

Factivity in German Exclamatives¹

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Abstract. This paper explores the information structural status of exclamative utterances. Specifically, it addresses the issue of whether the propositional content of exclamatives is factive or not. I argue that standard factivity tests are not able to provide an answer to this question because either they are unreliable or they cannot be applied to exclamatives. I propose a new test that involves VERUM focus: exclamatives show the same kind of VERUM focus distribution as factive complements. Furthermore, focus on the illocution of exclamatives does not emphasize the truth of the proposition, contrary to illocution focus in assertions.

Keywords: exclamatives, German, factivity, presupposition, VERUM focus

1. Introduction

Exclamatives come in a great variety of syntactic forms. In this paper I focus on *wh*-exclamatives, polar exclamatives and German *that*-exclamatives.

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|---|--|
| (1) Wie groß Paul ist!
how tall Paul is
'How tall Paul is!' <i>wh-exclamative</i> | (2) Mann, ist Syntax einfach!
boy is syntax easy
'Boy, is syntax easy!' <i>polar exclamative</i> |
| (3) Dass die immer Turnschuhe anzieht!
that she always sneakers wears
'That she always wears sneakers!' <i>that-exclamative</i> | |

All types of exclamatives share the illocutionary function exclamation. Exclamations are utterances that express an emotional attitude, e.g. surprise, shock or amazement at a certain state of affairs, thus they belong to the speech act *expressive*. The emotional attitude is often directed at the high degree to which something holds. With (1) for example the speaker expresses his surprise towards the fact that Paul is extremely tall and not only tall to a standard degree.

English *wh*-exclamatives are always SVO, i.e. they do not show subject-auxiliary inversion, whereas German *wh*-exclamatives can come with or without subject-auxiliary inversion.

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| (4) What shoes she wears! | (6) *What shoes wears she! |
| (5) Was für Schuhe die getragen hat!
what for shoes she wears
'What shoes she wore!' | (7) Was für Schuhe hat die getragen!
what for shoes wears she
'What shoes she wore!' |

The main pitch accent typically falls either on the d-pronoun², which frequently occurs in exclamatives, or on the finite verb. Two puzzles arise with respect to sentence stress and verb position in German exclamatives³: (i) in V-final exclamatives main pitch accent is only accepted on the lexical verbs but not on the auxiliaries, see (8) vs. (9), and (ii) in V2-exclamatives main pitch accent is accepted on lexical verbs as well as auxiliaries, see (10) vs. (11).⁴ I claim that the unusual sentence stress distribution is due to the factivity of exclamatives.

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| (8) Wen die alles KENNT!
who she all knows
'How many people she knows!' | (10) Wen KENNT die alles!
who knows she all
'How many people she knows!' |
| (9) *Wen die alles getroffen HAT!
who she all met has
'How many people she met!' | (11) Wen HAT die alles getroffen!
who has she all met
'How many people she met!' |

The propositional content of exclamatives is often claimed to be known by the speaker and the hearer. This property is also known as *factivity*. While some theories take factivity to be an essential property of exclamatives (Grimshaw 1979, Portner and Zanuttini 2003, Roguska 2008, Abels 2010), others assume factivity either only for a certain type of exclamatives (D'Avis 2013) or for a certain part⁵ of exclamatives (Delsing 2010). Some theories even doubt the factivity status altogether (Rett 2011). In the following, I will show that most of the standard factivity tests either do not yield consistent results or are unapplicable to begin with. I will then argue that the two puzzles presented above provide new evidence for the factivity of exclamatives.

²In addition to personal pronouns, German also has d(emonstrative)-pronouns. D-pronouns are different from personal pronouns in that they cannot be coreferent with a *discourse topic*, i.e. they can only be resolved to antecedents which are given but not maximally salient (see Bosch and Umbach 2008, Hinterwimmer 2014).

³The stress pattern is consistent across different types of exclamatives. I will demonstrate the pattern on *wh*-exclamatives since it is the only exclamative type that can be V2 as well as V-final, and thus is suitable to provide the most minimal pairs.

⁴The main pitch accent distribution of auxiliaries patterns with the main pitch accent distribution of copular verbs.

⁵In this case the high degree that exclamatives often express is not assumed to be part of the fact:

- (i) How unbelievably tall he is! FACT: He is tall.

