally licensed

Sarah ist eigentlich eine sehr unsichere Frau,
Sarah is usually a very insecure woman

und auch bei wichtigen finanziellen Entscheidungen **lässt** sie **sich** **beirren**.
and also with important financial decisions lets she herself sway

"Usually, Sarah is a very insecure woman, and when it comes to important financial decisions, she can be swayed, too."

The experimental materials included 16 German NPIs, see Table 1. We selected the NPIs from the *Collection of Distributionally Idiosyncratic Items* (CoDII) (Sailer and Trawiński, 2006b, a; Trawiński and Soehn, 2008; Trawiński et al., 2008).[7] To shed light on the question as to whether licensing by contrasts affects only a subset of NPIs (our RQ2), the list includes both minimizer and non-minimizer NPIs. The latter category is represented by the twelve verbal NPIs and the adverbial NPI *sonderlich* 'particularly'.[8] Notice that all NPIs except for *sonderlich* are idioms. Each NPI occurred in exactly one lexical environment (e.g. the NPI *sich beirren lassen* in the lexical environment in 15 above), for a total of 16 such lexical environments. In the four conditions, this made for 64 total test items.

To obtain a baseline for acceptability/naturalness, the experimental materials contained a set of 12 control items. Half of the controls were designed to be fully acceptable, and the other half were semantically anomalous and therefore unacceptable. Example (16) contains one of the unacceptable control items. The general pattern of the control items followed the design of the experimental items: they were biclausal structures, featuring clausal coordination with either a contrastive or non-contrastive relation between the clauses. In (16), the coordination is with non-contrastive *und auch* 'and also'. Further, the control items featured idiomatic expressions, like *hinterher hinken* 'to lag behind' in (16).

(16) **Sample of an unacceptable control item**

Klara ist beim jährlichen Wettschwimmen eigentlich immer die Schnellste, und auch dieses Jahr hinkt sie hinterher.
"Klara is usually the fastest in the annual swimming race, and this year, she's lagging behind, too."

[7]The full list of German NPIs in the CoDII corpus is available at `https://www.english-linguistics.de/codii/codiinpi/de/list-complete.xhtml` (last checked 31.01.25).

[8]Since our focus lay with the more general question RQ1, the selection of NPIs proceeded on criteria of item construction, rather than balancing the different subtypes. This procedure resulted in the numeric underrepresentation of minimizer NPIs in the sample.

Table 1: NPIs tested in the experiment.

#	NPI (Licensor)	English	NPI type
1	sich (nicht) lumpen lassen	(not) be a cheapskate	verbal
2	sich (nicht) reinreden lassen	(not) let oneself be talked into (sth.)	verbal
3	(nicht) zu übersehen sein	can(not) be overlooked	verbal
4	(nicht) zu bändigen sein	can(not) be tamed	verbal
5	sich (nicht) scheren um	(not) give a damn	verbal
6	(nicht) ausstehen können	can(not) stand	verbal
7	sich (nichts) befehlen lassen	(not) take any orders	verbal
8	(keinen) Abbruch tun	(not) put an end (to sth.)	verbal
9	sich (nicht) beirren lassen	let oneself (not) be swayed	verbal
10	(nicht) übers Herz bringen	(not) have the heart (to do sth.)	verbal
11	(nicht) an sich rütteln lassen	(not) be open to challenge	verbal
12	sich (nicht) deuteln lassen	leave (no) room for interpretation	verbal
13	(keinen) Finger rühren	(not) lift a finger	minimizer
14	(keinen) Mucks machen	make (no) sound	minimizer
15	(keinen) blassen Schimmer haben	(not) have the faintest idea	minimizer
16	(nicht) sonderlich	(not) particularly	adverb

The experimental items were distributed across four lists such that every list contained each item in one of the four conditions (= Latin square), with each list additionally containing the twelve control items. We used the website SoSciSurvey.de (Leiner, 2024) to host the questionnaire. The task for the participants consisted of judging the naturalness of each item with a slider on a continuous scale, which had the endpoints *total unnatürlich* 'totally unnatural' and *total natürlich* 'totally natural'. The output was coded as integers from 1 to 100.

