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1 The emergence of typological hierarchies: the animacy/referential hierarchy

(1) Typological hierarchies:

- Typological hierarchies are widely perceived as one of the major empirical results of typological research
- In their classical sense, typological hierarchies are generalizations describing chains of synchronic implicational relationships holding between different grammatical phenomena cross-linguistically.
- Sometimes, the ranking of different elements along the hierarchy is meant to provide a representation of the distribution of some non-implicational phenomenon pertaining to these elements.

(2) The animacy/referential hierarchy:

1st person pronouns > 2nd person pronouns > 3rd person pronouns > human > animate > inanimate (Croft 2003: 130, among others)

(3) The animacy/referential hierarchy has been used to describe several cross-linguistic distributional patterns in various grammatical domains:

- Case marking alignment: If accusative alignment in case marking is used for any NP type on the hierarchy, then it is used for all NP types to the left of it. On the other hand, if ergative alignment in case marking is used for any NP type, then it is used for all NP types to the right of it.
- Singular vs. plural distinctions: If a language makes singular vs. plural distinctions for any NP type on the hierarchy, then it makes these distinctions for all NP types to the left of it.

- Hierarchical alignment (non-implicational):
  - Direct-inverse marking: Some languages use dedicated morphology (inverse affixes) to distinguish between the cases where a speech act participant is being acted upon by a non speech act participant, while the reverse situation where a speech act participant acts upon a non speech act participant is either not indicated overtly or indicated by means of different morphology (direct afffixes). Direct and inverse affixes are also sometimes used in individual languages to indicate various combinations of speech act participants (first person acting on second, or vice versa) or non speech act participants (for example, third person obviative acting on third person proximate, or vice versa).
  - Indexation: bound person forms sometimes index speech act participants in preference to non speech act participants independently of role, that is, first or second person participants are

always indexed, while third person participants are either never indexed or indexed only when no first or second person participant is present.

(4) What are the motivations for the distributional patterns described by typological hierarchies?

- Hierarchies are often assumed to provide a representation of the scalar ranking of different elements with regard to particular properties, which gives rise to the distributional patterns described by the hierarchies.
- But this assumption is based on the synchronic patterns described by individual hierarchies, not the actual diachronic processes that give rise to these patterns from one language to another.
- So how do these patterns actually emerge cross-linguistically, and do the relevant processes provide evidence for the explanations provided for individual hierarchies on synchronic grounds?

(5) Case marking alignment:

- The distribution of ergative and accusative case marking alignment along the animacy/referential hierarchy has been related to the relative likelihood of different NP types occurring as A and P arguments. Pronouns, animate and definite nouns are less likely to occur as P arguments, hence, when they do, the P role is disambiguated through the use of overt morphology, yielding an accusative pattern. Inanimate and indefinite nouns and nouns as opposed to pronouns are less likely to occur as A arguments, hence, when they do, the A role is disambiguated through overt morphology, yielding an ergative pattern (Dixon 1979 and 1994, Comrie 1989, DeLancey 1981, Song 2001, among others).

(6) Some diachronic processes leading to ergative and accusative patterns restricted to particular NP types:

- Ergative patterns restricted to inanimates can originate from instrumentals: '(3SG) did Y with X' >'X ERG did Y', with the instrumental marker becoming an ergative marker (Garrett 1990, Mithun 2005: (24)).
- Ergative patterns not used with pronouns can originate from the development of an ergative marker from a demonstrative or a personal pronoun used in apposition to an A argument to emphasize that the latter encodes new/unexpected information: 'X, he/ this one, did Y' > 'X ERG did Y' (McGregor 2006 and 2008: (8)).
- Deictic elements indicating action towards a speech act participant sometimes give rise to ergative markers not used with 1st/2nd person pronouns: 'X did something to me/you' > 'X ERG did something here to me/you (Rude 1991: (9)).

- Accusative patterns restricted to pronouns and animate/definite nouns can originate from the development of an accusative marker from a topic marker (König 2008, Iemmolo 2010 and references therein: (10)).