2. Standard Factivity Tests

Standard factivity tests focus on the distinction between *asserted* propositions and *presupposed* propositions. With an assertion the speaker proposes to add a proposition to the common ground. In contrast, a presupposition is already part of the common ground when uttered. Tests that distinguish between assertions and presuppositions are *subsequent discourse moves*, *holes*, and *filters*. If exclamation marks are factive, i.e. not assertive, then the next question that has to be answered is whether factivity is derived via a presupposition or via a conventional implicature. Since both types of inferences are very similar in their behaviour, some frameworks have subsumed the former under the latter (Karttunen and Peters 1979, Gazdar 1979, Chierchia and McConnell-Ginet 1990, Simons et al. 2010), and thus consider presuppositions as special cases of conventional implicatures, i.e. the ones that make propositions true. Accounts that argue for a difference between conventional implicatures and presuppositions (Stalnaker 1974, Karttunen 1974, Heim 1990, Potts 2005, Horn 2007) propose that difference to be anchored, again, in their relation to the common ground: conventional implicatures are added to the common ground as secondary assertions when uttered whereas presuppositions are already entailed by the common ground when uttered. Two tests can be used to figure out whether the hypothesized factivity of exclamation marks is derived via conventional implicature or via a presupposition: *plugs* and *backgrounding*. For reasons of space, I will focus on *subsequent discourse moves* and *backgrounding*.⁶

2.1. Subsequent Discourse Moves

Previous research has examined subsequent (Rett 2011, Chernilovskaya et al. 2012, D’Avis 2013) as well as preceding (Castroviejo Miró 2008) discourse moves. If exclamation marks are not factive, we would expect them to behave like assertions in discourse, i.e. the addressees should be able to question, confirm, or deny them. The dialogue in (12) provides an example for questioning while (13) additionally shows confirmation and denial.

(12) A: How many people took part in the rally!
B: Well, most of the people were just bystanders. (Chernilovskaya et al. 2012: 115)

(13) A: Hat der aber ein tolles Auto!
has he aber a great car
'Boy, does he have a great car!'

⁶Abels (2010) shows that the projection behavior of exclamation marks with respect to filters and holes provides convincing evidence for a factivity presupposition. However, Abels has to rely on the premise that the factivity presupposition that comes with embedded exclamation marks is the same as the one that comes with matrix exclamation marks. He has to assume that exclamation marks can be embedded – an idea that is highly problematic especially with respect to the embedding behaviour of English *wh*-exclamation marks (see Rett 2011).

B: Findest du? / Finde ich nicht. / Finde ich auch. / Ja, das stimmt.
think you / think I not / think I too / yes that is true
'You think? / I don't think so. / I think so, too. / Yeah, that's right.' (D'Avis 2013: 194)

These tests are unreliable, however, because there are other examples that seem to show that exclamatives cannot be questioned, confirmed, or denied by the addressee, see (14) for denial and (15) for confirmation and questioning as well as denial. Hence, subsequent discourse moves do not provide a consistent test for factivity.⁷

(14) A: (My,) What delicious desserts John bakes!
B: ?? No (he doesn't), these are store-bought. John's actually a terrible cook.
(Rett 2011: 414)

(15) A: Dass die den geheiratet hat!
that she him married has
'That she has married him!'
B: #Findest du? / #Das finde ich auch.
think you / that think I too
'You think? / I don't think so.'
(D'Avis 2013: 195)

Furthermore, these tests are highly problematic if one takes into consideration that presuppositions can be *accommodated* (Karttunen 1974). The discourse moves following an exclamative are appropriate reactions in case the propositional content is asserted as well as in case it is accommodated as a presupposition. Either the speaker asserts the propositional content and, therefore, expects the hearer to update the CG accordingly, or he presupposes it and, therefore, relies on the hearer's willingness to accommodate the presupposition into the CG. Subsequent discourse moves do not tell us whether the speaker chose the first or the second option. Similar presupposition tests such as the *Wait a minute* test (von Fintel 2004) are notoriously unreliable (Potts 2012).

2.2. Backgrounding

A possible way to distinguish conventional implicatures and presuppositions is by taking backgrounding into account. While all types of presuppositions can contain information that has been previously uttered, at least one type of conventional implicatures, i.e. *supplements*, has to contain information that is entirely new. They then quietly impose this new information on the common ground. The parenthetical *a cancer survivor* in (16-a) triggers the conventional implicature *Lance*

⁷The differences between (12)-(13) and (14)-(15) require more attention. Due to space, however, this paper will not focus on this matter.