50 participants recruited via Prolific.com completed the questionnaire. One participant who indicated that German was not their native language did not enter the analysis. For each of the remaining participants, we examined the ratings for the filler items to ensure that they had properly understood the task and provided plausible, differentiated judgments. This was achieved by applying a one-sided *t*-test to compare the ratings of acceptable and unacceptable control items. Nine participants for whom the test showed no statistically significant difference were excluded from the analysis.[9] Thus, the data of 40 German native speakers (30 female, 10 male, median age 33) entered the analysis.

3.1. Results

The results are given in Figure 1 and Table 2. As expected, the conventionally licensed conditions received high naturalness ratings, irrespective of whether they featured a contrastive relation between the conjuncts or not. However, a (descriptively speaking) small effect can be observed within the licensed conditions: items with contrast received overall higher ratings than items without contrast. This difference is not expected; the NPIs should be equally acceptable irrespective of whether they occur in a contrastive environment.

[9] A possible explanation for the relatively high rejection rate is that the control items (like the experimental items) contained idiomatic expressions. It is possible that the excluded participants were unfamiliar with many of these idiomatic expressions.

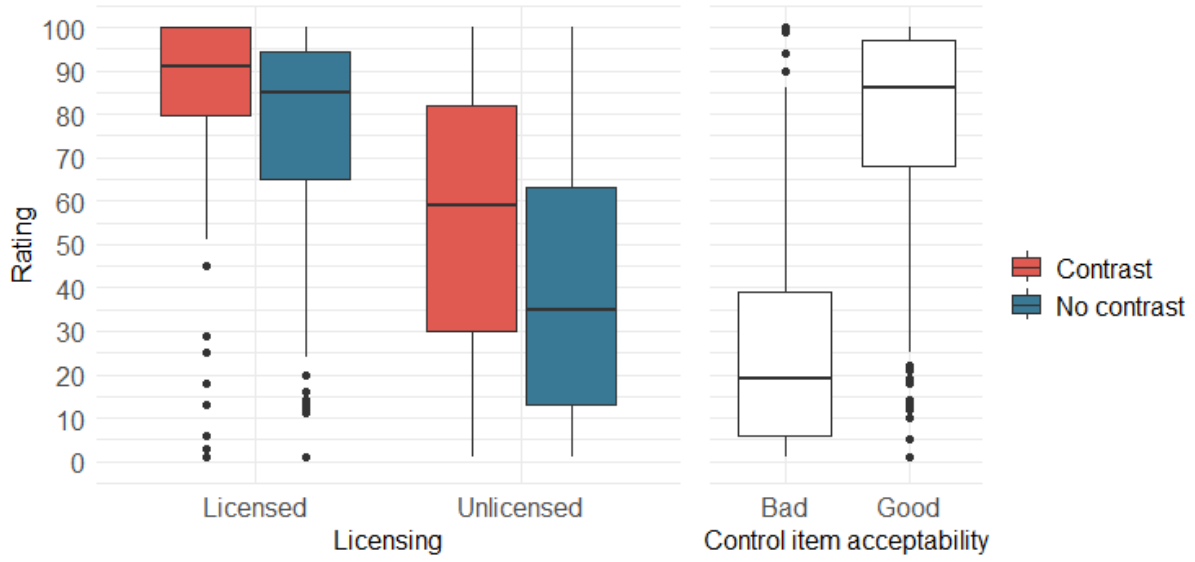

Figure 1: Results of Experiment 1 (the "licensed" conditions contained a conventional negative licensor; the "unlicensed" conditions contained no negative expression).

Table 2: Experiment 1: Mean ratings per experimental condition and controls (N = number of observations, SD = standard deviation, SE = standard error, CI = 95% confidence interval).

