

To 'Be', and Not to 'Have': Auxiliary Selection in Unaccusative Verbs in Italian

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This paper investigates the characteristics of unaccusative verbs in Italian with respect to the consistency with which these verbs select the auxiliaries 'be' (*essere*) and 'have' (*avere*) in compound tense forms. The study builds on the gradient approach to split intransitivity (Sorace 2000) by exploring the behaviour of 29 intransitive Italian verbs with respect to their core-peripheral features: auxiliary selection acceptability ratings and associated variance measures. Although there is clear support for the gradient approach in relation to the general order of semantic categories along the unaccusativity gradient, the results reveal that the ordering of subclasses within the Change group conflict with that currently proposed in the literature. In addition, the findings demonstrate the aspectual and lexical semantic characteristics of internally-caused change-of-state verbs in Italian require further investigation before their auxiliary selection behaviour can be properly understood. Furthermore, contrary to the gradient account, Existence verbs, the most stative and therefore the most peripheral subclass in the unaccusativity hierarchy, exhibit behaviour more characteristic of core unaccusative verbs. This study examines a wider range of semantic subclasses of unaccusative verbs than has hitherto been reported and identifies the core-peripheral boundary for Italian.¹

1. Introduction

The linguistic phenomenon known as split intransitivity has been identified consistently across unrelated languages; it refers to the observation that intransitive verbs fall into two broad categories: unaccusative (UA) or unergative (UE), the morpho-syntactic manifestation of which varies cross-linguistically, e.g., auxiliary selection, affixation and verb-subject word order. In English, the behaviour of UA and UE verbs is observable in construction types such as the resultative (1) and the Locative Inversion (LI) construction (2) [see Levin and Rappaport Hovav henceforth LRH, (1995, 2005) for a comprehensive review]:

- (1) a. The gate swung open (UA)
b. * Joanna shouted hoarse (UE)
c. * The gate swung itself open (UA)
d. Joanna shouted herself hoarse (UE)
- (2) a. On the horizon appeared a ship (UA)
b. * In the street shouted a man (UE)

In Romance and Germanic languages that exhibit auxiliary selection in compound tenses, the auxiliary *be* (*essere* in Italian) occurs with UA verbs, and *have* (*avere*) with UE verbs. Examples (3) and (4) illustrate the case for Italian.

- (3) Giovanna è arrivata (UA)
Joanna is.AUX arrived
'Joanna has arrived'

1 The author would like to thank the two anonymous referees for their constructive comments on an earlier version of this paper, Rita Balestrini for her assistance in translating the stimulus sentences used in this study and Dr Michael Hickey for his valuable input during the writing of this paper.

- (4) Giovanna ha sorriso (UE)
Joanna has.AUX smiled
'Joanna has smiled'

From a theoretical perspective, split intransitivity was initially explored by Perlmutter (1978) in the context of Relational Grammar; he proposed the Unaccusativity Hypothesis which was later developed by Burzio (1986) within the framework of Government and Binding Theory. The Unaccusativity Hypothesis accounts for split intransitivity by proposing that the single argument of UE verbs, e.g., *smile*, is base-generated pre-verbally, whereas the single argument of UA verbs, e.g., *arrive*, is base-generated post-verbally. Thus, the underlying syntactic configuration of intransitive verbs determines their subclass membership.

In parallel, alternative approaches have focussed on the semantic properties of the single argument of intransitive verbs. Dowty (1979), for example, comments that the arguments of UA predicates tend to involve 'patient-like' entities, e.g., *arrive*, *die* and *fall*, whereas the arguments of UE predicates tend to be more 'agentive' in nature, e.g., *smile*, *walk* and *talk*.

In the last 15 years, theorists have combined these earlier approaches by proposing a syntactico-semantic account of argument realisation patterns: the UA-UE distinction is determined at the semantic level by both aspectual and lexical semantic properties of verbs, and at the syntactic level it is encoded by underlying verb-argument structure (whether the single argument is generated pre- or post-verbally). This general theoretical perspective was initially established through the extensive work of LRH (1995), an approach that has been referred to as the Projectionist framework. More recently, these theorists have turned their focus to the mapping between aspects of verb meaning and event structure, and the role of discourse-related attributes of the construction (see Rappaport Hovav & Levin 1998 and LRH 2005 for a comprehensive review of this approach).

The work of Sorace (1993, 1995, 2000, 2004) extended the syntactico-semantic approach to account for the observation that certain semantic classes of verbs reliably exhibit the UA-UE distinction, whereas others show variability in classification. Sorace (2000) distinguishes between core (invariable) and peripheral (variable) semantic classes of verbs and has proposed a hierarchical organisation, or 'gradient', of semantic classes which emerges from the differential morpho-syntactic behaviour of UA-UE verbs. This hypothesis, the 'gradient approach', builds on the earlier observation (Grimshaw 1990; Baker 1997) that verbs denoting telic change (e.g., *arrive*) and change-of-state (e.g., *die*) are associated with unaccusativity, whereas those denoting both agentive and unaffecting processes (e.g., *sing*) are associated with unergativity.

Auxiliary selection provides the diagnostic for the classification of UA and UE verbs in Romance and Germanic languages that exhibit auxiliary selection in compound tenses (*be* or *have*), as illustrated in (3) and (4). Table 1 shows the Auxiliary Selection Hierarchy (ASH) proposed by Sorace (2000). The upper part of the table presents the hierarchy of semantic verb classes relating to UA verbs, and the inverted UE hierarchy is presented in the lower half. Thus, a gradient extends from canonical, or core, UA and UE verbs in the top and bottom semantic classes in Table 1 (these verbs exhibit categorical auxiliary selection) to verbs such as *run*, which fall on the periphery of the hierarchy (these exhibit variable auxiliary selection in that they can take either auxiliary depending on whether an endpoint is specified).

