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Nurturing exressional fluency among adolescents: Findings from regression

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ABSTRACT

The investigation probed the roles of adolescents' age, gender, temperament and perceived home environment in statistically predicting their expressional fluency – an aspect of creativity. Stratified random sample of 450 adolescents of middle socio-economic status families [assessed by Socio-Economic Status Scale (Meenakshi, 2004)] in Kolkata was selected. 150 adolescents each belonged to age groups 13-14 years, 15-16 years and 17-18 years, respectively. 150 adolescents each studied in schools affiliated with West Bengal Board, Council for Indian School Certificate Examination and Central Board of Secondary Education with equal representation of genders. Standardized tools *viz*., Sentence Construction Test of Divergent Production Abilities (Sharma, 2011), Dimensions of Temperament Scale (Chadha and Chandna, 2005) and Home Environment Inventory (Misra, 2003) were administered to assess adolescents' creativity, temperament and perception of home environment, respectively. After computing bivariate correlations Multiple Regression Analysis was conducted. Expressional fluency of adolescents was found to be significantly predicted by their age, gender as well as dimensions of temperament and perceived home environment. Punitive homes were found to make adolescents expressive.

Key Words : Expressional fluency, Temperament, Perceived home environment, Adolescents.

INTRODUCTION

Expressiveness is an integral part of creativity. Expressions make creativity evident. Expressional fluency can be thought of as the capacity to generate a profusion of creative products. In the context of literary creativity, it is the ability to produce as many meaningful, relevant and commendable sequences of words as possible within certain stipulations. Creativity, in it's turn, is an attribute necessary for developing innovations vital to society and it's crux is divergent production ability - the capability to think diversely (Guilford, 1967; Morgan *et al.*, 1987). Researchers reveal associations between creativity on the one hand and temperament as well as perceived home environment of adolescents on the other (Roy, 1982; Sharma, 1982; Rathi Devi, 1984; Kagan, 1987; Runco, 1992; Hennessey, 1995; Kaufman and Vosburg, 1997; Reddy and Rao, 2003; Verhaeghen et al., 2005; Healy and Rucklidge, 2007; Lather *et al.*, 2014; Abraham, 2015). The debate whether these associations are positive or inverse is yet to be resolved. So it is an active

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area of research. Adolescence (12 to 19 years of age) is a time of cognitive maturation, intense emotionality and self-assertion. These characteristics have important linkages with creative expressiveness, temperament and perceived home environment of adolescents (Guilford, 1967; Morgan *et al.*, 1987). So adolescence is of particular interest in the present investigation.

In the following studies, creativity and temperament were found positively related. Roy (1982) reported a positive correlation between deviant personality (a manifestation of difficult temperament) and creative motive leading to divergent expression of 240 adolescents. Age of the subjects was significantly related with behavioural deviance and divergent production. Lather *et al.* (2014) reported that in the age group 18-23 years, those with internal locus of control were superior in creative fluency and verbal responses. But in the age group 24-26 years, those with external locus were superior. Trivedi and Bhargava (2010) drew a sample of 240 adolescents. Low achieving creative girls outperformed their male peers in understanding of problems and creative writing. Kagan (1987) reviewed researches to opine that ability of perceiving others in complex and divergent ways help individuals communicate effectually and adapt verbal messages to fit the perspectives of listeners. Verhaeghen *et al.* (2005) worked with 99 undergraduates. It emerged that rumination was linked with depressive symptoms and creative fluency A few studies have revealed either inverse or non-significant relation between divergent production and temperament. Kaufman and Vosburg (1997) conducted two studies (samples: 91 subjects, 17-21 years; 92 subjects 19-41 years). They found poorer performance in creative problem solving of subjects in positive mood. Clapham (2001) found that positive and negative affects (aspects of temperament) did not influence creative thinking of 148 participants.