Hanis Coos (Coosan)

(7) (a) **x**=*yɨqántštextbarime:ẋ* *mæ* *hanƛ* *eʔkwɨnai:ɬ*
ERG=last people shall they.see.thee
'The last generation shall see you.' (Mithun 2005)

(b) *k'wɨn-t* **x**=*mɨl:aqətš*
shoot-TRANS OBL=arrow
'He shot at him with an arrow.' (Mithun 2005)

Bagandji (Australian)

(8) *yaḍu-***ḍuru** *gāndi-d-uru-ana*
wind-DEM/ERG carry-FUT-3SG.SUBJ-3SG.OBJ
'**This** wind will carry it along / The wind will carry it along' (Hercus 1982: 63)

Sahaptin (Sahaptian)

(9) (a) *i-q'ínun-***ɨm**-*a*
3NOM-look-this.way-PAST
'He looked this way' (Rude 1991: 38)

(b) *áw-naš i-nák-wina k'waali-***nɨm**
now-1SG 3NOM-carry-go dangerous.one-ERG
'Now the dangerous one has taken me along.' (Rude 1991: 27)

Kanuri (Nilo-Saharan)

(10) (a) *Músa shí-***ga** *cúro*
Musa 3SG-OBJ saw
'Musa saw him' (Cyffer 1998: 52)

(b) *wú-***ga**
1SG-as.for
'As for me' (Cyffer 1998: 70) op

(11) Diachrony and traditional explanations of the distribution of ergative and accusative case marking alignment (Gildea 1998, Creissels 2008, Cristofaro 2013, 2014):

- Constraints in the distribution of ergative and accusative patterns are directly related to the nature of the source construction:
  - Instrumentals do not usually apply to 1st/2nd person pronouns (Garrett 1990), and demonstratives/3rd person pronouns used to signal new/unexpected information do not apply to pronouns either, because pronouns represent given information (McGregor 2006). It is then natural that ergative markers derived from these sources should have the same distribution.
  - Deictics indicating action towards speech act participants will not apply to 1st/2nd person agents, so the resulting ergative markers will have the same distribution.

  - Topics are usually pronominal, animate and definite, so it is natural that accusative markers derived from topic markers should be restricted to pronouns and animate/definite nouns.

- All this is independent of the need to disambiguate particular types of A or P arguments. In fact, when ergative or accusative markers derive from elements not restricted to particular NP types, they are not restricted to these NP types either:
  - Ergative markers sometimes derive from the markers used on the notional A argument of a nominalization or a resultative contruction as the latter is reanalyzed: 'To X will be the Verbing of Y' > 'X ERG will Verb Y' ((12)); 'Y is Y's Verbed thing' > 'X ERG Verbed Y' ((13)-(15)). The relevant argument can be nominal, pronominal, animate, and inanimate, and the resulting ergative marker applies to all of these NP types.

  - Accusative markers sometimes derive from the markers used to encode the notional P argument of a nominalization, e.g. 'X is occupied with the Verbing of Y' > 'X is Verbing Y OBJ' ((16)). The relevant argument can be nominal, pronominal, animate, and inanimate, and the resulting ergative marker applies to all of these NP types.
  - Accusative markers can also derive from serial verbs, e.g. 'take X (and) Verb (X)' > 'X OBJ Verb' Serial verbs can have both animate and inanimate P arguments, and the resulting accusative markers apply to both animate and inanimate nouns ((17)).

- The distribution of ergative and accusative patterns may not reflect a unified phenomenon:
  - Restrictions in the distribution of ergative vs. accusative alignment reflect restrictions in the distribution of the source construction, so it is not clear that they are related to some principle pertaining to the

distribution of the resulting alignment patterns (e.g. disambiguating the argument roles that are more in need of disambiguation).

– The same type of restrictions can be due to the properties of different source constructions in different cases (e.g. different source constructions all lead to ergative patterns not being used with 1st/2nd person pronouns), hence it is not clear that there is a single principle motivating the restrictions.
– Likewise, the use of a particular pattern in a particular context can originate differently in different cases (e.g. ergative patterns used for nouns can originate from constructions restricted to nouns or constructions also used with pronouns), so it is not clear that it can be accounted for in terms of a single principle.

