Variation in the distribution of er in present-day Dutch wh-questions
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1. Introduction

The English that-trace effect blocks complementizer that with subject extraction:

(1) Who do you think (*that) __ came?  Subject extraction
(2) What do you think (that) he ate __?  Object extraction

In Dutch, there is no that-trace effect, since the complementizer is obligatory:

(3) Wie denk je *(dat) er __ komt?
   Who think you that ER comes
   ‘Who do you think is coming?’

In fact, the expletive pronoun er we see above is obligatory with subject extraction, which contrasts with object extraction where it is blocked:

(4) Wie denk je dat hij (*er) __ zag?
   Who think you that he ER saw
   ‘Who do you think he saw?’

In English, the original that-trace effect is restricted to embedded clauses (although see Pesetsky and Torrego 2001 for an analysis which extends this to matrix clauses). In Dutch, er also appears with subject extraction in matrix clauses:

(5) Wie komt *(er) __?
    Who comes ER
    ‘Who is coming?’
(6) Wie zag hij (*er) __?
    Who saw he ER
    ‘Who did he see?’

Previous literature has also noted an adverb effect, where the presence of an adverb alleviates that-trace effects (Browning 1996, Culicover 1993); similarly in Dutch, the presence of an adverb reduces the need for er.

(7) Who do you think that without any reasonable doubt will win the game?
(8) Wie zingt in de kerk vanavond?
    Who sings in the church tonight
    ‘Who is singing in the church tonight?’
Bech (1952) claims that *er only occurs in intransitive clauses. Nevertheless, Bennis (1986) shows that *er does occur in transitive clauses. However, *er seems to be subject to a definiteness effect (Zucchi 1995) in transitive clauses, where definite objects cannot co-occur together with *er:

\[(9) \text{Wie denk je dat } \text{*er} \text{ } \text{__} \text{ het koekje at?} \]
\[\text{Who think you that *ER } \text{ the cookie ate} \]
\[\text{‘Who do you think ate the cookie?’}\]

In the example above, we would expect *er to be obligatory since we are dealing with subject extraction, but for some reason the definite object blocks the presence of *er.

**Summarizing**, we see a subject-object asymmetry in the presence of *er in extraction contexts. However, the presence of *er is also related to other factors, such as the presence of an adverb and the definiteness of the object.

Den Dikken (2007), in a small study, investigated subject extraction from embedded clauses, taking into account various factors. *Er* was present in only some of his examples, making it difficult to establish the conditions for when *er* appears. His study also demonstrated a wide range of variation between speakers. We conducted a questionnaire focusing specifically on *er.*

Our questionnaire aimed at answering the following questions:

- What is the distribution of *er*?
  - What is the effect of transitivity?
  - What is the effect of definiteness on transitive objects?
  - What are the effects of adverbs?

Our research questions are:

- What determines the distribution of *er*?
- What is the function of *er*?

**Roadmap:**

- Methodology
- Data:
  - Intransitive clauses need *er*
  - Definiteness effect in transitive clauses
  - No adverb effect
- Analysis: *Er* is the partial spell-out of *wie* ‘who’, due to a need to adhere to the Dutch EPP. Certain objects (pronominal, definite) interact with how this EPP is satisfied, leading to differences in the appearance of *er.*
2. Methodology & Data

2.1 Methodology

To capture the synchronic variation in the distribution of *er*, we created a questionnaire.

**Participants:** 555 participants took part in the questionnaire. 136 of them were excluded on the grounds of: (a) native language was not Dutch (6), (b) questionnaire was not fully completed (128), and (c) native language information was not given (2).

The remaining 419 participants were native Dutch speakers, aged 19-88. We also gathered information on gender, place of birth (and youth), whether they lived abroad longer than a year, and other languages and dialects spoken.

**Materials:** There were 84 test sentences and 5 control sentences. There were three sentences for each set of conditions, involving different lexical items. We tested the following factors:
   a) embedding (42 matrix vs. 42 embedded)
   b) transitivity (60 transitive vs. 24 intransitive)
   c) definiteness of the object (12 pronoun, 24 definite DP, 24 indefinite DP)
   d) the presence of *er* (42 *er* vs. 42 no *er*)
   e) the presence of an adverb (36 adverb vs. 48 no adverb)

**Procedures:** We sent out an online questionnaire through social media, hosted on the platform Survey Monkey. Participants were presented with the sentences in sets of seven to eight and asked to rate them on a Likert scale ranging from 1 (“I would never say it like this”) to 5 (“I would say it like this”).

2.2 Data

We used the results of 419 participants (based on the criteria discussed earlier).

