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Metacognition and its correlated: A study

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Abstract

Present study is an attempt to study the impact of metacognition on the home environment and mental health of adolescents. Metacognition refers to higher order thinking which involves active control over own thought process. A person with good metacognitive skills and awareness uses these processes to oversee his own learning process, plan and monitor ongoing cognitive activities and to compare cognitive outcomes with internal and external standards. Role of family is of paramount importance in shaping and molding the thoughts and personalities of the adolescents. Parent's child relations are narrowly connected with important traits of adolescent's emotional, social and cognitive development. Who have received a good home environment, better conscious level and a supportive and helpful relationship with parents and positive attitudes from parents those adolescents can mentally perform well. Data were collected from 300 adolescents studying in 10th, 11th and 12th standard in Hindi medium Govt. Senior Secondary School. Metacognition Awareness Inventory (MAI) by Schraw and Dennison (1994) was used for assessing metacognition. Home Environment Inventory (HMI) by Mishra (1983) was used for measuring home environment. Mental Health Inventory (MHI) by Jagdish and Srivastava (1983) was used for assessing mental health. Results revealed that both home environment and mental health showed positive and significant impact on metacognition.

Keywords: Adolescents, metacognition, home environment, mental health, metacognitive knowledge, metacognitive regulation

Introduction

Metacognition plays an important role in comprehension, memory, self-control, problem solving and personality development. A good metacognitive skills and positive knowledgeable environment might not work if a student or a person is not self-regulated and self-actualization. When metacognitive skills is related with abstract thoughts, parents may find themselves listening to their teen discuss lofty philosophical issues and challenging their parents' values and beliefs. When teens practice these newly acquired skills it can become annoying but parents may find comfort knowing their teen is simply exercising their 'new and improved' metacognitive skills. Thus their ability to think abstractly also allows them to find humor in the world. Laible and Carlo (2004) [9] suggested that family is the environment where the children learned to use, understand and cope with the physical world. In the family, adolescents get an education, learn lifetime values, norms, beliefs and obtain the power needed to become personalities. They observe the parents, peers, teachers or community and then they either follow their example or choose their own path of life. Parental relationship of both fathers and mothers independently and together predict adolescent's outcomes.

Supportive relationship with family members have been influenced a broad range of socio-emotional behaviour and academic outcomes, including depression, nervousness, anxiety, self-worth offence, social capability, involvement with drugs and liquors and academic achievement of adolescents (Mohanraj, 2005) [14]. If parents have conscious, well-informed, inspiring and intricate those students do better academic work and have more positive school attitude. Home is the place where an individual starts his life. There is a vigorous contribution of home background in the growth and development of socio-emotional, motor, perceptual, physical and cognitive aspects of the individual. A good home environment is the outcome of good cooperation and support among family members, caring nature of parents, other family members and positive attitude of family towards beginner. Healthy parental relations in the home are a medium for making children into healthy and adjustable personalities. In fact, home and parents play the most important part of situating the environment.

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Agarwal (1995) [2] stated that parent's child relations are narrowly connected with important traits of adolescent's emotional, social and cognitive development. Who have received a good home environment, better conscious level and a supportive and helpful relationship with parents and positive attitudes from parents those adolescents can mentally perform well. According to Siddique and D'Arcy (1984) [18] the nature of family environment is strongly associated with an adolescent's mental health. Mental health of a person is mainly concerned with his total sense of growth and adjustment, peace, success, happiness and joy. According to Kuppuswami 2004, state that mental health means the ability to balance feeling, desires, ambitions and ideals in one's daily life. It means the ability to face and accept realities of life. Friends, family and institutions play an important role in maintaining stability and mental health among adolescents (Hinshaw, 2005) [4]. Mental health includes subjective well-being, perception of reality, integration of personality, autonomy, competence, group-oriented attitudes, inter-generational dependence, environment mastery and self-actualization of one's intellectual and emotional potential. It is important at every stage of life, from childhood and adolescence through adulthood.

