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Metacognition and its socio-demographics correlates: A study

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Abstract
Demographics work as identification status for an individual and for "how you think" there is always these small identifications that influence otherwise a greater objective. For advancement in psychopathology and understanding behaviour that fuel behavioral irregularities, there have been lack of research that have examined demographic correlates that affect the metacognition. In this perspective, 350 young adults took part in a study in the city of Ahmedabad, the present investigation was undertaken to investigate the influence of demographic factors, that is, family type, family income, parent's education, number of siblings and birth order. The Metacognition Questionnaire (MCQ-30) has been used as a measure of metacognition. Mean, standard deviation, 't' test and Analysis of Variance (ANOVA) have been employed for the analysis of data. The results of the study reveal significant impact of demographics on the metacognition of young adults. This study suggests understanding and regulation of one's own unhelpful metacognitions and treads path for future research in using the above understanding in the field of psychopathology.

Keywords: Demographic factors, Metacognition, young adults, psychopathology.

Introduction
Metacognition is a very new concept in the field of psychology. As much as it is there to understand metacognition as a concept, equal capacity of It is there to put to use in the field of research. Metacognition, by definition, is any knowledge or cognitive process that has involvement in the appraisal, monitoring or control of cognition. By concept, it is multifaceted. It is a high order organized system that makes a person recognize events in their own mind and manage them in a changeable manner. An essential role in functional and adaptational operation of an individual's cognitive process is played by metacognition. Deteriorations or inconsistencies in the metacognitive system is thought to have psychopathology trails. (Corcoran KM, 2008). One of the models of metacognition, the S-REF model, stresses on the essentiality of metacognition in the maintenance of psychopathology of various psychological disorder, mainly emotional disorders. The concept of metacognition suggests that there are three levels within which cognitive processes are divided, these are: processing which is automatic and involuntary, the low-level processing; processing which is voluntary and within one's conscious awareness, the online conscious processing; and lastly, the self-knowledge, that constitutes declarative and procedural knowledge.

Metacognition has found to have been showing compelling relations with various psychological processes such as emotional processes, cognitive processes and behaviour (Brune, 2006), therefore many studies have understood the role of metacognition as one of the aspects of information processing process that incorporates four mechanisms of content processing- monitoring, interpreting, evaluating and regulating. On basis of this one study by(Mathews, 1996)stated that dysfunctional metacognitive beliefs possibly form the basis for developing and also has a key role in the maintenance of psychological dysfunction. Research pool is huge contributing to the link between metacognition and prediction of development of psychological symptoms. Apart from the evident presence in clinical samples, metacognition in non-clinical samples have shown significant relations with perceived stress, negative emotions, anxiety and depression.(Wells, 2007). Negative beliefs about worry, worry concerning uncontrollability and danger, cognitive confidence, need to control thoughts and cognitive self-consciousness are the sub variables governing one's metacognition, and all of these have significant relationships with depression and anxiety spectrum disorders. (Spada, 2008). Therefore, the ideology of this study lies in understanding differential metacognition through varied demographics in order to understand and manage the effects of metacognition on one's psychological health.

Not many studies understand the effect of individual's first social circle that has a huge impact on early development of emotion, cognition and behaviour, that is, family environment. For which, rich demographics

included in this study are firstly, that includes family in general- family type and family income, second, that concerns one's parents- parent' education and lastly, that concerns the most important factor, the siblings- number of siblings and birth order. This study seeks to understand the effect of metacognition at a very preliminary level so as to give scope in future research to understand the prevalence of psychological disorders through varied demographics.

Objectives

1. To investigate if there is any significant relationship between metacognition and Family type
2. To investigate if there is any significant relationship between metacognition and Family income
3. To investigate if there is any significant relationship between metacognition and parent' education
4. To investigate if there is any significant relationship between metacognition and number of siblings
5. To investigate if there is any significant relationship between metacognition and birth order

Methodology

The current study was conducted in the city of Ahmedabad, Gujarat on a population of 350 young adults on basis on random sampling technique. Demographics details (Family type, family income, Parent education, Number of siblings, Birth order) were taken for this study and the Metacognition Questionnaire (MCQ-30) by Wells & Cartwright-Hatton 2004, was incorporated. MCQ-30 is a 30-item self-report questionnaire which are supposed to be rated on a 4- point Likertscale ranging from 1 (do not agree) to 4 (completely agree). This tool measures metacognitive beliefs relevant to vulnerability and maintenance of psychological disorders and items are grouped in 5 sub scales- cognitive confidence, cognitive self-consciousness, positive beliefs about worry, negative beliefs about worry concerning uncontrollability and danger and beliefs about need to control thoughts. Correlation and ANOVA were used for statistical analysis.