We interpret judgments of 1, 2, and 3 as “ungrammatical” and judgments of 4 and 5 as “grammatical.” We present graphs of the data, using the values 1 through 5, as well as tables indicating the percentages of grammatical (4-5) and ungrammatical (1-3) judgments.

2.2.1 Effect of Transitivity

⇒ **Intransitivity:** Intransitive sentences are rated better when *er* is present across all conditions.
(10) **Matrix clauses, with and without adverb:**

<table>
<thead>
<tr>
<th></th>
<th>Without er</th>
<th>With er</th>
</tr>
</thead>
<tbody>
<tr>
<td>%Gramm.</td>
<td>73.4%</td>
<td>94.6%</td>
</tr>
<tr>
<td>%Ungramm.</td>
<td>26.6%</td>
<td>5.4%</td>
</tr>
</tbody>
</table>

%Gramm. %Ungramm.

Without er 73.4% 26.6%

With er 94.6% 5.4%

(11) Wie juichte (er)?

Who cheered **ER**

‘Who was cheering?’

(12) Wie huilt (er) snel?

Who cries **ER** quickly

‘Who is quick to cry?’

(13) **Embedded clauses, with and without adverb:**

<table>
<thead>
<tr>
<th></th>
<th>Without er</th>
<th>With er</th>
</tr>
</thead>
<tbody>
<tr>
<td>%Gramm.</td>
<td>39.4%</td>
<td>74.9%</td>
</tr>
<tr>
<td>%Ungramm.</td>
<td>60.6%</td>
<td>25.1%</td>
</tr>
</tbody>
</table>

%Gramm. %Ungramm.

Without er 39.4% 60.6%

With er 74.9% 25.1%
(14) Wie denk je dat (er) luistert?  
Who think you that ER listens  
‘Who do you think is listening?’

(15) Wie denk je dat (er) nooit fietst?  
Who think you that ER never bikes  
‘Who do you think never bikes?’

⇒ **Transitivity:** The combination of *er* and a definite object or pronoun is rated worse than the combination of *er* and an indefinite object. We treat this as a definiteness effect.

- The same holds for embedded clauses.

(16) Matrix clauses (no adverb) with an indefinite, definite, or pronominal object and *er*:

**Judgments on Transitive Matrix Clauses with er**

<table>
<thead>
<tr>
<th></th>
<th>%Gramm.</th>
<th>%Ungramm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indefinite Object</td>
<td>86%</td>
<td>14%</td>
</tr>
<tr>
<td>Definite Object</td>
<td>44.1%</td>
<td>55.9%</td>
</tr>
<tr>
<td>Pronominal Object</td>
<td>21.5%</td>
<td>78.5%</td>
</tr>
</tbody>
</table>

(17) a. Wie las *er* een boek?  
Who read *ER* a book  
‘Who read a book?’

b. Wie las *er* het boek?  
Who read *ER* the book  
‘Who read the book?’

c. Wie zocht *er* haar?  
Who sought *ER* her  
‘Who sought her?’

⇒ **Transitivity:** Pronominal and definite objects were acceptable without *er*. The presence or absence of *er* also had no visible effect on indefinite objects.

- The same holds for embedded clauses.
(18) Matrix clauses (no adverb) with an indefinite, definite, or pronominal object and no er:

<table>
<thead>
<tr>
<th>Object Type</th>
<th>%Gramm.</th>
<th>%Ungramm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indefinite Object</td>
<td>84.5%</td>
<td>15.5%</td>
</tr>
<tr>
<td>Definite Object</td>
<td>94.7%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Pronominal Object</td>
<td>98%</td>
<td>2%</td>
</tr>
</tbody>
</table>

(19) a. Wie at een koekje?  
   ‘Who ate a cookie?’  

   b. Wie at het koekje?  
   ‘Who ate the cookie?’

   c. Wie belde jou?  
   ‘Who called you?’

2.2.2 Effects of adverbs

(20) Wie schreef een verhaal?
   'Who wrote a story'
   'Who wrote a story?'
(21) Wie floot gisteren een liedje?
   'Who whistled yesterday a song'
   'Who whistled a song yesterday?'

- Embedded clauses omitted here, as there are too many factors in play, obscuring any adverb effects.
- We will return to definite objects at the end.

