

Appendix 4: Extracted Grammar Patterns in 5 subcategories

Appendix 4.1 The extracted grammar patterns of the MOOCs

V patterns			
1. V (218544)	30. V n to n (7712)	58. it V that (916)	87. V way adv (57)
2. V n (156083)	31. V so/not (7129)	59. V n by n (865)	88. it V adj that (57)
3. V inf (126215)	32. V into n (6492)	60. V toward/towards n (721)	89. it V to n that (55)
4. V prep (120158)	33. V n for n (6064)	61. V across n (657)	90. it V n for n to-inf (51)
5. V to-inf (97124)	34. V as n (5053)	62. V by amount (653)	91. it V if (50)
6. V adv (75601)	35. V n adj (4469)	63. V n over n (606)	92. it V when (47)
7. V that (38971)	36. V of n (4315)	64. it V n to-inf (603)	93. nor AUX n (47)
8. V n of n (38504)	37. V n on n (4160)	65. V under n (557)	94. V n toward n (41)
9. V n prep (30989)	38. V as if/as though/ as like (4045)	66. V after n (532)	95. there V n adv (36)
10. V pron- refl (30905)	39. V n with n (3903)	67. V against n (515)	96. V n as to wh (25)
11. V in n (29565)	40. V n -ing (3876)	68. V n out of n (499)	97. V n on to n (17)
12. V n inf (28797)	41. V though (3715)	69. V n between pl-n (477)	98. it V n when (17)
13. V n n (27908)	42. V n from n (3477)	70. V on to n (428)	99. V n with adv (14)
14. V to n (26073)	43. V n wh (2811)	71. so AUX n (348)	100. V round n (14)
15. V n adv (22558)	44. V n at n (2749)	72. it V n that (334)	101. it V n if (14)
16. V pl-n (17558)	45. V like n (2439)	73. V n against n (347)	102. V as to wh (12)
17. V adj (16797)	46. V n about n (2406)	74. there V n (296)	103. neither AUX n (12)
18. V n to-inf (15496)	47. V n as n (2388)	75. V as adj (272)	104. it V n adj to-inf (6)
19. V at n (14012)	48. V n into n (2117)	76. V between pl-n (241)	105. it V n before (6)
20. V with n (12945)	49. V over n (1661)	77. V n as adj (240)	106. V way prep (5)
21. V n in n (12794)	50. it V to-inf (1525)	78. V onto n (229)	107. it V adj when (5)
22. V n that (12715)	51. V out of n (1440)	79. there V n prep (185)	108. V n among pl-n (4)
23. V on n (12623)	52. V by -ing (1306)	80. it V prep to-inf (124)	109. it V adj -ing (3)
24. V about n (12588)	53. it V like (1230)	81. V n off n (114)	110. it V to n as if/ though (3)
25. V wh (9865)	54. V around (1211)	82. V n onto n (96)	111. V and v (1)
26. V amount (8873)	55. V wh- to-inf (1053)	83. it V as if/as though (86)	112. it V adj if (1)
27. V for n (8354)	56. V off n (1000)	84. it V to n like (74)	113. it V adj if (1)
28. V -ing (8306)	57. it V prep that (988)	85. it V adj to-inf (69)	
29. V from n (8179)		86. it V n n to-inf (60)	
N patterns			
1. the N (257119)	15. N to-inf (20294)	29. N into n (2408)	43. N towards n (241)
2. n N (171404)	16. from N (15276)	30. the N be -ing (2166)	44. N among pl-n (225)
3. N of n (130447)	17. by N (13889)	31. out of N (2158)	45. poss N be that (173)