Better mental health outcomes in adolescents are characterized by greater adaptation in family, society, community, home and school environment, improved quality of life. Deprived home environments influenced physical, socio-emotional, psychological and cognitive development of the adolescents which resulting in poor verbal, perception, memory, attention, thought, motor and general cognition of children (Kaushal *et al.* 2017) [8]. Epstein (1992) [1] claims that "adolescents at all grade level do better academic work and have more positive school attitudes and behaviours, higher ambitions and other positive behaviour if they have parents who are conscious, well-informed and inspiring". Furthermore, metacognition, home environment and mental health play an important role in development of adolescents. The purpose of the present study, therefore is to determine the extent of relationship between metacognition, home environment and mental health of adolescents, so that efforts can be made to improve the metacognition of adolescents and hence, helping the adolescents to make this period a more adjusting and enjoyable time leading to success in adolescents life. So, highlighting the above facts, the present study was planned to study the extent of the interplay of metacognition, home environment and mental health with the following objectives:

Objectives of the study

- To study the relationship between metacognition and home environment of adolescents.
- To study the relationship between metacognition and mental health of adolescents.
- To study the relationship between home environment and mental health of adolescents.

Methods

Locale of the study

The study was conducted in Hisar district of Haryana state.

Selection of sample

The sample for the study comprised of randomly selected 300 adolescents (14-16 Years) studying in 10th, 11th and 12th

standards.

Research instruments

- Metacognition Awareness Inventory (MAI) by Schraw and Dennison (1994) was used for assessing metacognition.
- Home Environment Inventory (HMI) by Mishra (1983) was used for measuring home environment.
- Mental Health Inventory (MHI) by Jagdish and Srivastava (1983) [5] 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.

Relationship between home environment and metacognition of respondents'

Correlation coefficient was computed between aspects of home environment and components of metacognition depicted in table 1. Pearson correlation analysis divulged that control aspect of home environment was found positively and significantly correlated with aspect of metacognition i.e. 'regulation of cognition' and sub aspects i.e. planning ($r=0.14^*$), information management strategies ($r=0.10^*$) and total regulation of cognition ($r=0.13^*$) as well as overall metacognition ($r=0.13^*$). Protectiveness aspects of home environment was also found positively and significantly correlated with components of metacognition i.e. 'knowledge of cognition' and 'regulation of cognition' viz. sub-aspects conditional knowledge (0.15^*), information management strategies ($r=0.10^*$), evaluation ($r=0.16$) and total regulation of cognition ($r=0.10^*$) of respondents.

Table further elucidates that punishment was negatively and significantly correlated with procedural knowledge ($r=0.10^*$), planning ($r=0.12^*$) and information management strategies ($r=0.10^*$). Conformity was positively and significantly correlated with planning ($r=0.13^*$), information management strategies ($r=0.12^*$), evaluation ($r=0.13^*$) and total regulation of cognition ($r=0.13^*$) as well as overall metacognition ($r=0.10^*$) respectively. Reward was positively as well as significantly correlated with procedural knowledge, total knowledge of cognition, planning, information management strategies, comprehension monitoring, debugging strategies, evaluation, and total regulation of cognition as well as overall metacognition ($r=0.10^*$, $r=0.14^*$, $r=0.13^*$, $r=0.10^*$, $r=0.14^*$, 0.14^* , $r=0.14^*$ and $r=0.12^*$ respectively). Rejection was negatively and significantly correlated with evaluation ($r=-0.14^*$) and permissiveness, also positively and significantly correlated with procedural knowledge ($r=0.11^*$), comprehension monitoring ($r=0.10^*$), evaluation ($r=0.12^*$) and total regulation of knowledge respectively ($r=0.10^*$). Overall home environment was positively significantly correlated with planning, information management strategies, comprehension monitoring and total regulation of cognition ($r=0.10^*$, $r=0.11^*$, $r=0.10^*$ and $r=0.10^*$ respectively).

