

CODYM Spring Workshop
7-8 April 2014, Wrocław

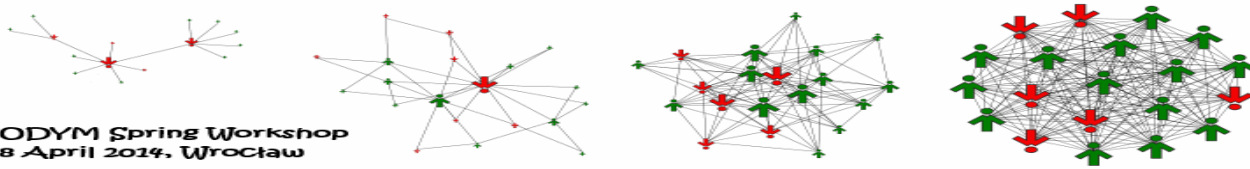
Narcissism and self-presentation on acebook: Sentiment analysis of adolescents' online/virtual interactions

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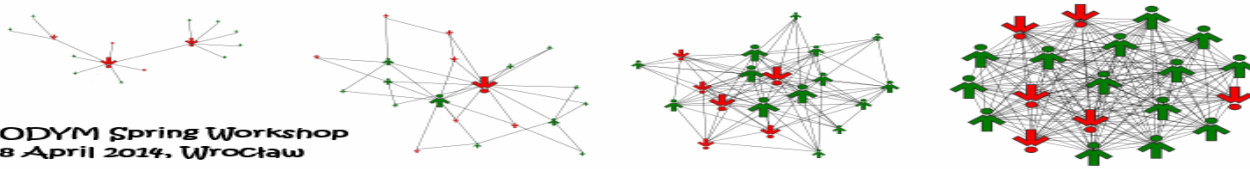




SUMMARY

- **Social dynamics and social networks**
- **Adolescents users**
- **The narcissistic trait**
- **Aims**
- **Methods**
- **Results**
- **Conclusion and future perspectives**





SOCIAL DYNAMICS & SOCIAL NETWORKS

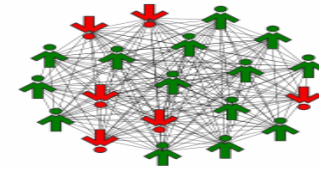
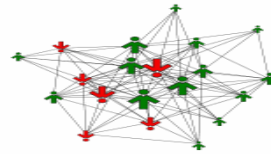
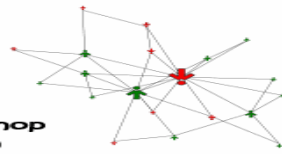
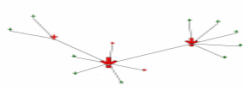


The birth of internet and the proliferation of Social Networks (SNs) have strongly changed communication and information broadcast

SOCIAL NETWORKS

- Allow people to reach all information
- Share in personal forum, blog or profile wall (Krämer, N.C., & Winter, 2008)
- Opportunity to self-present and to build an online social identity (Buffardi & Campbell, 2008)

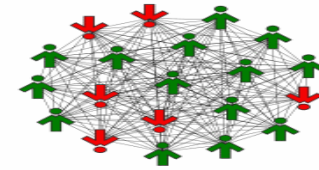
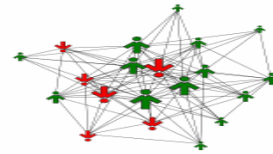
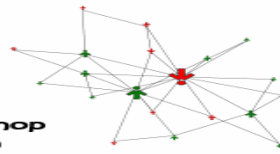
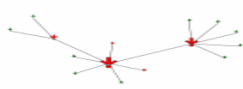




ADOLESCENTS USERS



- A “socio-cultural revolution” of virtual dynamics mainly concerns adolescents, who were born in an “open cyber world”
- Crucial role in adolescence (Tanti, Stukas, Halloran, Foddy, 2011):
 - Identity building
 - Development of significant relationships
- A few research focused on adolescents’ sample