According to this approach, the ASH represents a gradient sensitivity to the aspectual and lexical semantic characteristics of individual verbs. These aspectual parameters are deemed to be potentially universal (Legendre & Sorace 2003). Thus, verbs at the core of the UA hierarchy denote telic, dynamic change, and those at the core of the UE hierarchy denote agentive, non-motional activity. Peripheral verbs, being less specified with respect to telicity and agentivity, tend to display less stable syntactic behaviour both within languages (dialectal variation) and across them, and, furthermore, the core-peripheral boundary varies cross-linguistically.



UA Hierarchy	Examples	Auxiliary Selection
1) Change of Location	<i>arrive</i>	selects BE (least variation) – UA  greatest variation in auxiliary selection across languages  selects HAVE (least variation) – UE
2) Change of State		
a) Inherently Telic	<i>die</i>	
b) Appearance	<i>appear</i>	
c) Indefinite Change		
i) Internally-Caused	<i>decay/rot</i>	
ii) Directed Motion	<i>rise</i>	
3) Continuation of Condition		
a) Inanimate Subject	<i>persist</i>	
b) Animate Subject	<i>stay</i>	
4) Existence of State		
a) Concrete State	<i>exist</i>	
b) Positional Verbs	<i>lie</i>	
c) Abstract State	<i>seem</i>	
1) Uncontrolled Processes		
a) Motional	<i>float</i>	
b) Verbs of Emission	<i>drip, echo, glow, smell</i>	
c) Involuntary Reaction	<i>shiver</i>	
d) Bodily Function	<i>cough</i>	
2) Controlled Processes		
a) Motional	<i>run</i>	
b) Non-motional, affecting	<i>yield</i>	
c) Non-motional, unaffecting	<i>sing</i>	
UE Hierarchy		

Table 1. Auxiliary Selection Hierarchy (adapted from Sorace 2000: 863-70).

The gradient approach has been used to describe the core-peripheral distinction within UA-UE verbs groups across different auxiliary-selection languages, e.g., Italian, French and Dutch (Sorace 2000) and German (Keller & Sorace 2003). With a specific focus on Italian, Sorace (1993, 1995) investigated native speaker auxiliary preference based on acceptability judgements, and Bard, Frenck-Metre and Sorace (2010) explored core-peripheral effects on processing times of UA and UE verb sets. Furthermore, it is acknowledged that auxiliary selection may also show variability within languages as demonstrated for Paduan by Cennamo & Sorace (2007). Sorace (2000) identified the order of the main UA semantic categories labelled 1-4 and UE categories 1-2, indicated in bold in Table 1. The subclasses labelled a), b), and i), ii), etc., have been added by the author; the names and order of these sub-classes are derived from the detailed discussion presented in Sorace (2000).

Table 2 shows the mapping between these semantic categories and subclasses, and how they are split between the two larger aspectual groupings of the UA hierarchy, Change and State, the key underlying characteristic of the former being telicity and the latter stativity. In this paper, the term ‘subclass’ refers to the most differentiated level of semantic groupings. The current study focuses on the verb patterns from the 8 UA semantic subclasses, 1-4a).

Aspectual Groupings	4 UA Semantic Categories (Sorace 2000)	8 Semantic Subclasses used in this study (derived from Sorace 2000: 863-70)
Change (Telicity)	1) Change of Location	1) Change of Location
	2) Change of State	2a) Change of State: Inherently Telic 2b) Change of State: Appearance 2ci) Change of State: Internally-Caused 2cii) Change of State: Directed Motion
State (Stativity)	3) Continuation of Condition	3a) Continuation of Condition: Inanimate 3b) Continuation of Condition: Animate
	4) Existence of State	4a) Concrete State: Existence

Table 2. Mapping of semantic categories and subclasses.

One of the objectives of the research reported here is to provide an empirically-based ordering of semantic subclasses along the UA gradient. As mentioned above, the order of subclasses within the semantic categories presented in Table 1 has been based on Sorace's (2000) analysis. However, there is inconsistency in the literature regarding the ordering of these subclasses, in particular with respect to Change-of-State categories (Sorace 2004; Legendre & Sorace 2003; Legendre 2007), with the exception of the Inherently Telic subclass, which has been consistently positioned immediately below Change of Location. It will also be noted, in Table 1, that the Continuation of Condition semantic category contains two subclasses: verbs which can take animate or inanimate subjects. The latter subclass has been positioned higher in the UA hierarchy than the former, based on the distinction outlined above that agentivity is a semantic feature more closely associated with UE than UA verbs and should therefore be relevant in the more peripheral regions of the UA hierarchy. Previous research on Italian has not explored the effect of animacy on the relative strength of auxiliary selection choice.

The overall aim of the research reported here is to investigate the UA gradient in Italian as a function of auxiliary selection in a wider range of verbs than has hitherto been employed. This study explores the nature of the core-peripheral distinction in UA verbs in Italian in terms of:

- the order of semantic subclasses along the UA hierarchy
- inter-UA subclass variability (variance in auxiliary selection between semantic subclasses)
- intra-UA subclass variability (participant variance within semantic subclasses).

2. Method

2.1. Participants

A total of 26 native Italian speakers participated in this study; they were all enrolled on postgraduate programmes at the University of Reading and were paid £10.00 for their participation. There were 12 males and 14 females with respective mean ages of 31.50 and 29.33 years.