Table 1: Correlation between home environment and metacognition

Sr. N.	Metacognition	Aspects of Home Environment										Overall home environment
		Control	Protectiveness	Punishment	Conformity	Social isolation	Reward	Deprivation of privileges	Nurturance	Rejection	Permissiveness	
	Knowledge of cognition											
(a)	Declarative knowledge	0.02	0.05	-0.06	0.06	-0.02	0.10*	0.01	0.10*	0.05	0.06	0.02
(b)	Procedural knowledge	0.03	0.04	-0.10*	-0.03	0.03	0.16*	-0.05	0.07	-0.07	0.11*	0.06
(c)	Conditional knowledge	0.06	0.15*	0.06	0.08	0.01	0.08	-0.04	0.01	-0.06	-0.03	0.04
	Total knowledge of cognition	0.03	0.02	0.03	-0.01	0.01	0.15*	0.01	0.07	-0.04	0.07	0.04
	Regulation of cognition											
(a)	Planning	0.14*	0.07	-0.12*	0.13*	-0.04	0.10*	0.03	0.14*	0.01	0.07	0.10*
(b)	Information management strategies	0.10*	0.10*	-0.10*	0.12*	-0.06	0.15*	-0.08	0.13*	-0.04	0.05	0.11*
(c)	Comprehension monitoring	0.06	0.05	0.04	0.05	0.01	0.16*	-0.05	0.10*	-0.04	0.10*	0.10*
(d)	Debugging strategies	0.06	0.01	0.03	0.05	0.03	0.18*	0.04	0.14*	-0.01	0.08	0.08
(e)	Evaluation	0.08	0.16*	-0.04	0.13*	-0.06	0.19*	-0.05	0.14*	-0.14*	0.12*	0.06
	Total regulation of cognition	0.13*	0.10*	0.07	0.13*	0.01	0.19*	0.03	0.14*	-0.07	0.10*	0.10*
	Overall metacognition	0.11*	0.07	0.07	0.10*	0.03	0.17*	-0.05	0.12*	-0.07	0.07	0.08

Relationship between mental health and metacognition of respondents

Results related to correlations between metacognition and mental health among adolescents is displayed in table 2. Pearson correlation analysis divulged positive and significant correlation of positive self-evaluation of respondents with declarative knowledge, conditional knowledge and total knowledge of cognition ($r=0.19^*$, $r=0.11^*$ and $r=0.16^*$ respectively) component of ‘knowledge of cognition whereas, another component of metacognition i.e. ‘regulation of cognition was positively and significantly correlated with sub aspects i.e. planning ($r=0.16^*$), information management strategies ($r=0.21^*$), comprehension monitoring ($r=0.13^*$) and total regulation of cognition ($r=0.18^*$) as well as overall metacognition ($r=0.18^*$) of adolescents. Perception of reality was positively and significantly correlated with component of metacognition i.e. ‘regulation of cognition’ and its sub aspects- comprehension monitoring, debugging strategies and total regulation of cognition ($r=0.11^*$, $r=0.13^*$ and $r=0.10^*$ respectively) of respondents. Autonomy was positively and significantly correlated with component of metacognition i.e. ‘knowledge of cognition’ and its sub components i.e. declarative knowledge ($r=0.16^*$), procedural knowledge ($r=0.12^*$), conditional knowledge ($r=0.10^*$) and total knowledge of cognition ($r=0.17^*$) and another component of metacognition ‘regulation of cognition’ and all sub aspects

(information management strategies, comprehension monitoring, debugging strategies, evaluation, total regulation of cognition as well as overall metacognition) except planning among adolescents.

Table further highlights that goal oriented attitude was positively as well as significantly correlated with component of metacognition i.e. ‘regulation of cognition’ and its sub aspects i.e. comprehension monitoring ($r=0.14^*$), evaluation ($r=0.11^*$) and total regulation of cognition ($r=0.10^*$) among adolescents’. Environment mastery was positively and significantly correlated with both components of metacognition namely ‘knowledge of cognition’ and ‘regulation of cognition’ except conditional knowledge i.e. declarative knowledge, procedural knowledge and total knowledge of cognition, planning, information management strategies, comprehension monitoring, debugging strategies, evaluation, total regulation of cognition as well as overall metacognition.

Overall mental health was positively and significantly correlated with declarative knowledge ($r=0.11^*$) conditional knowledge ($r=0.10^*$) and total knowledge of cognition ($r=0.12^*$), information management strategies ($r=0.11^*$), evaluation ($r=0.14^*$) and total regulation of cognition ($r=0.11^*$) as well as overall metacognition of adolescents ($r=0.11^*$).

