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Table Of Content

Journal Cover 2
Author[s] Statement 3
Editorial Team 4
Article information 5
Check this article update (crossmark) 5
Check this article impact 5
Cite this article 5
Title page 6
Article Title 6
Author information 6
Abstract 6
Article content 7

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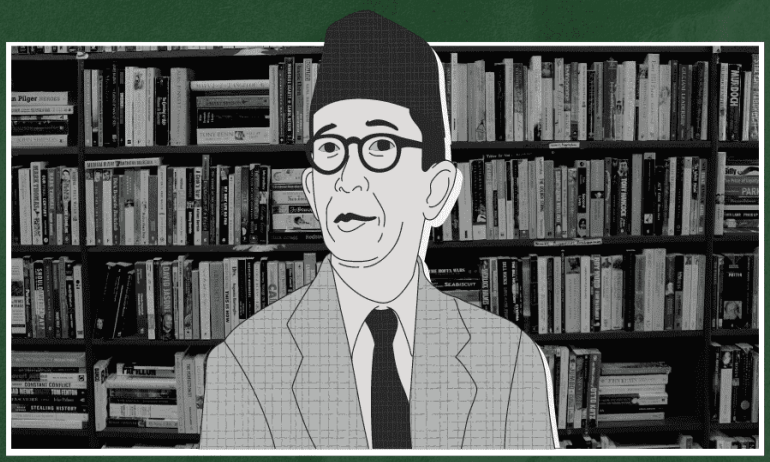

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Cognitive autonomy differences among adolescents in Malaysia

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Abstract

This research examined the relationship between five areas of cognitive autonomy and development among adolescents. Students from middle and high school in Keddah participated in this study. Ninety-four participants responded on the Cognitive Autonomy and Self-Evaluation (CASE) inventory, which examined the evaluative thinking, voicing opinions, comparative validation, decision making, and self-assessment. Scores were compared based on gender and grade. Results highlighted that high school students scored significantly higher in two of the five areas of cognitive autonomy. Additionally, females in middle school rated themselves significantly higher in two areas of cognitive autonomy (evaluative thinking and decision making). Areas of academic grades, time watching TV, time spent reading, and using computer were also discussed.

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Introduction

Adolescents could get a healthy psychosocial development when they become independent from their parents and other adults around them (Yeh, Liu, Huang, and Yang, 2007) and gain a sense of personal identity (Meeus et al., 2005). Despite autonomy and identity are separate constructs inside psychosocial development, they are closely related to each other. From most theoretical views, autonomy is an essential factor in the development of identity (Erikson, 1963; Meeus et al., 2005; Beckert et al., 2012). Adolescent autonomy increases self-reliance among adolescents, evidenced by distinguished ideas from authority figures, organized personal experiences, regulated their behaviours, guided individual goals, and independent decisions based on their own experiences without parental or adults support (Yeh et al., 2007). In addition, one of the most important tasks for adolescents is learning autonomous skills which in turn will help them manage their own lives and make positive healthy decisions. Autonomy is one's growing ability to think, feel, make decisions, and act on his or her own (Cicchetti & Rogosch, 2002).

Autonomy includes three facets, named by behavioral, emotional, and cognitive. Each of these aspects of autonomy is important to the development of young people at their maturation. The development of autonomy does not happen at one point in time and can generally occur throughout the human development (Steinberg, 2001). In current study, we focus on cognitive autonomy which represents an adolescent' ability to think independently. One way to measure adolescent independent thinking is to estimate adolescents' ability to evaluate their own thoughts, voice opinions, make decisions; self-evaluate, and capitalize on comparative validations (Beckert, 2007).

This third side of autonomy, independent thought, has received less attention in research compared to other twos facets. Adolescence stages are a proper time where peer interactions increase (Allen et al., 2002). Therefore, we can say that peers serve as guides in the formation of identity as adolescents start build a sense of self that is independent from their family. When adolescents can behave independently in interpersonal situations, they are better to evaluate alternatives and avoid adverse risk-taking outcomes.

Statement of the Problem

Most researchers concerning adolescent autonomy continues to focus on behavioral and emotional autonomy, but cognitive independent has received less attention from previous studies (Beckert et al., 2012). According to (Herman-Giddens, 2006), one essential reason is that adolescents are physically maturing at earlier ages which in turn because of early physical development, adults consider the adolescents in adult stage as younger ages. These situations need more advanced cognitive knowledge and skills, such as decision making than expected from young adolescence stages.

