

A English Link Types

Recall that <http://www.abisource.com/projects/link-grammar/dict/summarize-links.html> documents the 122 link types in the English link grammar lexicon. Below is the result of our largest English run, whose corpus uses 113 of these types.

Other researchers could postprocess link grammar parses by using the first two columns. These indicate whether a given link label L tended to be oriented rightward or leftward by our ILP.

The labels that do not have a consistent direction are mainly those that connect a conjunction to its conjuncts.⁹ Our coarsening of the labels (see section 5.1) discarded the characters that distinguish left from right conjuncts.

The third column indicates where multi-headedness happens, by showing how often the child of an L link had additional parents as well.

The remaining columns compare to the CoNLL parses. They show the fraction of L -labeled link tokens that were also present in the CoNLL reference parse—and on that fraction, whether the orientation matches CoNLL’s and what the dominant CoNLL label was.

Label	Rightward	Multiheaded	CoNLL Match	CoNLL Dir Match	CoNLL Label
A	0% (0/8501)	0% (0/8501)	84% (7148/8501)	98% (7002/7148)	NMOD 98% (7000/7148)
AA	0% (0/4)	0% (0/4)	-	-	-
AF	84% (16/19)	37% (7/19)	32% (6/19)	0% (0/6)	VMOD 83% (5/6)
AJ	50% (131/262)	0% (0/262)	86% (225/262)	99% (223/225)	COORD 97% (218/225)
AL	100% (71/71)	99% (70/71)	-	-	-
AM	0% (0/45)	0% (0/45)	51% (23/45)	65% (15/23)	AMOD 65% (15/23)
AN	0% (0/9401)	0% (0/9401)	83% (7825/9401)	98% (7639/7825)	NMOD 96% (7523/7825)
AZ	100% (2/2)	0% (0/2)	100% (2/2)	100% (2/2)	ADV 100% (2/2)
B	100% (1514/1515)	61% (919/1515)	53% (806/1515)	84% (678/806)	NMOD 75% (603/806)
BI	100% (34/34)	0% (0/34)	38% (13/34)	100% (13/13)	VMOD 77% (10/13)
BW	100% (1/1)	100% (1/1)	100% (1/1)	0% (0/1)	OBJ 100% (1/1)
C	100% (3272/3272)	0% (0/3272)	3% (85/3272)	53% (45/85)	NMOD 27% (23/85)
CC	100% (176/176)	4% (7/176)	9% (16/176)	0% (0/16)	PRN 56% (9/16)
CO	0% (0/2478)	1% (32/2478)	5% (114/2478)	68% (78/114)	NMOD 39% (44/114)
CP	100% (283/283)	13% (36/283)	88% (249/283)	100% (249/249)	ROOT 100% (249/249)
CQ	100% (7/7)	0% (0/7)	100% (7/7)	0% (0/7)	VMOD 57% (4/7)
CV	100% (3237/3237)	100% (3237/3237)	56% (1827/3237)	28% (512/1827)	VMOD 52% (956/1827)
CX	100% (6/6)	0% (0/6)	83% (5/6)	20% (1/5)	VMOD 60% (3/5)
D	0% (56/19535)	0% (71/19535)	85% (16656/19535)	100% (16608/16656)	NMOD 100% (16629/16656)
DD	0% (0/629)	0% (3/629)	26% (165/629)	99% (164/165)	NMOD 99% (163/165)
DG	0% (0/1051)	0% (0/1051)	90% (950/1051)	100% (950/950)	NMOD 100% (948/950)
DP	0% (0/13)	0% (0/13)	23% (3/13)	100% (3/3)	SBJ 100% (3/3)
DT	0% (0/509)	0% (0/509)	100% (508/509)	99% (505/508)	NMOD 99% (505/508)
E	0% (0/1897)	0% (2/1897)	67% (1279/1897)	99% (1263/1279)	ADV 84% (1079/1279)
EA	1% (6/473)	2% (11/473)	83% (394/473)	96% (377/394)	AMOD 95% (376/394)
EB	100% (509/511)	1% (7/511)	63% (321/511)	95% (305/321)	VMOD 54% (174/321)
EC	0% (0/96)	0% (0/96)	85% (82/96)	61% (50/82)	AMOD 88% (72/82)
EE	9% (11/126)	0% (0/126)	87% (110/126)	44% (48/110)	AMOD 87% (96/110)
EF	100% (12/12)	0% (0/12)	100% (12/12)	75% (9/12)	AMOD 100% (12/12)
EI	0% (0/7)	0% (0/7)	57% (4/7)	100% (4/4)	PMOD 50% (2/4)
EL	100% (11/11)	0% (0/11)	91% (10/11)	90% (9/10)	NMOD 90% (9/10)
EN	0% (0/490)	0% (0/490)	85% (415/490)	40% (167/415)	AMOD 90% (374/415)
ER	100% (1/1)	0% (0/1)	-	-	-
EW	0% (0/3)	0% (0/3)	33% (1/3)	100% (1/1)	AMOD 100% (1/1)
EZ	0% (0/12)	0% (0/12)	33% (4/12)	50% (2/4)	AMOD 100% (4/4)
FM	100% (9/9)	0% (0/9)	89% (8/9)	100% (8/8)	PMOD 100% (8/8)
G	0% (0/6061)	0% (0/6061)	70% (4258/6061)	96% (4070/4258)	NMOD 91% (3868/4258)
GN	0% (0/273)	0% (0/273)	92% (250/273)	98% (245/250)	NMOD 99% (248/250)
H	100% (4/4)	0% (0/4)	100% (4/4)	50% (2/4)	NMOD 50% (2/4)

⁹See <http://www.abisource.com/projects/link-grammar/dict/coordination.html>.