4. of N (128176)	18. N to n (135757)	32. within N (1882)	46. it v-link N -ing (139)
5. in N (86268)	19. N for n (13520)	33. N over n (1554)	47. N as to wh (46)
6. a N (85398)	20. N on n (9683)	34. under N (1376)	48. it v n N to-inf (34)
7. poss N (54076)	21. N with n (9290)	35. without N (841)	49. it v-link det N that (9)
8. N that (43988)	22. into N (8320)	36. it v-link N to-inf (773)	50. it v-link det N to-inf (9)
9. num N (43610)	23. N at n (6181)	37. the N be that (698)	51. there be det N in n (7)
10. to N (35722)	24. N from n (5793)	38. the N be to-inf (536)	52. it v-link a adj N that (6)
11. N in n (31947)	25. N as n (5390)	39. poss N be -ing (534)	53. v it det N to-inf (5)
12. with N (26644)	26. N about n (3599)	40. N against n (480)	54. there be det N to n (4)
13. on N (24177)	27. N between pl-n (3476)	41. N behind n (303)	55. it v-link det N -ing (3)
14. at N (22655)	28. N by n (2649)	42. poss N be to-inf (260)	
ADJ patterns			
1. ADJ n (300860)	19. ADJ at n (554)	34. it v-link ADJ to n that (14)	45. it v-link ADJ of n that (2)
2. det ADJ n (163242)	20. it v-link ADJ that (388)	35. ADJ against n (13)	46. it v-link ADJ of n to-inf (2)
3. n ADJ (11748)	21. ADJ by n (285)	36. there v-link something	47. it v n as ADJ that (1)
4. v-link ADJ (10749)	22. it v-link ADJ for n to-inf (120)	ADJ with n (13)	48. it v-link ADJ for n that (1)
5. ADJ to-inf (9430)	23. v it ADJ to-inf (116)	37. it v n ADJ to-inf (13)	49. there v-link anything
6. ADJ to n (6352)	24. ADJ over n (72)	38. there v-link something	ADJ in n (1)
7. ADJ of n (4106)	25. it v-link ADJ -ing (68)	ADJ about (12)	50. there v-link anything
8. ADJ in n (3791)	26. it v-link ADJ if (65)	39. ADJ as to wh (8)	ADJ with n (1)
9. ADJ that (3089)	27. ADJ between pl-n (45)	40. there v-link nothing	51. there v-link nothing
10. ADJ for n (2554)	28. it v-link ADJ wh (42)	ADJ with n (8)	ADJ in -ing (1)
11. ADJ as n (2345)	29. v it ADJ for n to-inf (42)	41. it v-link ADJ about n (7)	52. there v-link nothing
12. it v-link ADJ to-inf (1384)	30. there v-link	42. there v-link something	ADJ in n (1)
13. ADJ -ing (1321)	nothing about n (30)	ADJ in n (6)	
14. ADJ with n (1275)	31. ADJ toward/ towards n (29)	43. ADJ after n (5)	
15. ADJ about n (908)	32. v it ADJ that (25)	44. there v-link nothing	
16. ADJ from n (775)	33. it v n ADJ that (18)	ADJ with -ing (3)	
17. ADJ wh (734)			
18. ADJ on n (633)			

Appendix 4.2 The grammar patterns of Arts-Humanity

V patterns			
1. V (41433)	28. V -ing (1571)	55. V off n (189)	82. it V adj to-inf (22)
2. V n (28517)	29. V n to n (1526)	56. V n by n (183)	83. it V adj that (17)
3. V prep (21589)	30. V into n (1483)	57. V wh- to-inf (181)	84. V n onto n (16)
4. V inf (20086)	31. V as n (1291)	58. it V that (167)	85. it V as if/as though (16)
5. V to-inf (15219)	32. V so/not (1279)	59. V against n (48)	86. it V prep to-inf (13)
6. V adv (14193)	33. V n for n (1089)	60. V after n (140)	87. there V n adv (13)
7. V that (7584)	34. V of n (1041)	61. V n out of n (134)	88. it V n n to-inf (11)