Conventional licensor	Contrast	N	Rating	SD	SE	CI
Present	Contrast	160	84.1	23.4	1.8	3.6
Present	No contrast	160	76.5	25.0	2.0	3.9
Absent	Contrast	160	55.3	30.6	2.4	4.8
Absent	No contrast	160	39.7	28.9	2.3	4.5
High acceptability controls		240	77.6	32.0	2.1	4.1
Low acceptability controls		240	26.8	33.6	2.2	4.3

The two conditions without a licensor show noticeably lower ratings, which is also as one would expect. Within these two conditions, there is a more pronounced difference between the contrastive and non-contrastive conditions: the contrastive items receive notably higher ratings on average than the non-contrastive items. Interestingly, however, the contrastive unlicensed items do not reach the same level as the acceptable conditions and controls, and the non-contrastive unlicensed items are not rated quite as low as the unacceptable controls.

We used R (R Core Team, 2024) and the lme4-package (Bates et al., 2015) to fit a linear mixed-effects model to the data. The model contained the two experimental factors licensing (licensed vs. unlicensed) and contrast (contrast vs. no contrast), as well as the interaction as fixed effects, and participants and items as random effects. Factors were sum-to-zero contrast coded to facilitate the interpretation of interaction effects. The model indicated a statistically significant effect of licensing ($b = 16.4$, $SE = 2.0$, $t = 8.2$, $p < 0.001$), as well as of contrast ($b = 5.8$, $SE = 1.3$, $t = 4.5$, $p < 0.001$). The interaction effect was also significant ($b = -2.0$, $SE = 0.8$, $t = -2.5$, $p = 0.01$). To resolve the interaction, we split the data into two subsets, containing the licensed data and the unlicensed data, respectively, and fitted a linear mixed effects model for each. In both subsets, the effect of contrast was statistically significant, but in

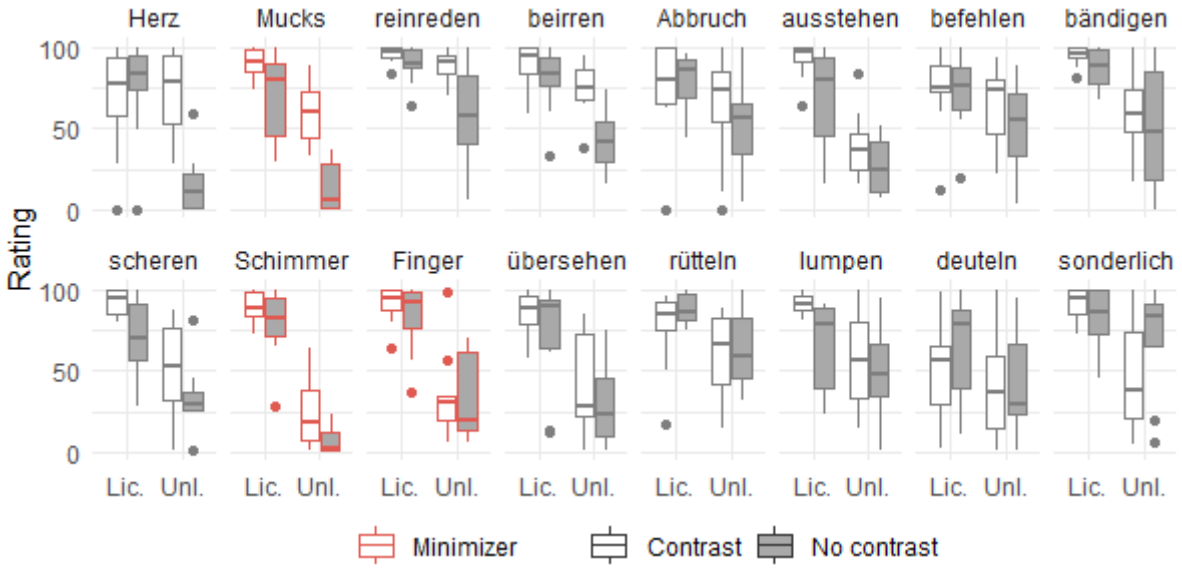

Figure 2: Results of Experiment 1: Individual NPIs per condition, ordered by size of the contrast effect within the unlicensed conditions. Minimizer NPIs are highlighted. (Lic. = licensed, i.e. with negative licensor, Unl. = unlicensed, i.e. without negative licensor.)