Previous studies emphasize the importance of both culture and gender with respect to most facets of adolescent development not only cognitive autonomy. Researching and understanding cognitive autonomy in adolescent's stages as it relates to other aspects of adolescent's behaviours may lead to new interventions in cognitive development or rather cognitive autonomy. Although many theorists believe cognitive autonomy develops over time in a fashion like Piaget's formal operations, no study attempt to identify cognitive autonomy development with specifically designed for construct. For more specific clarification, how school results, hours spent alone, time television watching, computer using, and reading effect on cognitive autonomy of adolescents have also been relatively undiscovered.

This study uses a descriptive design to compare cognitive autonomy and decision-making beginning in early adolescence to young adulthood. Male and female participants from middle school and high school in Malaysian schools were asked to answer a survey consisting of five elements of cognitive autonomy: evaluative thinking, voicing opinions, comparative validation, decision making, and self-assessment. In addition, this study conducted to identify the development of cognitive autonomy as it related to the participants' scores between grade levels of middle and high school' students. The present study focus on answer following research questions:

1. Are there significant differences in cognitive autonomy based on gender between adolescents?
2. Are there significant differences in cognitive autonomy among adolescents in middle and high school students?
3. How school grades, hours spent alone at home, watch television, using computer, and reading relate to cognitive autonomy of adolescents?

Autonomy

The origin of Autonomy comes from the Latin word "autos" which means "self'' and "nomos" meaning "rule" This concept was brought under deeper examination when famous theorist, Erik Erikson, through developing his eight stages of development (1963). In the second stage of psychological development, Erikson outlined that successful completion requires autonomy versus shame and doubt. Moreover, Erikson believed that in this phase if children didn't complete it successfully, and in any manner, they were shamed or feeling weak during their independency, so this will result in unneeded dependency toward the others, like the lack in their self-esteem with doubt in their capabilities. As well as, in order to foster their autonomy, at this phase the children should get supported to increase their independency to be more confident and safer in their ability to live in this world.

As for the teenagers the autonomy could be developed throughout a close relationship within family and friends. Generally, at this age or before, they start having the ability and control on their own behaviour. As their much time during this period is out of the supervision of the adults. In addition to that during their teen age, they are more influenced by their friends, for that it`s required to encourage healthy self- governance with the independency in their behaviours (Spear & Kulbok, 2004). Therefore, there are three kinds of self-governance: behavioural, emotional, and cognitive autonomy, however, in this study our focus is on the third one (cognitive autonomy).

Cognitive autonomy

Cognitive autonomy involves the decision-making processes and actions resulting from those decisions (Domenichelli, 2011). Increasingly adolescents are “maturing” at greater rates. They are maturing earlier physically lead them to increase social responsibility, and yet in the field of cognitive autonomy, adolescents do not reach maturity until their mid-twenties ages. The most important indicator of developed cognitive autonomy is the ability to make decisions independent of the effects of others (Beckert, 2007; Steinberg & Morris, 2001; Zimmer-Gembeck, 2001). Like many of his peers, Troy Beckert reported that cognitive autonomy is more than a decision-making model only. He confirms that cognitive autonomy is multi-faceted and is comprised of five scales: evaluative thinking, voicing opinions, comparative validation, decision making, and self-assessment.

Cognitive autonomy is essential factor in adolescence stage because it provides teenagers the opportunity to learn the skills that can help them to control their own lives and make good choices (Beyers et al., 2003). When positive cognitive autonomy is used, adolescents are better able to avoid some bad behaviours that could lead them to some unwanted life situations such as teen pregnancy, drugs, alcohol, and juvenile incarceration. Teenagers usually depend on tips from others to make their decisions, this advice is generally sought from their friends and does not include autonomous thinking by the adolescents. When an adolescent develops cognitive autonomy, it gives him or her capabilities to negotiate and compromise conflicts, express their own opinions, and appreciate differing perspectives from their own which leads to develop their self-regulation (Allen et al., 2002).

