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Meera Rani
Research Scholar, Department of Human Development and Family Studies, CCS Haryana Agricultural University, Hisar, Haryana, India

Dr. Krishna Duhan
Head & Prof, Department of Human Development and Family Studies, CCS Haryana Agricultural University, Hisar, Haryana, India

Sumit
Research Scholar, Department of Economics, Central University of Kashmir, Jammu & Kashmir, India.

Corresponding Author:
Meera Rani
Research Scholar, Department of Human Development and Family studies, CCS Haryana Agricultural University, Hisar, Haryana, India

Influence of home environment and mental health on metacognitive skill in adolescents

Meera Rani, Dr. Krishna Duhan and Sumit

Abstract
Present study is an attempt to study the influence of metacognition on the home environment and mental health of adolescents sample consisting of 300 participants, 150 of whom were females and 150 were males. The study also attempted to provide an outline of factors influencing metacognitive skills of adolescents. Variables such as residential area, gender, academic class, birth order, age, parental education, parental occupation, family structure, family size, siblings, family income, home environment and mental health influenced metacognition skills of adolescents. The study was conducted in the Hisar District, Haryana state. The tools metacognition Awareness Inventory (MAI) which was developed and validated by Schraw and Dennison (1994) [12] was used for assessing metacognition. Home Environment Inventory (HMI) by Mishra (1983) [8] was used for measuring home environment and Mental Health Inventory (MHI) by Jagdish and Srivastava (1983) [6] was used for assessing mental health. Results revealed that socio-economic variables (residential area, age, academic class, mother's education and family income) and punishment, reward, nurturance and overall home environment were significantly associated with levels of metacognition. Results further indicated that different aspects of mental health i.e. positive self-evaluation, perception of reality, integration of personality, autonomy, environment mastery and overall mental health found significantly associated with metacognition.

Keywords: Adolescents, metacognition, home environment, mental health, socio-economic variables

Introduction
Metacognition is a special type of knowledge and ability that develop with personal experience and with schooling. According to Vijayalakshmi (1996) [15], revealed that intelligent behaviour and cognition could be the product of socio-economic status to which individual belongs. Children from high socio-economic status because of their home environment are more confident and good mental health status and sure of themselves as compared to children who comes from lower class families. Children from low socio-economic status start out with feelings of inferiority and inadequacy and these in turn affect their metacognitive skills, memory and mental process like perception, monitoring, information management strategies and comprehension monitoring. Adolescence period is a histrionic contest, one demanding modification to changes in the identity, in the home and in the peer-groups and also in the institutions. The home environment is the most influential informal learning environment in which the family, especially parents acts as an educator. Sharma and Vaid (2005) [13] stated that a home and family is a place in which, the whole range of human experience, skills, ability and capabilities take place. The home environment is the most vital institution for the survival and blueprint of human life and the development of various personality traits, beliefs and values. The role of the family is of vital importance in shaping and molding the opinions and traits of adolescents. The relationship of metacognition of respondents and home environment was significantly associated. It can be said that home environment of the respondents affected their metacognition to a significant level. Lau and Kwok (2000) [7] revealed that a cohesive, orderly and better home environment is helpful to more positive psychological development among adolescents. Consciously or unconsciously the home environment moulds the behavior, personality and attitude, level of aspiration, aptitude and self-esteem of the adolescents. Results further revealed that control, protectiveness, conformity, social isolation, deprivation of privileges, rejection and permissiveness were found not significantly associated with metacognition of adolescents. Shek (2002) [14] found family functioning significantly and positively correlated with adolescent's psychological well-being i.e. existential well-being, life satisfaction, self-esteem, sense of mastery, general psychiatric morbidity. Thus, family members should provide opportunities to their adolescent to take part in the home through

effective communication, interrelationship skills, socially acceptable behaviour and better psychological adjustments. Mental health is an important determinant of one's integrated personality, aptitude, skills and balanced behaviour identified on the basis of the level of his alteration to self and others able to use his or her cognitive, emotional and psychological capabilities and meet the ordinary demands of everyday life. Adolescents face rapidly changing challenges in their socio-emotional and physical environment. Their cultural beliefs, family structure and support, peer and family relationship, home environment, mental health and educational opportunities influence their insight behaviour, knowledge, attitude, skills and adjustment. There were many factors affecting intelligence level as external and internal factors. The socio-economic status, home environment and mental health is of the important factors affecting metacognition. So with a framework of above related findings present study was conducted to add a paradigm with following objectives:

Objectives of the study

- To study the influence of socio-economic variables on metacognitive skills of adolescents.
- To study the influence of home environment on metacognitive skills of adolescents.
- To study the influence of mental health on metacognitive skills of adolescents.