Narcissistic Trait

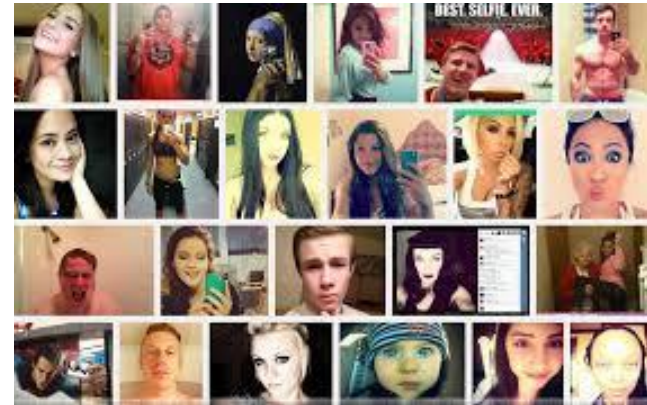
NARCISSISM

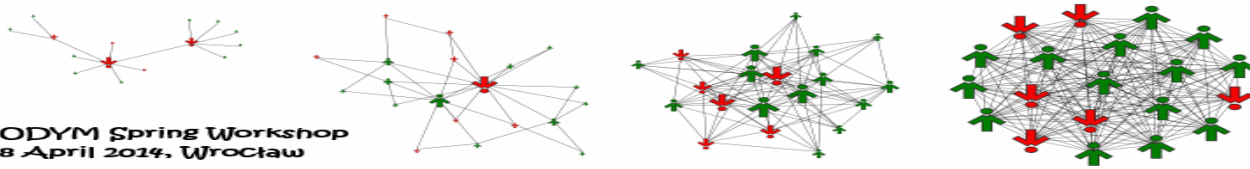


- A tendency to an inflated and positive self view of traits
- Take advantage of new relationships for self-enhancement

NARCISSISM ON FACEBOOK

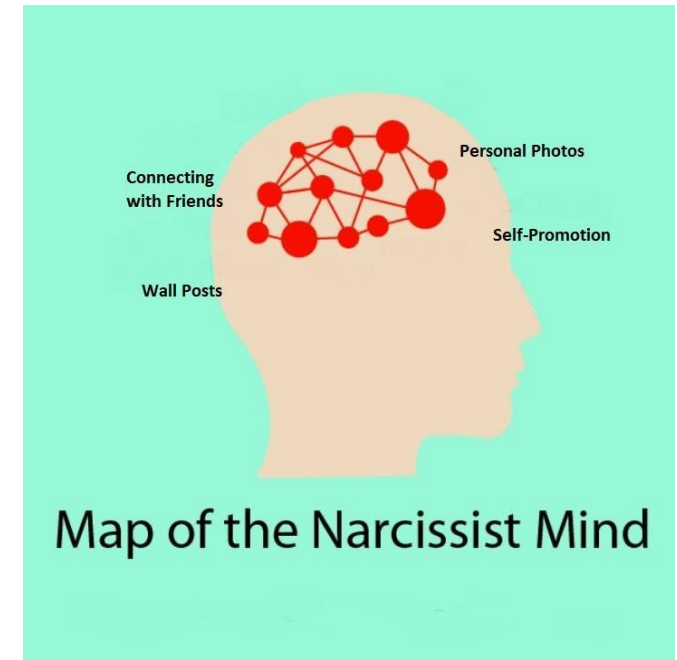
- **Intense activity on Facebook** (Mehdizadeh, 2010)
 - Connecting to many friends
 - Publishing more posts and photos
- **One hour a day minimum on Facebook**
- **More self-promoting photos**

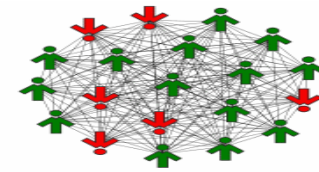
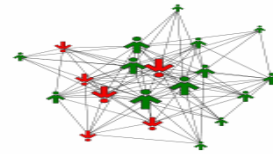
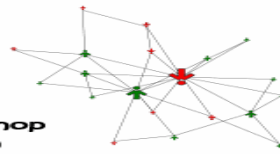




AIMS

- 1. Collect the socio-demographic features and explore the activity on Facebook**
- 2. Formalize six literature narcissistic models and a general metric merging by such models**
- 3. Evaluate the emerging profile to validate and measure the narcissistic trait**
- 4. Define a more effective new metric to automatically assess the online narcissism, using the Linguistic Inquiry Word Count program (LIWC)**





METHODS

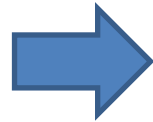
INCLUSION CRITERIA

Facebook Activity > 1 year

50 adolescent Facebook.com owners
50% Males; 50% Females
15 - 19 years old



Linguistic Inquiry
Word Count program
(LIWC)