Armstrong is a cancer survivor while the factive verb *know* in (16-b) triggers the presupposition *Lance Armstrong is a cancer survivor*, only the latter is appropriate since the information is already part of the common ground.

- (16) Lance Armstrong survived cancer.
a. #When reporters interview Lance, a cancer survivor, he often talks about the disease.
b. And most riders know that Lance Armstrong is a cancer survivor. (Potts 2005: 34)

Importantly, exclamatives pattern with presuppositions, see (17). The exclamative expresses information that was already introduced in the preceding clause.

- (17) I didn't expect us to have such a nice day at the park.
What fun we had!

This intuition is shared cross-linguistically, see (18) for German and (19) for French. Both exclamatives, *Oh my god, was I happy!* as well as *How beautiful she is!* can contain information that is already part of the background.

- (18) Dann habe ich mich furchtbar über den Lottogewinn gefreut. Mein Gott, habe ich
then have I myself extremely about the lottery.win be.happy my god have I
mich gefreut! Ich hab mich vielleicht gefreut!
myself be.happy I have myself vielleicht be.happy
'Then I was extremely happy about the lottery win. Oh my god, was I happy! I was so
happy!' (Altmann 1993: 33)
- (19) Comme elle est belle, comme elle est belle!
'How beautiful she is, how beautiful she is!' (Beyssade 2009: 32)

Whether or not information can be backgrounded depends on its relation to the common ground. Presuppositions are entailed by the common ground. This makes them capable of containing information that is already in the common ground. Conventional implicatures enter the common ground at the moment they are uttered; thus they usually give rise to redundancy violations in case the information is already part of the common ground.

However, when it comes to expressives, e.g. *damn* in (20), we have to admit that their ability to repeat is, according to Potts (2007), a rather defining criterion because the repetition intensifies the expressive attitude and hence does not lead to redundancy.

(20) Damn, I left my damn keys in the damn car.

(Potts 2007: 182)

Since exclamation marks are closely connected to the concept of expressives, we can attribute their ability to pick up previously uttered information not to their presuppositional status but rather to them being expressive.⁸

3. VERUM Focus: New Evidence for Factivity

Most of the presupposition tests we have looked at so far were more or less inconclusive. Another way to determine the relation of an utterance to the common ground is by looking at its information structural properties, e.g. focus. In languages like German and English, focus is realized via pitch accents. Recall the puzzle introduced in (8) to (11) in which German exclamation marks show a very unexpected accent distribution with respect to auxiliaries and their positions in the clause. In verb-final exclamation marks an accent on an auxiliary is not acceptable whereas an accent on a lexical verb is fine. In contrast, V2-exclamation marks allow accent on lexical verbs as well as on auxiliaries. That the acceptance might not only be due to the V2-position but to the C head in general is suggested by (21) and (22).

- (21) a. *[_{CP} [_C Dass] [_{TP} der mich angelogen HAT!]]
 that he me lied has
 b. [_{CP} [_C DASS] [_{TP} der mich angelogen hat!]]
 that he me lied has
 ‘That he lied to me!’

- (22) [_{CP} [_C HAT] [_{TP} die viele Leute kennengelernt!]]
 has she many people got.to.know
 ‘Boy, did she get to know many people!’

⁸Schlenker (2007: 240) criticizes the repeatability feature of expressives since it can result in different truth values: while (20) indicates that the speaker has a negative attitude towards his car and his keys, (i) only indicates the latter but not the former.

- (i) Damn, I left my damn keys in the car.

Judgements are far from clear. If there is a truth-conditional difference between (20) and (i) then (ii) is probably very unlikely to be uttered out of the blue. Porsche owners usually have a positive attitude towards their cars. If every occurrence of *damn* comes with a negative attitude towards the constituent it modifies, then one would expect for (ii) to be felicitous additional context is necessary, e.g. the owner mentioning that, lately, he is not happy with his Porsche anymore.

- (ii) Damn, I left my damn keys in the damn Porsche.

3.1. Focus in Alternative Semantics

Following Rooth (1992), I assume that focus indicates the presence of alternatives in the context. The basic idea of alternative semantics lies in the assumption of a *focus* semantic value which every syntactic object possesses in addition to its *ordinary* semantic value. For syntactic objects to be alternatives to each other, they both have to be elements of the focus semantic value they share, and they have to be different from each other with respect to their ordinary semantic value. To capture these ideas, Rooth (1992: 86) defines the *squiggle operator* \sim that introduces a free variable that is restricted in the sense described above. This free variable needs to find an antecedent in the discourse in order for focus to be licensed. The restrictions are formulated in the *Focus Interpretation Principle* (FIP).