Specific Aspects of Cognitive Autonomy

1- Evaluative thinking

Setting goals, evaluating the negatives and positives of options to achieve the determined goals, and learning from the outcomes of the action are ingredients of the decision-making process (Miller & Byrnes, 2001; Zimmerman, 1990; Domenichelli, 2011). This element of cognitive autonomy (evaluation thinking) includes the above sequence of events. Evaluation of thinking tells us that the adolescent is using the skills associated with metacognition within the framework of setting goals and making options to achieve these goals.

2- Voicing Opinion

Voicing opinion involves students’ ability to express and clarify what they desire or to express their beliefs and opinions. This includes the possibility to voice an opinion although the effects asserted from peers or by authoritative figures. Students who show a more powerful voice also acknowledge more ownership in the school across academic and procedural platforms. Stronger relationships with instructors and school adults also directly result from the ability to voice opinion (Mitra, 2004). Stronger relationships effect on the student academic achievement (Dupuis & Badiali, 1987; Mitra, 2004; Turcotte, 2006; Domenichelli, 2011). Thus, voice opinion has influence on academic achievement among students.

3- Comparative Validation

Theorists have speculated that one great adolescent transition that usually occurs is that shift from parent-oriented to be peer-oriented (Bednar & Fisher, 2003). In addition, the increase in peer effect results from adolescents’ perception of positive or negative results linked with the reactions of their peer groups to choices they choose (Bednar & Fisher, 2003; Manning, 2007). Associated to other aspects of cognitive autonomy, peer influence is particularly strong in the element of risk-taking behavior (drugs, alcohol and sex), as well as those behaviors linked with academic and social constructs aspects. Thus, comparative validation indicates to how much individual compare himself to others for acceptance or for a measure of his success.

4- Decision-Making

During Adolescent stage students increasingly make their own decisions because they move through their school and social environments. Decision making for this age group reflected in actions about risk-taking behaviors, including drugs and alcohol, peer effect, and success in their academic environment (Greene et al., 2004; Zimmer-Gembeck & Collins, 2003). In the academic field, the structure of high schools imposes on the students to become “self-directed and independent learners,” which is disconnect from the environment of their middle schools (Kohler & Field, 2003; Lampert, 2005) Setting goals and then making choices to achieve their goals are the main ingredients in the decision-making process. For adolescents, the shift from middle to high school, these main ingredients are still developing (Zimmer-Gembeck & Collins, 2003; Zimmerman, 1990).

5- Self-Assessing

Self-assessment happens when students are behaving independently and can reflect on their own actions and evaluate those actions. This may include the evaluation of the process, reasons for actions taken or not taken, or rather evaluation of success achieved in actions taken (Zimmerman, 1990). Furthermore, self-assessment is related with a learning stage in which the adolescents evaluate their behaviors and thought processes and then evaluate their own abilities. According to (Beckert, 2007), as an essential element of cognitive autonomy, self-assessment evaluates if the adolescents are awareness about self-assessment and if they consider themselves to be the best judge of their own strengths, abilities, and talents.

Potential Influences on Cognitive Autonomy

Although Montemayor (1982) examined the effect that hours spent at home alone, the type of conflicts adolescents have with their parents, and involvement with parents and peers in how they are interrelated, there is no literature available discussing the connection of time spent at home alone and the affect it has on cognitive autonomy. (Arnett, 2005) reported that there is a lack of integration in the socialization of adolescents, in the aspect of that they may receive socialization messages from media (and peers) than they do from the members in their environment. Studies examining the connection between hours of television watched and cognitive autonomy, however, have not been conducted (Thompson, 2006). Overall, like other developmental structures, differentially between adolescents on cognitive autonomy is predicted. We could consider the impacts of gender, school grades, family life, media and computer using as potential areas that contribute to differences among adolescents.

Methodology

Research Design

This research quantitatively evaluated data contained from responses of the students to the Cognitive Autonomy and Self-Evaluation questionnaire. Descriptive design was used for this study to assess how adolescent scores differ on the CASE between middle and high school students in Malaysia, how scores of students vary based on gender, and how areas of cognitive autonomy related to (1) school grades, (2) hours spent alone at home, (3) hours spent watching TV, (4) use of the computer, and (5) reading process. The current study was based on responses from adolescents and young adults attending middle and high school in state of keddah in Malaysia.