Cariña (Cariban)

(12) *a-eena-rɨ* **ɨ-'wa**-*ma*
2-have-NOMLZR 1-DAT/ERG-3.be
'I will have you' (from a nominalized construction 'To me it will be your having': Gildea 1998: 169)

West Greenlandic (Eskimo-Aleut)

(13) **piniartu-t** *terianniaq* *taku-a-at*
hunter-REL.PL fox.ABS see-INDIC-3PL.3SG
'The hunters saw the fox.' (originally 'the hunters's seen thing (was) the fox.': Fortescue 1995: 62-7)

Old Persian (Indo-European)

(14) (a) *ima tya* **manā** *kartam pasāva yaθā xšāyaθiya*
that which 1SG:GEN do:PTCPL after when king
abavam
become:PAST:1SG
'This is that which was done by me (lit. 'my deed')' (Haig 2008: 26)

(b) *avaθā*=**šām** *hamaranam kartam*
thus=3PL.GEN battle do:PTCPL
'Thus by them battle was done/ their battle was fought/ they engaged in battle.' (Haig 2008: 46)

Late Middle Indo-Aryan (Indo-European)

(15) (a) *laddh-a* *tuhuṃ* **maiṃ** *im-aṃmi*
find-PERF.PTCPL.NOM 2SG.NOM 1SG.INSTR this-LOC
van-aṃmi
wood-LOC
'You are found in this forest by me/ I have found you in this forest.'
(Bubenik 1998: 148)

(b) *tā* *keumai-eṃ* *hauṃ* *ghar-aho*
then Ketumaki-INSTR 1SG.NOM home-OBL
nī-ya
take-PERF.PTCPL.NOM
'Then I was brought home by Ketumaki/ Then Ketumaki brought me home.' (Bubenik 1998: 148)

Wayana (Carib)

(16) **ɨ**-*pakoro-n* *iri-Ø* *pək* *wai*
1-house-POSS/OBJ make-NOMLZR occ.with 1.be
'I'm (occupied with) making my house (lit. 'my house's making') (Gildea 1998: 201)

Twi (Niger-Congo)

(17) (a) *ɔkɔm* **de** *me*
hunger take me
'Hunger takes me' (Lord 1993: 70) [from an earlier description of the language]

(b) *o*-**de** *afoa* *ce* *boha-m*
he-OBJ sword put scabbard-inside
'He put the sword into the scabbard' (Lord 1993: 66)

(c) *wo̲*-**de** *no* *ye̲e̲* *o̲safohéne*
they-OBJ him make captain
'they made him captain' (Lord 1993: 79)

(18) Hierarchical alignment:

- Hierarchical alignment is usually accounted for by assuming a psychologically relevant ranking of speech act vs. nonspeech act participants, in the sense that the former represent natural agents and privileged points of view from which to describe events. This ranking is reflected by indexation, as well as the fact that the situation where a speech act participant is being acted upon by a non speech act participant is morphologically distinguished from the reverse (more natural) situation (Comrie 1980, DeLancey 1981, and Song 2001: 170-8, among others).

(19) Some possible origins of hierarchical alignment:

- Some possible sources for inverse markers:
  - Deictics indicating direction towards a speech act participant (cislocatives: 'He is watching hither' > 'He is watching me', 'You feed hither' > 'You feed me': Mithun 1996; (20), (21)).
  - Third person (indefinite) morphemes ((22), (23)).
  - Passive markers in sentences with third person agents and first or second person patients (which in some languages can only be encoded through passives, and are reinterpreted as active: Mithun 2005, (24)).
- The development of hierarchical alignment in indexation:
  - Bound person markers are known to develop from independent person forms (Siewierska 2004: 261-72, among others), and many languages lack independent 3rd person forms, or only have indefinite

such forms (Mithun 1991, Siewierska 2004; (26)). If a language has independent forms only for 1st/2nd person, and these become bound, this will give rise to a pattern with bound forms only for 1st/2nd person (Mithun 1991: 86).

– Such patterns may in principle also arise when a language only has independen forms for indefinite 3rd person, because these too may evolve into 1st and 2nd, rather than 3rd person bound forms (Chafe 1990 and Mithun 1993, (28)).