(23) FIP (for contrastive alternative sets containing individuals):
If a phrase α is construed as in contrast with a phrase β , then

a. $[[\beta]]^o \in [[\alpha]]^f$ and

b. $[[\beta]]^o \neq [[\alpha]]^o$

and β is matching α in type.

(adapted from Rooth 1992: 86)

3.2. VERUM Focus and its licensing Conditions

VERUM *focus* (or *polar focus* as it is termed cross-linguistically) is a type of focus that emphasizes the truth of a proposition (Höhle 1992), which is thus called the VERUM *effect*. As such VERUM focus usually occurs in contexts in which the truth of the proposition is either undecided or explicitly denied. The former I call an *uncertainty* context the latter a *denial* context. (24) gives an example of an uncertainty context, (25) for a denial context. In German, VERUM focus is realized as focus on the C head whereas English uses the insertion of emphatic *do*.

(24) A: Ich frage mich, ob Paul ein Drehbuch schreibt.

I wonder myself if Paul a screenplay writes
'I wonder if Paul writes screenplays.'

B: Ja, er SCHREIBT ein Drehbuch.

yes he writes a screenplay
'Yes, he DOES write screenplays.'

(25) A: Sue hat ihren Mann nicht verlassen.

Sue has her husband not left
'Sue didn't leave her husband.'

B: Doch, sie HAT ihren Mann verlassen
 doch she has her husband left
 ‘You’re wrong – she DID leave her husband.’

3.3. VERUM Focus as Focus on the Illocution

For languages like German, it can be argued that the VERUM effect is caused by the focus on either a covert VERUM operator (Höhle 1992) or the sentence/illocutionary type operator itself (Büring 2006, Stommel 2011, Lohnstein 2012). The second option is supported by the observation that the VERUM effect can only occur if the C head is focussed and C is typically thought to host this operator.

- (26) A: I wonder if Paul writes books.
 B: #Ich denke, [_{CP} [_C dass] [_{TP} er Bücher SCHREIBT]]
 I think that he books writes
 ‘I think, he WRITES books.’
 B’: Ich denke, [_{CP} [_C DASS] [_{TP} er Bücher schreibt]]
 I think that he writes books
 ‘I think he DOES write books.’
 B’’: Ja, [_{CP} er [_C SCHREIBT] [_{TP} Bücher]]
 yes he writes books
 ‘Yes, he DOES write books.’

The argument is based on the observation that assertions can be paraphrased in a way that the truth value or the discourse function is included in the utterance. The focus then merely focuses what is already part of the assertion, thus causing the VERUM effect.

- (27) Paul writes books.
 ~> *It is true* that Paul writes books (covert VERUM operator)
 ~> *I want to add to the common ground* that Paul writes books (illocution type operator)

For non-assertive speech acts like exclamations, it seems rather counterintuitive to argue for a covert VERUM operator. It is more likely that VERUM focus in C focuses an illocutionary operator. Since exclamatives do not function as assertions, focus on the C head should not give rise to the VERUM effect, compare (30) to (31).

- | | |
|---|--|
| <p>(28) Paul hat viele Leute getroffen.
Paul has many people met
'Paul has met many people.'
... but I am not sure about that.</p> | <p>(30) Wen hat Paul alles getroffen!
who has Paul all met
'How many people Paul met!'
... but I am not sure about that.</p> |
| <p>(29) Paul HAT viele Leute getroffen.
Paul has many people met
'Paul DID meet many people.'
... but I am not sure about that.</p> | <p>(31) Wen HAT Paul alles getroffen!
who has Paul all met
'How many people Paul met!'
... but I am not sure about that.</p> |

The exclamative focus in C does not result in a VERUM effect because exclamatives are not about adding a true proposition to the common ground. The focus on the illocution in C explains why there is no difference in acceptability of focus marking between auxiliaries and copulars on the hand and lexical verbs on the other. For the focus on the illocution, it does not matter what C is filled with, even complementizers can serve as a host.

- (32) a. In wie vielen Ländern IST der schon gewesen!
in how many countries is he already been
'How many countries he DID travel to!'
- b. Wie viele Seiten HAT die pro Tag geschrieben!
how man pages has she per day written
'How man pages she wrote daily!'
- c. Wie viele Seiten SCHREIBT die pro Tag!
how many pages writes she per day
'How many pages she writes daily!'