Instruments

The purpose of the Cognitive Autonomy and Self-Evaluation (CASE) inventory is to enable students to make self-describe five domains of their independent thinking (Beckert, 2007). The CASE questionnaire examined the following areas of cognitive autonomy among adolescents: (1) students' ability to use evaluative thinking, (2) students' ability to voice opinions, (3) students' ability to make decisions, (4) students' ability to self-assess, and finally (5) ability to use comparative validation. Demographic questions examine the students based following areas: gender, school grades, hours spent alone at home, hours spent watching television per week, hours spent on the computer using each week, and hours spent reading per week. The questionnaire consists of 27 Likert-type items 5-point Likert scale. Always, Often, Sometimes, Seldom, and never, or strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree are the choices in this inventory.

Sample

For the purpose of this study, we used a convenience sample. All participants were attending middle school and high school in keddah, Malaysia. Participants in this study consisted by male (50%) and female (50%) from middle and high school grades, which provided perceptions about themselves and their abilities to think independently.

Analysis And Findings

In current study Independent variables included gender, school level (middle or high school), respondent's grades, hours spent watching television, hours spent reading per week, hours spent using computer per week, and hours spent at home alone each weekday. In this study 94 only were answered out of 100 questionnaires were distributed among middle and school students. The respondents in this study were 52 males and 42 females, based on school level, there are 49 middle school and 45 high school students.

Gender Differences

In term of gender, which is considered the impacts of gender on respondents of students on the CASE inventory. Table 1 illustrated the mean and standard deviation for middle school students. The analysis highlighted that the high school participants' gender was not statistically significant on the *CASE* scales (evaluative thinking, voicing opinions, comparative validation, decision making, and self-assessment). For secondary school students, evaluative thinking ($p = 0.032 > 0.05$) and making decision ($p = .033 > 0.05$) both showed a significant difference between male and females. In each part, females reported themselves higher than males to use evaluative thinking ($M = 3.54$, $SD = 0.61$) and make decisions ($M = 3.85$, $SD = 0.52$). Table 1

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	Male (N=28)		Female (N=21)		
Variable	M	SD	M	SD	F
Evaluative thinking	3.06	0.8	3.54	0.61	0.04
Voicing opinions	3.36	0.66	3.56	0.73	0.17
Comparative validation	2.98	0.64	2.91	0.58	0.62
Decision-making	3.73	0.73	3.85	0.52	0.04
Self-assessing	3.63	0.74	3.64	0.85	0.97

Table 1. *Mean Scores and Standard Deviations for Each Gender for middle school students*

School level Differences

This aspect showed how students' scores on the CASE inventory are different among adolescents in the middle and high school years. Table 2 illustrates the impact of the students' grade level for each scale and how scores of CASE vary among adolescents perceptions.

A significant difference was found in evaluative thinking (p = 0.01>0.05), comparative validation (p = 0.02>0.05), and decision-making (p = 0.01 >0.05). In evaluative thinking, high school students (M= 3.71, SD = 0.51) rated themselves significantly higher than middle school students (M= 3.36, SD = 0.66) and decision-making (M = 4.17, SD = 0.49). In the field of comparative validation, middle school students (M = 3.18, SD = 0.63) rated themselves significantly higher than high school students (M =3.05, SD = 0.64). Table 2

		middle school (n= 49)		high school (n= 45)	
Scale	M	SD	M	SD	F
Evaluating thinking	3.36	0.66	3.71	0.51	0.01
Voicing opinion	3.59	0.77	3.49	0.63	0.77
Comparative validation	3.18	0.63	3.05	0.64	0.02
Making decision	4.05	0.5	4.17	0.49	0.01
Self-assessing	3.54	0.63	3.56	0.63	0.29

Table 2. ***Mean Scores and Standard Deviations for Each school Level***

Independent Variables

School Grades

The results showed a significant difference (p = 0.01> 0.05) in the field of voicing opinions with students who rated themselves above average grades (M = 3.7, SD = 0.65) rating themselves higher scores in their readiness to voicing opinion compared to students who received average or below average grades (M = 3.26, SD= 0.7). Additionally, same scores for high school students' self-reported school grades for each scale. There are A significant differences (p = 0.04 > 0.05) in the aspect of voicing opinion with students who rated themselves above average grades (M = 3.59, SD = 0.6) rating themselves higher scores in their ability to voicing opinion compared by students who got average or below average grades (M = 3.48, SD = 0.78).