the unlicensed subset it was larger ($b = 7.8$, $SE = 2.2$, $t = 3.5$, $p < 0.01$) than in the licensed subset ($b = 3.8$, $SE = 1.4$, $t = 2.7$, $p = 0.02$).

Figure 2 shows the results for all 16 NPIs in the four conditions. A visual inspection of the figure suggests that the general effect that we observe in the data is not uniform across the NPIs. This is especially the case for the contrast effect within the unlicensed conditions: some NPIs exhibit a strong or notable effect of contrast (esp. those in the top row of Fig. 2), while others exhibit hardly any effect (esp. those in the bottom row of Fig. 2).[10] However, these differences seem to be gradual rather than categorical, i.e. there is no clearly identifiable set of NPIs that show an effect of similar size and no identifiable set of NPIs that clearly show no effect.

This pattern also holds within the set of minimizer NPIs in our data. One minimizer, *einen Mucks machen* 'make a sound', exhibits a comparatively strong contrast effect in the unlicensed conditions, while the other two, *einen blassen Schimmer haben* 'have the faintest idea' and *einen Finger rühren* 'lift a finger', show a much smaller, if any, effect. Within the minimizers, we do not find the same gradualness of the contrast effect that we find in the overall data, which likely is due to the low number of minimizers in the sample.

3.2. Discussion

In Section 2 we posed three empirical questions regarding the NPI-licensing potential of contrast. We have treated these questions as our research questions; they are repeated in (17).

[10]The NPI *sonderlich* 'particularly' shows a striking, unexpected pattern that is different from all other NPIs: it seems to be considerably more acceptable in non-contrastive environments when unlicensed than in contrastive environments. This unique pattern of *sonderlich* among our selection of NPIs is certainly in congruence with this word's lexical meaning; beyond this observation, no compelling explanation for the unexpected behavior of *sonderlich* suggests itself to us in any way.

(17) **Research questions** (RQs) (repeated from example 11 in Section 2 above)
1. Can contrast license NPIs?
2. Does licensing by contrast affect different (types of) NPIs differently (e.g. minimizers vs. non-minimizers)?
3. Does "anaphoric licensing" play a role?

Regarding RQ1, our experimental results showed a general positive effect of contrast, irrespective of the presence of a conventional negative licensor. This general contrast effect is not predicted; it possibly stems from the way the individual items were constructed. What is of more relevance for RQ1 is the experimental observation that the contrast effect was larger for those NPIs that were not independently licensed by a conventional negative licensor than for those that were independently licensed. The fact that the corresponding interaction effect was statistically significant suggests that the increase in acceptability of unlicensed NPIs in contrastive environments we observe in the data is indicative of a general pattern: contrast indeed contributes to the licensing of NPIs. However, since the acceptability of these sentences is not as high as for sentences with conventionally licensed NPIs (regardless of whether these sentences are contrastive or not) means that contrast does not have the same level of licensing power as negation.

Regarding RQ2, we observe gradual differences across NPIs. If otherwise unlicensed, the NPIs in the experiment show varying sizes of a licensing effect by contrast, where some seem outright licensed by contrast, others do not seem to be sensitive to contrast in this regard at all, and several in between these two extremes. While we thus may conclude that contrast functions as a licensor for some NPIs, we cannot capture this observation by claiming that NPIs neatly fall into two categories (e.g. contrast licensees vs. others). Interestingly, the distinction between minimizers vs. non-minimizers does not seem to affect the licensing power of contrast. Contrastive licensing seems to operate on a subset of NPIs that is not limited to minimizers, and conversely does not seem to include all minimizers.