Note, that it is still an open question what kind of focus alternatives one could assume for an illocutionary operator. One idea could be the relevant illocutions of the other participants in the discourse (see Lohnstein 2012). However, this idea is rather difficult to implement since alternatives have to be distinguished with respect to different addressees. More work needs to be done here in order to provide a complete picture of the VERUM focus distribution.

An alternative route is suggested by recent observations concerning the default stress pattern of *wh*-exclamatives in German. According to Repp (2015), speakers place main pitch accent in V2 *wh*-exclamatives either on an auxiliary in V2-position (see also Altmann 1993) or on the d-pronoun which frequently occurs in German exclamatives. This suggests that the stress pattern in (31) merely reflects the default sentence stress pattern in German V2-exclamatives independent of information structure.

3.4. VERUM Focus as Polar Focus

In order to use VERUM focus as a new test for factivity, we have to show that VERUM focus in V-final position is in fact possible. Under the assumption of an illocutionary type operator located in C, narrow focus on the verb-final position is predicted not to cause a VERUM effect in assertions. However, already Höhle (1992: 129) has observed that there are embedded sentences in which at least the focus on an auxiliary or a copular verb leads to a VERUM effect, see (33) and (34). In contrast, the focus on the lexical verb leads to standard narrow verb focus, see (35).

- (33) A: I wonder if Paul wrote a book.
B: Ich denke, dass Paul ein Buch geschrieben HAT.
I think that Paul a book written has
'I think that Paul DID write a book.'
- (34) A: I wonder if Paul is in Rome.
B: Ich denke, dass Paul in Rom IST.
I think that Paul in Rome is
'I think that Paul IS in Rome.'
- (35) A: I wonder if Paul writes books.
B: #Ich denke, dass Paul Bücher SCHREIBT.
I think that Paul books writes
'I think that Paul WRITES books.'

Lohnstein (2012) argues that VERUM focus in V-final position is only a side effect of the lack of lexical alternatives to the focussed verb. The poorer the lexical semantics of the verb, the fewer alternatives there are to produce contrast, the extreme case being copular verbs and auxiliaries for which the only alternative that is available is the verb's negation. If there are no alternatives to begin with except the negated version of the verb itself than the VERUM interpretation follows automatically. Lohnstein has to include negated versions into the focus semantic value in order for his argument to hold. If we follow this line of thought, we can potentially include tense alternatives as well. But this means that auxiliaries and copulars in fact do have alternatives other than their negation.

In order to avoid these problems, I would like to argue that the reason for the VERUM effect with auxiliaries and copulars and but not with lexical verbs lies in the general semantics of the syntactic objects. Copulars as well as auxiliaries are said to not contribute to the meaning to a proposition. This effect is traditionally derived via the identity function.

Since the identity function takes a semantic object and delivers the same semantic object, the only

alternative that these items can have is the negation of that semantic object. The focus semantic values for copular verbs shown in (36-a). A similar suggestion can be made for auxiliaries. They take a proposition and deliver a proposition; the focus semantic value is given in (36-b).

- (36) a. $\llbracket [\text{ist}_{COP}]_F \rrbracket^f = \{ \lambda P[\lambda w[P(w)]], \lambda P[\lambda w[\neg P(w)]] \}$
 b. $\llbracket [\text{hat}]_F \rrbracket^f = \{ \lambda p[\lambda w[p(w)]], \lambda p[\lambda w[\neg p(w)]] \}$

The focus semantic values of copulars and auxiliaries reflect the intuition that the whole proposition is given and that only the polarity is focussed.

Now, let us see how (36) derives the focus alternatives for F-marked auxiliaries and copulars.⁹

- (37) $\llbracket [\text{dass Paul in Rom [IST]}_F \rrbracket^f$ ‘that Paul IS in Rome’
 $= \{ \lambda w[\text{Paul is in Rome in } w], \lambda w[\neg[\text{Paul is in Rome in } w]] \}$
 $= \left\{ \begin{array}{l} \text{it is true that Paul is in Rome,} \\ \text{it is false that Paul is in Rome} \end{array} \right\}$

- (38) $\llbracket [\text{dass Paul ein Buch geschrieben [HAT]}_F \rrbracket^f$ ‘that Paul DID write a book’
 $= \{ \lambda w[\text{Paul wrote a book in } w], \lambda w[\neg[\text{Paul wrote a book in } w]] \}$
 $= \left\{ \begin{array}{l} \text{it is true that Paul wrote a book,} \\ \text{it is false that Paul wrote a book} \end{array} \right\}$

The focus semantic value of an utterance with an F-mark on a lexical verb with rich lexical semantics is given in (39) for comparison.