Runco (1992) reviewed literature and concluded that perceived familial variables and age significantly influenced creativity among youngsters. Hennessey (1995) also reviewed literature and opined that home conditions had significant impact on the creativity of individuals. Generally creativity and perceived quality of home environment are found to share positive relation. Rathi Devi (1984) found that perceived family environment correlated significantly with creative thinking of 566 class IX pupils. Rao (1982) studied 930 students (boys and girls; urban and rural) of class IX and X. It was found that older students of higher socioeconomic status families were more creative. Sharma (1982) reported that perceived parental preference was significantly related to adolescents' creative expressions (sample: 481 class IX students, 230 boys; 251 girls). Boys were thus found to be more creative. Reddy and Rao (2003) chose a sample of 900 students of classes VIII to X to note that rural girls were creatively less fluent than male peers because of greater restrictions imposed on the former by families and communities. Abraham (2015) reviewed researches to suggest that gender difference in socialization at home and it's perception by adolescents partly influenced their quantity and quality of creative output. Volf and Tarasova (2013) found gender differences in neurophysiology underlying processing of promised rewards; this impacted adolescents' performance on verbal creative tasks. Vygotsky (2004) threw light on the strong linkage between imagination and creativity in youngsters. Lying or telling tales which are common among the young are verbal expressions of imagination and creativity. Although punitive contexts are generally considered impediments to development, Talwar and Lee (2011) found that small children's ability to tell lies for covering up lapses were enhanced in such contexts. Jensen *et al.* (2011) worked with 229 high schoolers and 261 undergraduates. They concluded that adolescents and young adults lied to parents to assert their autonomy. Hence greater parental restrain increased lying; when parents realized their offspring were lying they became more controlling.

Studies on relations of expressional fluency with temperament as well as perceived home

environment are few. In one such study (Healey and Rucklidge, 2007) it was reported that the presence of Attention Deficit Hyperactive Disorder symptoms in creative children (93 ten-twelve year olds) correlated significantly with their temperaments but not with perceived family environments**.** The above review highlighted the need to study impacts of temperament and perceived home environment on expressional fluency among Indian adolescents. Prediction of expressional fluency of adolescents based on their temperament and perceived home environment has been rarely attempted. The present study has tried to fill in this lacuna. Besides, prior studies have indicated the influence of adolescents' age and gender on expressional fluency – temperament and expressional fluency – perceived home environment relations (Rao, 1982; Sharma, 1982; Rathi Devi, 1984; Runco, 1992; Reddy and Rao, 2003; Trivedi and Bhargava, 2010; Volf and Tarasova, 2013; Lather *et al.*, 2014; Abraham, 2015). So variables of age and gender have also featured as predictors in the present investigation.

The following hypothesis emerged from the above survey of research literature:

Extent of expressional fluency of adolescents can be predicted by their age, gender as well as dimensions of temperament and perceived home environment.

Operational definitions of the variables

i) *Expressional fluency:* It is an aspect of creativity. It may be thought of as the ability to think of and articulate as many ideas as possible which are logically in harmony with a system or theory (Sharma, 2011).

ii) *Temperament:* It is defined as the aspect of personality which is composed of mood, activity level and emotion. (Morgan *et al.*, 1987). The following temperaments were proposed by Chadha and Chandna (1999; 2005) : -(a) Sociable temperament: Tendency to engage in social interactions and relationships. (b) Ascendant temperament: Tendency to lead, initiate activities and dominate over others. (c) Secretive temperament: Tendency to keep emotions under close control. (d) Reflective temperament: Tendency to be deeply thoughtful and imaginative instead of engaging in motor activities. (e) Impulsive temperament: Tendency to act upon new ideas quickly without much thought. (f) Placid temperament: Tendency to remain quiet, calm and relaxed. (g) Accepting temperament: Tendency to regard other people and their advice as good and well-meaning. (h) Responsible temperament: Tendency to act reliably, trustworthily and conscientiously. (i) Vigorous temperament: Tendency to be energetic and continuously engage in strenuous activities. (j) Cooperative temperament: Tendency to be supportive, compliant and collaborative. (k) Persistent temperament: Tendency to keep thinking about specific subject and working despite obstacles until goal is reached. (l) Warm temperament: Tendency to sympathize and share with, praise and help others. (m) Aggressive temperament: Tendency to be envious, competitive, vengeful and hostile. (n) Tolerant temperament: Tendency to be conforming, satisfied and understanding. (o) Tough-minded temperament: Tendency to be logical, rational and unbiased (Chadha and Chandna, 1999; 2005).