Television Watching

The results highlighted that middle school participants differed significantly in aspect of evaluative thinking, (p = 0.01 >0.05), and self-assessment, (p = 0.01 > 0.05) based on the amount of hours spent watching TV. Middle school students who reported spending more than 6 hours watching TV each week (M = 3.08, SD =0. 79) were significantly less effective at using evaluative thinking than either the 0-3-hour group (M= 3.5, SD = 0.67) or the 3-6-hour group (M= 3.6, SD = 0.77). Also, the students who reported spending more than 6 hours watching television each week (M = 3.39, SD = 0.84) were significantly less effective at ability to self-assess than either the 0-3-hour group (M = 3. 77, SD = 0. 78) or the 3-6-hour group (M = 3.97, SD = 0.7).

High school participants differ significantly in areas of evaluative thinking, (p = 0.02) and decision-making (p = 0.03) according to hours spent watching TV. High school participants who reported spending 0-3 hours watching TV each week (M = 3.59, SD = 0.62) were significantly more effective in evaluative thinking than the 3-6-hour group (M= 3.07, SD =0.6) or the 6 or more-hour group (M = 3.34, SD = 0.72). Likewise, high school students who reported spending 0-3 hours watching television each week (M = 4.2, SD = 0.5) were significantly more effective in decision making than the 3-6-hour group (M = 3.88, SD = 0.44) or the 6 or more hour group (M = 4, SD = 0.51).

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Time Reading

Middle school respondents differed significantly in areas of evaluative thinking and (p = 0.04) and voicing opinions (p = 0.01) according to the amount of time of reading. Middle school participants who reported spending 6 or more hours reading each week (M= 3.62, SD = 0.84) were significantly more effective at using evaluative thinking than either the 0-3-hour group (M = 3.09, SD = 0. 71) or the 3-6-hour group (M = 3.22, SD = 0.48). Likewise, middle school who reported spending 3-6 hours reading each week (M = 3.87, SD = 0. 72) were significantly more effective voicing opinion than the 0-3-hour group (M = 3.24, SD =o.6) or the 6 or more hour group (M = 3.75, SD = 0.72).

High school participants different significantly in area of evaluative thinking (p = 0.03) based the amount of time reading. High school students who reported 6 or more hours reading each week (M = 3 .64, SD = 0.41) were significantly more effective at using evaluative thinking than the 0-3 hours group (M = 3.23, SD = 0.67) and the 3-6-hour group (M = 3.18, SD = 0.61).

Computer Use

In this section for each school level, the scores of participants on CASE did not show significant differences by time spent using the computer each week and subgroups of cognitive autonomy.

Time Spent at Home Alone

Middle school students have different significant in fields of evaluative thinking (p = 0.02), voicing opinion (p = 0.02), making decision (p = 0.02), and self-assessing (p = 0.042) based the amount of time which they spent at home alone. Middle school participants who reported that no time home alone were significantly more effective at using evaluative thinking (M = 3.56, SD = 0.68) than the 1-2 hour group (M= 3.52, SD = 0.66) or the 3 or more hour group (M = 3.08, SD = 0.9). In addition, middle school students who reported spending no time home alone were significantly more effective at voicing opinion (M = 3.64, SD = 0.67) than the 1 to 2-hour group (M= 3.59, SD = 0.64) and the 3 or more hour group (M = 3 .29, SD = 0.9). middle school students who reported spending no time home alone were significantly more effective at their self-assessment (M = 3.95, SD = 0.65) than the 1 to 2-hour group (M= 3.7, SD = 0.85) and the 3 or more-hour group (M= 3.5, SD = 0.84). middle school students who reported spending 1 to 2 hours home alone were significantly more effective in making decisions (M =4, SD =0.53) than the no time home alone students (M= 3.95, SD = 0.45) and the 3 or more hour group (M = 3.65 , SD = 0.68).

There are no significant differences in any of the scale areas for high school students' self-reported time spent home alone each week.