⁹Note, that the complementizer *dass* is equally poor in terms of lexical alternatives. If the F-marker in (38) is shifted to the complementizer, the focus alternatives do not change.

- (i) Ich denke, $\llbracket [\text{DASS}]_F \text{ Paul ein Buch geschrieben hat} \rrbracket^f =$
 $\left\{ \begin{array}{l} \text{it is true that Paul wrote a book,} \\ \text{it is false that Paul wrote a book} \end{array} \right\}$

One could argue that the complementizer denotes an identity function as well since it does not contribute to the overall meaning of the sentence. The focus semantic value is given below:

- (ii) $\llbracket [\text{dass}]_F \rrbracket^f = \{ \lambda p[\lambda w[p(w)]], \lambda p[\lambda w[\neg p(w)]] \}$

This point is not crucial for the VERUM focus distribution in exclamatives but it provides a complete picture for VERUM effects in German embedded sentences in general. The main argument that is put forward against VERUM focus as illocution focus is based on the occurrence of VERUM effects in embedded sentences where there is most likely no such operator present. If we can derive VERUM effects in embedded sentences solely via contrastive alternatives of the identity function than we can avoid assuming an illocutionary operator for these sentences.

$$(39) \quad \llbracket \text{dass Paul Bücher [SCHREIBT]}_F \rrbracket^f \text{ ‘that Paul WRITES books’}$$

$$= \{ \lambda w. f(\text{Paul}) \text{ in } w \mid f \in D_{\langle e, st \rangle} \} = \left\{ \begin{array}{l} \text{that Paul writes books,} \\ \text{that Paul corrects books,} \\ \text{that Paul reads books,} \\ \dots \end{array} \right\}$$

Following the FIP (Rooth 1992), focus is licensed if the free variable, which is introduced by the squiggle operator, finds an antecedent in the discourse that (i) is an element of the focus semantic value of the F-marked phrase and (ii) is different from the ordinary semantic value of the F-marked phrase. Thus, VERUM focus is licensed if the polar alternative can be found as an antecedent in the discourse. This is obviously the case in denial contexts where the negative alternative is explicitly mentioned, as in (25). But it is also implicitly given in contexts where the truth of a proposition is still undecided, as in (24). The VERUM effect is the result of the established contrast to the negative alternative in the discourse. In contrast, focus on a lexical verb should not be licensed because it does not create polar alternatives in the first place. Let us see how this works out in detail.

3.4.1. Denial Contexts

A denial context with focus on a lexical verb is given in (40). The squiggle operator which marks the focus domain applies at the sentence level.

- (40) A: [Paul schreibt keine Bücher.]₃
 Paul writes no books
 ‘Paul does not write books.’
 B: #Doch, ich denke, [dass er Bücher [SCHREIBT]_F] ~ v₃
 doch I think that he books writes
 ‘I think he WRITES books.’

The second constraint of the FIP is satisfied because the meaning of the antecedent is different from the meaning of the clause containing the F-marked phrase.

$$(41) \quad \llbracket \text{Paul schreibt keine Bücher} \rrbracket^o \neq \llbracket \text{dass Paul Bücher [SCHREIBT]}_F \rrbracket^o$$

$$= \lambda w. \neg [\text{Paul writes books in } w] \neq \lambda w. \text{Paul writes books in } w$$

However, the first constraint is not satisfied, see (42).

$$(42) \quad \llbracket \text{dass Paul Bücher [SCHREIBT]}_F \rrbracket^f =$$

$$\{\lambda w. f(\text{Paul}) \text{ in } w \mid f \in D_{\langle e, st \rangle}\} = \left\{ \begin{array}{l} \text{that Paul writes books,} \\ \text{that Paul corrects books,} \\ \text{that Paul reads books,} \\ \dots \end{array} \right\}$$

$$\llbracket \text{Paul schreibt keine Bücher} \rrbracket^o \notin \llbracket \text{dass Paul Bücher [SCHREIBT]}_F \rrbracket^f$$

Since the first constraint of the FIP is violated, focus on a lexical verb is not licensed in (40).