8. V <i>of</i> n (6994)	35. V n <i>with</i> n (889)	62. V <i>under</i> n (128)	89. it V to n like (11)
9. V <i>in</i> n (6818)	36. V n -ing (810)	63. V toward/towards n (118)	90. V n toward n (10)
10. V pron- refl (5883)	37. V n adj (773)	64. it V n to-inf (115)	91. nor AUX n (10_
11. V <i>to</i> n (5484)	38. V n <i>on</i> n (728)	65. V n between pl-n (113)	92. it V n <i>for</i> n to-inf (9)
12. V n n (5079)	39. V amount (712)	66. there V n (110)	93. it V when (7)
13. V n prep (5064)	40. V <i>through</i> n (650)	67. V <i>on to</i> n (99)	94. V <i>as to</i> wh (5)
14. V n adv (4011)	41. V as if/as though/like (629)	68. V n <i>over</i> n (90)	95. V n <i>as to</i> wh (5)
15. V n inf (3889)	42. V n <i>from</i> n (615)	69. so AUX n (89)	96. V round n (5)
16. V pl-n (3323)	43. V n <i>as</i> n (605)	70. V <i>across</i> n (83)	97. V way adv (5)
17. V adj (3083)	44. V n <i>about</i> n (569)	71. V as adj (83)	98. neither AUX n (5)
18. V <i>with</i> n (2602)	45. V n <i>at</i> n (545)	72. there V n prep (80)	99. it V n if (4)
19. V n <i>in</i> n (2576)	46. V <i>like</i> n (542)	73. V n <i>against</i> n (71)	100. V n <i>on to</i> n (3)
20. V <i>on</i> n (2540)	47. V n wh (448)	74. V <i>onto</i> n (60)	101. it V n when (3)
21. V n to-inf (2521)	48. V <i>out of</i> n (382)	75. V <i>between</i> pl-n(56)	102. V n <i>with</i> adv (2)
22. V <i>about</i> n (2432)	49. V n <i>into</i> n (382)	76. it V n that (51)	103. V n among pl-n (1)
23. V <i>at</i> n (2236)	50. it V to-inf (315)	77. it V to n that (45)	104. it V adj if (1)
24. V n that (2041)	51. V <i>over</i> n (303)	78. V n as adj (43)	105. it V n adj to-inf (1)
25. V wh (1750)	52. V around (299)	79. it V prep that (38)	
26. V <i>from</i> n (1666)	53. it V like (276)	80. V n off n (30)	
27. V <i>for</i> n (1601)	54. V <i>by</i> -ing (191)	81. V by amount (28)	
N patterns			
1. the N (82700)	15. N to-inf (5753)	29. out of N (901)	43. N towards n (90)
2. N of n (44405)	16. from N (5528)	30. N into n (718)	44. poss N be to-inf (71)
3. of N (41930)	17. by N (4825)	31. within N (562)	45. poss N be that (60)
4. n N (41585)	18. N to n (4459)	32. the N be -ing (515)	46. it v-link N -ing (36)
5. in N (30010)	19. N for n (4155)	33. under N (489)	47. N as to wh (19)
6. a N (28290)	20. N with n (3324)	34. without N (379)	48. it v n N to-inf (7)
7. poss N (19237)	21. into N (3091)	35. N over n (341)	49. it v-link det N that (5)
8. N that (13261)	22. N on n (2869)	36. N against n (250)	50. it v-link det N to-inf (4)
9. to N (11531)	23. N from n (2038)	37. it v-link N to-inf (242)	51. there be det N to n (3)
10. N in n (11231)	24. N at n (1876)	38. the N be that (183)	52. it v-link a adj N that (2)
11. with N (9270)	25. N as n (1852)	39. the N be to-inf (165)	53. there be det N in n (2)
12. num N (9202)	26. N about n (1689)	40. N among pl-n (120)	54. it v-link det N -ing (1)
13. on N (7864)	27. N between pl-n (1142)	41. N behind n (119)	55. v it det N to-inf (1)
14. at N (6566)	28. N by n (988)	42. poss N be -ing (111)	
ADJ patterns			
1. ADJ n (100717)	13. it v-link ADJ to-inf (480)	25. ADJ <i>over</i> n (19)	37. there v-link something ADJ in n (3)
2. det ADJ n (52431)	14. ADJ -ing (385)	26. it v-link ADJ if (16)	38. it v-link ADJ about n (2)
3. v-link ADJ (3814)	15. ADJ about n (348)	27. ADJ between pl-n (14)	39. ADJ against n (1)
4. n ADJ (3251)	16. ADJ from n (340)	28. it v-link ADJ wh (14)	40. it v n ADJ that (1)

5. ADJ to-inf (2697)	17. ADJ wh (213)	29. there v-link nothing ADJ about n (14)	41. it v n as ADJ that (1)
6. ADJ of n (1599)	18. ADJ on n (193)	30. v it ADJ for n to-inf (12)	42. there v-link anything ADJ in n (1)
7. ADJ in n (1551)	19. it v-link ADJ that (170)	31. ADJ toward/towards n (10)	43. there v-link nothing ADJ in -ing (1)
8. ADJ to n (1307)	20. ADJ at n (163)	32. it v-link ADJ to n that (7)	44. there v-link nothing ADJ with -ing (1)
9. ADJ that (983)	21. ADJ by n (103)	33. v it ADJ that (6)	45. there v-link nothing ADJ with n (1)
10. ADJ as n (849)	22. it v-link ADJ for n to-inf (45)	34. there v-link something ADJ about n (4)	
11. ADJ for n (814)	23. v it ADJ to-inf (29)	35. there v-link something ADJ with n (4)	
12. ADJ with n (485)	24. it v-link ADJ -ing (30)	36. ADJ as to wh (3)	

