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# MENTAL POLLUTION IMPEDES FOREIGN LANGUAGE READING COMPREHENSION

*Yakup ÇETİN*[*]

**ABSTRACT**

The same Turkish foreign language learners of a university preparatory school (N=35) were tested twice on the same pre-intermediate reading passage within one month interval. In the first condition students were given the reading test (pre-test) during the class time upon watching a documentary on wild life for 40 minutes. After a month before they were given the same reading test (post –test) in the same classroom setting, they were shown mental pollutants - a compilation of various videos with violent, scary, erotic, and comedic content from popular video-sharing websites for 40 minutes. It was hypothesized that mental pollutants would contaminate students' mind by distracting emotional states and slowing mental processes and thus impeding the comprehension of foreign language reading material. The statistical results based on T-test Paired Samples Statistics and One-Sample Kolmogorov-Smirnov Test show that exposure to mental pollutants remarkably results in poor L2 reading comprehension.

**Key words:** mental pollution, videos, foreign language, reading comprehension

# ZİHİN KİRLİLİĞİ YABANCI DİLDE OKUMAYI ZORLAŞTIRABİLİR

**ÖZET**

Bir üniversitenin hazırlık sınıfındaki aynı Türk öğrenciler (N=35), alt orta seviyedeki aynı okuma parçasıyla bir ay arayla 2 kere test edildi. İlk durumda öğrencilere 40 dakikalık bir vahşi yaşam belgeseli izletildikten sonra ders sırasında okuma parçası verildi (ilk test). Bir ay sonra aynı sınıf ortamında, öğrencilere aynı okuma parçası (son test) verilmeden önce 40 dakika boyunca ünlü video paylaşım sitelerinden toplanmış şiddet, korku, erotik ve komedi içerikli zihinsel kirliliğe yol açacak videolar gösterildi. Varsayılan şey zihin kirliliğinin öğrencilerin dengelerini bozarak zihinsel fonksiyonlarını dağıtarak öğrencilerin hafızasını yavaşlatacağı ve dolayısıyla yabancı dilde yazılı okuma parçasını anlamaya da engel olacağıdır. Eşleştirilmiş iki grup arasındaki farkların testine ve tek grup Kolmogorov-Smirnov testine dayalı istatistiksel sonuçlar zihin kirleticilere maruz kalmanın yabancı dildeki okuma parçasını anlamada fark edilir derecede olumsuz etkilere neden olduğunu göstermiştir.

[*] Yrd. Doç. Dr., Fatih Ü. Eğt. Fak. İngilizce Öğretmenliği Böl. El-mek: ycetin@fatih.edu.tr

**Anahtar Kelimeler:** Zihin kirliliği, videolar, yabancı dil, okuduğunu anlama

**Introduction**

A systematic review of media in relation to child and adolescent health reports that the average child today in high-tech societies spends around 45 hours per week with various forms of media (including television, movies, internet, video games, magazines and music). In other words, children spend more time watching TV and playing computer games than with parents and friends. The content analysis of these 173 quantitative studies focused mainly on the relationship between media exposure and seven health outcomes: childhood obesity, tobacco use, drug use, alcohol use, low academic achievement, sexual behavior, and attention deficit disorder with hyperactivity. The majority of these studies, nearly 80%, call attention to the adverse effects of media exposure to children's and adults' health outcomes. With regard to the scope of this paper, 65% of the 31 studies indicate a statistically significant relationship between low academic achievement and intense media exposure (Common Sense Media 2008).

EFL / ESL (English as a Foreign and Second Language) research focuses mostly on the great advantages provided by various multimedia devices such as cable or digital TVs, multi-room DVRs, laptops, mobile phones, digital cameras, MP3-4 players and so on (Chen 1997; Anderson & Reed 1998; Lam 2000; Tschirner 2001; Toner et al. 2008; Peng et al. 2009). Surprisingly, though the field of psychology abounds with studies on the negative effects of constantly developing technological tools on users (Kunkel et al. 1999; Anderson and Bushman 2002; Bushman 2005), EFL/ESL language specialists seem to overlook the other side of the picture. In fact, besides their countless benefits and impressive properties of being visual, auditory, tactile, and kinesthetic; many of them like internet, television, and video games can lead to memory failure by polluting the foreign language learners' mind when they are consciously or subconsciously used beyond their purpose. In other words, *mental pollution* caused by excessive and arbitrary exposure to certain media products may result in cognitive deficit by both hindering or slowing retrieval and recognition processes in second language (L2) learning (Cetin and Flamand 2010).