iii) Perceived home environment: It refers to the psycho-social climate of the home as viewed by the adolescents. It is the quantity and quality of the cognitive, emotional and social support that is available to the adolescent at home (Misra, 2003). It has the following dimensions: - (a) Control: Extent of autocratic milieu at home in which many restrictions are imposed by parents on offspring in order to discipline the latter. (b) Protectiveness: Extent of parental tendency of preventing independent behaviour of offspring and prolonging infantile care. (c) Punishment: Extent to which parents subject offspring to physical and affective punishment to prevent the occurrence of

undesirable behaviour on the part of the latter. (d) Conformity: Extent to which the offspring is expected to comply with parents' directions, commands or orders. (e) Social isolation: Extent of parental tendency of keeping the offspring isolated from loved ones except family members as a negative sanction. (f) Reward: Extent of parents' giving of materials and symbolic rewards to increase the probability of or strengthen desirable behaviour by the offspring. (g) Deprivation of privileges: Extent of depriving the offspring of their rights to love, respect and care from parents as a means of controlling their behaviour. (h) Nurturance: Extent of parental interest in and love for the offspring. (i) Rejection: Extent of disallowing the offspring of their human rights including rights to autonomy, uniqueness and free expression of feelings. (j) Permissiveness: Extent of opportunities provided by parents so that the offspring expresses his or her views freely and acts according to own desires without any interference (Misra, 2003).

iv) Age is operationally defined as chronological age of a person.

v) Gender refers to socially constructed roles, behaviours, activities and attributes that a given society considers appropriate for men and women (World Health Organization, 2012).

METHODOLOGY

Participants :

A stratified random sample comprising 450 adolescents residing in Kolkata – 150 adolescents each belonging to the age-groups 13-14 years, 15-16 years and 17-18 years of middle socio-economic status families and studying in classes VIII to XII were selected. The sample comprised of 225 boys and 225 girls.

Tools used :

i) Sentence Construction Test of Divergent Production Abilities (Sharma, 2011) :

Sentence Construction Test (a part of Divergent Production Abilities) was administered to assess expressional fluency of adolescents. Divergent Production Abilities is a test battery which measures aspects of creative thinking *viz.,* word fluency (measured by Word Production Test), ideational fluency (measured by Uses of Things Test), associational fluency (Similarities Test), expressional fluency (Sentence Construction Test), originality (Titles Test) and elaboration ability (Elaboration Test). Sentence Construction Test has five items each asking for framing of as many meaningful four/five-word sentences as possible with initial letters of the words as given. It's test-retest reliability coefficient is .84. In case of validity, scores of 40 subjects on expressional fluency measured by the present test was correlated with their scores on fluency assessed by Baqer Mehdi's Test of Creative Thinking (Verbal); the validity coefficient was found to be .63. This demonstrates more or less sufficient convergent validity of the present test. Percentile norms are based on 443 class IX students with mean age 13.80 years (Sharma, 2011).

ii) Dimensions of Temperament Scale (Chadha and Chandna, 2005):

It was used to assess 15 dimensions of temperament (*viz.,* sociability, ascendance, secretiveness, reflectiveness, impulsivity, placidity, acceptance, responsibility, vigor, cooperation, persistence, warmth, aggressiveness, tolerance and tough-mindedness) of participants. It comprises 152 items with response-options being yes and no. Test-retest reliability of the scale was found to be .94. Split-half reliability for odd-even items was found to be .76 and for first-second halves was .79. Test-retest reliability coefficients of the dimensions ranged from .82 to .95. All reliability values were significant.

Cross-validation yielded the coefficient .81. Convergent validity coefficient between scores on the scale and those on Dimensions of Temperament by Thorndike is .73; $p<.01$. Percentile norms are based on 240 fifteen to eighteen years old boys and girls (Chadha and Chandna, 2005).

iii) Home Environment Inventory (Misra, 2003):

It was used for assessment of dimensions of home environment (*viz.,* control, protectiveness, punishment, conformity, social isolation, reward, deprivation of privileges, nurturance, rejection and permissiveness) of participants. The inventory which is suited for use with pupils of VIII to XII has 100 items pertaining to the 10 dimensions of home environment. Responses are indicated on a five-point scale ranging from "mostly" to "never". Split-half reliabilities (corrected for length) of the dimensions are all significant and between .726 and .947. The inventory is claimed to have adequate content validity. Percentile norms are based on data from 113 students (54 boys; 59 girls) of intermediate classes (Misra, 2003).

iv) Socio Economic Status Scale (Meenakshi, 2004):

It was used for assessing and controlling socio-economic status of participants. It consists of 71 items grouped into sections *viz.,* education, profession, monthly income, financial assets, property, locality including durables and social status. The scale has a test-retest reliability of .82. As for validity, it could differentiate between students of public and government schools ($t=9.29$; $p<.01$) in socio-economic status. Norms are based on 1127 students of classes VII to XII (Meenakshi, 2004).