Shasta (Hokan)

(20) (a) *kwáskak*-**ak̓**
they.ran-hither
'They ran hither' (Mithun 1996: 420)

(b) *rát·ayka*-**mak**
he.is.chasing-hither

‘He is chasing me’ Mithun (1996: 422)

(c) *súmatahýk-***aˈk**
I.make.angry-hither
‘I am making you angry’ (Mithun (1996: 421))

(d) *twári·čača··m·a***aˈk**
you.look-hither
‘Why do you look at me?’ (Mithun 1996: 421)

Nez Perce (Penutian)

(21) (a) *i-ɖínun-***ɨm**-*a*
3-see-CISL-PAST
‘He looked this way’ (Rude 1991: 38)

(c) *tiwíixn-***im**
follow-CISL
‘You have followed me’ (Mithun 1991: 418)

Chukchi (Chukotkan)

(22) **ne**-*lʔu*-gət
GENLINV-see-2SG
'He saw you' (the inverse prefix is derived from an (indefinite) third person prefix: Fortescue 1997: 382)

Japhug Rgyalrong (Sino-Tibetan)

(23) (a) *pω-mtó-t-a*
AOR-see-PAT-1SG
'I saw him/her/it.' (Jacques (2010: 129))

(b) *pώ-***wɣ**-*mto-a*
AOR-INV-see-1SG
'He/she/it saw me.' (the inverse prefix is derived from third person pronoun **wə*: Jacques 2010: 129)

Hanis Coos (Coosan)

(24) *n=tó:hɨ-ts-u*
1SG-hit-TRANS-PASS/INV
(He/she/it) hit me.' (lit. 'I was hit.': Mithun 2005)

(25) Person forms in Tangut (Sino-Tibetan):

Independent (Hwang-Cherng (2003: 607)):

1	*ŋa*	SG.FAM
	ŋa njɨ	PL.FAM
2	*nja*	SG.FAM
	nja njɨ	PL.FAM
3	supplied by demonstratives	

Bound (Watters (2002: 374) and references therein):

-ŋa 1SG.S, 1SG.A >3SG.P, 2SG.A>1SG.P, 2PL.A>1SG., 3SG.A>1SG.P, 3PL.A>1S
-ni 1PL.S,1PL.A>3SG.P, 2PL.S, 2PL.A>3SG.P
-na 2SG.S, 2SG.A>3SG.P,3SG.A>2SG.P, 3PL.A>2SG.P

(26) Person forms in Diegueño (Hokan):

Independent: *ʔənʸa* 1SG, *ma* 2SG, *ʔənʸawup* 1PL, *mənʸawup* 2PL; 3rd person forms supplied by demonstratives (Langdon 1970: 145-6)

Bound: *nʸ-* 1A2O, 3A1O; *ʔnʸm-* 2A1O; *m-* 2S, 3A2O, 2A3O; *ʔ-* 1S, 1A3O (Langdon 1970: 139-40)

(27) Person forms in Tiriyó (Carib):

Independent (noncollective): *wï(ï)* 1SG, *ëmë* 2, *kïmë* 1PL.INCL, *anja* 1PL.EXCL; 3rd person forms supplied by demontratives (Meira 2006)

Bound:*wɨ-* 1S, 1A3O; *mɨ-* 2S, 2A3O; *y(i)-* 1S, 3A1O; *ə-* 2S, 3A2O (Gildea 1998: chap. 5; Meira 2006)

Caddo (Caddoan)

(28) (a) **yi-***ʔi=ʔán-ah*
DEFOC.AG-catch-PERF
'One caught him' (Chafe 1990: 60)

(b) **yu**-*t-háy=wa=yúh-ʔaʔ*
DEFOC.BEN-DAT-tell-PL.FUT
'He will tell us' (Chafe 1990: 67)

(29) Diachrony and the traditional explanation of hierarchical alignment (Cristofaro 2013):

- Hierarchical alignment does not obviously originate from a ranking of 1st/2nd vs. 3rd person:
  - If inverse markers derive from a deictic, the fact that they signal action upon a speech act participant is a natural consequence of their

origin, rather than the need to overtly signal a situation where a higher ranking participant is being acted upon by a lower ranking one. (the use of the deictic may be related to the common cross-linguistic tendency to avoid direct reference to speech act participants, see Heath 1996, Mithun 1996: 429, Siewierska 2004: 235-45).

– If inverse markers derive from a 3rd person form, they originally indicate one of the participants involved in the action, which means that all participants are originally treated in the same way in terms of indexation.
– In yet other cases, the source construction is a passive one used to ensure that speech act participants are cast as subjects, and the passive marker becomes an inverse marker as the active/passive distinction is blured (probably due to these sentences being the only means to express the relevant participant configurations in the

language: Mithun 2005).