Regarding RQ3, our experimental materials were designed so as to preclude the possibility of "anaphoric licensing": each test item featured the NPI it contained only once in its critical position in the second clause. This design choice ruled out any possible interference caused by preceding mentions of the NPI. We therefore may confidently conclude that our results are not affected by "anaphoric licensing". We return to a discussion of how the preceding context in the experimental materials may have influenced the acceptability of the NPI in other ways in Sections 4 and 5.

The key finding from Experiment 1 is thus that contrast appears to have a licensing effect on certain NPIs (RQ 1). We focus on this observation moving forward, as the patterns observed in the other two RQs are less informative. As mentioned already, the notion of "anaphoric licensing" (RQ3) appears to be resolved. Determining why only some NPIs are affected by contrast licensing (RQ2) remains challenging, as our data does not support a minimizer vs. non-minimizer distinction. In the acceptability data, we see no clear pattern that intuitively accounts for the behavior of individual NPIs. We revisit this issue in Experiment 2 (Section 5), where we test whether the pattern may be accounted for by "negative side messages" generated through implicature. In the next section, we explain what we mean by "negative side messages" by analyzing the general licensing power of contrast as observed in our experiment.

4. NPI-licensing through "negative side messages"

The starting-off point for our analysis is Sailer's (2022) treatment of his observation that verum focus licenses minimizer NPIs. He makes the following generalization: minimizer NPIs can occur in contrastive sentences with verum focus if there is a salient negative proposition available in the utterance content. In the case of B's utterance in Sedivy's (1990) example (18) (reproduced from ex. 3 above), Sailer (2022) argues, there is a "negative side message" that the speaker does not give a damn, see (19).

(18) A: You don't **give a damn**.
B: I DO **give a damn**. (Sedivy, 1990: 98)

(19) Negative side message: It is not true that I don't give a damn. (Sailer, 2022: 735)

Sailer (2022) proposes the formal representation in (20): in this model, an unlicensed minimizer NPI like *give a damn* can appear in a contrastive context with verum focus and without an overt licensor in the truth-conditional content *tc* iff there is a salient utterance in the use-conditional content *uc* that contains a proposition in which a negation scopes over the NPI, i.e. in which the NPI-proposition is denied. In other words, B's utterance in (18) can be made if there is a salient negative utterance available in the utterance context that denies that B gives a damn. This salient negative utterance, or "negative side message", in turn, sanctions the presence of the otherwise unlicensed NPI in B's contrastive utterance with verum. Sailer's (2022) account is one of pragmatic NPI licensing: in this account, minimizer NPIs can be pragmatically licensed by the use-conditional content of utterances.

(20) TRUE(**give-damn**(**speaker**)) $^{tc}|^{uc}\langle$**salient-utt**($\neg$ **give-damn**(**speaker**))$\rangle$ (Sailer, 2022: 746)[11]

We propose that Sailer's (2022) analysis of the licensing effect of verum focus on otherwise unlicensed minimizer NPIs can be extended to encompass our experimental observations on the licensing power of contrast. This means that those NPIs in our study that showed a positive contrast effect without a negative licensor may be similarly licensed by a "negative side message" arising in the utterance context. For example, consider the experimental item in (21), which contains the NPI *sich beirren lassen* 'let oneself be swayed'. This item was comfortably within the acceptable range in the results (see Figure 2 above). To make it easier for us to refer to the relevant parts of the example, we have split it into its constituent clauses (21a) and (21b).

(21) a. Sarah ist eigentlich eine sehr selbstbewusste Frau,
Sarah is usually a very confident woman

b. aber bei wichtigen finanziellen Entscheidungen **lässt** sie **sich** **beirren**.
but with important financial decisions lets she herself sway
"Usually, Sarah is a very confident woman, but when it comes to important financial decisions, she can be swayed."

[11] The TRUE()-operator represents the semantic contribution of verum. The exact workings of this operator are not relevant here, for details we refer the reader to Sailer (2022) and references therein.