Table 2: Correlation between metacognition and mental health of respondents

Sr. No.	Components of metacognition	Aspects of mental health					Overall mental health	
		Positive self-evaluation	Perception of reality	Integration of personality	Autonomy	Goal- oriented attitudes		Environmental mastery
	Knowledge of cognition							
(a)	Declarative knowledge	0.19*	0.07	0.05	0.16*	0.06	0.17*	0.11*
(b)	Procedural knowledge	0.06	0.06	0.01	0.12*	0.01	0.12*	0.06
(c)	Conditional knowledge	0.11*	0.01	0.01	0.10*	0.05	0.07	0.10*

	Total knowledge of cognition	0.16*	0.01	0.03	0.17*	0.05	0.17*	0.12*
	Regulation of cognition							
(a)	Planning	0.16*	0.07	0.08	0.04	-0.01	0.16*	0.05
(b)	Information management strategies	0.21*	0.04	0.08	0.11*	0.07	0.19*	0.11*
(c)	Comprehension monitoring	0.13*	0.11*	0.07	0.11*	0.14*	0.17*	0.08
(d)	Debugging strategies	0.06	0.13*	0.08	0.15*	0.05	0.13*	0.03
(e)	Evaluation	0.08	0.03	0.02	0.14*	0.11*	0.15*	0.14*
	Total regulation of cognition	0.18*	0.10*	0.07	0.14*	0.10*	0.21*	0.11*
	Overall metacognition	0.18*	-0.07	0.07	0.15*	0.07	0.21*	0.11*

Relationship between home environment and mental health of respondents

Table 3 reveals the correlation between home environment and mental health of respondents. It was found that control was positively as well as significantly correlated with autonomy (r=0.12*) and protectiveness also significant with perception of reality (r=0.10*). Punishment was negatively and significantly correlated with all aspects of mental health except environment mastery i.e. positive self-evaluation (r=-0.10), perception of reality (r=0.13*), integration of personality (r=-0.28*), autonomy (r=-0.25*) and group oriented attitudes (r=-0.19*) as well as overall mental health (r=-0.24*). Conformity was positively and significantly correlated with integration of personality (r=-0.16*) and environmental mastery (r=0.13*).

Table further revealed that social isolation was negatively significantly correlated with all aspects of mental health as well as overall mental health viz. positive self-evaluation (r=-0.19*), perception of reality (r=-0.13*), integration of personality (r=-0.32*), autonomy (r=-0.19*), group oriented attitudes (r=-0.26*), environmental mastery (r=-0.19*) as well as overall mental health (r=-0.34). Reward was positively

significantly correlated with integration of personality (r=0.10*), autonomy (r=0.09*), group oriented attitudes (0.15*) and environmental mastery (r=0.23*) as well as overall mental health (r=0.12*). Deprivation of privileges was negatively and significantly correlated with positive self-evaluation (r=-0.26*), integration of personality (r=-0.27*), autonomy (r=-0.22*), group-oriented attitude (r=0.27*) as well as overall mental health (r=-0.32) and only environmental mastery was positively and significantly correlated with deprivation of privileges.

Nurturance was positively and significantly correlated with perception of reality (r=0.19*) and integration of personality (r=0.22*) as well as overall mental health (r=0.10*). Rejection was negatively and significant correlated with all the aspects of mental health as well as overall mental health. Permissiveness was positively as well as significantly correlated with autonomy (r=0.11*), group-oriented attitudes (r=0.10*), environmental mastery (r=0.10*) as well as overall mental health (r=0.10*). Overall home environment was positively and significantly correlated with all the aspects as well as overall mental health except environmental mastery.

Table 3: Correlation between home environment and mental health of respondents

Mental health	Aspects of home environment										Overall home environment
	Control	Protectiveness	Punishment	Conformity	Social isolation	Reward	Deprivation of privileges	Nurturance	Rejection	Permissiveness	
Positive self-evaluation	-0.03	0.04	-0.10*	0.07	-0.19*	0.18*	-0.26*	0.02	-0.24*	-0.04	0.13*
Perception of reality	0.02	0.10*	-0.13*	0.08	-0.13*	0.01	-0.08	0.19*	-0.35*	0.04	0.16*
Integration of personality	0.01	0.05	-0.28*	0.16*	-0.32*	0.10*	-0.27*	0.22*	-0.37*	0.08	0.33*
Autonomy	0.12*	0.03	-0.25*	0.02	-0.19*	0.10*	-0.22*	-0.03	-0.29*	0.11*	0.17*
Goal-oriented attitudes	0.08	0.04	-0.19*	0.06	-0.26*	0.15*	-0.27*	0.05	-0.23*	0.10*	0.12*
Environmental mastery	0.02	0.04	-0.03	0.13*	-0.19*	0.23*	0.16*	0.07	-0.12*	0.10*	0.03
Overall mental health	0.07	0.05	-0.24*	0.04	-0.34*	0.12*	-0.32*	0.10*	-0.39*	0.10*	0.25*