2.2. Preparation of test sentences

Verbs were selected from the categories of intransitive verbs listed in LRH (1995, Appendix A); at least one representative from each semantic subclass listed in Table 1 was included. Of the 28 verbs selected, *remain* was combined with both an animate and inanimate subject, thus generating 29 unique sentences in Italian. These sentences were checked by a native Italian speaker for grammaticality and to ensure that verb-subject collocations were legitimate.

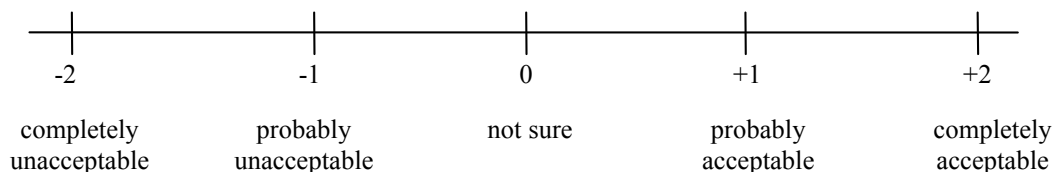
Two versions of each sentence were produced, one employing the auxiliary *essere* and the other *avere*. To ensure that the two versions of the sentence were identical, the subject NP was indefinite,² singular and masculine in all cases; if feminine and/or plural NPs had been employed, gender and number agreement would have been required on the past participle in those sentences where the auxiliary *essere* was used, as illustrated in (3) which contains a feminine NP subject. The stimulus set of 58 sentences is presented in Appendix 1.

Two stimulus lists were compiled using different randomised orders of the 58 sentences; each list was randomly assigned to half the participants, so that all participants evaluated all 58 sentences.

2 Indefinite subject NPs were employed in the current study in order to replicate the stimulus set used by the author in an investigation of unaccusativity in Mandarin (Laws & Yuan 2010). In Mandarin, unaccusative verbs allow V-S syntax (in particular the Locative Inversion construction) with indefinite, but not definite subjects; therefore the format of the sentences which made up the set for this study was devised to permit direct cross-linguistic comparisons.

2.3. Procedure

The experiment was conducted by email. The participants' task was to employ the following scale, based on Yuan (1999), Shan and Yuan (2007) and Laws and Yuan (2010), to evaluate sentence acceptability:



Participants were sent detailed instructions on how to complete the task and two example sentences were provided to illustrate the extremes of the acceptability / unacceptability continuum. The scale from -2 to +2 was presented below each sentence and participants were required to use bold or coloured font to indicate their rating. If they chose any rating other than +2, i.e., -2, -1, 0 or +1, they were required to provide a reason for this by selecting one or more items from the following list of options:

- a) Incorrect use of *avere* or *essere*
- b) The reflexive form of the verb would sound better
- c) The grammar is correct, but the choice of tense is unusual
- d) If not a) – c), please state:

This precaution was put in place in case there were any other factors relating to the sentences themselves which influenced the participants' judgements of grammaticality. The average time to complete the task was 40 minutes.

3. Results and discussion

The mean acceptability ratings and standard deviations for the 29 sentences are presented in Appendix 2. As described in 2.3, participants were asked to provide their reasons for assigning the acceptability ratings -2, -1, 0 or +1. In the majority of cases, the reason for unacceptability was 'a) Incorrect use of *avere* or *essere*', but there were a few cases where reason 'b) The reflexive form of the verb would sound better' was selected. Since both these options relate to the use of an auxiliary in combination with a particular verb, the related acceptability ratings were included in the data set analysed.

However, selection of options 'c) The grammar is correct, but the choice of tense is unusual', or 'd) If not a) – c), please state:', were not dependent on the acceptability of specific auxiliary-verb combinations. In the former case, for example, 4 participants claimed that sentence 29 in Appendix 1 would sound better if the verb were in the imperfect rather the present perfect form: *un palazzo bellissimo esisteva qui per molti anni*; this observation may be due to regional differences in the use of the imperfect in Italian. An example of d) included the following additional reason for unacceptability: 2 participants preferred to position the subject post-verbally in sentence 9: *è successo un incidente sul ponte*, thus employing the V-S construction: *happened an accident on the bridge*; this is an example of free inversion, a phenomenon observed in null-subject languages like Italian (Burzio 1986). The V-S construction occurs very frequently in Italian, particularly with UA verbs that have an indefinite subject. The tendency for participants to prefer this construction could have been reduced by employing definite rather than indefinite subject NPs in the stimulus set. (Footnote 2 gives the rationale for this feature of the design).

Where an acceptability judgement was affected by factors c) or d), the rating for that sentence was removed from the analysis in order not to contaminate the data relating to

auxiliary-verb combinations. This amounted to removing only 32 scores from the total of 1,508 (29 sentences x 2 auxiliaries x 26 participants). This reduction is minimal, but ensures that the data analysed have not been affected by extraneous factors relating to the test sentences themselves.

Therefore, the means reported in Appendix 2 are based on the remaining 1,476 data scores; the number of scores removed for tense or other reasons is included in the row for each sentence pair in the ‘Excluded’ column. The number of participants who felt that the verb should be used reflexively is entered in the ‘Reason / b) Rflxv’ column, and, as mentioned above, the related acceptability scores were included in the analysis.

3.1. The order of semantic subclasses along the UA hierarchy

In order to compare the ordering of semantic subclasses along the UA hierarchy with that proposed by Sorace (2000), verb means were grouped in accordance with the gradient presented in Table 1. Resultant means and standard deviations are presented in Table 3.