Methods

Locale of the study

Haryana state was selected purposively as the locale for the present investigation because the researcher is student of CCS Haryana Agricultural University, Hisar.

Selection of area

Hisar city was selected purposively due to easy accessibility of school having sufficient strength of students. An exhaustive list of urban and rural government schools admitting children in age group 14-16 years. For rural sample, three villages namely Kharia, Dhobi and Kirtan were selected randomly and Government Senior Secondary Schools from each of these villages were taken, to draw urban sample, four schools namely government girls senior secondary school, Sushilabhawan, Hisar; Government Boys Senior Secondary School, Jahajpul, Hisar; Government Senior Secondary School, Model Town, Hisar and Government Senior Secondary School, Patel Nager, Hisar were selected.

Participants

List of boys and girls in age range of 14-16 years was prepared of each school. From rural area, 25 boys and 25 girls were selected from each school. The same procedure was followed for urban areas. Equal sample size was taken with regards to gender. Hence total 300 adolescents constituted the final sample for the present study

Measures

- Metacognition Awareness Inventory (MAI) by Schraw and Dennison (1994) [12] was used for assessing metacognition.
- Home Environment Inventory (HMI) by Mishra (1983) [8] was used for measuring home environment.
- Mental Health Inventory (MHI) by Jagdish and Srivastava (1983) [6] was used for assessing mental health.

Results

The results of the present paper in accordance with the objectives, inferred through the use of prescribed methodology and standard tools.

(a) Association of metacognition with socio-personal variables

Chi square was run to assess the relationship of metacognition with socio-personal variables i.e. residential area, age, class, parental education, number of sibling and family income of the respondents. Three levels of metacognition were computed as per scale low, moderate, high. The association of metacognition with socio-personal variables of the respondents has been presented in table 1. It is evident from the data that residential area, age, academic class, mother education and family income were significantly associated with metacognition of the respondents ($\chi2$ =11.84**, $\chi2$ =15.79**, $\chi2$ =15.79**, $\chi2$ =8.24* and $\chi2$=6.45* respectively). So, it can be said that socio-personal variables of the respondents affected their metacognition to a significant level. Table further show that father's education and number of siblings was found not significantly associated with metacognition of respondents.

Table 1: Association of metacognition with socio-personal variables

Socio-personal variables	Metacognition			
	Low	Moderate	High	$\chi2$ value
Residential area				
Rural	21	92	37	11.84**
Urban	18	67	65	
Age				
14+ years	12	52	32	15.79**
15+ years	5	65	38	
16+ years	22	42	32	
Class				
10^{th}	12	52	32	15.79**
11^{th}	5	65	38	
12th	22	42	32	
Father's education				
Illiterate	8	29	24	2.22
Up to Matriculation	20	71	42	
Above matriculation	11	59	36	
Mother's education				
Illiterate	14	55	51	8.24*
Up to Matriculation	20	93	44	
Above matriculation	5	11	7	
Number of siblings				
Up to 2 siblings	10	50	22	5.08
3 to 4 siblings	21	91	63	
5 and more siblings	8	18	17	
Family income				
Low (100000 – 150000/-)	12	43	39	6.45*
Middle (I50001 – 200000/-)	22	78	40	
High (200001 – 400000/-)	5	38	23	

(b) Association of metacognition with home environment

The relationship of metacognition with home environment of the respondents has been given in Table 2. It is observable from the data that punishment, reward, nurturance ($\chi2$ =7.31*, $\chi2$ =13.51** and $\chi2$ =8.26* respectively) were significantly associated with metacognition of the respondents at $p<0.5$. So, it can be said that home environment of the respondents affected their metacognition to a significant level. Results further revealed that control, protectiveness, conformity, social isolation, deprivation of privileges, rejection and permissiveness were not significantly associated with metacognition of respondents.