Discussion

The first research question focused on how scores would differ on the *CASE* based on gender for each sample group. For middle students, evaluative thinking and decision-making were the only scales that reported significant differences between genders. Females scored higher than boys in evaluative thinking and decision-making. This finding linked to the results of Schvaneveldt and Adams (2001) and Thompson (2006) where they hypothesized that males, when making decisions, are more likely to plan out their decisions, while females are more likely to use an intuitive approach when making decisions. When evaluating their thinking and decision-making, females' intuitive reaction may prove to be more autonomous than the males. This study found that gender was not a significant factor in this study of autonomy among students, females in middle school rated themselves higher than males in every CASE scale. For high school no siginificat differences based on gender. The results are highlighted that females are maturing faster.

The second research question focused on how scores of students on the CASE inventory differ among middle and high school students. High school students scored themselves higher than middle school students in ability to evaluate their thinking and make decisions. These results are related to the literature of Caskey and Ruben (2003), which states that the frontal lobe of the brain that controls planning and evaluation, which for middle students not complete yet, it remains unripe during the period of the adolescent years. In the field of comparative validation, high school students illustrated a decrease in comparison to middle school students. This decrease is consisted with the literature by Bednar & Fisher (2003) which argues that adolescents shift from being parent-oriented to being peer-oriented at this period.

The third research question focused on how the participants self-reported school grades, hours spent at home alone, watch TV, using computer, reading, relate to their cognitive autonomy.

School grades

Both of the students from middle and high school showed significant differences in voicing opinion. The students who have high average scored high level of voicing opinion. Middle school students who rated themselves have high in ability to voice their opinion, scored themselves high in their grades. These results matched with literature which reported that students who participate in class with verbal comments also show higher academic grades (Finn & Cox, 1992).

Watching TV

In this aspect, there are significant difference in the areas of evaluating thinking and self-assessment among secondary school students. Students who scored that watch TV more than 6 hours rated themselves less effective in evaluative thinking and self-assessment compared with students who scored o-3 hours or 3-6 hours groups. While high school students showed significant difference in the areas of evaluative thinking and making decision. The students who scored that spend 0-3 hours were more effective in the two area compared to 3-6 hours and more than 6 hours groups.

Time Spent Reading

In this term, there are significant difference in the areas of evaluating thinking and voicing opinion among middle school students. Students who scored that read more than 6 hours each week rated themselves more effective in evaluative thinking compared with students who scored 0-3 hours or 3-6 hours' time spent reading groups, while the students who scored 3-6 hours' time spent reading each week were more effective in voicing opinion than other two groups (0-3 hours, more 6 hours). While high school students showed significant difference in the area of evaluative thinking only. The students who scored that spend more than 6 hours reading each week were more effective in the evaluative their thinking compared to 0-3 hours and 3-6 hours groups. These results are showing the importance of time spent reading on the ability to evaluate one's thoughts and opinions among adolescents.

Computer Use

In this section for each school level, the scores of participants on CASE did not show significant differences by time spent using the computer each week and subgroups of cognitive autonomy.

Time Spent Home Alone

There are no significant differences in any of the scale areas for high school students' self-reported time spent home alone each week. Middle school students showed a significant difference in four of the five scale areas of cognitive. Those who rated themselves highest in the areas of evaluative thinking, voicing opinions, and self-assessing rated themselves as spending no alone at home. However, for students who scored 1-2 hours spent times alone were more effective in making decission.

Conclusion

This study is conducted with the intended target of contributing to the comprehensive understanding of cognitive autonomy and its importance among adolescents and their development. In this research, one trend that appeared was that cognitive autonomy increases parallel with maturity of adolescents. Future studies could determine how cognitive autonomy develops between ethnicities and different socio-economic conditions as well as between religions. Such study could provide helpful skills for improving the independence for adolescents such as programs established to help foster autonomous thinking or provide the programs which teach the parents proper skills to help them in developing their children's cognitive autonomy.

Moreover, students in this study reported a significant difference in their academic grades and increase in autonomous thinking when they read three or more hours a week. This trend was among all students' participants. So, the programs which promote the habits of reading to enhance autonomous thinking may show a deep effect on adolescent's development.

The factors conducted here could be used in all school systems and by parents to implement future programs or training that will effectively improve the development of cognitive autonomy, which in turn promote positive outcomes as an increase in reading time, decrease in time spent alone at home, using computer and so on to develop the five areas of cognitive autonomy among adolescents.

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