2.2.3 Summary:

Returning to the questions in our introduction, we can now give the following answers:

What is the distribution of *er*?
- What is the effect of transitivity?
  - Intransitivity: Intransitive clauses improve with the presence of *er*.
- What is the effect of definiteness on transitive objects?
  - *Er* in combination with a definite object or pronoun is rated badly. This can be captured in the following scale:
    Pronominal Object > Definite Object > Indefinite Object
  - Definite objects and pronouns are rated acceptable without *er*.
  - *Er* has no effect on indefinite objects.
- What are the effects of adverbs?
  - There was no clear evidence for an adverb effect.
3. Analysis

3.1 Intransitives

• Finding: Intransitive clauses are better with er.

3.1.1 Dutch EPP

Chomsky (1982): Proposes the EPP (all clauses must have a subject), which can only be satisfied by nominal features.

Holmberg (2000) builds on this and proposes that there is a feature \([P\text{(honological)}]\) on T, which requires overt material in Spec, TP. Thus, any category with phonological features can satisfy the EPP.

Motivation: In Icelandic, if the subject position is empty, as in relative clauses or embedded subject questions, something can move to Spec, TP to satisfy the \([P]\) feature. This something can be, for example, a PP (shown below) or a NegP, AdvP, DP, or verb particle (not shown).

\[(24) \text{Stylistic Fronting of PP:}\]
\[
\text{Peir } [\text{CP sem } [\text{TP í } \text{ótla hafa verið } [\text{PP } \ldots \text{ ][VP segja að } \ldots ]]]
\]
\[
\text{those that in Oslo have been say that}
\]
\[
\text{‘Those that have been in Oslo say that …’ (Holmberg 2000: 449)}
\]

Landau (2007) furthermore proposes that only XPs with an overt head are eligible candidates for this requirement.

Motivation: Only elements with an overt head can appear in subject position. Thus, French null-headed QPs are excluded from subject position (29b), but not object position (29a).

\[(25)\]
\[
\begin{align*}
\text{a. Jean } & \text{ne voudrait pas que tu boives } [\text{QP } \emptyset \text{ de bière }]. \\
\text{John } & \text{NEG would not like you to drink beer.}
\end{align*}
\]
\[
\text{‘John wouldn’t like you to drink beer.’}
\]
\[
\begin{align*}
\text{b. } & \text{Jean } \text{ne voudrait pas que } [\text{QP } \emptyset \text{ de bière } ] \text{ lui coule dessus}. \\
\text{John } & \text{NEG would like not that of beer to him spill on}
\end{align*}
\]
\[
\text{‘John wouldn’t like beer to spill on him.’ (Kayne 1981 (as in Landau 2007: 13))}
\]

Chomsky (2013, 2014): Labeling is a phase-level process which assigns labels to projections. As in English, in Dutch, T is weak and can only be labeled via feature agreement between the overt subject in Spec,TP and T. As labeling occurs at the phase level, movement out of Spec,TP (to Spec,CP) will make labeling of T impossible. This forces the need for overt material in Spec,TP as argued for by Holmberg (2000) and Landau (2007).


Dutch EPP: Spec, TP must always be filled by some element with an overt head.
We take this as motivation for the presence of er in intransitives. When the subject position is empty as in wh-questions, er is used to satisfy the [P] feature on T.

(26) Wie kommt er?
    Who comes ER
    ‘Who is coming?’

(27) \[
\begin{array}{c}
\text{CP} \\
\text{wie} \\
\text{komt} \\
\text{TP} \\
\text{er} \\
\end{array}
\]

But, this leaves open the questions: Where does er come from? What is er?

3.1.2 Structure of wh-words

We claim that er is the partial Spell-Out of a copy of the wh-subject.

Barbiers, Koeneman, and Lekakou (2008) argue for a complex wh-structure in Dutch, as below. This is termed the big DP Hypothesis.

(28) \[
\begin{array}{c}
\text{DP} \\
\text{D} \\
\Phi P \\
\Phi \\
\text{QP} \\
\text{DP} \\
\text{D} \\
\text{QP} \\
\end{array} = \text{die} ‘\text{this’} \quad \text{DP} = \text{dat} ‘\text{that’}
\]

(29) \[
\begin{array}{c}
\text{DP[-WH]} \\
\text{D[-WH]} \\
\Phi P \\
\Phi \\
\text{QP} \\
\text{DP[-WH]} \\
\text{D[-WH]} \\
\text{QP} \\
\end{array} = \text{die} ‘\text{this’} \quad \text{DP[-WH]} = \text{dat} ‘\text{that’}
\]

We adopt the basic tenants of this structure, but we assume the DP can be either [-WH] or [+WH], with the following spell-outs:
This approach to the Spell-Out of *wie* ‘who’ and *wat* ‘what’ is compatible with a nanosyntactic approach to lexicalization; the Superset Principle allows for both [PhiP] and [DP_{+WH} [PhiP]] to Spell-Out as *wie* and for both [QP] and [DP_{+WH} [QP]] to Spell-Out as *wat*.