Table 2: Association of metacognition with home environment

Sr. No.	Aspects of home environment	Metacognition			χ2 value
		Low	Moderate	High	
(1)	**Control**				
	Low (3-13)	10	36	32	3.46
	Moderate (14-24)	24	107	63	
	High (25-35)	5	16	7	
(2)	**Protectiveness**				
	Low (5-16)	2	12	8	2.09
	Moderate (17-28)	23	92	51	
	High (29-40)	14	55	43	
(3)	**Punishment**				
	Low (8-18)	7	26	14	7.31*
	Moderate (19-29)	29	91	67	
	High (30-40)	3	42	21	
(4)	**Conformity**				
	Low (10-19)	3	3	2	4.51
	Moderate (20-30)	18	55	29	
	High (31-40)	18	101	71	
(5)	**Social isolation**				
	Low (2-14)	27	113	69	3.35
	Moderate (15-27)	10	37	31	
	High (28-40)	2	9	2	
(6)	**Reward**				
	Low (2-14)	2	5	3	13.51**
	Moderate (15-27)	14	21	14	
	High (28-40)	23	133	85	
(7)	**Deprivation of privileges**				
	Low (2-14)	25	113	73	1.98
	Moderate (15-27)	13	41	24	
	High (28-40)	1	5	5	
(8)	**Nurturance**				
	Low (5-16)	8	17	10	8.26*
	Moderate (17-28)	27	106	59	
	High (29-40)	7	36	33	
(9)	**Rejection**				
	Low (2-14)	25	98	62	3.19
	Moderate (15-27)	11	54	38	
	High (28-40)	3	7	2	
(10)	**Permissiveness**				
	Low (5-16)	9	31	16	3.29
	Moderate (17-28)	28	106	74	
	High (29-40)	2	22	12	
	Overall Home Environment				
	Low (123-200)	16	52	27	5.22
	Moderate (201-278)	18	100	71	
	High (279-356)	5	7	4	

(c) Association of metacognition with mental health

Table 3: Association of metacognition with mental health

Sr. No.	Aspects of mental health	Metacognition			χ2 value
		Low	Moderate	High	
(1)	**Positive self- evaluation**				
	Poor (18-25)	7	8	8	9.96*
	Good (26-33)	25	104	59	
	Very good (34-41)	7	47	35	
(2)	**Perception of reality**				
	Poor (10-16)	5	24	20	7.17*
	Good (17-23)	30	100	70	
	Very good (24-30)	4	35	12	
(3)	**Integration of personality**				
	Poor (10-22)	4	5	5	11.72**
	Good (23-35)	20	83	67	
	Very good (36-48)	15	71	30	
(4)	**Autonomy**				
	Poor (8-13)	2	15	7	12.87**

	Good (14-19)	35	113	64	
	Very good (20-25)	2	31	31	
(5)	**Group-oriented attitudes**				
	Poor (17-23)	5	18	13	0.62
	Good (24-30)	24	97	58	
	Very good (31-37)	10	44	31	
(6)	**Environmental mastery**				
	Poor (20-26)	15	22	15	15.86**
	Good (27-33)	17	111	65	
	Very good (34-40)	7	26	22	
	Overall Mental Health				
	Poor (109-137)	2	11	7	6.23*
	Good (138-166)	89	80	56	
	Very good (167-195)	9	68	39	

The relationship between metacognition and mental health of the respondents are presented in Table 3. It is obvious from the data that statistical significant relationship was found with different aspects of mental health i.e. positive self-evaluation, perception of reality, integration of personality, autonomy, environment mastery and as well as overall mental health ($\chi 2$ =9.96*, $\chi 2$ =7.17** and $\chi 2$ =11.72**, $\chi 2$ =12.87**, $\chi 2$ =15.86** and $\chi 2$ =6.23* respectively) at $p<0.5$ and non-significant relationship was found with goal-oriented attitude. Therefore, it can be said that mental health of the respondents affected their metacognition to a significant level.