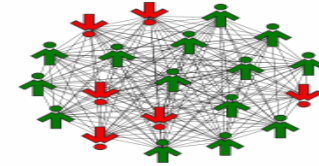
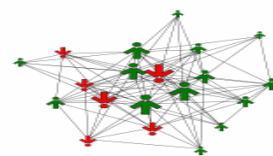
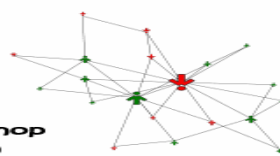
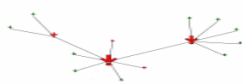


**FACEBOOK
PROFILE**

Personal Profile Information

Facebook Activity

- ✓ 32368 Activities
- ✓ 28878 Wall Posts
- ✓ 62083 Comments



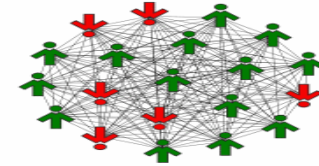
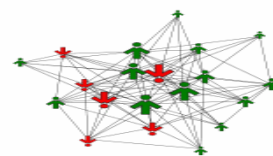
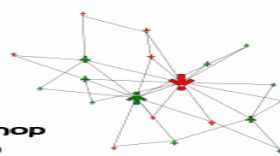
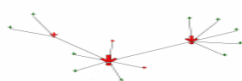
RESULTS 1

Table 1: Personal information of the Facebook profile

FB Activity variables	Mean	SD	Min	Max
Like	12646	13279.67	465	66815
Comments	1241.66	926.40	121	4494
Complete Activity	647.36	528.65	29	2609
Wall Posts	557.56	490.71	22	2399
Photos	217.72	193.97	15	908
Quotes	94.04	99.38	1	333
Videos	62.12	93.12	1	562
Personal Photos	48.68	43.30	1	206
Profile Picture Edit	22.76	19.72	0	81

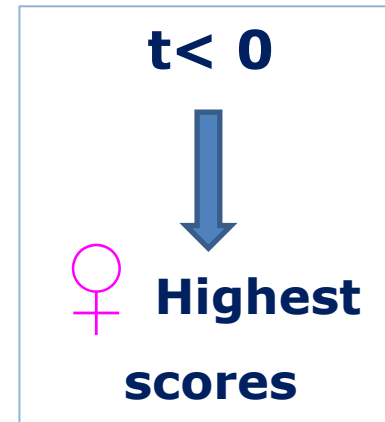
FB Profile variables	Mean	SD	Min	Max
Friends	3085.87	1089.12	642	4970
Like page	546.67	781.14	30	4762
Photos	447.67	419.43	31	2398
Map	64.03	124.39	1	644
Following	11.87	11.34	1	46

Table 2: Facebook activities



LIWC categories	<i>t</i>	<i>P</i>
Physical	-4.735	.01
Certainty	-4.189	.01
Negations	-4.158	.01
Body	-4.069	.01
Commas	-3.883	.01
Exclusive	-3.717	.01
Discrepancy	-3.620	.01
Fillers	-3.538	.01
Ingestion	-3.427	.01
Inhibition	-3.370	.01
Conditional	-3.219	.01
Health	-3.013	.01
You	-2.659	.05
Anxiety	-2.593	.05
Cognitive Processes	-2.525	.05
Home	-2.474	.05
Self	-2.368	.05
Dictionary	-2.260	.05
Apostrophe	-2.221	.05
Sexual	-2.167	.05
Pronouns	-2.164	.05
They	-2.092	.05
Negative Emotions	-2.007	.05
Words per sentence	2.834	.01
Sport	2.332	.05

