

# On the syntax and semantics of gradient judgments

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## Abstract

Native speaker judgments on the grammaticality of sentences form the primary source of evidence in linguistic theory. Yet one issue that has not received much attention is gradient judgments, where a sentence is judged to be somewhere between fully grammatical and ungrammatical (see (1)). While the existence of gradient data has long been recognized (e.g., Chomsky, 1965), few studies have attempted to explain this data within a theoretical framework (see Watt, 1975, Müller, 1999, Keller, 2000). One of the challenges facing theories of gradient judgments is accommodating gradience within a grammar traditionally assumed to be discrete. This has led to proposals that the grammar itself is gradient (e.g., Ross, 1972) or that the grammar is discrete, with gradient judgments reflecting non-linguistic factors (Bever, 1970). This paper proposes a theory of gradient grammaticality based on the interaction of syntactic and semantic principles operating within the architecture of a discrete grammar. Evidence for the theory comes from the judgment data in Keller (2000), and the results of a new experiment on extraction from NPs.

This proposal assumes that both the syntactic and semantic components of the grammar are discrete and non-continuous, restricting a sentence to being either grammatical or ungrammatical (syntactically or semantically) depending on whether any principles or constraints are violated in its derivation. Gradience does not exist in the grammar, i.e., there are no intermediate degrees of grammaticality. Sentence acceptability, on the other, which refers to native speakers' overall evaluation of sentence grammaticality, does allow for gradience, with sentences being judged on a continuum from fully acceptable to fully unacceptable. I propose that acceptability judgments reflect different interactions between syntactic and semantic grammaticality. Sentences that are both syntactically and semantically grammatical are fully acceptable, while those that are ungrammatical in both domains are fully unacceptable. Gradient judgments occur when one component is grammatical and the other ungrammatical, with the degree of gradience determined by the nature of the particular violations that occur in deriving the ungrammaticality (following, for example, proposals that constraints are ranked and/or cumulative, e.g., Müller, 1999, Keller, 2000).

The table in (2) summarizes the proposed theory and its predictions for acceptability judgments on a set of sentences based on Keller (2000). In these examples the relevant principles for syntactic grammaticality are word order [+ORDER] and absence of resumptive pronoun [-RES PRON], and for semantic grammaticality, indefiniteness of picture NP [-DEF], referentiality of extracted NP [+REF], and categorization of verb for nonexistence of object [-EXIST]. Sentence (a), which is syntactically and semantically grammatical as it violates none of the above principles, is predicted to be perfectly acceptable. The following gradient judgments are predicted for the sentences in (b), which are syntactically grammatical but violate semantic constraints: ‘?’ for (bi), which violates [-DEF], and ‘??’ for (bii), which violates [-EXIST] as well as [-DEF]. The predictions for (a) and (b) are supported by Keller’s (2000) experimental data, where violations of semantic constraints result in significantly reduced acceptability, with sentences violating two constraints judged as less acceptable than those violating only one. Other studies such as Borkin (1974) and Watt (1975) have also shown that sentences with identical syntactic structures may elicit different degrees of acceptability with the manipulation of the semantics.

According to the above proposal, sentences of type (c), which are semantically grammatical but syntactically ungrammatical, should elicit gradient judgments. Keller (2000), however, found such sentences to have much lower mean acceptability ratings than (b) type sentences. This shows that the syntax is a critical component in determining sentence acceptability, as a syntactically ungrammatical sentence will be judged unacceptable regardless of its semantically grammatical status. This is consistent with the view that it is not possible to impose a semantic interpretation on a syntactically ill-formed sentence. In addition, it is supported by other theories of gradient grammaticality which make similar distinctions between principles and constraints that result in serious (absolute) grammaticality and those that result in mild unacceptability, such as Watt’s (1975) pre- and post-conditions on rule applications, Keller’s (2000) hard and soft constraints, and Müller’s (1999) matrix hierarchies and subhierarchies. Finally, Keller did not test syntactically and semantically ungrammatical sentences as in (d), but my intuitions indicate that they are as unacceptable as (c).

The present proposal has two important implications: (i) The assumption that grammaticality is non-gradient and absolute implies that there does not exist degrees of grammaticality (e.g. Watt, 1975) or of ungrammaticality (Chomsky, 1965). Examples such as (3) that claim to exhibit gradient ungrammaticality are misleading because they are comparing judgments across different structures. Independently, each structure is absolutely ungrammatical; (ii) If all structures that exhibit gradient judgments are syntactically grammatical, then judgment data could be used as a diagnostic for sentence grammaticality. Extraction from picture NPs, for example, is considered to be ungrammatical because it violates the Complex NP Constraint (CNPC), but it is well known that this construction is acceptable under certain semantic conditions. The present proposal would consider this structure to be

underlyingly grammatical since ungrammatical structures cannot be made more acceptable through semantic manipulation, questioning the validity of the CNCP.

## Examples

- (1) a. Which friend has Thomas painted a picture of?  
 b. ?Which friend has Thomas painted the picture of?  
 c. ??Which friend has Thomas lost the picture of?  
 d. \*Which friend Thomas has painted a picture of him? (Keller, 2000)
- (2)

	<b>Syntactically gramm.</b>	<b>Semantically gramm.</b>	<b>Predicted acceptability</b>
a.	yes	yes	✓Which friend has Thomas painted a picture of?
b.	yes	no	?Which friend has Thomas painted the picture of? ??Which friend has Thomas lost the picture of?
c.	no	yes	*Which friend Sarah has painted a picture of?
d.	no	no	*Which friend Sarah has lost the picture of her?

- (3) a. \*Who do you wonder how will fix the car? (subjacency violation)  
 b. ?Which car do you wonder how to fix? (ECP violation)

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