Discussion

There are different factors which have direct and indirect influence or relationship with metacognition, home environment and mental health. Metacognition refers to a level of thinking that involves vigorous control over the process of thinking that is used in learning situations. Planning is the way to approach a learning task, monitoring, comprehension and evaluating the process towards the completion of a task. Using metacognitive tools help to develop individual's ability to identify, manage and develop cognitive processes and use them in solving different types of problems. Narang (2012) [9] investigated impact of metacognition on academic performance of adolescents found a positive connection between academic performance and metacognition. Chi square was run between socio-personal factors including residential area, age, class, parental education, number of siblings and family income of the respondents. Three level of metacognition were computed as per scale low, moderate and high. The socio-economic status influenced not only physical setting where the home and neighbourhood are located but also the intelligence and metacognition skills. According to Vijayalakshmi (1996) [15], revealed that intelligent behaviour and cognition could be the product of socio-economic status to which individual belongs. Children from high socio-economic status because of their home environment are more confident and good mental health status and sure of themselves as compared to children who comes from lower class families. Children from low socio-economic status start out with feelings of inferiority and inadequacy and these in turn affect their metacognitive skills, memory and mental process like perception, monitoring, information management strategies and comprehension monitoring.

Similar results are also depicted in the present study that residential area, age, class, mother education and family income are found significantly associated with metacognition of the respondents. Hence it can be said that socio-personal variables of the respondents affect their metacognition to a significant level. Results are in consistent with findings Narang and Saini (2013) [10, 11], revealed that metacognition in case of male respondents was found to be significantly associated with academic achievement. Results of the study further revealed that father's education and number of siblings were found non-significantly associated with metacognition of respondents. Adolescence period is a histrionic contest, one demanding modification to changes in the identity, in the home and in the peer-groups and also in the institutions. The home environment is the most influential informal learning environment in which the family, especially parents acts as an educator.

The role of the family is of vital importance in shaping and molding the opinions and traits of adolescents. The relationship of metacognition of respondents and home environment was significantly associated. It can be said that home environment of the respondents affected their metacognition to a significant level. Lau and Kwok (2000) [7] revealed that a cohesive, orderly and better home environment is helpful to more positive psychological development among adolescents. Consciously or unconsciously the home environment moulds the behavior, personality and attitude, level of aspiration, aptitude and self-esteem of the adolescents. Results further revealed that control, protectiveness, conformity, social isolation, deprivation of privileges, rejection and permissiveness were found not significantly associated with metacognition of adolescents. Shek (2002) [14] found family functioning significantly and positively correlated with adolescent's psychological well-being i.e. existential well-being, life satisfaction, self-esteem, sense of mastery, general psychiatric morbidity. Thus, family members should provide opportunities to their adolescent to take part in the home through effective communication, interrelationship skills, socially acceptable behaviour and better psychological adjustments.

Mental health is an important determinant of one's integrated personality, aptitude, skills and balanced behaviour identified on the basis of the level of his alteration to self and others able to use his or her cognitive, emotional and psychological capabilities and meet the ordinary demands of everyday life. The relationship of metacognition with mental health of the adolescents disclosed statistical relationship with all the aspects of mental health i.e. positive self-evaluation, perception of reality, integration of personality, autonomy, environment mastery and overall mental health except goal oriented attitude. Thus it can be said that mental health of respondents is affected by metacognition to a significant level. Heatherton and Wagner (2011) [5] also reported that metacognitive skills and approach i.e. self-regulation, self-assessment behavior interventions that focus on optimizing

self-regulation skills could have positive effect on the mental health of adolescents, by improving their psycho-emotion regulation and helping them to reach personally valued goals and desires. Indeed, some evidence suggested that self-regulation interventions can indeed improve psychological and metacognitive skills and well-being.