Findings

A. Metacognition and Family type

Ho- there is no statistically significant relationship between metacognition and family type

H1- there is statistically significant relationship between metacognition and family type

Group Statistics					
	Family Type	N	Mean	Std. Deviation	Std. Error Mean
lack of cognitive confidence	Nuclear	233	11.8498	3.63872	.23838
	Joint	117	12.2308	3.44760	.31873
positive beliefs of worry	Nuclear	233	13.0000	4.17608	.27358
	Joint	117	13.2051	3.50502	.32404
cognitive self-consciousness	Nuclear	233	16.8755	3.89152	.25494
	Joint	117	16.2650	3.70320	.34236
negative beliefs about uncontrollability	Nuclear	233	14.6395	4.58714	.30051
	Joint	117	14.7692	4.35768	.40287
need to control thoughts	Nuclear	233	12.7082	3.88418	.25446
	Joint	117	12.6068	3.83036	.35412

Table 1: mean table for metacognition variables with family type

Independent Samples Test					
		t-test for Equality of Means			
		t	df	Sig. (2-tailed)	Mean Difference
lack of cognitive confidence		-.957	243.909	.339	-.38098
positive beliefs of worry		-.484	271.374	.629	-.20513
cognitive self-consciousness		1.430	242.962	.154	.61058
negative beliefs about uncontrollability		-.258	243.335	.797	-.12975
need to control thoughts		.232	235.348	.816	.10132

Table 2: t-test table for table 1

The above tables show that there may be a difference between metacognitions of young adults who belong to nuclear family versus ones who belong to joint family, however, these differences are not significant. In this case, we accept the null hypothesis and conclude stating that there is no relationship between metacognition and family type.

B. Metacognition and Parental education
HO: there is no significant relationship of metacognition with mother' and father's education.
H1: there is a significant relationship of metacognition with mother' and father's education.

Descriptive				
		N	Mean	Std. Deviation
lack of cognitive confidence	Uneducated	31	12.4194	3.64028
	Up to 10th	24	12.5000	4.34391
	Up to 12th	96	12.3750	3.45269
	Graduation	157	11.5414	3.42968
	Post-Graduation	42	12.0714	3.84069
	Total	350	11.9771	3.57555
positive beliefs of worry	Uneducated	31	14.5806	3.89679
	Up to 10th	24	13.4167	4.21092
	Up to 12th	96	13.1875	3.86431
	Graduation	157	12.8726	3.94956
	Post-Graduation	42	12.2143	3.97269
	Total	350	13.0686	3.96053
cognitive self-consciousness	Uneducated	31	18.0645	3.31598
	Up to 10th	24	16.6667	3.21230
	Up to 12th	96	16.5833	3.55607
	Graduation	157	16.5605	4.05782
	Post-Graduation	42	16.2619	4.20835
	Total	350	16.6714	3.83515
negative beliefs about uncontrollability	Uneducated	31	14.4194	4.65313
	Up to 10th	24	15.0833	5.33990
	Up to 12th	96	15.7604	4.21712
	Graduation	157	14.2739	4.48160
	Post-Graduation	42	13.7143	4.34649
	Total	350	14.6829	4.50590
need to control thoughts	Uneducated	31	14.1613	4.55410
	Up to 10th	24	12.8333	3.11611
	Up to 12th	96	13.0938	3.52458
	Graduation	157	12.2102	4.05575
	Post-Graduation	42	12.2619	3.43625
	Total	350	12.6743	3.86108

Table 3: metacognition with father's education

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
lack of cognitive confidence	Between Groups	58.002	4	14.501	1.136	.339
	Within Groups	4403.815	345	12.765		
	Total	4461.817	349			
positive beliefs of worry	Between Groups	111.824	4	27.956	1.799	.129
	Within Groups	5362.530	345	15.544		
	Total	5474.354	349			
cognitive self-consciousness	Between Groups	69.882	4	17.471	1.190	.315
	Within Groups	5063.332	345	14.676		
	Total	5133.214	349			
negative beliefs about uncontrollability	Between Groups	183.131	4	45.783	2.288	.060
	Within Groups	6902.666	345	20.008		
	Total	7085.797	349			
need to control thoughts	Between	127.003	4	31.751	2.158	.073

	Groups					
	Within Groups	5075.866	345	14.713		
	Total	5202.869	349			

Table 4: Anova table for table 3

The above tables show the relationship between metacognition and father's education. The table shows that among the five sub variables of metacognition, negative beliefs about uncontrollability and need to control thoughts, are the two dimensions that show significant relationship with education level of an individual's father. Therefore, we accept the alternate hypothesis stating that there is a significant difference between metacognition and father's education.