Semantic Subclass	Means		Standard Deviations	
	<i>essere</i>	<i>avere</i>	<i>essere</i>	<i>avere</i>
1) Change of Location	+2.00****	-2.00	0.00	0.00
2) Change: Inherently Telic	+2.00****	-2.00	0.00	0.00
3) Change: Appearance	+2.00****	-2.00	0.00	0.00
4) Change: Internally-Caused	+1.79****	-1.05	0.69	1.45
5) Change: Directed Motion	+1.97****	-1.67	0.16	0.93
6) Cont of Cond (Inanimate)	+1.56****	-1.15	1.09	1.51
7) Cont of Cond (Animate)	+2.00****	-1.69	0.00	0.96
8) Exist: Concrete Existence	+1.98****	-1.94	0.15	0.24

*p<0.05; **p<0.025; ***p<0.01; ****p<0.001

Table 3. Semantic subclasses: auxiliary means.

A 2-way ANOVA (8 x 2) was conducted: the two within-participants factors were semantic subclass with 8 levels and Auxiliary type with 2 levels (*essere/avere*).

The main effect of semantic subclass was statistically significant ($F=12.559_{(7, 175)}$, $p<0.001$), as was the main effect for Auxiliary type ($F=4,920.229_{(1, 25)}$, $p<0.001$). The 2-way interaction, semantic subclass x Auxiliary, also reached significance ($F=23.964_{(7,175)}$, $p<0.001$); the significance levels of related 2-tailed *t* tests for *essere-avere* comparisons are also included in Table 3.

Mean acceptability ratings from Table 3 are plotted in Figure 1; the corresponding standard deviations are plotted in Figure 3 and the related discussion on variability data patterns is reported in section 3.3. To separate semantic subclasses into subgroups, a gap has been introduced between the Change, Continuation of Condition and Existence categories.

Figure 1 reveals some interesting observations relating to the ordering of semantic subclasses within the UA hierarchy for Italian. As expected, acceptability ratings for the core category Change of Location, as well as the subclass Inherently Telic (*die* and *be born*), show an exclusive preference for the auxiliary *essere* and a categorical rejection of the auxiliary *avere*. This prototypical UA pattern is also observed here for verbs of Appearance, suggesting that in Italian, the Appearance subclass is also core.

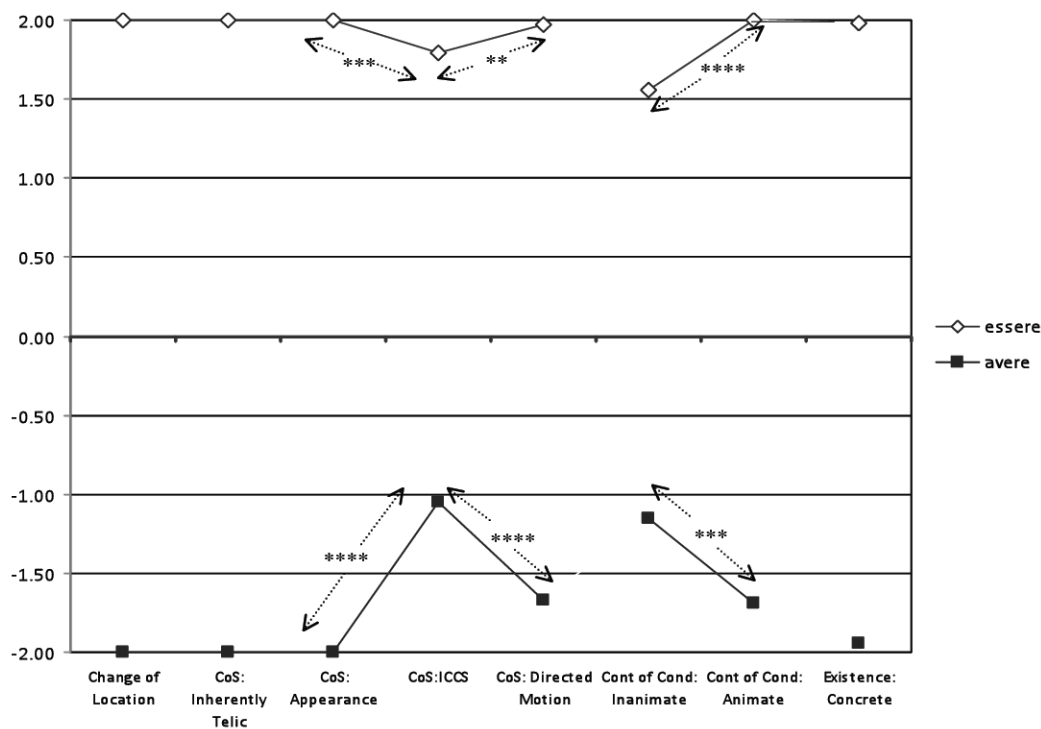


Figure 1. Semantic subclasses: auxiliary means.

As noted in the Introduction, a consistent ordering of Change-of-State semantic subclasses (excluding Inherently Telic) has not been proposed in the literature, although Sorace (2000, 2004) argues that verbs of Internally-Caused Change-of-State are more telic than verbs of Directed Motion. However, the evidence here indicates the reverse, i.e., the semantic profile of verbs that make up the Directed Motion subclass is more telic and dynamic than that of the verbs tested in the Internally-Caused Change-of-State subclass. In fact, if the order of points corresponding to these semantic subclasses is transposed (so that CoS: Directed Motion precedes CoS: ICCS on the x axis, in Figure 1), a smoother progression along the telicity-based portion of the UA hierarchy emerges for both auxiliaries; the re-ordered points reflect decreasing acceptability of *essere* within the Change subclasses, and a continuous increase in the acceptability of *avere*. Interestingly, an identical finding has been obtained for Mandarin (Laws & Yuan 2010).