### 3.1.3 Subject and object extraction

(31) Wie komt *(er)?

Subject extraction

Who comes ER

‘Who is coming?’

(32) Wie zag hij *(er)?

Object extraction

Who saw he ER

‘Who did he see?’

With subject extraction, the big DP first moves to Spec,TP, and from there, the PhiP is sub-extracted to Spec,CP, leaving behind the D(WH)-layer, which is Spelled-Out as *er*.

(33) CP[WH]

\[
\begin{array}{c}
\text{PhiP} \\
\text{wie} \\
\text{C'} \\
\text{komt} \\
\text{DP[+WH]} \\
\text{er} \\
\end{array}
\]

The Dutch EPP forces this subextraction mechanism:

- Feature [P] on T requires an overt head in its specifier (which cannot be satisfied by an unpronounced copy).
- The wh-word needs to move to Spec,CP, to satisfy [WH] features on C.
- Subextraction is the compromise: the highest head of the subject is spelled-out in Spec,TP (satisfying [P]) and the rest of the subject is spelled-out in Spec,CP (satisfying [WH]).

Why is full-copy wh-doubling not a possibility?

- Nunes (2004) argues that this would violate Kayne’s LCA, and suggests a mechanism of scattered deletion instead, where complementary material in the two copies is deleted.
\[(34) \ [\text{CP} \ [\text{DP}_{+wh} \ \text{er} \ [\Phi \text{P wie} \ [\text{QP} \ \ldots] \ ]] \ [\text{C'} \ \text{komt} \ [\text{TP} \ [\text{DP}_{+wh} \ \text{er} \ [\Phi \text{P wie} \ [\text{QP} \ \ldots] \ ]] \ ]] \ldots \]

\[\text{Wie komt er?}\]

- But, this predicts the word order \textit{Er komt wie?} to also be possible, contrary to fact.

\[(35) \ [\text{CP} \ [\text{DP}_{+wh} \ \text{er} \ [\Phi \text{P wie} \ [\text{QP} \ \ldots] \ ]] \ [\text{C'} \ \text{komt} \ [\text{TP} \ [\text{DP}_{+wh} \ \text{er} \ [\Phi \text{P wie} \ [\text{QP} \ \ldots] \ ]] \ ]] \ldots \]

\[\text{Er komt wie?}\]

- We adopt subextraction instead.

With object extraction, the big DP moves straight to Spec,CP, skipping Spec,TP which has already been filled by the subject. The big DP is spelled out as \textit{wie/wat}. There is no subextraction, so no \textit{er}.

\[(36) \]

\[
\begin{array}{c}
\text{CP[WH]} \\
\text{DP[+WH]} = \text{wat} \\
\text{D} \text{QP} \text{C'} \text{TP[P]} \\
\text{at} \text{hij} \text{T'} \ldots \text{wat}
\end{array}
\]

Recall:
- Finding: Intransitive clauses are better with \textit{er}.
- Explanation: The Dutch EPP forces subextraction from the complex subject; the head DP[+WH] is spelled-out in Spec,TP as \textit{er} and the PhiP in Spec,CP as \textit{wie}.

### 3.2 Transitives

- Finding: The combination of \textit{er} and a definite object or pronoun is rated worse than the combination of \textit{er} and an indefinite object. We treat this as a definiteness effect.
- Finding: Pronominal and definite objects were acceptable without \textit{er}.
- Finding: The presence or absence of \textit{er} also had no visible effect on indefinite objects.

#### 3.2.1 Redefining the definiteness effect

**Definiteness Effect:**

\[(37) \ \text{Pronominal Objects} \quad \rightarrow \quad \text{Definite Objects} \quad \rightarrow \quad \text{Indefinite Objects} \quad \text{No er} \quad \text{Optional er}\]
With indefinite objects, *er* appears to be optional. We suggest that this could be related to the specificity of indefinite objects, for which our questionnaire did not distinguish.

In Dutch, the element *wat* in its meaning ‘something’ can only be used in nonspecific contexts.

We know from scrambling that specific indefinites can be scrambled but nonspecific indefinites cannot:

(38) …dat Jan gisteren één / een kopje koffie gedronken heeft.  
    …that John yesterday one / a cup coffee drunk has
    ‘…that John drank a cup of coffee yesterday.’

(39) …dat Jan één / *een kopje koffie gisteren ___ gedronken heeft.  
    …that John one / a cup coffee yesterday ___ drunk has

*Wat* ‘something’ cannot be scrambled:

(40) …dat Jan gisteren wat gedronken heeft.  
    …that John yesterday something drunk has
    ‘…that John drank something yesterday.’