Strategies to improve metacognitive skills, home environment and mental health of adolescents

On the basis of results obtained, the following strategies are framed to improve metacognitive skills, home environment and mental health of adolescents. After a secured environment in the home as adolescents enter the vast world of schools and institutes, they feel directionless. Adolescence is considered as a bridging period from childhood to adulthood. It is period of rapid changes in almost all developmental domains (Katoch, 2013) [6]. During this period of development

countless physical, cognitive and mental changes occur. The cognitive changes that occur during adolescence are increased in abstract, idealistic and logical thinking. In this period of life, they forge a personal identity, a self-concept and an orientation towards achievement that play a significant role in shaping their success in school, work and life. Mood, body image, cognitive and psychological development, family and community relationship, interactions at school and with peers, teachers, friends and participation in health-risk behaviors all are the critical developmental aspects of adolescent's life.

This is the phase where these adolescents require the strong metacognitive skills, supportive home environment and better mental health to tackle the life in an effective way. Cognition helps to generate new knowledge through mental process and also help to use the knowledge that people have in daily life. Shek (1997) ^[16] examined that family play an important role in influencing psychological and psychosocial development and positive mental health of Chinese adolescents. Home environment and mental health both are influence the behavior, metacognitive skills and decisions taken by adolescents.

The important strategies are

- **Plan goals/journey:** Students that plan their learning journey and goals are more likely to have better metacognitive skill. Planning activities includes predicting outcomes, scheduling strategies and various forms of vicarious trial and error etc. are prior to undertaking a problem. Goals that are co-related and agreed between the teacher and student encourage a sense of ownership. Clear learning goals are necessary for students to effectively apply their metacognitive strategies. Students must identify and recognize deep structure task attributes through they could activate relevant strategy.
- **Talk to parents as friends:** It brings closer to them it makes them feel supportive. Parents are only true friends; it helps retaining the family values and makes parents understand their children better. Communicating together involves a two-way sharing of information and helps to develop a common understanding meaning it is easier for parents, careers and staff to support one another. Effective communication also helps families and staff to build a trusting partnership and develop honest and respectful relationship and involve them in decisions because it improves adolescent's academic achievement, metacognitive skills, reduces stress and restores parents' confidence. Adolescents who involve parents or other caregiver earn higher grades and test scores, have better social skills and show improved behavior. Listen to your parent's concerns as it helps build a bond and develop trust.
- **Be positive:** As positive thinking helps with stress management and can improve mental health. A positive thinking is the guide to leading a positive life. Maintaining a positive thinking through the ups and down is important to every aspect to every aspects of life. Mindful practices can help to increase ability to regulate emotions, decrease stress, anxiety and depression. It can also help to focus attention as well as to observe thought and feeling without judgment.
- **Promote good food habits:** Good nutrition is an important part of leading a healthy lifestyle. Combined with physical activity, diet can helps to reach and maintain a healthy weight, reduce the risk of chronic disease like heart disease and cancer) and promote overall health and positive relations. Make sure your child has enough sleep, nutritious food, good hygiene and regular medical care for development mental and physical health and psychological development.
- **Make a good relationship:** Make connections because they allow understanding and being successful in the world. Making connections is just another way to describe learning how things are related to each other and how the physical word works.