Table 3: Gender difference on LIWC categories



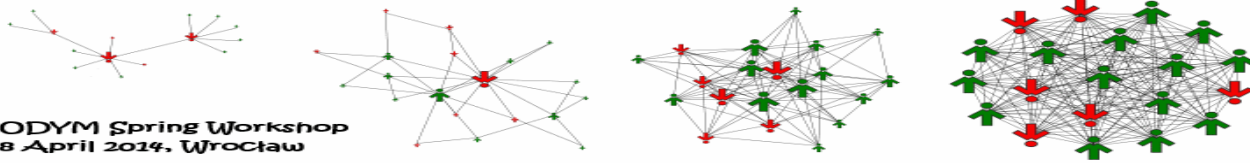
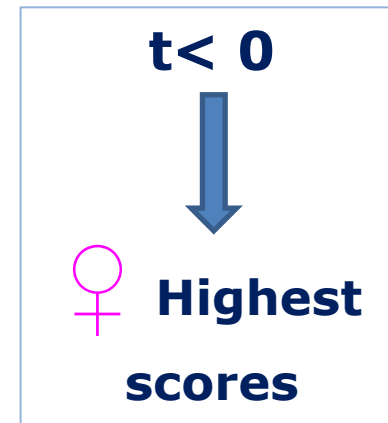
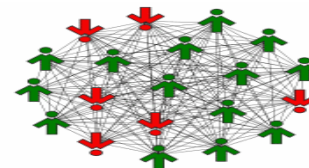
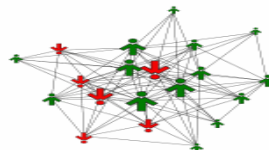
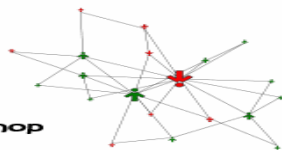
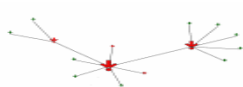


Table 4: Gender difference on Facebook variables

FB Variables	<i>t</i>	<i>p</i>
Quotes	-3.090	.01
Personal Photos	-2.828	.01
Wall Posts average length	-2.628	.05
Photos	-2.385	.05
Personal Information	2.265	.05





RESULTS 2

Buffardi Model (2008)

Personal Information
Comments
Quotes
Personal Photos
Profile Picture Edit

Panek Model (2013)

Profile Picture Edit
Activity
Wall Posts

Carpenter Model (2012)

Personal Photos
Followed People
Anger Words
Wall Posts
Swear Words
Profile Picture Edit

Centroid Model

DeWall Model (2011)

First Person Pronouns Singular
Personal Photos
Swear Words
Anger Words
Reflexive Pronouns
Verb First Person Singular

Bergman Model (2011)

Profile Picture Edit
Visited Places
Friends
Photos
Wall Posts
Personal Photos
Photos with Other People

Holtzman Model (2010)

Friends Words
Swear Words
Comments
Wall Posts
Friends
Anger Words
Sexual Words
School Words
Wall Posts Length



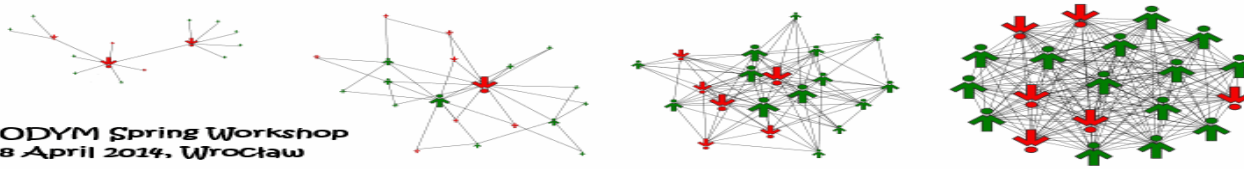


Table 5: Correlations among the six models and the centroid model

Variable	1	2	3	4	5	6	7
(1) - Holtzman Model	-						
(2) - Dewall Model	.69	-					
(3) - Buffardi Model	.69	.41	-				
(4) - Panek Model	.65	.41	.92	-			
(5) - Carpenter Model	.76	.70	.74	.76	-		
(6) - Bergman Model	.61	.37	.84	.79	.67	-	
(7) - Centroid Model	.86	.70	.90	.90	.91	.84	-

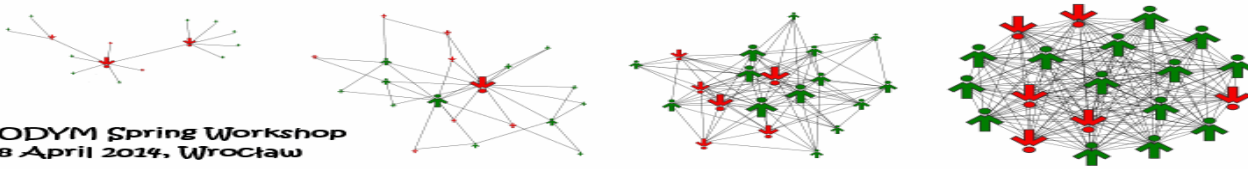
Gender differences



Independent-samples t-tests

Three significant differences

1. the Holtzman model ($t_{(48)}=-2.90, p<.05$)
2. the Bergman model ($t_{(48)}=-2.75, p<.05$)
3. the Centroid model ($t_{(48)}=-2.23, p<.05$)