Procedure :

Four standardized tools were used for data collection. Among these, socio-economic status scale was used for assessment of socio-economic status of adolescents for purpose of control. Data were collected from groups of about 20-25 adolescents each at a time. Venues of data collection were schools. After data collection and scoring, means and standard deviations were computed followed by computation of Pearsonian correlation coefficients. Then multiple regression analysis was conducted. Multiple regression analysis was preferred over Multivariate Analysis of Variance (MANOVA) as there was only one dependent variable. MANOVA is suitable in cases where the dependent variable is more than one. Obtained results were discussed in view of findings of previous investigations and conclusions were drawn.

RESULTS AND DISCUSSION

Results (Table 1) show that differences in mean values of the pertinent variables across age-groups or gender-groups are not great. Standard deviation values indicate moderate to low dispersion of scores on the relevant variables. Subsequently Peasonian correlation coefficients were computed to find the relations of participants' scores on expressional fluency with those on each dimension of temperament and perceived home environment.

Results (Table 2) indicate that extent of expressional fluency of participants is significantly related with their ascendance, reflectiveness, impulsivity, placidity, acceptability, responsibility, vigour, cooperativeness, persistence, warmth, tolerance and tough-mindedness. These correlation coefficients are positive indicating that sampled adolescents' higher scores on expressional fluency are associated with their higher tendencies of being dominating, introspective, impulsive, relaxed,

Table 1 : Mean and Standard Deviation values of variables

Variables	Entire Sample (N=450)		13-14 years (N=150)		15-16 years (N=150)		17-18 years (N=150)		Boys (N=225)		Girls (N=225)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Expressional Fluency	2.29	2.21	2.36	2.31	2.33	2.15	1.56	1.79	2.17	2.45	2.41	1.93
Sociability	5.38	2.12	5.11	2.04	5.62	2.19	5.53	1.98	5.39	2.10	5.36	2.15
Ascendance	4.89	1.89	4.69	1.96	5.08	1.85	5.03	1.64	4.67	1.93	5.12	1.83
Secretiveness	4.57	1.84	4.26	1.84	4.87	1.81	4.66	1.79	4.42	1.80	4.72	1.87
Reflectiveness	5.19	2.15	4.96	2.10	5.48	2.13	4.88	2.39	5.06	2.21	5.33	2.09
Impulsivity	2.99	1.37	2.99	1.35	3.04	1.40	2.66	1.23	3.06	1.48	2.91	1.28
Placidity	4.32	2.16	4.12	2.21	4.47	2.13	4.63	1.96	4.37	2.17	4.27	2.15
Acceptability	2.98	1.44	2.88	1.35	3.09	1.53	2.88	1.41	2.99	1.50	2.96	1.37
Responsibility	5.25	2.04	5.05	1.95	5.40	2.10	5.59	2.09	5.00	1.95	5.51	2.09
Vigor	5.89	3.46	5.44	3.48	6.29	3.47	6.25	2.99	5.86	3.58	5.93	3.35
Cooperation	6.99	2.96	6.76	2.87	7.22	3.06	7.03	2.88	6.50	2.94	7.50	2.90
Persistence	3.64	1.68	3.47	1.65	3.82	1.73	3.66	1.38	3.56	1.69	3.73	1.67
Warmth	7.71	3.39	7.02	3.33	8.37	3.37	7.94	3.15	7.25	3.47	8.18	3.25
Aggressiveness	4.53	2.17	4.16	2.06	4.88	2.17	4.72	2.53	4.34	2.19	4.73	2.14
Tolerance	4.44	2.05	4.35	2.05	4.60	2.08	4.06	1.92	4.37	2.10	4.52	2.01
Tough-mindedness	2.77	1.50	2.75	1.53	2.85	1.50	2.41	1.24	2.78	1.50	2.77	1.50
Control	21.66	7.63	21.72	8.41	21.56	7.07	21.91	5.71	22.45	7.73	20.84	7.45
Protectiveness	24.68	8.51	24.00	9.00	25.27	8.16	25.34	7.16	24.48	8.23	24.90	8.80
Punishment	23.33	9.18	22.14	10.05	24.23	8.47	25.25	6.53	23.38	9.19	22.80	9.17
Conformity	25.57	9.34	24.42	9.43	26.19	9.43	29.12	6.81	25.91	8.98	25.22	9.71
Isolation	15.14	8.75	14.29	8.75	15.74	8.71	16.94	8.72	17.07	9.06	13.15	7.96
Reward	26.35	9.26	25.53	9.80	26.81	9.01	28.81	6.35	26.26	9.40	26.45	9.14
Deprivation	12.94	9.03	12.53	8.59	13.15	9.16	14.22	9.35	15.12	9.47	10.68	7.96
Nurturance	20.31	8.61	19.91	8.94	20.37	8.38	22.59	7.67	20.25	9.10	20.38	8.08
Rejection	13.15	8.52	12.36	8.22	13.85	8.60	13.81	9.68	14.57	8.81	11.68	7.96
Permissiveness	19.13	8.14	17.43	8.08	20.33	8.06	22.53	6.65	19.60	8.43	18.65	7.82