Discussion

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 grave role of metacognition in successful understanding task and to regulate adolescents teaching in schools so that the activities can be better applied to their cognitive resources through these metacognitive activities. Along with metacognition some other factors like how a student regulates himself as well as the environment of the home, community and institutions to impact the overall development like physical, cognitive, metacognitive skills, socio-emotional and academic achievement etc. of an individual. According to Lerner (2002) ^[11] stated that by early adolescence, individuals are indeed producers of their own development. Correlation coefficient was computed between components of metacognition and aspects of home environment. Correlation analysis divulged that aspects of home environment namely; control was positively as well as significantly correlated with planning, information management strategies and total regulation of cognition as well as overall metacognition may be due to the fact that the children who are controlled by the parents at home do not have an opportunity and flexibility to think in a divergent manner. Lakshmi and Arora (2006) ^[10] found that parental control showed negative relationship with skills, academic success and competence. Whereas, protectiveness depict positively and significantly correlated with conditional knowledge, information management strategies, evaluation and total regulation of cognition among adolescents. This means adolescents with adequate protection at home have shown higher understanding, monitoring and evaluating the task. Due to close and enduring association between parents and children, adolescent learn to share and care of each other. Kaur and Kalaramna (2004) ^[7] found high protectiveness resulted in increase of patience, sensitivity, tactfulness and sense of humor in female adolescents. Punishment was found negatively and significantly correlated with procedural knowledge, planning and information management strategies respectively. The results show that punishment at homes might help children develop the critical thinking ability. Conformity was positively and significantly correlated with planning, information management strategies, evaluation and total regulation of cognition as well as overall metacognition. Adolescents with high conformity have high understanding, effective communication and high metacognitive skills. Rewards was positively as well as significantly correlated with procedural knowledge, total knowledge of cognition, planning, information management strategies, comprehension monitoring, debugging strategies, evaluation and total regulation of cognition as well as overall metacognition. Adolescents with high regards significantly had higher critical thinking, self-awareness, coping with stress, effective communication, planning, monitoring, evaluation as well as high metacognitive skills. Nurturance was positively and significantly correlated with declarative knowledge, planning, information management strategies, comprehension monitoring, debugging strategies, evaluation and total regulation of cognition as well as overall metacognition may be due to the fact that unconditional love and emotional attachment with children at home make the child learn the same positive behavior and attitudes, metacognitive skills and abilities. Kaur and Kalaramna (2004) ^[7], once again revealed that the increase in the level of nurturance of females led to increase in cooperativeness, tactfulness and sense of humor. Rejection was negatively and significantly correlated with

evaluation may be due to the fact that as children experience more rejection as a negative sanction by the parents at home, children suffer from uselessness, inferiority, insecurity, helplessness and hopelessness. Permissiveness was positively and significantly correlated with procedural knowledge, comprehension monitoring, evaluation and total regulation of cognition. High permissiveness leads to high critical task and thinking. Linares *et al.* (2002) ^[12] studied that adolescent with permissiveness authoritative parenting obtained highest scores in competence, self-esteem and self-worth. Overall home environment was positively and significantly correlated with planning, information management strategies, comprehension monitoring and total regulation of cognition. Daulta (2008) ^[13] found that home environment had positive impact on scholastic achievement of both boys and girls adolescents. Parenting style and family environment also contributed to the development of personality characteristics. Stephen *et al.* (1997) ^[19], proposed that parental acceptance lead to academic performance. Children who were successful and well developed came from families where positive relationship existed between them and their parents, whereas children, who were discouraged and rejected at home they, failed to get success in academic achievement.

Metacognition plays a significant role in clinical and experimental psychology and is used as a mental health intervention and support in clinical settings. According to Kuppaswami (2004), state that mental health means the ability to balance feelings, desires, ambitions and ideas in one's daily life. Results related to correlations between metacognition and mental health among adolescents divulged a positive and significant correlation of positive self-evaluation of respondents with declarative knowledge, conditional knowledge, total knowledge of cognition, planning, information management strategies, comprehension monitoring and total regulation of cognition as well as overall metacognition of respondents. Perception of reality was positively and significantly correlated with comprehension monitoring, debugging strategies and total regulation of cognition of respondents. Autonomy among respondents was positively and significantly correlated with declarative knowledge, procedural knowledge, conditional knowledge, total knowledge of cognition, information management strategies, comprehension monitoring, debugging strategies, evaluation and total regulation of cognition as well as overall metacognition except planning. Goal oriented attitude was positively as well as significantly correlated with comprehension monitoring, evaluation and total regulation of cognition among respondents. Environment mastery was positively and significantly correlated with declarative knowledge, procedural knowledge and total knowledge of cognition, planning, information management strategies, comprehension monitoring, debugging strategies, evaluation and total regulation of cognition. Overall mental health was positively and significantly correlated with declarative knowledge, conditional knowledge, total knowledge of cognition, information management strategies, comprehension monitoring, debugging strategies, evaluation and total regulation of cognition as well as overall metacognition of adolescents. Shrivastava and Sharma (2009) ^[17] revealed that healthy and good parent child relationship in the family greatly influence the mental health of adolescents in various aspects i.e. personality, knowledge, memory, perception, monitoring and information processing etc.