RESULTS 3

Table 6: FB Users' emerging behavioral profile from Facebook variables

Variable: Activity on Facebook	Correlation	Variable: Facebook Profile	Correlation
Wall posts	.84	Map	.52
Activities with likes	.84	Videos	.47
Complete activity	.83	Friends	.34
Word count*	.81		
Personal photos	.79		
Wall posts length	.79		
Comments	.72		
Likes	.70		
Quotes	.67		
Photos	.66		
Profile picture edit	.65		



Facebook activity variables are **strongly associated** with FB users' self-presentation (centroid scores)

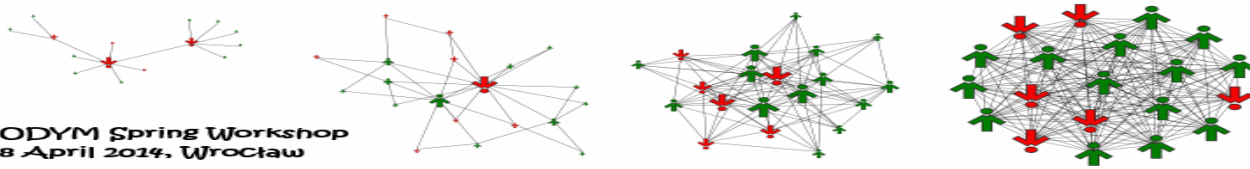
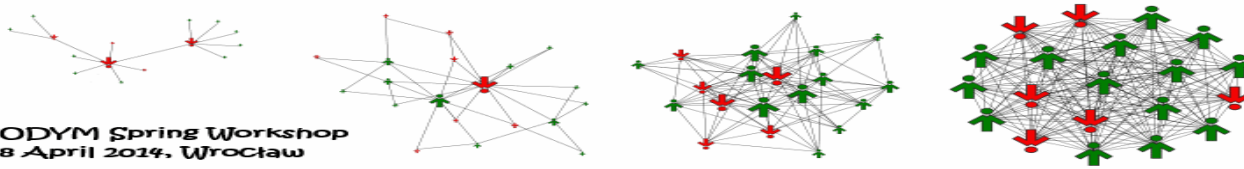


Table 7: FB Users' emerging behavioral profile from linguistic and semantic analysis (LIWC)

LIWC – Linguistic Processes	Correlation	LIWC – Cognitive Processes	Correlation
Comma	.56	Discrepancy	.41
Personal pronouns	.50	Exclusive	.39
Dictionary words	.50	Cognitive Processes	.33
1 st p. pronouns singular	.48	Certainty	.30
Self	.46	Inclusive	.29
Present Tense	.42	LIWC – Affective Processes	Correlation
Verb first person sing.	.39	Anger words	.42
Numerals	-.37	Sadness words	.41
Articles	.36	Affective Processes	.41
Negations	.35	Anxiety	.29
Prepositions	.33	LIWC – Biological Processes	Correlation
2 nd p. pronouns singular	.32	Physical	.55
		Sexual	.53
		Body	.44

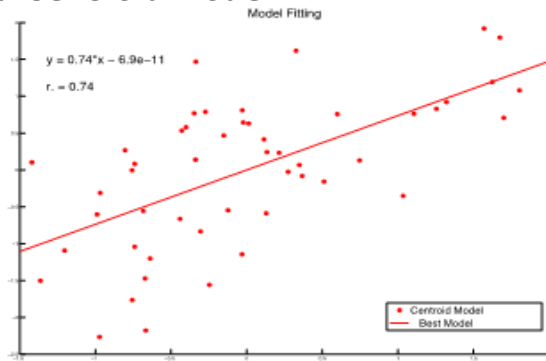


RESULTS 4

Figure 1: Best Model

$$N_i^{BestModel} = Comma_i + Physical_i + Sexual_i$$

Figure 2: Correlation between the Best Model and Centroid Model



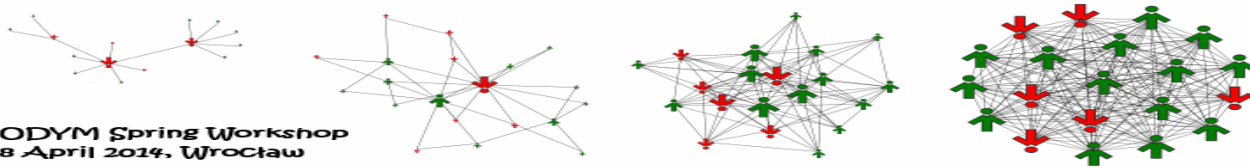
Strong correlation with DeWall model
($r=.71$)