Appendix 4.3 The grammar patterns of Computer-Math Sciences

V patterns			
1. V (45741)	28. V n to n (1474)	55. it V to-inf (274)	82. it V if (16)
2. V n (34279)	29. V for n (1442)	56. V n by n (219)	83. it V n n to-inf (16)
3. V inf (28148)	30. V as if/as though/like (1354)	57. it V that (202)	84. V n off n (14)
4. V prep (24762)	31. V n for n (1219)	58. V around (199)	85. it V adj to-inf (13)
5. V to-inf (23755)	32. V so/not (1191)	59. V out of n (151)	86. there V n adv (13)
6. V adv (15125)	33. V from n (1110)	60. V off n (147)	87. V way adv (10)
7. V that (11005)	34. V through n (930)	61. V n over n (133)	88. it V to n that (10)
8. V n inf (9419)	35. V n adj (928)	62. it V n to-inf (123)	89. it V adj that (9)
9. V n of n (7574)	36. V as n (839)	63. V on to n (99)	90. it V when (9)
10. V n n (7328)	37. V into n (829)	64. V after n (81)	91. it V as if/as though (10)
11. V n prep (7168)	38. V of n (806)	65. V across n (80)	92. V n as to wh (6)
12. V pron- refl (7029)	39. V n with n (801)	66. it V n that (80)	93. nor AUX n (6)
13. V n adv (5454)	40. V n -ing (711)	67. there V n (77)	94. V as to wh (4)
14. V to n (4203)	41. V n on n (699)	68. V n between pl-n (66)	95. V n on to n (4)
15. V in n (3889)	42. V n wh (696)	69. there V n prep (58)	96. it V n for n to-inf (4)
16. V pl-n (3578)	43. V n at n (649)	70. V n out of n (56)	97. V n with adv (3)
17. V amount (3576)	44. V n from n (593)	71. V n as adj (54)	98. it V n if (3)
18. V n to-inf (3243)	45. V like n (587)	72. so AUX n (52)	99. V round n (2)
19. V n that (3230)	46. V n as n (518)	73. V as adj (44)	100. it V n adj to-inf (2)
20. V at n (2988)	47. it V prep that (438)	74. V under n (39)	101. it V n when (2)
21. V adj (2905)	48. V n into n (410)	75. V toward/towards n (38)	102. V n toward n (1)
22. V with n (2541)	49. V n about n (406)	76. V n onto n (36)	103. V way prep (1)
23. V on n (2278)	50. V by -ing (380)	77. it V prep to-inf (36)	104. it V adj -ing (1)
24. V n in n (1966)	51. V wh- to-inf (360)	78. V between pl-n (32)	105. it V adj when (1)
25. V -ing (1947)	52. it V like (344)	79. V onto n (31)	106. it V n before (1)

26. V about n (1923)	53. V over n (322)	80. V n against n (25)	
27. V wh (1860)	54. V by amount (295)	81. V against n (24)	
N patterns			
1. the N (78106)	14. on N (6819)	27. N by n (828)	40. poss N be to-inf (120)
2. n N (63727)	15. at N (6571)	28. N about n (795)	41. N behind n (83)
3. N of n (38593)	16. N for n (4432)	29. N into n (782)	42. poss N be that (48)
4. of N (37477)	17. N to n (4421)	30. N over n (573)	43. N against n (43)
5. a N (28197)	18. by N (4100)	31. the N be -ing (516)	44. it v-link N -ing (40)
6. in N (22979)	19. from N (3619)	32. out of N (447)	45. N towards n (31)
7. num N (17094)	20. N with n (2814)	33. within N (369)	46. N as to wh (19)
8. N that (15449)	21. N on n (2688)	34. under N (312)	47. N among pl-n (13)
9. poss N (13599)	22. into N (2175)	35. the N be that (263)	48. it v n N to-inf (9)
10. to N (11126)	23. N at n (1834)	36. it v-link N to-inf (224)	49. it v-link det N to-inf (3)
11. with N (8385)	24. N as n (1601)	37. poss N be -ing (163)	50. there be det N in n (2)
12. N in n (8181)	25. N from n (1552)	38. without N (159)	51. it v det N to-inf (2)
13. N to-inf (6933)	26. N between pl-n (987)	39. the N be to-inf (157)	52. it v-link det N that (1)
ADJ patterns			
1. ADJ n (92268)	13. ADJ with n (405)	25. ADJ over n (28)	37. it v n ADJ that (4)
2. det ADJ n (54705)	14. it v-link ADJ to-inf (376)	26. it v-link ADJ for n to-inf (25)	38. it v-link ADJ about n (3)
3. v-link ADJ (4139)	15. ADJ from n (236)	27. it v-link ADJ wh (14)	39. there v-link nothing ADJ with n (3)
4. n ADJ (4111)	16. ADJ about n (226)	28. there v-link nothing ADJ about n (13)	40. ADJ after v (2)
5. ADJ to-inf (2976)	17. ADJ wh (225)	29. v it ADJ for n to-inf (12)	41. there v-link something ADJ about n (2)
6. ADJ to n (2797)	18. ADJ on n (224)	30. it v n ADJ to-inf (10)	42. it v-link ADJ of n to-inf (1)
7. ADJ that (1007)	19. ADJ at n (153)	31. v it ADJ that (9)	43. there v-link nothing ADJ in n (1)
8. ADJ of n (931)	20. it v-link ADJ that (106)	32. ADJ between pl-n (8)	44. there v-link nothing ADJ with -ing (1)
9. ADJ in n (881)	21. ADJ by n (95)	33. ADJ toward/ towards n (8)	
10. ADJ as n (758)	22. it v-link ADJ if (33)	34. it v-link ADJ to n that (5)	
11. ADJ for n (717)	23. v it ADJ to-inf (32)	35. there v-link something ADJ with n (5)	
12. ADJ -ing (521)	24. it v-link ADJ -ing (30)	36. ADJ as to wh (4)	