Cetin and Flamand (2010:275) define *mental pollution hypothesis* as "contamination of the mind by various forms of affective visual distractors, ranging in scope from violent or sexually suggestive images to comedic commercial advertisements and coming from a variety of media sources". According to them, specifically violent and sexually suggestive distractors explicitly or implicitly exposed by multiple media items including internet, television, videotapes, video games, and magazines constitute the most common form of mental pollutants. These types of visual stimuli may interfere in memory processing, neuro-chemical balance and concentration level by negatively impacting key cognitive components in the brain that facilitates learning; especially second and foreign language within this context. For example, an EFL/ESL learner who simply needs to prepare a PowerPoint class presentation about *love* may intentionally or unintentionally digress from the point while looking for relevant videos and pictures on the internet. Namely, the same learner may be exposed to countless irrelevant pictures and redundant information on websites "ranging from mundane text advertisements to sexually explicit images or to high quality videos featuring bizarre or outrageous content, which may not only distract their attention and perhaps even clutter their working memory, but may also result in physiological distractions such as exciting their emotions or arousing their libido" (Çetin & Flamand 2010: 279). They point out that one's exposure to mental pollution particularly in advanced societies is almost unavoidable because

of the presence and availability of various media formats in all parts of our life, even in learning and teaching environments.

Cetin and Flamand (2010) stress that every encounter with so called *mental pollutants* can elicit intense psychological and emotional reactions like anger, frustration, anxiety, or even excite sexual desires, which could mostly slow mental functions by instantly increasing the blood pressure and heart rate. Thus, a person who is constantly subject to mental pollution can experience certain cognitive declines like memory weakness in cognitive tasks including foreign and second language learning. Particularly adults who are allowed to view violent, scary and sexually suggestive entertainment programs suffer mostly from mental pollution due to the independence provided by their age. Similar to what Csikszentmihalyi (1990) and Lee and LaRose (2007) describe as 'flow', adults as well as children may grossly engage in an activity such as TV program, video game, internet, novel, etc. and rewarded intrinsically by their content that nothing else from the actual world seems to matter. The concept of flow wherein one might get lost in an activity presents a good example of how mental pollutants can hinder memory and cognitive functions. As a further example, a person who pointlessly surfs the internet may find himself or herself in a condition of flow, wherein he is likely to be exposed to a high amount of disorganized and unnecessary information ranging from simple texts to affective, violent, scary and sexually explicit images. Likewise, getting lost in a violent video game may be entertaining for many players, however, at the same time it can also be cognitively, psychologically, and socially intrusive.

Relatedly, the analysis of a bulk of research between 1990 and 2005 by Schmidt and Vandewater (2008) point out that video games do not contribute to learning so long as they do not have an educational purpose and design. Similar to the entertainment TV programs, due to their outstanding features such as 3-D fantasy action, many video games expose players to cognitively, affectively, and physically challenging sensory stimuli. As underlined by Thomas and Macredie (1994), once the video game starts, the users move from the real world to the cyber world where they participate in various imaginary missions and tasks without worrying about the consequences. According to Rieber (1996), especially video games whose content includes lots of fantasy are motivating and therefore capable of attracting children's curiosity and likelihood of engagement. In this context, Cetin and Flamand (2010) assert that violent video games and sexual internet websites because of their captivating characteristics are likely to produce "flow" states while the users are overwhelmingly lost in an extremely pleasurable activity.

A number of research, mostly in the field of psychology, report on the detrimental effects of certain television programs, videotapes, videogames, internet websites on human memory and psychology (Allen, D'Alessio, & Brezgel 1995; Anderson and Bushman 2002; Anderson et al. 2003; Bushman 2005). The contents of those media means found to be harmful to the memory, cognition, and behavior consist mainly of sexual, violent, and sensational weirdness, what Cetin and Flamand (2010) refer to as mental pollution. For instance, contrary to the expectations that violence and sex sell advertised products, a study by Bushman (2005) on the relationship between televised sex, violence, and memory has revealed that they seriously hamper memory recall and recognition. In the study, regardless of their age and sex, participants retrieved less number of advertisement brands when they were asked to watch television programs including sexual and violent content. In the same experiment, on the other hand, the participants who viewed neutral programs -non-violent and non-sexual- recalled many more advertised products in the same memory test. Presumably, because of cognitive and emotional reactions provided by affective stimulations included in TV programs, it was not easy for the treatment groups in Bushman's study to maintain a stable memory or attention span for recalling those advertised products.