Sailer's (2022) analysis can be applied to example (21) as follows: the clause in (21b) containing the NPI is acceptable because the context, specifically (21a), generates the salient proposition in (22) through (conversational) implicature. This proposition conveys the "negative side message" necessary for licensing the otherwise unlicensed NPI. A formal representation of the relevant truth and utterance conditions of (21b) is provided in (23). For the sake of simplicity, we abbreviate the truth-conditional content of (21b) as "swayable(Sarah)". See (24) for a schematic representation of the proposed licensing mechanism.

(22) Negative side message: Usually, Sarah cannot be swayed.

(23) **swayable(Sarah)** $^{tc}|^{uc}\langle$**salient-prop**($\neg$ **swayable(Sarah)**)$\rangle$

(24) $[\![$(21a)$]\!]$ = **confident(Sarah)** $\neg$ **swayable (Sarah)** $[\![$(21b)$]\!]$ = **swayable(Sarah)**

triggers implicature licenses use of

An important point of difference between Sailer's (2022) verum focus cases and our contrast cases pertains to the origin of the "negative side message". In Sailer's (2022) cases, this message represents an utterance condition triggered by a specific semantic component of the clause, i.e. verum focus. In many cases discussed by Sailer (2022), the "negative side message" is given in the preceding context in form of an explicit utterance by an interlocutor. In our cases, as we have argued, the "negative side message" is not tied to a specific structural or semantic component of the clause, but instead arises in a more indirect manner via conversational implicature. Explicit utterances and conversational implicatures are, of course two very different linguistic entities, which are unlikely to be located within the same semantic representation.

We acknowledge this conceptual problem, but do not attempt to resolve it here. Instead, we approach the negative implicature from an empirical angle. In the next section, we present the results of a rating experiment that approaches the question of whether the materials of Experiment 1 triggered a "negative side message" required for the licensing mechanism outlined in this section.

5. Experiment 2: Evaluating the role of "negative side messages"

Experiment 2 investigated whether the experimental materials of Experiment 1 systematically produced the "negative side messages" that our proposal is based on (see Section 4 above). To illustrate how such "negative side messages" may have arisen, consider the sentence in (25), which is reproduced from the sample item from Experiment 1 in (15) above. We hypothesize that part of the lexical content of the first clause (i.e. *Sarah ist selbstbewusst* 'Sarah is confident') triggers a conversational implicature involving the conventionally licensed NPI, i.e. *Sarah lässt sich nicht beirren* 'Sarah cannot be swayed'. We further hypothesize that this implicature in turn aids in the acceptability of the NPI without a licensor in the second conjunct, as outlined in Section 4 above.

(25) Sarah ist eigentlich eine sehr selbstbewusste Frau,
Sarah is usually a very confident woman

aber bei wichtigen finanziellen Entscheidungen **lässt** sie **sich** **beirren**.
but with important financial decisions lets she herself sway

"Usually, Sarah is a very confident woman, but when it comes to important financial decisions, she can be swayed."

To approach the question of whether the lexical content of the first clause influenced the acceptability of the otherwise unlicensed NPI in the second clause in this manner, we presented participants with a series of sentence pairs. The set of sentence pairs were modified from the materials of Experiment 1. The first sentence was the first clause of our experimental items in the crucial [contrastive + no conventional licensor] condition, like in (25) above. The second sentence contained the same subject and the NPI of that item with a conventional licensor. See (26) for a sample item with both sentences.

(26) **Sample item Experiment 2**

Sarah ist eine sehr selbstbewusste Frau. – Sarah **lässt sich** nicht **beirren**.
Sarah is a very confident woman Sarah lets herself not sway

We hypothesized that on an NPI-by-NPI basis, a higher degree of similarity between these sentence pairs may correlate with the acceptability of the NPI that we observe in the crucial condition in Experiment 1. We therefore asked participants to judge the sentence pairs regarding how similar they thought the sentence pairs were regarding their meaning. This procedure seems suitable to provide quantitative data on the semantic relation between the materials of Experiment 1 and the "negative side messages" in a general way. We, however, acknowledge that the procedure only provides an indirect approach to the question of whether the second sentence is specifically an implicature of the first.