(41) *[…dat Jan wat gisteren ___ gedronken heeft.  
    …that John something yesterday ___ drunk has]

We take this as evidence that *wat* ‘something’ is obligatorily nonspecific (Roelandt 2014).

Returning to transitive clauses with indefinite objects which optionally take *er*, *wat* ‘something’ is only possible if *er* is present:

(42) Wie at *er* wat?  
    Who ate ER something
    ‘Who ate something?’

(43) *[Wie at wat?  
    Who ate something
    ‘Who ate something?’ (grammatical under the meaning ‘Who ate what?’)

⇒ Thus, *er* is compatible with nonspecific indefinites.

This suggests that nonspecific indefinites need *er*. The variation we found in the questionnaire is probably due to the ambiguity between a nonspecific and specific interpretation of indefinite objects; some participants may have interpreted the indefinite as nonspecific, therefore, needing *er*, and some may have interpreted it as specific, therefore not needing *er*.

Assuming this, we can redefine our definiteness effect as follows:
The cline above summarizes the three findings of transitives.

We also note that the cline directly mirrors the availability of scrambling for objects:

**Scrambling:**

<table>
<thead>
<tr>
<th>Pronominal Obj</th>
<th>Definite Obj</th>
<th>Specific Indefinite Obj</th>
<th>Nonspecific Indefinite Obj</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scrambles</td>
<td>Scrambles</td>
<td>Scrambles</td>
<td>Cannot scramble</td>
</tr>
</tbody>
</table>

Examples:

(46) **Base position: pronominal object**

…dat Jan gisteren hem gesproken heeft.
…that John yesterday him spoken has
‘…that John talked to him yesterday.’

(47) **Scrambled position: pronominal object**

…dat Jan hem gisteren __ gesproken heeft
…that John him yesterday spoken has

We propose that this complementary distribution (availability of er vs. type of object) is related to a competition for structural position between those objects which can move (scramble) and er.

3.1.2 Analyzing the definiteness effect.

- We assume that pronominal, definite, and specific indefinite objects always move to the edge of the vP (Diesing 1992). This makes them visible to vP external operations.

- This gives us the following structure for pronominal, definite, and specific indefinite objects:
Recall the presence of *er* is argued to be related to a partial spell-out of the subject. *Er* only appears when the subject has moved to Spec,TP, implying that the wh-subject has not moved to Spec,TP.

As T looks down in Spec,vP to satisfy its features, it sees both the wh-subject and the object, which are equidistant (both being specifiers) and therefore, equally accessible targets for movement.

Given a choice between the wh-subject and the object, it chooses the object.

We suggest that this might be due to the [WH] feature on the subject, which makes the object a more compatible candidate to satisfy T’s features.

The wh-subject is later pulled up by C[WH], giving us the following:
4. **Remaining Issue: Adverbs**

While we did not find an adverb effect in the sense of Browning (1996) / Culicover (1993), adverbs do interact with transitive clauses with definite objects (adverb + pronoun combination not tested).

⇒ The combination of definite object and *er* becomes more acceptable if an adverb is present.

(52) Effect of adverb on definite object – *er* relation

![Judgments on Matrix Transitive Clauses with definite objects and *er*](chart)

<table>
<thead>
<tr>
<th></th>
<th>%Gramm.</th>
<th>%Ungramm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without Adverb</td>
<td>44.1%</td>
<td>55.9%</td>
</tr>
<tr>
<td>With Adverb</td>
<td>78.9%</td>
<td>21.1%</td>
</tr>
</tbody>
</table>

(53) Wie las er het boek?
Who read *ER* the book
‘Who read the book?’

(54) Wie floot er gisteren het liedje?
Who whistled *ER* yesterday the song
‘Who whistled the song yesterday?’

We think this may be some kind of intervention effect, which breaks the complementary distribution between *er* and definite objects (and probably specific indefinite objects and pronouns).

5. **Conclusions**

- Our questionnaire showed the following:
  - Intransitive clauses improve with the presence of *er*.
  - There is a definiteness effect with transitive objects, where the more definite the object, the less it can combine with *er*. 
There was no clear evidence for an adverb effect.

- Analysis:
  - We argued *er* is the partial spell-out of the wh-word, which is a complex DP. *Er* is stranded in Spec,TP to satisfy the Dutch EPP.
  - We propose that the definiteness effect arises because certain objects (definite, pronominal, specific) can satisfy the Dutch EPP in place of the subject, blocking stranding of *er*.

6. References