Appendix 4.4 The grammar patterns of Physical Sciences

V patterns			
1. V (39215)	28. V -ing (1373)	55. it V like (257)	82. V n toward n (16)
2. V n (25344)	29. V for n (1322)	56. V by -ing (213)	83. V way adv (15)
3. V prep (24141)	30. V into n (1144)	57. V by amount (170)	84. it V when (13)

4. V inf (23949)	31. V n to n (1016)	58. it V prep that (163)	85. it V to n that (12)
5. V adv (16733)	32. V so/not (980)	59. it V that (150)	86. it V adj to-inf (11)
6. V to-inf (16556)	33. V n for n (926)	60. V n by n (129)	87. it V n for n to-inf (10)
7. V that (8105)	34. V as n (857)	61. V across n (123)	88. it V n n to-inf (10)
8. V n of n (6887)	35. V n -ing (835)	62. it V n to-inf (117)	89. it V as if/as though (9)
9. V pron-refl (6220)	36. V n on n (822)	63. V n over n (113)	90. it V adj that (8)
10. V n prep (5714)	37. V as if/as though/like (768)	64. V n out of n (96)	91. it V if (7)
11. V n inf (5039)	38. V through n (691)	65. V wh- to-inf (95)	92. it V n when (6)
12. V in n (4941)	39. V of n (677)	66. V against n (86)	93. V round n (5)
13. V n adv (4744)	40. V n adj (675)	67. V n between pl-n (75)	94. it V to n like (5)
14. V n n (4434)	41. V n from n (588)	68. V under n (68)	95. V n with adv (4)
15. V to n (4043)	42. V n with n (549)	69. V after n (65)	96. it V n if (4)
16. V at n (3288)	43. V n at n (489)	70. it V n that (65)	97. V n on to n (3)
17. V pl-n (2967)	44. V over n (457)	71. so AUX n (62)	98. it V n before (3)
18. V adj (2954)	45. V like n (422)	72. V on to n (56)	99. nor AUX n (3)
19. V amount (2265)	46. V n wh (409)	73. V between pl-n (52)	100. it V to n as if/as though (2)
20. V on n (2186)	47. V n into n (384)	74. V onto n (47)	101. there V n adv (2)
21. V n to-inf (2066)	48. it V to-inf (360)	75. it V prep to-inf (36)	102. V and v (1)
22. V n in n (2033)	49. V toward/towards n (358)	76. V as adj (34)	103. V n among pl-n (1)
23. V about n (1982)	50. V out of n (334)	77. V n against n (34)	104. it V adj -ing (1)
24. V n that (1978)	51. V off n (323)	78. V n as adj (33)	105. there V n prep (1)
25. V with n (1970)	52. V n as n (320)	79. V n onto n (22)	
26. V wh (1736)	53. V around (315)	80. there V n (20)	
27. V from n (1621)	54. V n about n (265)	81. V n off n (19)	
N patterns			
1. the N (58728)	14. with N (4774)	27. there N be -ing (749)	40. N against n (78)
2. n N (41263)	15. from N (3771)	28. N into n (528)	41. N towards n (73)
3. of N (28692)	16. N to-inf (3410)	29. out of N (481)	42. N behind n (56)
4. N of n (28018)	17. by N (2907)	30. N by n (473)	43. it v-link N -ing (49)
5. in N (18119)	18. N on n (2560)	31. N over n (472)	44. poss N be that (28)
6. a N (16182)	19. N for n (2521)	32. N about n (444)	45. poss N be to-inf (26)
7. num N (12563)	20. N to n (2482)	33. within N (223)	46. N among pl-n (9)
8. poss N (11731)	21. into N (1715)	34. under N (196)	47. it v n N to-inf (7)
9. N that (7742)	22. N at n (1692)	35. poss N be -ing (173)	48. N as to wh (3)
10. to N (7618)	23. N with n (1531)	36. it v-link N to-inf (162)	49. it v-link a adj N that (3)