This finding for Italian and Mandarin is important because it conflicts with Sorace's (2000) analysis of verbs of indefinite change, based on the work of Bertinetto and Squartini (1995), where verbs of Internally-Caused Change-of-State, such as *decay/rot* "tend to trigger an interpretation in which the telos is reached", whereas verbs of Directed Motion, such as *rise*, "favour the interpretation in which there is an approximation to a telos which remains unattained" (Sorace 2000: 865). Therefore, although verbs in both semantic subclasses are deemed telic, the data reported here produce an outcome which is the reverse of the prediction generated from Bertinetto and Squartini's analysis.

The comparison of means with respect to the three Stative subclasses reveals a set of unexpected results. Figure 1 demonstrates that contrary to the expectation that variable behaviour should increase as telicity decreases, rather, in the absence of telicity, variable behaviour decreases as stativity increases: the most Stative subclass, Existence, which was predicted to show the greatest variability in auxiliary selection, instead produces a profile virtually indistinguishable from the core category Change of Location. Furthermore, the next most Stative subclass, Animate Continuation of Condition, produces a profile more characteristic of core verbs than the least Stative subclass, Inanimate Continuation of

Condition³; the inter-subclass difference being significant for both auxiliaries. In other words, when viewed as a whole, the subclasses positioned at the extremes of the UA hierarchy exhibit core-like, categorical auxiliary selection and intermediate subclasses exhibit peripheral, variable auxiliary-selection patterns. Figure 2 shows a stylised representation of the UA gradient for Italian.

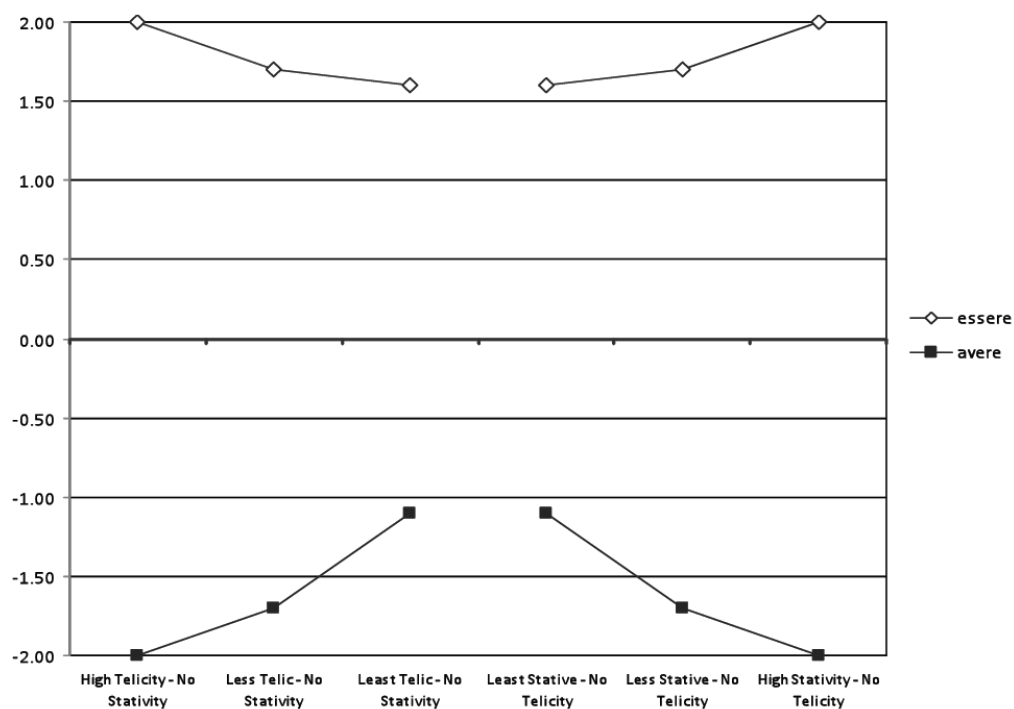


Figure 2. Stylised UA hierarchy for Italian.

These findings raise a number of issues that challenge the current conceptualisation of the gradient approach for Italian: the relationship among the three aspectual properties that underlie the UA hierarchy (telicity, stativity and agentivity) and the effect of animacy.

3.2. Inter-UA class variability

Figure 3 presents a graphical representation of the standard deviation data listed in Table 3. Since each point represents variability across all participants, significance tests cannot be used to compare differences between values.

Comparison between Figures 1 and 3 reveals that high acceptability means produce low standard deviations, and vice versa, i.e., standard deviations for sentences using the auxiliary *avere* are consistently higher than those containing *essere* (i.e., verbs in the Internally-Caused Change-of-State, Directed Motion and Continuation of State subclasses). By contrast, with respect to the highly telic verbs in the Change group, categorical auxiliary selection results in zero variance.

As noted in 3.1, in relation to the auxiliary means in the Change group, a smoother UA gradient would be achieved if the points for Directed Motion and Internally-Caused Change-of-State were reversed. Given the higher variance associated with the latter, such a transposition is required for verb patterns to coincide with Sorace's (2000) proposal that the core-peripheral gradient is characterised by increased variability.

3 An anonymous reviewer has pointed out that the results obtained here for Continuation of Condition verbs are also observable with certain UE subclasses that take either animate or inanimate subjects, e.g., Bodily Function and Emission: the variants with inanimate subjects combine with both *essere* and *avere*, whereas the animate versions combine more exclusively with *essere*. Thus (in)animacy affects auxiliary choice patterns.