Correlation between the Best Model and the six literature models

- **Strong correlation** with DeWall model ($r=.71$), Holtzman model ($r=.62$), and Carpenter model ($r=.55$)
- **Medium correlation** with the Bergman model ($r=.45$), the Panek model ($r=.43$), and the Buffardi model ($r=.43$)

Gender differences Independent-samples t-test to **confirm** the different narcissism scores for males and females ($t_{(48)}=-4.56, p<.01$)





CONCLUSION AND FUTURE PERSPECTIVES

Literature confirm

Narcissists disclose more personal information

LIWC analysis

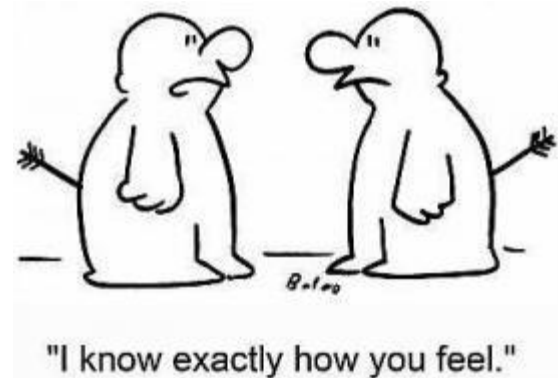
Significant relations between narcissistic trait and linguistic, cognitive, biological and affective processes

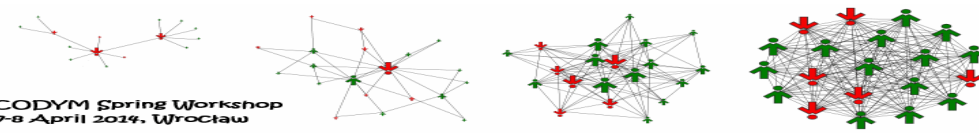
New LIWC based model

Narcissistic trait assessment in few posts

Reverse Engineering

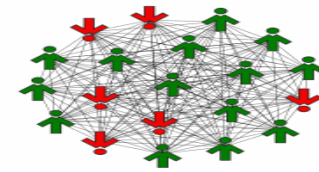
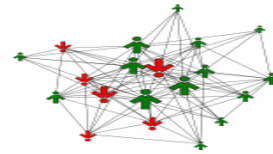
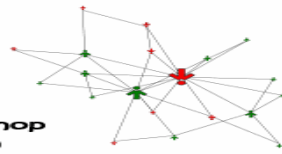
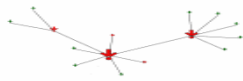
Development of simple models for SNs based human virtual dynamics





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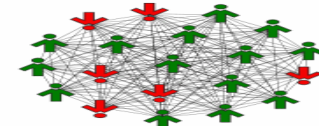
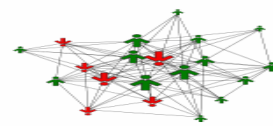
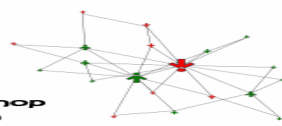
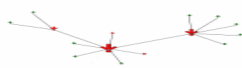


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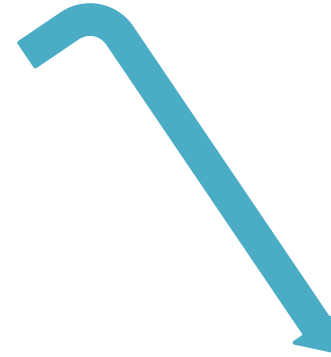
Sociophysics of Virtual Dynamics





LIWC Variables	Score	Added Score	Total Score
Comma	6		6
Physical	6		6
Sexual	5	1	6
Word count *	6		6
Sleep	5		5
Negative emotion	5		5
Body	4		4
Dictionary	4		4
Exclusive	4		4
Negation	4		4
Personal pronoun	4		4
Reflexive pronoun	3	1	4

Table: Best Model building



$$N_i^{BestModel} = Comma_i + Physical_i + Sexual_i$$

The **Best model** consisted of only three variables, namely the three dimensions of LIWC which reached a Total Score of 6