accepting, responsible, hard working, cooperative, persevering, friendly, accommodating and unbiased. However, those who are passive, shallow in thinking, slow in acting, tense, incompliant, careless, idle, uncooperative, relenting, emotionally cold, unaccommodating and biased tend to score lower on expressional fluency. Dimensions of home environment as perceived by the sampled adolescents such as control, protectiveness, punishment, conformity, isolation, reward, nurturance and permissiveness are found to be more or less powerfully (at .01 or .05 levels) related to expressional fluency. Moreover, these statistically significant correlation coefficients are positive. So it seems that adolescents' expressional fluency blooms in family contexts regarded by them as more controlling, protective, punitive, demanding compliance with parental wishes, isolating, rewarding, fostering and permissive. Conversely, homes regarded by adolescents as unrestrictive, non-defending, non-punishing, non-demanding of obedience, inclusive but unappreciative, neglecting and narrow-minded tend to be associated with lower expressional fluency among them. These outcomes resonate with those of prior studies (e.g. Roy, 1982; Sharma, 1982; Rathi Devi, 1984; Kagan, 1987; Runco, 1992;

Table 2 : Bivariate Correlations – Expressional Fluency with Dimensions of Temperament and Perceived Home Environment of Adolescents (N=450)

Dimensions of Temperament	Correlation with Expressional Fluency	Dimensions of Perceived Home Environment	Correlation with Expressional Fluency
Sociability	.09	Control	.12*
Ascendance	.13**	Protectiveness	.17**
Secretiveness	.07	Punishment	.21**
Reflectiveness	.10*	Conformity	.17**
Impulsivity	.12*	Isolation	.10*
Placidity	.17**	Reward	.18**
Acceptability	.12*	Deprivation	.09
Responsibility	.10*	Nurturance	.17**
Vigour	.19**	Rejection	.07
Cooperation	.19**	Permissiveness	.10*
Persistence	.13**		
Warmth	.15**		
Aggressiveness	.03		
Tolerance	.16**		
Tough-Mindedness	.14**		

df=448; *p<.05; **p<.01

Hennessey, 1995; Kaufman and Vosburg, 1997; Reddy and Rao, 2003; Verhaeghen *et al.,* 2005; Healy and Rucklidge, 2007; Lather *et al.,* 2014; Abraham, 2015). Next, multiple regression analysis was conducted with expressional fluency of participant adolescents as dependent variable and their dimensions of temperament and perceived home environment as predictors. Expressional fluency being the response variable was considered as dependent. Adolescents' age and gender were also included as predictors in view of their roles in previous studies (Rao, 1982; Sharma, 1982; Rathi Devi, 1984; Runco, 1992; Reddy and Rao, 2003; Trivedi and Bhargava, 2010; Volf and Tarasova, 2013; Lather *et al.*, 2014; Abraham, 2015). Table 3 displays values of Beta coefficients. These are estimates resulting from regressions that have been standardized so that variances of the dependent variable and predictors are numerically one. Standardized coefficients specify by how many standard deviations a dependent variable will increase / decrease, per one standard deviation increase in the predictor. Beta coefficients ignore the scaling inherent in the measure of each predictor which makes comparisons across predictors easy.

Beta coefficients (Table 3) reveal that perceived punitiveness in home environment of the sampled adolescents is chief determinant of their extent of expressional fluency (Beta= .23; Sig. .008). Sign on the Beta coefficient indicates that: - adolescents' expressional fluency manifested through sentence construction flourishes when the family milieu is viewed as punishing. It is plausible that adolescents have to cultivate expressiveness in making excuses as it saves them from being punished. It is also likely that they become articulate to affirm their individuality in the face of parental suppression (Jensen *et al.*, 2004; Vygotsky, 2004; Talwar and Lee, 2011). Table 3 shows that the set of predictors (*viz.,* sociability, ascendance, secretiveness, reflectiveness, impulsivity, placidity, acceptability, responsibility, vigour, cooperation, persistence, warmth, aggressiveness, tolerance, tough-mindedness, control, protectiveness, punishment, conformity, isolation, reward, deprivation, nurturance, rejection, permissiveness, age and gender) bear significant relations with dependent variable – expressional fluency of sampled adolescents (R= 0.33; p<.01). R^2 value