11. at N (6606)	24. N from n (1280)	37. there N be that (133)	50. it v-link det N -ing (2)
12. N in n (6479)	25. N as n (1136)	38. there N be to-inf (113)	51. there be det N in n (2)
13. on N (5615)	26. N between pl-n (865)	39. without N (98)	52. it v-link det N that (1)
ADJ patterns			
1. ADJ n (60264)	11. ADJ as n (416)	21. it v-link ADJ that (45)	31. there v-link something ADJ about n (5)
2. det ADJ n (33587)	12. ADJ -ing (211)	22. it v-link ADJ for n to-inf (20)	32. v it ADJ that (5)
3. n ADJ (2739)	13. ADJ with n (200)	23. v it ADJ to-inf (19)	33. it v-link ADJ wh (3)
4. v-link ADJ (2560)	14. it v-link ADJ to-inf (200)	24. ADJ over n (17)	34. it v-link ADJ of n that (2)
5. ADJ to-inf (1631)	15. ADJ wh (141)	25. ADJ between pl-n (15)	35. it v-link ADJ about n (1)
6. ADJ to n (1573)	16. ADJ at n (139)	26. it v-link ADJ if (9)	36. there v-link nothing ADJ about n (1)
7. ADJ of n (761)	17. ADJ about n (137)	27. it v-link ADJ -ing (8)	37. there v-link something ADJ in n (1)
8. ADJ in n (668)	18. ADJ from n (103)	28. ADJ toward / towards n (7)	38. there v-link something ADJ with n (1)
9. ADJ that (545)	19. ADJ on n (102)	29. v it ADJ for n to-inf (6)	
10. ADJ for n (444)	20. ADJ by n (47)	30. ADJ against n (5)	

Appendix 4.5 The grammar patterns of Life Sciences

V patterns			
1. V (47208)	28. V n to n (2024)	55. V across n (250)	82. there V n prep (21)
2. V n (35328)	29. V -ing (1921)	56. V off n (214)	83. V way adv (17)
3. V inf (29156)	30. V into n (1879)	57. it V like (208)	84. it V to n that (16)
4. V prep (26523)	31. V so/not (1639)	58. it V that (189)	85. it V adj that (15)
5. V to-inf (21762)	32. V n for n (1459)	59. V n by n (162)	86. it V if (13)
6. V adv (15526)	33. V n adj (1155)	60. V wh- to-inf (160)	87. it V adj to-inf (12)
7. V that (9733)	34. V n from n (1041)	61. V toward/towards n (136)	88. it V n for n to-inf (12)
8. V n of n (9464)	35. V as n (1012)	62. V n between pl-n (135)	89. nor AUX n (12)
9. V in n (7430)	36. V of n (990)	63. V n over n (131)	90. V n onto n (11)
10. V n prep (6886)	37. V amount (962)	64. it V n to-inf (130)	91. V n as to wh (10)
11. V to n (6398)	38. V through n (890)	65. V after n (126)	92. it V to n like (10)
12. V pron-refl (6282)	39. V n with n (887)	66. V n out of n (104)	93. it V when (10)
13. V n n (5527)	40. V n on n (885)	67. V against n (99)	94. V n toward n (8)
14. V n inf (5210)	41. V n -ing (840)	68. V under n (89)	95. it V n n to-inf (5)
15. V n adv (4503)	42. V n about n (668)	69. it V n that (80)	96. there V n adv (5)
16. V adj (4476)	43. V as if/as though/like (664)	70. V on to n (78)	97. it V adj when (4)
17. V n to-inf (4217)	44. V n wh (645)	71. so AUX n (73)	98. it V n when (3)
18. V pl-n (4200)	45. V n at n (557)	72. V onto n (62)	99. neither AUX n (3)