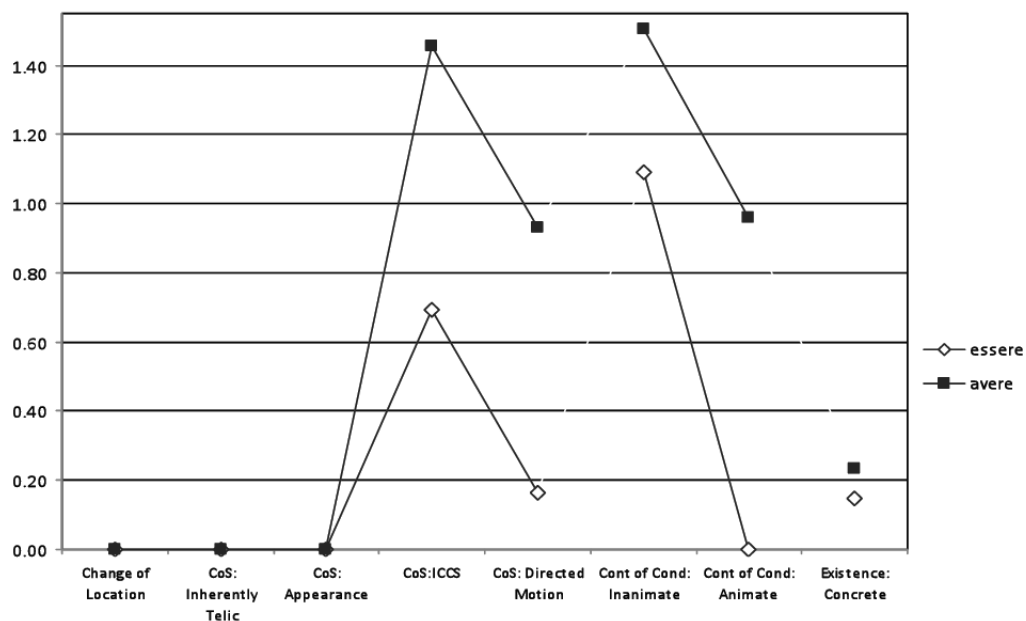


Figure 3. Semantic subclasses: standard deviations.

The pattern of variance within the subclasses of the Stative group (Figure 3) is very much in line with the auxiliary selection patterns (Figure 1) discussed in 3.1: as stativity increases (through Inanimate Continuation of Condition to Animate Continuation of Condition and finally Existence) variability decreases. Therefore, the pattern of variance measures corroborates the conclusion drawn in 3.1: the current conceptualisation that the UA gradient reflects a progression from core to peripheral verb behaviour needs to be reformulated for Italian.

3.3. Intra-UA subclass variability

Related 2-tailed *t* tests were conducted on auxiliary means for each of the 29 verbs. Significance levels are included in Appendix 2 against the higher mean for each pair. It is immediately clear that all auxiliary comparisons are statistically very robust ($p < 0.001$ or $p < 0.01$), but that there are 2 distinct exceptions: verb 12, *ferment*, where the *essere-avere* mean difference only just reaches significance, and verb 24, *persist*, where no significant difference obtains, although the direction of the mean difference still shows an advantage for *essere*.

As discussed in 3.2, in the first 3 Change semantic subclasses (Change of Location, Inherently Telic and Appearance), acceptability judgements consistently converge on the extremes of the rating scale: +2 for *essere* and -2 for *avere*. Furthermore, it can also be seen from Appendix 2 that within the Change group, this pattern is observed with the Internally-Caused Change-of-State verb *grow* and 2 of the 3 Directed Motion verbs: *descend* and *rise*. In the Continuation of Condition category, both variants of the verb *remain* also show this pattern, as does the main verb *be* in the Existence subclass.

The semantic subclass that contains the greatest variability is Internally-Caused Change-of-State: the full range of behaviour can be observed: at one extreme there are verbs which produce highly polarised auxiliary means e.g., *grow*; while at the other, there are verbs like *ferment* where auxiliary means are both positive and only just differ significantly. To appreciate the qualitative differences in auxiliary-selection behaviour in this subclass, auxiliary means, sorted in ascending order for *avere*, are plotted in Figure 4. The graph has been annotated to indicate the number of participants who selected reason 'b) The reflexive form of the verb would sound better' against those verbs for which the rating +2 was not selected for the sentence containing the auxiliary *essere*.

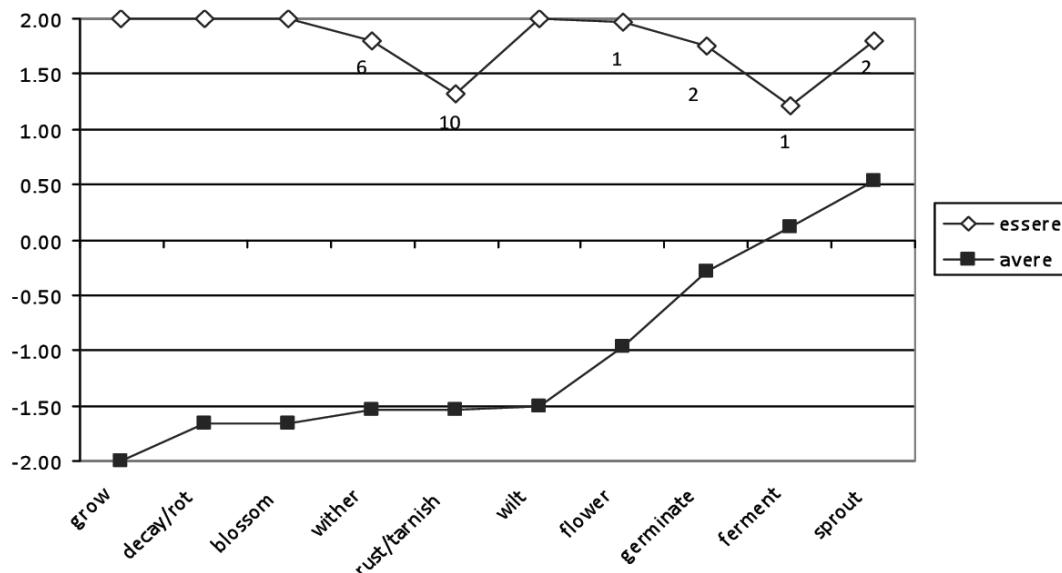


Figure 4. Internally-Caused Change-of-State Verbs: sorted auxiliary means.