A denial context with focus on an auxiliary is given in (43).

- (43) A: [Paul hat kein Buch geschrieben.]₃
 Paul has no book written
 ‘Paul did not write a book.’
 B: Doch, ich denke, [dass er ein Buch geschrieben [HAT]_F] ~ v₃
 doch I think that he a book written has
 ‘I think he DID write a book.’

The first as well as the second constraint of the FIP are satisfied. Thus, focus on the auxiliary in (43) is licensed.

(44) $\llbracket \text{Paul hat kein Buch geschrieben} \rrbracket^o \neq \llbracket \text{dass Paul ein Buch geschrieben [HAT]}_F \rrbracket^o$
 $= \lambda w. \neg[\text{Paul wrote a book in } w] \neq \lambda w. \text{Paul wrote a book in } w$

(45) $\llbracket \text{dass Paul ein Buch geschrieben [HAT]}_F \rrbracket^f$
 $= \{\lambda w[\text{Paul wrote a book in } w], \lambda w \neg[\text{Paul wrote a book in } w]\}$
 $= \left\{ \begin{array}{l} \text{it is true that Paul wrote a book,} \\ \text{it is false that Paul wrote a book} \end{array} \right\}$
 $\llbracket \text{Paul hat kein Buch geschrieben} \rrbracket^o \in \llbracket \text{dass Paul ein Buch geschrieben [HAT]}_F \rrbracket^f$

3.4.2. Uncertainty Contexts

An uncertainty context with focus on a lexical verb is given in (46).

- (46) A: Ich frage mich, ob Paul Bücher schreibt.
 ‘I wonder if Paul writes books.’
 B: #Ja, ich denke, dass er Bücher SCHREIBT.
 ‘I think he WRITES books.’

The embedded interrogative clause denotes a set of the form $\{p, \neg p\}$, viz. $\{\lambda w[\text{Paul writes a b. in } w], \lambda w\neg[\text{Paul writes a b. in } w]\}$. Only the second element in the set serves as an antecedent for the free variable that is introduced by the squiggle. Thus, the antecedent is implicitly given, shown in (47).

- (47) A: Ich frage mich, $\{p, [\neg p]_3\}$
 B: #Ja, ich denke, [dass er Bücher [SCHREIBT]_F] $\sim v_3$

Under the assumption that we can identify implicit antecedents with Rooth (1992), we get the same antecedent as in the denial contexts above: $\lambda w\neg[\text{Paul writes books in } w]$. Consequently, the second constraint of the FIP is satisfied, see (41) above, but not the first constraint, see (42) above.

Focus on an auxiliary is given in (48), with the focus domain shown in (49).

- (48) A: Ich frage mich, ob Paul ein Buch geschrieben hat.
 I ask myself if Paul a book written has
 ‘I wonder if Paul wrote a book.’
 B: Ja, ich denke, dass er ein Buch geschrieben HAT.
 yes I think that he a book written has
 ‘I think he DID write a book.’

- (49) A: Ich frage mich, $\{p, [\neg p]_3\}$
 B: Ja, ich denke, [dass er ein Buch geschrieben [HAT]_F] $\sim v_3$

Again, the antecedent $\lambda w\neg[\text{Paul writes books in } w]$ satisfies both constraints of the FIP, identical to the denial contexts above, see (44) and (45). Hence, focus is licensed in (48).

3.4.3. VERUM Focus in Factive Complements and Exclamatives

With the focus semantic values proposed in (36) we can explain why auxiliaries and copulars but not lexical verbs can carry VERUM focus in embedded clauses. Up until now, we have looked at clauses that are embedded under non-factive verbs. Factive verbs should change the predictions for the distribution of VERUM focus since they presuppose the truth of their complement. In an uncertainty context factive complements should not license VERUM focus because the factivity presupposition already makes sure that the proposition is true. Since the truth of the propositional content is already entailed by the common ground at the moment of utterance, factive complements will not be able to find their antecedent, i.e. the negative alternative, in the discourse. They will only find the positive alternative: $\lambda p\lambda w[p(w)]$ which satisfies the first constraint of the FIP but,

crucially, not the second constraint since the positive alternative is not different from the ordinary semantic value of the factive complement. As is shown in (50), the auxiliary cannot be focussed in factive complements if they are preceded by an uncertainty context (see also Stommel 2011: 108).