Label	Rightward	Multiheaded	CoNLL Match	CoNLL Dir Match	CoNLL Label
HA	0% (0/4)	100% (4/4)	-	-	-
I	100% (5405/5424)	60% (3247/5424)	95% (5168/5424)	47% (2408/5168)	VMOD 53% (2756/5168)
ID	0% (0/1409)	0% (0/1409)	76% (1077/1409)	35% (380/1077)	PMOD 32% (344/1077)
IN	100% (244/244)	0% (0/244)	99% (242/244)	100% (242/242)	PMOD 100% (242/242)
IV	100% (1626/1627)	100% (1626/1627)	85% (1389/1627)	97% (1353/1389)	OBJ 70% (972/1389)
J	98% (16400/16673)	2% (280/16673)	87% (14522/16673)	97% (14069/14522)	PMOD 98% (14240/14522)
JG	100% (58/58)	0% (0/58)	81% (47/58)	100% (47/47)	PMOD 100% (47/47)
JQ	100% (3/3)	100% (3/3)	100% (3/3)	100% (3/3)	PMOD 100% (3/3)
JT	100% (83/83)	0% (0/83)	94% (78/83)	100% (78/78)	PMOD 97% (76/78)
K	100% (565/565)	0% (0/565)	97% (547/565)	100% (545/547)	PRT 70% (384/547)
L	100% (546/546)	0% (0/546)	1% (3/546)	0% (0/3)	AMOD 67% (2/3)
LE	100% (2/2)	0% (0/2)	-	-	-
LI	100% (8/8)	0% (0/8)	88% (7/8)	100% (7/7)	ADV 100% (7/7)
M	100% (9594/9596)	0% (16/9596)	74% (7124/9596)	92% (6583/7124)	NMOD 82% (5873/7124)
MG	100% (58/58)	0% (0/58)	86% (50/58)	100% (50/50)	NMOD 100% (50/50)
MJ	50% (100/200)	0% (0/200)	68% (136/200)	96% (131/136)	COORD 88% (120/136)
MV	100% (13375/13376)	0% (61/13376)	51% (6797/13376)	98% (6681/6797)	ADV 75% (5105/6797)
MX	100% (1999/1999)	4% (83/1999)	42% (836/1999)	91% (763/836)	NMOD 89% (741/836)
N	100% (546/546)	0% (0/546)	100% (545/546)	100% (545/545)	VMOD 100% (544/545)
NA	0% (0/2)	0% (0/2)	100% (2/2)	50% (1/2)	COORD 100% (2/2)
ND	0% (0/617)	0% (0/617)	68% (419/617)	98% (411/419)	NMOD 72% (302/419)
NI	32% (103/324)	2% (5/324)	64% (206/324)	76% (157/206)	COORD 31% (64/206)
NJ	0% (0/1)	0% (0/1)	-	-	-
NM	100% (899/899)	0% (0/899)	88% (790/899)	82% (646/790)	AMOD 75% (589/790)
NN	0% (0/658)	0% (0/658)	11% (75/658)	95% (71/75)	AMOD 87% (65/75)
NR	0% (0/5)	0% (0/5)	100% (5/5)	60% (3/5)	AMOD 60% (3/5)
NS	0% (0/157)	0% (0/157)	92% (145/157)	100% (145/145)	NMOD 98% (142/145)
NT	0% (0/21)	0% (0/21)	5% (1/21)	0% (0/1)	AMOD 100% (1/1)
NW	0% (0/1)	0% (0/1)	100% (1/1)	100% (1/1)	NMOD 100% (1/1)
O	100% (11027/11028)	0% (0/11028)	81% (8932/11028)	96% (8535/8932)	OBJ 73% (6495/8932)
OD	100% (39/39)	0% (0/39)	87% (34/39)	100% (34/34)	OBJ 74% (25/34)
OF	100% (549/549)	50% (274/549)	96% (528/549)	98% (518/528)	NMOD 70% (367/528)
ON	100% (18/18)	0% (0/18)	89% (16/18)	100% (16/16)	PMOD 100% (16/16)
OT	100% (6/6)	0% (0/6)	100% (6/6)	100% (6/6)	OBJ 50% (3/6)
OX	100% (5/5)	0% (0/5)	-	-	-
P	100% (3755/3756)	31% (1167/3756)	94% (3528/3756)	100% (3523/3528)	VC 60% (2104/3528)
PF	100% (25/25)	0% (0/25)	80% (20/25)	0% (0/20)	ADV 60% (12/20)
PP	100% (1292/1294)	67% (862/1294)	98% (1265/1294)	99% (1254/1265)	VC 99% (1250/1265)
Q	100% (53/53)	49% (26/53)	66% (35/53)	63% (22/35)	ROOT 37% (13/35)
QI	100% (163/163)	0% (0/163)	8% (13/163)	100% (13/13)	PMOD 85% (11/13)
QJ	50% (2/4)	0% (0/4)	50% (2/4)	100% (2/2)	COORD 100% (2/2)
R	100% (1404/1404)	38% (538/1404)	13% (179/1404)	16% (29/179)	NMOD 78% (140/179)
RJ	50% (23/46)	0% (0/46)	7% (3/46)	100% (3/3)	COORD 100% (3/3)
RS	0% (0/565)	99% (561/565)	95% (537/565)	97% (522/537)	SBJ 97% (521/537)
S	97% (13138/13520)	57% (7662/13520)	92% (12476/13520)	5% (586/12476)	SBJ 97% (12150/12476)
SF	99% (200/203)	76% (154/203)	92% (187/203)	2% (3/187)	SBJ 98% (183/187)
SFI	100% (1/1)	0% (0/1)	100% (1/1)	100% (1/1)	SBJ 100% (1/1)
SI	100% (129/129)	0% (0/129)	80% (103/129)	99% (102/103)	SBJ 86% (89/103)
SJ	50% (2736/5468)	0% (0/5468)	69% (3778/5468)	93% (3502/3778)	COORD 86% (3240/3778)
SX	100% (17/17)	88% (15/17)	100% (17/17)	0% (0/17)	SBJ 100% (17/17)
SXI	100% (1/1)	0% (0/1)	100% (1/1)	100% (1/1)	SBJ 100% (1/1)
TA	0% (0/31)	0% (0/31)	100% (31/31)	100% (31/31)	NMOD 100% (31/31)
TD	100% (5/5)	0% (0/5)	100% (5/5)	0% (0/5)	NMOD 100% (5/5)
TH	100% (660/660)	0% (0/660)	1% (9/660)	100% (9/9)	OBJ 89% (8/9)
TI	100% (38/38)	0% (0/38)	82% (31/38)	100% (31/31)	PMOD 81% (25/31)
TM	100% (26/26)	0% (0/26)	100% (26/26)	100% (26/26)	NMOD 100% (26/26)
TO	100% (1733/1734)	0% (1/1734)	0% (5/1734)	100% (5/5)	ADV 40% (2/5)