The current study is the first to analyse the auxiliary-selection behaviour of these verbs systematically in Italian, which is why a larger selection of verbs was included in this subclass. The pattern of means in Figure 4 suggests that a focused investigation of the characteristics of this subclass is needed, and it is likely that this exercise will result in further sub-categorisation of this semantic subclass.

Looking at the overall trends (Figure 1), it is clear that the two auxiliaries appear in complementary distribution across the range of UA verbs tested, thus reflecting the congruence between the event structure of these verbs and that of the auxiliary *essere*. Nevertheless, individual verbs contribute quantitatively differently to the overall variation for any given subclass. This observation underlines the importance of comparing behaviour at both verb and semantic subclass level when investigating the characteristics of split intransitivity.

4. Conclusions

The results presented here provide more comprehensive empirical data relating to unaccusativity in Italian than has hitherto been published. In general, the results support the gradient approach to split intransitivity; however, not all aspects of the data can be readily accounted for within this framework.

This study confirms, in accordance with the gradient approach, that the core UA semantic subclasses in Italian are Change of Location and Inherently Telic; this finding was supported by both auxiliary mean and standard deviation measures. A universal order for semantic subclasses within the Change group has not to date been identified, and although attempts have been made to determine this on the basis of underlying aspectual and lexical semantic characteristics (Legendre 2007), conflicts still persist in the literature (Sorace 2000; Legendre & Sorace 2003). The order for Italian has been identified here as: Appearance > Directed Motion > Internally-Caused Change-of-State. Interestingly, the same order has been observed for Mandarin (Laws & Yuan 2010).

In relation to this, the analysis of Internally-Caused Change-of-State verbs revealed that auxiliary-selection behaviour of individual verbs within this subclass contained more qualitative differences than verbs in any other UA subclass examined here. Clearly, it is necessary to obtain a more fine-grained analysis of the inherent aspectual and lexical

semantic characteristics of these verbs in order to interpret more conclusively the range of behaviours they exhibit.

The gradient approach suggests that the core-peripheral boundary varies cross-linguistically (Sorace, 2000); it appears from the data presented in this study that the boundary for Italian is between Appearance and Directed Motion. Again, this is an observation that has not hitherto been identified.

Telicity and stativity are deemed to be the semantic features underlying the UA gradient: telicity decreases as stativity increases across semantic subclasses. Support for this claim was obtained with respect to the Change subclasses, i.e., as telicity decreases, variability increases.

However, this account could not explain the qualitative differences across the Stative subclasses. Contrary to the expectation that greatest variability is observed at the most stative end of the UA hierarchy (where verbs are predicted to accept both auxiliaries more readily than core verbs), mean and standard deviation measures for the Existence verbs *be* and *exist* reflect patterns more typical of core verbs; the former being indistinguishable from members of the Change of Location category. Furthermore, as stativity decreases (Continuation of Condition subclasses) so does variability, although the nature of the interaction between auxiliary selection and the animacy of the verb subject requires further exploration. Therefore, taken together, these findings indicate that for Italian, greater stativity does not necessarily imply greater peripherality.

In conclusion, this study has identified the characteristics of the UA gradient for Italian. Furthermore, the results emphasise the importance of understanding the auxiliary-selection behaviour of the individual verbs within each subclass in order to interpret the behaviour of the subclass as a whole. Finally, although the gradient framework has been able to account for some of the results reported here, further research will need to isolate the potential effects of dialectal differences and the role of animacy on auxiliary-selection variability.

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Appendix 1. Test sentences from each semantic subclass (English and Italian translation)

Change of Location	
1.	a man <u>arrived</u> at the school un uomo è/ha arrivato a scuola
2.	a boy <u>came</u> to the door un ragazzino è/ha venuto alla porta
3.	a prisoner <u>escaped</u> from the cell un prigioniero è/ha fuggito dalla cella
4.	a book <u>fell</u> on the floor un libro è/ha caduto per terra
Change of State: Inherently Telic	
5.	a baby was <u>born</u> in the hospital un bambino è/ha nato in ospedale
6.	a cat <u>died</u> in the village un gatto è/ha morto nel villaggio
Change of State: Appearance	
7.	a policeman <u>appeared</u> at the window un poliziotto è/ha apparso alla finestra
8.	a problem <u>arose</u> from the discussion un problema è/ha sortito dalla discussione
9.	an accident <u>happened</u> on the bridge un incidente è/ha successo sul ponte
Change of State: Indefinite Change: Internally-Caused Change-of-State	
10.	a flower <u>blossomed</u> on the windowsill un fiore è/ha sbocciato sul davanzale
11.	a tomato <u>decayed/rotted</u> on the plate un pomodoro è/ha marcito sul piattino
12.	a barrel of beer <u>fermented</u> in the corner un barile di birra è/ha fermentato nell'angolo
13.	a cherry tree <u>flowered</u> in the park un ciliegio è/ha fiorito nel parco
14.	a seed <u>germinated</u> between the paving-stones un seme è/ha germinato fra le piastre di pietra
15.	a cherry tree <u>grew</u> in the park un ciliegio è/ha cresciuto nel parco
16.	a beech tree <u>sprouted</u> in the garden un faggio è/ha germogliato nel giardino
17.	a silver spoon <u>tarnished/rusted</u> in the drawer un cucchiaio d'argento è/ha arrugginito nella scatola
18.	a flower <u>wilted</u> in the vase un fiore è/ha appassito nel vaso
19.	a bunch of grapes <u>withered</u> on the vine un grappolo d'uva è/ha avvizzito sulla vite