19. V about n (3479)	46. V n into n (547)	73. V n against n (61)	100. V as to wh (2)
20. V n in n (3254)	47. V like n (492)	74. V as adj (52)	101. V n among pl-n (2)
21. V with n (3214)	48. V n as n (448)	75. V n as adj (50)	102. V n on to n (2)
22. V n that (3127)	49. it V to-inf (345)	76. V between pl-n (49)	103. V n with adv (2)
23. V at n (2925)	50. V out of n (302)	77. V by amount (42)	104. it V n before (2)
24. V on n (2823)	51. it V prep that (290)	78. it V as if/as though (35)	105. it V n if (2)
25. V wh (2413)	52. V by -ing (273)	79. there V n (33)	106. it V n adj that (1)
26. V from n (2228)	53. V over n (273)	80. V n off n (26)	107. it V n adj to-inf (1)
27. V for n (2102)	54. V around (258)	81. it V prep to-inf (24)	
N patterns			
1. the N (6517)	13. on N (415)	25. under N (11)	37. it v-link N to-inf (9)
2. n N (3740)	14. from N (381)	26. N into n (95)	38. N over n (5)
3. of N (2422)	15. into N (334)	27. N with n (89)	39. it v-link N -ing (5)
4. N of n (2408)	16. at N (327)	28. N as n (61)	40. N against n (3)
5. in N (1716)	17. within N (324)	29. N at n (61)	41. N towards n (3)
6. a N (1042)	18. N to n (315)	30. N between pl-n (61)	42. without N (3)
7. N that (994)	19. by N (291)	31. N about n (43)	43. N among pl-n (2)
8. N in n (717)	20. with N (274)	32. N by n (42)	44. N as to wh (1)
9. to N (711)	21. the N be -ing (199)	33. out of N (42)	45. poss N be that (1)
10. poss N (638)	22. N for n (185)	34. poss N be -ing (17)	46. poss N be to-inf (1)
11. num N (599)	23. N from n (155)	35. the N be that (17)	
12. N to-inf (418)	24. N on n (116)	36. the N be to-inf (10)	
ADJ patterns			
1. ADJ n (5927)	8. ADJ of n (74)	15. ADJ -ing (13)	22. v it ADJ to-inf (2)
2. det ADJ n (3361)	9. ADJ for n (44)	16. ADJ with n (12)	23. ADJ by n (1)
3. v-link ADJ (236)	10. ADJ as n (38)	17. ADJ about n (8)	24. it v-link ADJ for n that (1)
4. ADJ to-inf (196)	11. ADJ on n (32)	18. ADJ at n (6)	25. it v-link ADJ wh (1)
5. n ADJ (182)	12. ADJ that (28)	19. ADJ from n (5)	26. there v-link something ADJ with n (1)
6. ADJ to n (125)	13. it v-link ADJ to-inf (28)	20. ADJ between pl-n (3)	
7. ADJ in n (94)	14. ADJ wh (19)	21. it v-link ADJ that (2)	

Appendix 4.6 The grammar patterns of Social Sciences

V patterns			
1. V (44947)	28. V n to n (1672)	55. it V that (208)	82. it V to n that (17)
2. V n (32615)	29. V from n (1554)	56. V n by n (172)	83. it V as if/as though (16)