Label	Rightward	Multiheaded	CoNLL Match	CoNLL Dir Match	CoNLL Label
TS	100% (7/7)	0% (0/7)	-	-	-
TY	100% (57/57)	0% (0/57)	100% (57/57)	77% (44/57)	NMOD 96% (55/57)
U	100% (43/43)	0% (0/43)	86% (37/43)	92% (34/37)	PMOD 92% (34/37)
UN	100% (4/4)	0% (0/4)	100% (4/4)	100% (4/4)	PMOD 100% (4/4)
V	100% (8/8)	0% (0/8)	100% (8/8)	100% (8/8)	OBJ 38% (3/8)
VJ	51% (765/1500)	1% (8/1500)	71% (1059/1500)	89% (939/1059)	COORD 86% (916/1059)
W	100% (10528/10528)	0% (5/10528)	5% (504/10528)	46% (232/504)	P 52% (262/504)
WN	100% (6/6)	0% (0/6)	-	-	-
WV	100% (7563/7563)	100% (7557/7563)	57% (4345/7563)	97% (4214/4345)	ROOT 97% (4214/4345)
WY	100% (1/1)	0% (0/1)	-	-	-
X	80% (13132/16406)	5% (806/16406)	8% (1364/16406)	95% (1300/1364)	P 100% (1358/1364)
Y	2% (4/172)	0% (0/172)	86% (148/172)	93% (137/148)	AMOD 80% (118/148)
YP	0% (0/120)	0% (0/120)	100% (120/120)	0% (0/120)	NMOD 100% (120/120)
YS	0% (0/1645)	0% (0/1645)	98% (1619/1645)	0% (0/1619)	NMOD 100% (1619/1619)
Z	100% (9/9)	0% (0/9)	56% (5/9)	0% (0/5)	VMOD 100% (5/5)

B Sample English Parses

Below we display the first 100 English sentences whose widths do not exceed the width of this page. The blue upper half shows the CoNLL tagging and dependency parse. The red lower half shows the link grammar's tagging and our orientation of the link parse. A vertical edge to word token v denotes an edge $0 \rightarrow v$. Words that were unknown to the link parser are flagged with [!].

Edges are shown as solid lines if they appear in both parses. They are drawn more thickly if the directions do not match.

Edges are shown as dotted lines if they appear only in one parse and not in the other.

Edges are highlighted in orange if the child has multiple parents.























































