Change of State: Indefinite Change: Directed Motion	
20.	a bank of clouds <u>advanced</u> from the east un banco di nuvole è/ha avanzato dall'est
21.	a parachute <u>descended</u> from the sky un paracadute è/ha sceso dal cielo
22.	some smoke <u>rose</u> from the chimney del fumo è/ha salito dalla ciminiera
Continuation of Condition: Inanimate Subjects	
23.	a discussion about politics <u>lasted</u> several hours un discorso di politica è/ha durato parecchie ore
24.	a terrible storm <u>persisted</u> in the north un uragano terribile è/ha persistito nel nord
25.	a rain cloud <u>remained</u> over the field un nembo è/ha rimasto sopra il campo
Continuation of Condition: Animate Subjects	
26.	a man <u>remained</u> in the house un uomo è/ha rimasto nella casa
27.	a young boy water <u>survived</u> on the desert island un ragazzino è/ha sopravvissuto sull'isola deserta
Existence of State: Concrete State	
28.	an old friend of mine has <u>been</u> to Egypt several times un mio vecchio amico è/ha stato in Egitto parecchie volte
29.	a beautiful palace <u>existed</u> here for many years un palazzo bellissimo è/ha esistito qui per molti anni

Appendix 2. Descriptive statistics for each verb-auxiliary pair

	Means		Standard Devs		Reason b) Rflxv	Excluded	
	<i>essere</i>	<i>avere</i>	<i>essere</i>	<i>avere</i>		c) Tense	d) Other
1) Change of Location							
1. arrive → <i>arrivare</i>	+2.00****	-2.00	(0.00)	(0.00)			
2. come → <i>venire</i>	+2.00****	-2.00	(0.00)	(0.00)			
3. escape → <i>fuggire</i>	+2.00****	-2.00	(0.00)	(0.00)			
4. fall → <i>cadere</i>	+2.00****	-2.00	(0.00)	(0.00)			
2) Change: Inherently Telic							
5. be born → <i>nascere</i>	+2.00****	-2.00	(0.00)	(0.00)			
6. die → <i>morire</i>	+2.00****	-2.00	(0.00)	(0.00)			
3) Change: Appearance							
7. appear → <i>apparire</i>	+2.00****	-2.00	(0.00)	(0.00)			
8. arise → <i>sorgere</i>	+2.00****	-2.00	(0.00)	(0.00)			
9. happen → <i>succedere</i>	+2.00****	-2.00	(0.00)	(0.00)		2	2
4) Change: Internally-Caused							
10. blossom → <i>sbocciare</i>	+2.00****	-1.65	(0.00)	(0.89)			
11. decay/rot → <i>marcire</i>	+2.00****	-1.67	(0.00)	(0.87)		2	
12. ferment → <i>fermentare</i>	+1.21*	+0.12	(1.25)	(1.58)	1	2	
13. flower → <i>fiorire</i>	+1.96****	-0.96	(0.20)	(1.46)	1		
14. germinate → <i>germinare</i>	+1.76****	-0.28	(0.66)	(1.65)	2		2
15. grow → <i>crescere</i>	+2.00****	-2.00	(0.00)	(0.00)			
16. sprout → <i>germogliare</i>	+1.80****	+0.54	(0.82)	(1.48)	2		1
17. tarnish/rust → <i>arrugginire</i>	+1.32****	-1.54	(1.07)	(1.03)	10	1	
18. wilt → <i>appassire</i>	+2.00****	-1.50	(0.00)	(1.30)			
19. wither → <i>avvizzire</i>	+1.80****	-1.54	(0.71)	(0.99)	6	1	
5) Change: Directed Motion							
20. advance → <i>avanzare</i>	+1.92****	-0.96	(0.28)	(1.43)	1	4	
21. descend → <i>scendere</i>	+2.00****	-2.00	(0.00)	(0.00)			
22. rise → <i>salire</i>	+2.00****	-2.00	(0.00)	(0.00)		1	

	Means		Standard Devs		Reason	Excluded	
	<i>essere</i>	<i>avere</i>	<i>essere</i>	<i>avere</i>		b) Rflxv	c) Tense
6) Cont of Cond (Inanimate)							
23. last → <i>durare</i>	+2.00****	-1.62	(0.00)	(1.02)		1	
24. persist → <i>persistere</i>	+0.55	+0.41	(1.60)	(1.71)		4	4
25. remain → <i>rimanere</i>	+2.00****	-2.00	(0.00)	(0.00)			
7) Cont of Cond (Animate)							
26. remain → <i>rimanere</i>	+2.00****	-2.00	(0.00)	(0.00)			
27. survive → <i>sopravvivere</i>	+2.00****	-1.38	(0.00)	(1.30)	2		
8) Exist: Concrete Existence							
28. be → <i>essere</i>	+2.00****	-2.00	(0.00)	(0.00)			
29. exist → <i>esistere</i>	+1.95****	-1.88	(0.22)	(0.33)		4	1
Overall Mean	1.88	-1.53				22	10
Standard Deviation	0.56	1.13					

*p<0.05; **p<0.025; ***p<0.01; ****p<0.001

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