Correlation between home environment and mental health of respondents found that control was positively as well as

significantly correlated with autonomy and protectiveness also significant with perception of reality. Punishment was negatively and significantly correlated with all aspects of mental health except environment mastery i.e. positive self-evaluation, perception of reality, integration of personality, autonomy and group oriented attitudes as well as overall mental health. Conformity was positively and significantly correlated with integration of personality and environmental mastery. Results further revealed that social isolation was negatively significantly correlated with all aspects of mental health as well as overall mental health *viz.* positive self-evaluation, perception of reality, integration of personality, autonomy, group oriented attitudes, environmental mastery as well as overall mental health. Reward was positively significantly correlated with integration of personality, autonomy, group oriented attitudes and environmental mastery as well as overall mental health. Deprivation of privileges was negatively and significantly correlated with positive self-evaluation, integration of personality, autonomy, group-oriented attitude as well as overall mental health and only environmental mastery was positively and significantly correlated with deprivation of privileges. Nurturance was positively and significantly correlated with perception of reality and integration of personality as well as overall mental health. Rejection was negatively and significant correlated with all the aspects of mental health as well as overall mental health. Permissiveness was positively as well as significantly correlated with autonomy, group-oriented attitudes, environmental mastery as well as overall mental health. Overall home environment was positively and significantly correlated with all the aspects as well as overall mental health except environmental mastery.

Major findings

Reward and nurturance was positively as well as significantly correlated with both component of metacognition ('knowledge of cognition' and 'regulation of cognition') and its sub-component as well as overall metacognition. Control and overall home environment found positively and significantly correlated with planning, information management strategies, total regulation of cognition and overall metacognition. Conditional knowledge, information management strategies, evaluation and total regulation of cognition found significantly correlated with protectiveness. Permissiveness found significantly correlated with procedural knowledge, comprehension monitoring, evaluation and total regulation of cognition. Conformity had significantly and positively correlated with planning, information management strategies, evaluation, total regulation of cognition and overall metacognition. Punishment had significantly and negatively correlated with procedural knowledge, planning and information management strategies. Rejection had negative and significant correlation with evaluation.

Positive self-evaluation, autonomy and environmental mastery had positive and significant correlation with both components of metacognition ('knowledge of cognition' and 'regulation of cognition') and all sub aspects as well as overall metacognition. Goal-oriented attitude was positively and significantly correlated with comprehension monitoring, evaluation and total regulation of cognition. Overall mental health had positively and significantly correlated with declarative knowledge, conditional knowledge, total knowledge of cognition, information management strategies, evaluation, total regulation of cognition and overall metacognition. Perception of reality was positively and

significantly correlated with comprehension monitoring, debugging strategies and total regulation of cognition.

Control was positively as well as significantly correlated with autonomy and protectiveness also significant with perception of reality. Punishment was negatively and significantly correlated with all aspects of mental health except environment mastery i.e. positive self-evaluation, perception of reality, integration of personality, autonomy and group oriented attitudes as well as overall mental health. Conformity was positively and significantly correlated with integration of personality and environmental mastery. Reward was positively significantly correlated with integration of personality, autonomy, group oriented attitudes and environmental mastery as well as overall mental health. Deprivation of privileges was negatively and significantly correlated with positive self-evaluation, integration of personality, autonomy, group-oriented attitude as well as overall mental health and only environmental mastery was positively and significantly correlated with deprivation of privileges. Nurturance was positively and significantly correlated with perception of reality and integration of personality as well as overall mental health. Rejection was negatively and significant correlated with all the aspects of mental health as well as overall mental health. Permissiveness was positively as well as significantly correlated with autonomy, group-oriented attitudes, environmental mastery as well as overall mental health. Overall home environment was positively and significantly correlated with all the aspects as well as overall mental health except environmental mastery.

Conclusion

Promoting metacognitive awareness and skills could be a valuable method for improving learning and performance at all ages. Parents and teachers play a very significant role in this regard. Home environment and mental health influence the behavior and decisions taken by adolescents. Therefore, it may be suggested to build/develop interpersonal/intrapersonal relationship by helping the parents and teachers to organize and use teacher and peer scaffold interactions to support metacognitive development and gradually encourage the transition from the external supported monitored and controlled, to more internalized metacognitive processes. For this teachers and parents should encourage student's participation in extra co-curricular activities helping their all-round development and to develop positive attitude like co-operation, sociability, friendliness, tolerance, lenience and healthy human relationship.

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