  - If a language has no independent 3rd person forms, it cannot develop corresponding bound forms, so hierarchical alignment in indexation can be a result of what independent pronominal forms originally exist in a language, rather a specific ranking of different persons with respect to each other.

- Hierarchical alignment is no unified phenomenon:

  - Inverse markers and hierarchical alignment in indexation can originate differently (grammaticalization of specific source elements vs. affixation of 1/2 person independent forms in the absence of 3rd person ones), so it is not clear that they are motivated in terms of the same principle. (e.g. a ranking of speech act vs. non speech act participants).

  - Inverse markers originate from different source constructions (deictics, 3rd person forms), so their use may not reflect a single principle.
  - Hierarchical alignment in indexation may originate differently in different cases (absence of 3rd person independent forms, evolution of indefinite 3rd person independent forms into 1st/2nd person bound forms), so it is not clear that different instances of this phenomenon can be explained in the same way.

(30) Diachrony provides a natural explanation for some facts about hierarchical alignment patterns that are difficult to account for in terms of the mechanisms that have been postulated to account for these patterns on synchronic grounds.

- In some languages, inverse morpheme are also used to indicate that a speech act participant is being acted upon by another speech act participant, but the relevant participant combinations are not the same

from one language to another:

  - In some languages, the morphemes are used to indicate that a second person acts upon a first person (see e.g. Haude 2006 for Movima).
  - In other languages,they are used to indicate that a first person acts upon a second person, and in yet other languages, as can be seen from the Shasta examples in above, they can be used to indicate both of these situations (20c-d).

- If one assumes that the use of inverse morphemes reflects the relative naturalness of the situation being encoded, then one has to assume that particular situations where a speech act participant acts upon another are not conceptualized as having the same degree of naturalness from one language to another.
- This assumption is in fact implicit in much of the literature on hierarchical alignment in Algonquian languages (see Zúñiga 2006 and Lockwood and Macaulay 2012 for critical reviews), where different

versions of the referential hierarchy are postulated for different languages depending on what person combinations are indicated by direct and inverse morphemes (even so, however, it it not clear why the morphemes are used to indicate reverse situations within the same language.)

- These facts, however, are naturally accounted for by the origins of inverse morphemes.
  - If the morphemes originate from a cislocative, then they are likely to be found in different situations involving speech act participants, because cislocative elements are compatible with any situation involving a speech act participant.
  - If they originate from third person indefinite elements, then they may also be found in situations where a speech act participant acts upon another, because third person indefinites are also used in order to refer to speech act participants without overtly mentioning them.

(31) Singular vs. plural distinctions: The distribution of singular vs. plural distinctions along the animacy/referential hierarchy has been explained by assuming that the hierarchy reflects the relative degree of relevance of number distinctions to different NP types. These distinctions are more relevant to (some of) the NP types towards the left end of the hierarchy because these NPs encode animate referents, and these referents are inherently individuated (Comrie 1989, Corbett 2000, Croft 2003, Haspelmath 2005, among others).

(32) Some possible origins of singular vs. plural distinctions restricted to particular NP types:

- Singular vs. plural marking patterns often develop as a zero marked singular comes to be distinguished from the plural as a result of the grammaticalization of a plural marker from terms involving the notion of plurality, such as 'people', 'all', 'several', and the like ((33)-(35)).
- A plausible factor in this development is the fact that in several contexts the other meaning components of these terms may be communicatively

peripheral (for example, the notion 'human' contributed by 'people' is redundant when the term is referred to a group of human beings, e.g. 'the wizard people', 'the British people'; sentences such as 'mark where all the windows are' are comunicatively equivalent to their unquantified counterparts, e.g. 'mark where the window are'). Over time, then, plurality may be reanalyzed as the central meaning of the expression.

- In many cases where singular vs. plural distinctions originate in this way, and are restricted to particular NP types, the source of the plural marker is an element restricted to, or typically used with those NP types. For example:
  - when the singular vs. plural distinction is restricted to humans or animates, the plural marker originated from from the grammaticalization of expressions such as 'people' and the like ((33), ((34a));

  - in cases where the distinction is restricted to pronouns and humans, the plural marker originated from the grammaticalization of associative markers in expressions such as 'X and his peers, clan' (Ghanaian Pidgin English: Huber 1999, possibly Mandarin Chinese: (Iljic 2001)), which are typically relevant to pronouns and humans.