The experimental set-up was equivalent to that of Experiment 1: participants indicated their response on a continuous scale with the endpoints labelled *total unähnlich* 'totally dissimilar' and *total ähnlich* 'totally similar' (output coding 1 to 100). Every participant judged every of the 16 sentence pairs designed from the experimental items of Experiment 1, as well as 12 control pairs.[12] Experiment 2 was presented as the second part of the same online questionnaire as Experiment 1. Thus, the data from the same 40 participants entered the analysis.

The mean similarity ratings for the individual NPIs are given in Figure 3. As can be seen, the similarity ratings are high across the board. The overall median rating across all NPIs was 91, with the sample item in (26) above receiving the lowest average similarity ratings (median 72.5). These high ratings indicate that the lexical contents of the first clause were highly similar in meaning to the NPIs with a conventional licensor, i.e. the "negative side message" our analysis relies on. We assume that this semantic similarity between the first clause and the "negative side message" may be interpreted to be indicative of the first clause triggering the implicature of the "negative side message". Under this assumption, all 16 of our items in Experiment 1 were such that they may have triggered the "negative side message" necessary to license the

[12]The control pairs tested whether participants understood the task and gave plausible similarity judgments. No participants gave judgments for the controls that raised any kind of concern in this regard.

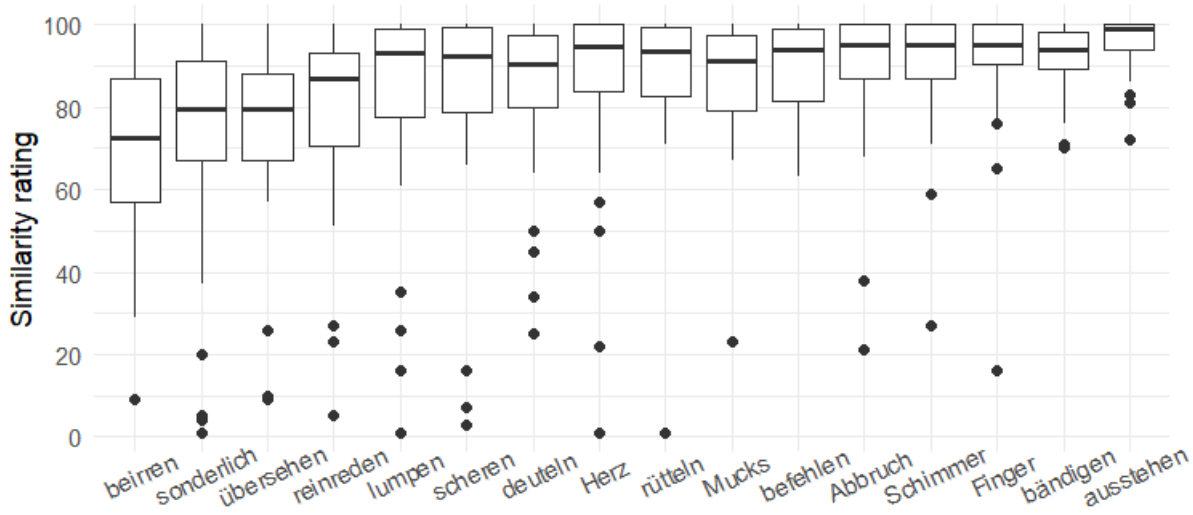

Figure 3: Results of Experiment 2: Similarity ratings by NPI, sorted by mean rating.

NPI they contained without further conventional licensors, with some minor variation between the items.