Descriptive				
		N	Mean	Std. Deviation
lack of cognitive confidence	Uneducated	50	12.6200	3.73560
	Up to 10th	22	12.5909	4.39328
	Up to 12th	135	12.0148	3.14331
	Graduation	111	11.6306	3.69995
	Post-Graduation	32	11.5938	3.99887
	Total	350	11.9771	3.57555
positive beliefs of worry	Uneducated	50	14.2000	4.03556
	Up to 10th	22	13.3636	4.50973
	Up to 12th	135	12.8000	3.59685
	Graduation	111	12.8829	4.20117
	Post-Graduation	32	12.8750	3.98991
	Total	350	13.0686	3.96053
cognitive self-consciousness	Uneducated	50	17.3800	3.28192
	Up to 10th	22	17.1818	3.48652
	Up to 12th	135	16.3852	3.45976
	Graduation	111	16.7117	4.38466
	Post-Graduation	32	16.2813	4.34210
	Total	350	16.6714	3.83515
negative beliefs about uncontrollability	Uneducated	50	14.1600	4.45549
	Up to 10th	22	15.1364	5.31212
	Up to 12th	135	14.5704	4.37350
	Graduation	111	15.0180	4.45989
	Post-Graduation	32	14.5000	4.87257
	Total	350	14.6829	4.50590
need to control thoughts	Uneducated	50	13.5800	3.56336
	Up to 10th	22	12.8182	4.43618
	Up to 12th	135	12.6222	3.67498
	Graduation	111	12.2793	3.87104
	Post-Graduation	32	12.7500	4.57905
	Total	350	12.6743	3.86108

Table 5: metacognition with mother's education

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
lack of cognitive confidence	Between Groups	47.174	4	11.793	.922	.451
	Within Groups	4414.643	345	12.796		
	Total	4461.817	349			
positive beliefs of worry	Between Groups	80.686	4	20.171	1.290	.273
	Within Groups	5393.668	345	15.634		
	Total	5474.354	349			
cognitive self-consciousness	Between Groups	46.948	4	11.737	.796	.528

	Within Groups	5086.267	345	14.743		
	Total	5133.214	349			
negative beliefs about uncontrollability	Between Groups	33.441	4	8.360	.409	.802
	Within Groups	7052.356	345	20.442		
	Total	7085.797	349			
need to control thoughts	Between Groups	59.340	4	14.835	.995	.410
	Within Groups	5143.528	345	14.909		
	Total	5202.869	349			

Table 6: ANOVA for table 5

The two tables show above indicate the relationship between metacognition and mother's education. The table shows that among the five sub variables of metacognition, all show slight difference but the ANOVA shows that these differences are not statistically significant. Therefore, we accept the null hypothesis stating that there is no significant difference between metacognition and mother's education.

C. Metacognition and Family income
Ho- there is no significant difference between metacognition and family income.
H1- there is significant difference between metacognition and family income.

Descriptive				
		N	Mean	Std. Deviation
lack of cognitive confidence	Below 1 Lakh	133	12.5038	3.78919
	1 Lakh to 2 Lakh	95	12.1684	3.40104
	Above 2 Lakh	122	11.2541	3.37115
	Total	350	11.9771	3.57555
positive beliefs of worry	Below 1 Lakh	133	13.0376	3.81068
	1 Lakh to 2 Lakh	95	13.3053	3.88963
	Above 2 Lakh	122	12.9180	4.19285
	Total	350	13.0686	3.96053
cognitive self-consciousness	Below 1 Lakh	133	16.7068	3.82334
	1 Lakh to 2 Lakh	95	15.9263	3.39349
	Above 2 Lakh	122	17.2131	4.09844
	Total	350	16.6714	3.83515
negative beliefs about uncontrollability	Below 1 Lakh	133	15.0977	4.60544
	1 Lakh to 2 Lakh	95	14.6632	4.16830
	Above 2 Lakh	122	14.2459	4.64137
	Total	350	14.6829	4.50590
need to control thoughts	Below 1 Lakh	133	13.3083	3.97183
	1 Lakh to 2 Lakh	95	12.5053	3.58743
	Above 2 Lakh	122	12.1148	3.87447
	Total	350	12.6743	3.86108