3. V inf (25876)	30. V -ing (1494)	57. V against n (158)	84. it V n for n to-inf (16)
4. V prep (23143)	31. V n for n (1371)	58. it V like (145)	85. nor AUX n (16)
5. V to-inf (19832)	32. V amount (1358)	59. V around (140)	86. it V prep to-inf (15)
6. V adv (14024)	33. V into n (1157)	60. V n over n (139)	87. V n onto n (11)
7. V that (9344)	34. V as n (1054)	61. V n against n (136)	88. it V adj to-inf (11)
8. V n of n (7586)	35. V n on n (1027)	62. V off n (127)	89. V way adv (10)
9. V in n (6487)	36. V n adj (938)	63. V across n (121)	90. it V adj that (8)
10. V n prep (6157)	37. V of n (801)	64. V after n (120)	91. it V if (8)
11. V to n (5945)	38. V n with n (777)	65. V by amount (118)	92. it V when (8)
12. V n n (5540)	39. V n -ing (680)	66. it V n to-inf (118)	93. V n toward n (6)
13. V pron-refl (5491)	40. V n from n (640)	67. V n out of n (109)	94. V n on to n (5)
14. V n inf (5240)	41. V as if/as though/like (630)	68. V on to n (96)	95. V n as to wh (4)
15. V n adv (3846)	42. V n wh (613)	69. V n between pl-n (88)	96. V way prep (4)
16. V pl-n (3490)	43. V through n (554)	70. so AUX n (72)	97. neither AUX n (4)
17. V n to-inf (3449)	44. V n at n (509)	71. V toward/towards n (71)	98. V n with adv (3)
18. V adj (3379)	45. V n about n (498)	72. V n as adj (60)	99. it V n when (3)
19. V n in n (2965)	46. V n as n (497)	73. V as adj (59)	100. it V to n like (3)
20. V on n (2796)	47. V like n (396)	74. it V prep that (59)	101. there V n adv (3)
21. V about n (2772)	48. V n into n (394)	75. it V n that (58)	102. V round n (2)
22. V with n (2618)	49. V over n (306)	76. there V n (56)	103. it V n adj to-inf (2)
23. V at n (2575)	50. V wh- to-inf (257)	77. V between pl-n (52)	104. V as to wh (1)
24. V n that (2339)	51. V by -ing (249)	78. V onto n (29)	105. V n among pl-n (1)
25. V wh (2106)	52. V under n (233)	79. V n off n (25)	106. it V adj -ing (1)
26. V so/not (2040)	53. it V to-inf (231)	80. there V n prep (25)	107. it V n if (1)
27. V for n (1887)	54. V out of n (221)	81. it V n n to-inf (18)	108. it V to n as if (1)
N patterns			
1. the N (31968)	15. at N (2585)	29. N by n (318)	43. N towards n (44)
2. n N (21089)	16. N for n (2227)	30. out of N (287)	44. poss N be to-inf (42)
3. of N (17655)	17. from N (1977)	31. N into n (285)	45. poss N be that (36)
4. N of n (17023)	18. N to n (1898)	32. under N (267)	46. it v n N to-inf (11)
5. in N (13444)	19. by N (1766)	33. without N (202)	47. it v-link N -ing (9)
6. a N (11687)	20. N with n (1532)	34. the N be -ing (187)	48. N as to wh (4)
7. poss N (8871)	21. N on n (1450)	35. N over n (163)	49. it v-link det N to-inf (2)
8. N that (6542)	22. into N (1005)	36. it v-link N to-inf (136)	50. v it det N to-inf (2)
9. N in n (5339)	23. N from n (768)	37. N against n (106)	51. it v-link a adj N that (1)

10. to N (4786)	24. N as n (740)	38. the N be that (102)	52. it v-link det N that (1)
11. num N (4152)	25. N at n (718)	39. the N be to-inf (91)	53. there be det N in n (1)
12. with N (3941)	26. N about n (628)	40. N among pl-n (81)	54. there be det N to n (1)
13. N to-inf (3780)	27. N between pl-n (421)	41. poss N be -ing (70)	
14. on N (3464)	28. within N (404)	42. N behind n (45)	
ADJ patterns			
1. ADJ n (41684)	13. ADJ -ing (191)	25. it v-link ADJ wh (10)	37. there v-link nothing ADJ about n (2)
2. det ADJ n (19158)	14. ADJ about n (189)	26. ADJ over n (8)	38. there v-link something ADJ in n (2)
3. ADJ to-inf (1930)	15. ADJ with n (173)	27. ADJ against n (7)	39. ADJ as to wh (1)
4. v-link ADJ (1818)	16. ADJ wh (136)	28. it v-link ADJ if (7)	40. it v-link ADJ about n (1)
5. n ADJ (1465)	17. ADJ at n (93)	29. it v-link ADJ -ing (6)	41. it v-link ADJ of n to-inf (1)
6. ADJ of n (741)	18. ADJ from n (91)	30. ADJ between pl-n (5)	42. there v-link anything ADJ with n (1)
7. ADJ in n (597)	19. ADJ on n (82)	31. v it ADJ that (5)	43. there v-link nothing ADJ with -ing (1)
8. ADJ to n (550)	20. it v-link ADJ that (65)	32. there v-link nothing ADJ with n (4)	44. there v-link something ADJ about n (1)
9. ADJ for n (535)	21. ADJ by n (39)	33. ADJ after v (3)	45. there v-link something ADJ with n (1)
10. ADJ that (526)	22. v it ADJ to-inf (34)	34. it v n ADJ to-inf (3)	
11. it v-link ADJ to-inf (300)	23. it v-link ADJ for n to-inf (30)	35. ADJ toward/ towards n (4)	
12. ADJ as n (284)	24. v it ADJ for n to-inf (12)	36. it v-link ADJ to n that (2)	