reveals that 11% of variance in expressional fluency scores of the participating adolescents can be explained by the select predictors. Significant F-value (Table 4) indicates that participating adolescents' extent of expressional fluency can be significantly predicted (F= 1.94; Sig. .004) by their temperament; perceived home environment; age and gender. The research hypothesis (extent of expressional fluency of adolescents can be predicted by their age, gender as well as dimensions of temperament and perceived home environment) is supported. Findings of prior investigations (e.g. Roy, 1982; Sharma, 1982; Rathi Devi, 1984; Kagan, 1987; Runco, 1992; Hennessey, 1995; Kaufman and Vosburg, 1997; Reddy and Rao, 2003; Verhaeghen *et al.*, 2005; Healy and Rucklidge, 2007; Lather *et al.*, 2014; Abraham, 2015) are congruent with the present outcome.

Table 3 : Summarized Results of Regression: Dependent Variable - Expressional Fluency of Adolescents (N=450)

Predictors	Beta co-efficient	Sig.
Sociability	-.03	.662
Ascendance	-.02	.812
Secretiveness	-.01	.875
Reflectiveness	-.06	.404
Impulsivity	.05	.378
Placidity	.07	.299
Acceptability	.01	.842
Responsibility	-.02	.718
Vigour	.13	.083
Cooperation	.14	.070
Persistence	.01	.894
Warmth	-.03	.715
Aggressiveness	-.07	.252
Tolerance	.02	.817
Tough-mindedness	-.01	.907
Control	-.14	.077
Protectiveness	.03	.733
Punishment	.23	.008
Conformity	.03	.739
Isolation	.02	.837
Reward	.001	.996
Deprivation	.04	.656
Nurturance	.05	.539
Rejection	-.07	.370
Permissiveness	-.05	.483
Age	-.09	.059
Gender	.05	.288

Intercept= .97; R=.33 (df= 448; p<.01) ;R^2= .11

Table 4 : Summary of ANOVA: Regression for Expressional Fluency of Adolescents (N=450)

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Regression	242.19	27	8.97	1.94	.004
Residual	1952.26	422	4.63		

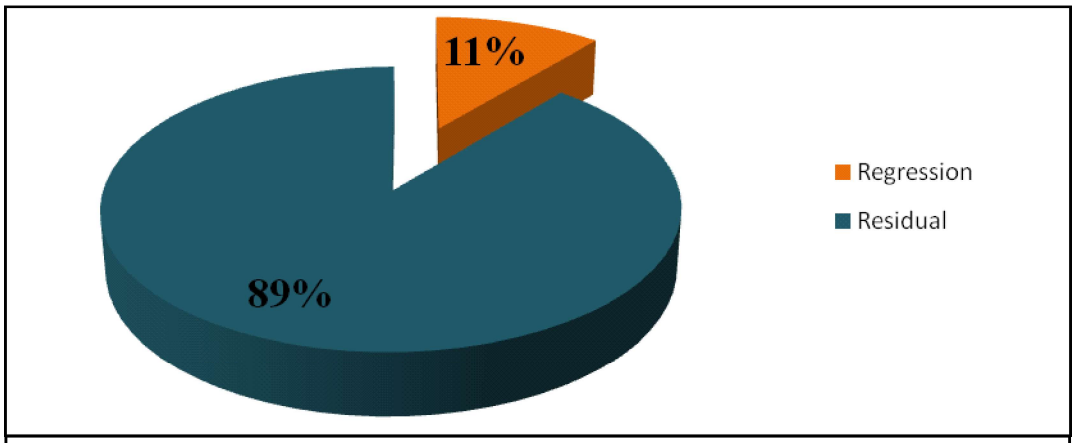

Fig. 1 : Partition of Total Variance: Regression for Expressional Fluency Scores (N=450)

Conclusion :

Expressional fluency of adolescents is found to be predicted by their age, gender as well as dimensions of temperament and perceived home environment. The surprising implication of a finding is - though punitive homes are undesirable yet those may force adolescents to be communicative plausibly to fend off punishment and establish autonomy. Of course, punitive parenting is inadvisable. But some restrain should be put in place. Besides, home environments must be made moderately challenging with associated pay-off matrices. For instance, if teenagers know that conversing intelligently on topical issues and writing journals on daily events for a month would earn them a movie ticket, they would try not to remain sullen and silent.

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