Table 7: metacognition and family income

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
lack of cognitive confidence	Between Groups	104.141	2	52.070	4.146	.017
	Within Groups	4357.676	347	12.558		
	Total	4461.817	349			
positive beliefs of worry	Between Groups	8.215	2	4.107	.261	.771
	Within Groups	5466.140	347	15.753		
	Total	5474.354	349			
cognitive self-consciousness	Between Groups	88.707	2	44.354	3.051	.049

	Within Groups	5044.507	347	14.537		
	Total	5133.214	349			
negative beliefs about uncontrollability	Between Groups	46.224	2	23.112	1.139	.321
	Within Groups	7039.573	347	20.287		
	Total	7085.797	349			
need to control thoughts	Between Groups	94.367	2	47.183	3.205	.042
	Within Groups	5108.502	347	14.722		
	Total	5202.869	349			

Table 8: ANOVA table for table 7

Table 7 and Table 8 indicate the difference between metacognition variables and family income, and whether or not these differences are statistically significant. Among the five variables of metacognition, lack of cognitive confidence, cognitive self-consciousness and need to control thoughts, are three variables that did show relationship with family income. Therefore, we accept the alternate hypothesis stating that there is a significant relationship between metacognition and family income

D. Metacognition and Number of Siblings
H0- there is no significant difference between metacognition and number of siblings
H1- there is a significant difference between metacognition and number of siblings

Correlations							
		Number of Siblings	lack of cognitive confidence	positive beliefs of worry	cognitive self-consciousness	negative beliefs about uncontrollability	need to control thoughts
Number of Siblings	Pearson Correlation	1	.032	.020	-.123*	-.050	.003
	Sig. (2-tailed)		.554	.710	.021	.356	.952
	N	350	350	350	350	350	350

Table 9: correlation between metacognition and number of siblings

Table 9 shows correlation statistics between number of siblings and metacognition sub variable. Amongst the five sub variables, only cognitive-self-consciousness showed a significant relationship with number of siblings demographics. It showed a slightly weak correlation with number of siblings demographics. Therefore, we accept alternate hypothesis stating that there is a significant relationship between metacognition and number of siblings.

E. Metacognition and Birth order
H0- There is no significant relationship between birth order and metacognition
H1- there is a significant relationship between birth order and metacognition

Correlations							
		Birth Order	lack of cognitive confidence	positive beliefs of worry	cognitive self-consciousness	negative beliefs about uncontrollability	need to control thoughts
Birth Order	Pearson Correlation	1	-.038	.065	.023	-.006	-.021
	Sig. (2-tailed)		.476	.224	.670	.909	.699
	N	350	350	350	350	350	350

Table 10: correlation table between birth order and metacognition

The above table shows correlation between birth order and metacognition. It is seen in the table that there maybe a correlation between birth order and metacognition, but this relationship does not show statistically

significant difference between birth order and metacognition. Therefore, we accept the null hypothesis stating that there is no significant relationship between birth order and metacognition.

Findings &Conclusion

Many studies and researches have shown the role of these five dimensions of metacognition as vulnerability factors that predict development of psychological symptoms. However, no studies have explored in depth the role of socio-demographic aspects and family demographics aspects. Regarding the socio-demographics details, first we start with discussing family type. Through the analysis, it is seen that family type had no relationship with metacognition, that means, metacognition of individuals have nothing to do with what type of family they come from. Individuals coming from nuclear and/or joint family will have no effect of the metacognitions of either. Second demographic for the study was parental education, for which mother's and father's was assessed separately. It was found that while father's education had an effect on their child's metacognition, mother's education had no effect for the same. Father education had an effect on an individual's ability of thinking that perseverative thinking is uncontrollable and dangerous (negative beliefs about uncontrollability), and also the need of suppressing certain types of thoughts (need to control thoughts). Third demographic of the study was family income and the study suggested that it had direct effect on confidence an individual has on its attention and memory (cognitive confidence), on one's thought monitor and internal focus (cognitive self-consciousness) and also on the need to control their intrusive thoughts. Fourth variable assessed the effect of siblings and the study suggested that as the siblings number increased, the tendency of monitoring one's own thoughts and focus attention inwards (cognitive self-consciousness) decreased. Therefore one who has more siblings tend to have less of unhealthy metacognition. And lastly, in the order an individual is born, the birth order, had absolutely no effect on one's metacognition.

Studying metacognition and understanding how evidently unhelpful metacognition fuels psychological disorders, it is the call of the hour to also understand its correlates to better understand what all social and basic correlates energises unhelpful metacognitions. Therefore, through this study, the richness of understanding metacognition from base level was attempted.

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