- (50) A: I wonder if it's Peter's birthday today.
B: #Ja stimmt, mensch, ich hab' doch tatsächlich vergessen, dass er heute Geburtstag
yes true gosh I have doch indeed forgotten that he today birthday
HAT.
has
'Right, gosh, I completely forgot that it IS his birthday today.'

The only possible occurrence of VERUM focus in factive complements is a denial context – a context in which the speaker wants to substitute the negative alternative with the positive one. This is a case of correction focus, i.e. CG revision¹⁰ (Steube 2001, Umbach 2004, Karagjosova 2006).

- (51) A: Hanna likes company when she visits the opera, which is why she is angry about the fact that her daughter did not go with her this time.
B: You're wrong – Hanna likes it most when she goes alone.
Sie ärgert sich darüber, dass ihre Tochter gestern mit ihr in der Oper
she is.angry herself about that her daughter yesterday with her in the opera
WAR.
was
'She is angry that her daughter DID accompany her.'

Under the assumption that exclamation marks are factive, we can now make the prediction that they pattern with factive complements, i.e. they can only license narrow focus on auxiliaries and copulars in V-final exclamatives if they occur in denial contexts.

- (52) A: Were you surprised that you didn't get the job?
B: Nein, dass ich ihn bekommen HABE! Darüber war ich überrascht.
no that I it gotten have about was I surprised
'No, that I DID get the job! I was surprised about that.'

- (53) A: Peter is not a big traveller. The places he has not been to!

¹⁰Following Karagjosova (2006), denial contexts are analyzed as negotiations of the CG. Therefore, the CG in (51) does not entail $\neg p$ but rather *A believes $\neg p$* as a discourse commitment of A (see Gunlogson 2003). The factivity presupposition of speaker B's utterance cannot exclude $\neg p$ from the CG since $\neg p \notin CG_{A,B}$. However, $\neg p$ can still act as an antecedent for VERUM FOCUS to be licensed. This is different to uncertainty contexts like the one in (50) in which a factive presupposition can directly exclude $\neg p$ -worlds from the common ground (CG: $\{p, \neg p\}$).

B: Aber wo der auch schon gewesen IST!
but where he also already been is
'But the places he HAS been to already!'
Just think about the time before he started studying.

Uncertainty contexts like those in (54) and (55) do not license VERUM focus because the factivity of the exclamatives prevents the propositions to find their negative alternative in the context.

(54) A: How did her interview go? Do you know if she got the job?

B: You know I was completely surprised.
#Dass die den Job bekommen HAT!
that she the job gotten has
'That she DID get the job!'

(55) A: I'm not an expert on traveling. But ask Peter, maybe he has been to many of the places that you want to know about.

B: Yes, I already talked to him and I was pretty surprised.
#Wo der schon gewesen IST!
where he already been is
'The places he HAS been to already!'

Both uncertainty and denial contexts license V-final narrow focus on auxiliaries and copulars if they are embedded under non-factive predicates. In factive complements as well as in root-exclamatives V-final narrow focus on auxiliaries and copulars is only licensed by denial contexts. The only reasonable explanation that captures this VERUM focus distribution is to assume that auxiliaries and copulars denote the identity function whose only focus alternative is its negation. The negative alternative can be found in uncertainty as well as in denial contexts if the clause is embedded under a non-factive predicate. However, factive complement clauses are not licensed in uncertainty contexts because the factivity presupposition already makes sure that the proposition is true so that the negative alternative cannot be found in the discourse as an antecedent. If the negative alternative is explicitly present, as it is the case in the denial context, then VERUM focus can be used as correction focus by which the speaker signals that he wants to substitute the negative alternative with the positive one and thus revises the common ground. Exclamatives behave exactly like factive complements; therefore they have to be factive.

4. Conclusion

The distribution of VERUM focus provides a novel test for factivity – one that is, crucially, also applicable to exclamatives. It gives consistent results, unlike other presupposition test such as subsequent discourse moves discussed above. Furthermore, it does not have to rely on the premise

that the factivity presupposition that comes with embedded exclamatives is the same as the one that comes with matrix exclamatives which is what Abels (2010) has to assume in order to apply plugs and filters as relevant presupposition tests. Since V-final exclamatives can also be used as matrix exclamatives, VERUM focus can be tested independent of embedding, see e.g. (53)-(55). A final advantage of the VERUM focus test is that it gives an explanation for what otherwise would be a completely mysterious verb stress pattern in German exclamatives.

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