Strategies for improving metacognitive skills, home environment and mental health of adolescents

Metacognition is an essential skill in critical thinking, problem solving and self-regulated lifelong learning. These skills are developed through intentional questioning, modeling techniques and reflection. If you know what you know and do not know, your metacognitive skills help drive you to obtain the missing information, which we refers to as self-directed or self-regulated learning. Classroom teachers should therefore be equipped with self-assessment strategy so that in the teaching learning process, they would be able to transfer these skills to the students who need them to pursue their own learning purposefully and independent. Metacognitive strategies can improve persistence and motivation in the face of challenging tasks and to resolve the real-life complexities. These strategies that can make them to monitor and control their learning activities. As students become more skilled at using metacognitive strategies, they gain confidence and become more independent as learners. Independence leads to ownership as students realize they can pursue their own intellectual needs and discover a world of information at their fingertips. For personal growth, one should write inner feelings, identify life goals and fill mind with positive ideas, thoughts and inspirations. It has an impact on cognitive level of the students. Students can meaningfully grasp the material to be studied. Students in the metacognitive classroom experienced a more permanent restructuring in understanding.

Strategies were framed for metacognitive skills of adolescents for self-acceptance, students can make a list of all the negative judgments, learn to validate emotional reality, learn to accept imperfections, be kind to self and believe in oneself. Present results are supported by Green *et al.* (2012) [3] reported that positive psychology and teaching strategies, the participating teachers worked individually with the school children and parents helped them to attain their personal and academic goals and to increase their level of metacognitive skills, psychological competence and well-being.

Parental involvement is much more likely to promote adolescent's school success when it occurs in the context of an authoritative home environment. Home environment can be a strong source of support for improving close relationship, strong parenting skills, good communication and modeling positive behaviour, hence a conducive home environment should be created for better mental health of the adolescents. For parent child relations strategies are respect parents, imagine things from parent's perspective, talk to parents as friend, be open and honest, establish boundaries and make rules. Harsha (2017) [4] suggested that direction to parents, teachers and counsellors to provide better career opportunities to adolescents, listen to them carefully, respect their career choices, provide them proper guidance in a proper manner for options related to vocation, try to know their interest in which field they want to go and make their counselling wherever necessary. Arasan and Solomon (2014) [1] recommended that psycho-social intervention had helped to enhance the mental health of the adolescents and consequently improvement in their academics. Through life skills training students' self-esteem, mental health and assertiveness are improved. Strategies were framed for home environment and mental health with regards to parents and siblings, spend time with parents, be respectful, show care of oneself and parents, exchange daily stories with parents, i.e. eat together, talk to parents as friend, be open and honest, set boundaries and make rules. Parents and schools should work together for bridging the gap between school and home environment, resulting in improved positive health and academic behaviour among children. Encourage children to value education, assist children in getting necessary preventive care and improve access to resources and support networks. Dahlback *et al.* (2008) [2], indicated that children's play and involvement in extra co-curricular activities play an important role in the socio-cultural set up of families and societies and to develop positive attitudes like co-operation, sociability, friendliness, tolerance, lenience and healthy human relationship and it also effect metacognitive skills and psychological well-being of the children. Intervention programs, policies and imperatives measures are important sources to overcome the problems of adolescents and make their life better and comfortable.

Major Findings

- Residential area, age, academic class, mother's education and family income were significantly associated with metacognition of the respondents.
- Punishment, reward, nurturance and overall home environment were significantly associated with levels of metacognition.
- Different aspects of mental health i.e. positive self-evaluation, perception of reality, integration of personality, autonomy, environment mastery and overall mental health found significantly associated with metacognition.

Conclusion

The study provides evidence that home environment and mental health of adolescents do play a vital role in promoting metacognition. Metacognition influences the home environment and mental condition of an adolescent. Home environment and mental health are often directly linked to metacognitive skills, thought and academic achievement. The study also attempted to provide an outline of factors influencing metacognitive skills of adolescents. Variables as residential area, gender, academic class, birth order, age, parental education, parental occupation, family structure, family size, siblings and family income influenced metacognition, home environment and mental health of adolescents. The study demands parental time and concern, interaction and sufficient availability of required resources to boost metacognitive skills, home environment and mental health of adolescents. A positive home, learning environment, family, parental and peers influence supports an adolescent usually to become a positive and prosperous students. Metacognitive skill is of more importance in present life style due to growing tension, stress and various complexities. It can be learned, developed and used as an effective life skill for managing personal and interpersonal life and achieving success in all walks of life.

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