- When the plural marker originates from expressions not restricted to particular NP types ('all', 'several' and the like), on the other hand, the resulting singular vs. plural marking pattern applies to all of the NP types on the referential hierarchy ((34b), (35)).
- In these various cases,
  - singular vs. plural marking patterns originate from the reinterpretation of particular source constructions, which may be a result of the relative contextual prominence of different meaning components of these constructions;
  - the distribution of singular vs. plural distinctions along the

animacy/referential hierarchy directly reflects the distribution of the source element that gives rise to the plural marker;

  - there is no direct evidence, then, that the distribution is motivated in terms of their relevance to particular NP types.

- Sometimes, animacy and individuation do indeed play a role in the distribution of singular vs. plural marking. For example:
  - In a number of creoles and West African languages, plural forms are used to indicate individuated items, so they are used with animates rather than inanimates because the former are inherently individuated (Kihm 1994: 133-4 on Kriyol, among others).
  - Likewise, in a number of North American languages, plural markers derived from distributive expressions are restricted to human or animate nouns ((38)). These nouns presumably favor the development from distributive to plural marker because their referents are inherently individuated, so, when there is a plurality of

these referents, these will be scattered over space, and the noun will carry a distributive marker every time more than one is mentioned (Sapir 1930-1: 257, Mithun 1999: 90-1).

This connection between animacy/individuation and plurality, however, is limited to specific constructions in particular languages, rather than being a general explanatory factor for the various patterns captured by the referential hierarchy.

(33) Orkhon Turkic (Altaic): *-γun / gün* -PL, only for humans; cf. Uyghur (Altaic) *kün* 'people, folks', Mongolian (Altaic) *kümün* 'man, people' (Tekin (1968: 121))

Maithili (Indo-European)

(34) (a) *əndi̇t/ *bhəīs* **lokəin**
pundit buffalo people
'pundits, *buffaloes' (Yadav (1997: 70))

(b) *jən/* *gæ* **səb**
laborer cow all
'laborers, cows' (Yadav (1997: 69))

(35) Magahi (Indo-Aryan)

ghar/ *janní/* *ham* **sab**
house woman I all
'houses/ women / we' (Grierson 1883-7: 6-14)

(36) Lendu (Nilo-Saharan): *ku*'3SG' < *ke* 'man', *ndrù, kpà* 'people, 3PL';

Zande (Niger-Congo) *kɔ* 3SG <**ko* 'man, male'(Heine and Song (2011: 26-8));

Ngiti (Nilo-Saharan): *àlɛ̆* 1PL.INCL < *alɛ* 'person' (Kutsch Lojenga (1994: 195))

(37) Quileute (Chimakuan)

(a) *tukôˈyo’* / **tu̲tkô***yo*
snow / snow.DISTR
‘snow /snow here and there’ (Andrade (1933: 187))

(b) *á’t’cit* / **á’á’***t’cit*
chief chief.DISTR
‘chief / chiefs’ (Andrade (1933: 187))

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'chief / chiefs' (Andrade (1933: 187))

(39) Concluding remarks:

- The diachronic processes that can give rise to the patterns described by the referential hierarchy pose two types of challenges for traditional assumptions about this hierarchy.
- First, these processes show that the patterns described by the hierarchy do not obviously originate from the factors that have been postulated to account for these patterns on synchronic grounds (e.g. animacy, a perceived difference between speech act and non speech act participants, or the need to disambiguate particular argument roles).
- Also, particular patterns originate from different source constructions and through different developmental mechanisms in different cases.
- These facts suggest that, contrary to the traditional view, the patterns described by the hierarchy may not reflect a ranking of different NP types

with regard to some particular property, which has psychological reality and leads speakers to use particular constructions (e.g. a ranking of the relative likelihood of different NPs occurring in particular argument roles, the relative naturalness of different types of situations involving speech act and non speech act participants, or the relative degree of animacy or individuation of different referents). Rather, the hierarchy might be a descriptive schema that is general enough to capture the outputs of several independent diachronic processes, whose effects should be disentangled and assessed separately when trying to account for the hierarchy.

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