Recall, however, that the licensing effect of contrast in Experiment 1 was not consistent across NPIs. If the implicature of a "negative side message" were at play in the licensing of NPIs in contrast, we would expect a more uniform effect in Experiment 1, paralleling the largely uniformly high similarity ratings of Experiment 2. To investigate this impression of the data statistically, we tested whether the similarity ratings of Experiment 2 correlate with the acceptability ratings of the crucial [contrast + no licensor]-condition in Experiment 1. The correlation is displayed in Figure 4. In this figure, each of the 16 NPIs is represented with their mean acceptability under contrast and no licensor (Experiment 1, horizontal axis), and their mean similarity (Experiment 2, vertical axis). In line with our impression, these two values do not positively correlate; in fact, a linear model indicated fitted to the data indicated a negative correlation, which however was not statistically significant ($b = -0.7$, $SE = 0.5$, $t = -1.4$, $p = 0.19$, see also the regression line in Figure 4).

In sum, the results of Experiment 2 allow for a cautious interpretation that the lexical materials of Experiment 1 triggered "negative side messages", which may have contributed in the licensing of some of the NPIs. However, the results also show that the degree to which such a message was triggered was uniform across NPIs, which is different from the gradual effect across NPIs we observe in Experiment 1. Thus, while it may very well be the case that "negative side messages" generated as conversational implicatures aid in the licensing of some NPIs, it remains unclear why they fail to license other NPIs. As the results of Experiment 1 have shown, the distinction of minimizer vs. non-minimizer NPIs is unlikely to be a predictor for these patterns.

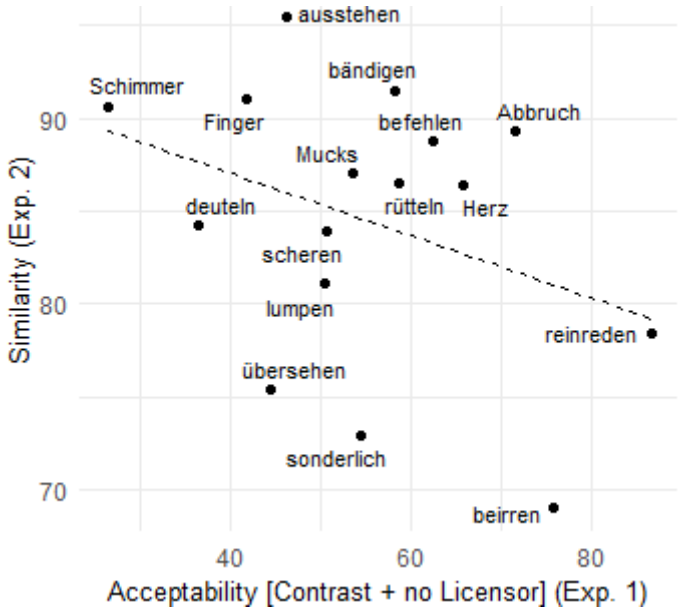

Figure 4: Mean similarity ratings and acceptability ratings for the 16 NPIs and linear regression line.

6. Conclusion

Previous findings by Sedivy (1990) and Sailer (2022) showed that in English and German, certain minimizer NPIs can appear in contrastive contexts with verum. The acceptability data of Experiment 1 not only supports, but also extends these findings. The results presented in this paper have shown that the phenomenon of NPIs in contrast is in fact broader than previously assumed: we have shown that firstly NPIs in contrast are not restricted to verum focus, secondly that NPIs in contrast are not limited to minimizer NPIs, and thirdly that there is a general effect of contrast on the acceptability of NPIs: an otherwise unlicensed NPI can become acceptable in an utterance if it contrasts with another, negated proposition that arises from the utterance context. Our data points towards a pragmatic licensing mechanism in the sense of Sailer (2022) that can operate on a subset of NPIs: in contrastive contexts, negative implicatures may arise from the utterance content, which in turn can aid the acceptability of the unlicensed NPI. Experiment 2 attempted to pin down the exact licensing contribution of these negative implicatures, but did not provide conclusive evidence. Future research will thus be required to determine which (types of) NPIs this proposed mechanism can operate on.

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