Daly and Perez (2009) mention that the split of internal thought from external perception plays a key role in the development of symbolic systems by contributing to cognitive growth as well as abstract thinking. In line with Levin (2003) they point out that unless these capacities are well organized, children may not be able to perceive and contemplate the outcomes of violent behavior. Therefore, as children are in the process of developing internal symbolic capacity, Daly and Perez argue that children are mostly defenseless against various forms visual stimuli, particularly violent images provided by miscellaneous media products. According to Cetin and Flamand (2010), visual stimuli whose content contains emotionally affective, violent, and sexually explicit images – what they call mental pollutants - in large doses over years can act as barriers to some cognitive functions like inhibiting long-term memory formation. In support of this, a study by Christakis, et al., (2004) based on National Longitudinal Study of Youth revealed that those children who spent too many hours watching television at early ages experienced attention problems in their later years.

Robinson, et al. (2001) studied the impact of reduction of television, videotape and video game use on elementary school students' aggressive behavior. In their study in relation to Bandura's social cognitive theory, the school children were subject to a six month intervention program which aimed to motivate them to decrease their time spent in those activities. The statistically significant results of their study reported noteworthy reduction in observed verbal and physical aggressive behavior. Thus, the investigators draw attention to the possible negative effects of media (e.g. television, videotape, and video game use) on elementary school children's aggressive behavior. Relatedly, further research (Anderson et al. 2003; Huesmann, et al. 2003; Anderson & Bushman 2002; Johnson, et al. 2002; Bushman & Huesmann 2001;) confirms the thesis that constant exposure to visual violence through various mediums such as television, video games, and books increases the likelihood of children's aggressive manners and interactions.

As for LeDoux (2002), this all imply that specific types of emotionally-loaded or highly affective stimulants are likely to hinder one's capability of explicit memory to store new information due to the interferences caused by implicit systems. Complementary to this, Kiefer et al.'s (2007) study in neurophysiology reports on the strong relationship between varying emotional mood states and human memory. According to their findings, powerful memory and successful recall is possible only by maintaining continuous stable emotional mood states. As mentioned by Rosenfield (1988), emotional conditions are quite influential in various memory processes since they play facilitative or obstructive role as far as acquisition and retrieval of information is concerned. With regard to this, Cetin and Flamand (2010) point out that some kinds of emotionally-charged affective distractions 'mental pollutants' may result in a state of cognitive disarray that may not only weaken a person's ability to concentrate on comprehension demanding tasks but also hinder his or her ability to store new information.

Although the impact of diverse media products on different age groups' moral and social behavior, cognitive process, gender and ethnic stereotypes, and use of time have been investigated, there is unfortunately a dearth of research about its influence on academic disciplines, particularly foreign and second language learning. This research has been conducted especially in the field of foreign language education since despite the availability of modern technology and its by-products to support foreign language learning than ever before; it seems that L2 learners still encounter serious handicaps in their attempt to learn a new language. Therefore, the aim of the current study is to contribute to the foreign and second language research from a psycholinguistic and cognitive aspect by hypothesizing that exposure to mental pollutants – in particular violent, scary, erotic, and bizarre video images - may result in poor foreign language reading comprehension. In this context, this experimental research tries to answer whether or not the contents of certain videos - which include mental pollution- to which people are intentionally or unintentionally frequently exposed to

on various media tools -depending on intensity and duration may hamper L2 reading comprehension. It aims to further investigate the study by Cetin and Flamand (2010) that affirmed the negative effects of mental pollutants to L2 Vocabulary retention.

**Method**

**Participants**

Participants for this study were 35 adults aged 18-20 studying English (n=35) at the preparatory school of a private university in Istanbul. Participants were placed randomly into B1 (pre-intermediate) level according to the results of a reliable placement test 'Michigan test of English' from the Testing and Certification Division of the English Language Institute University of Michigan. The number of participants for the study was limited to only 19 females and 16 males because of the nature of treatment-consisting of violent, scary, and sexual videos. Therefore, only 35 out of 75 randomly chosen volunteers with written consent from the 23 B1 modules / classes including 463 students were invited to the study. When they participated in this study, participants had been studying English for one month at the university preparatory school, for English was the medium of instruction in their prospective faculties.

**Materials and Procedure**

Permission and approval was given by the school management to call the 35 students for the study during regular instruction. All the participants were volunteers and initially gave their written consent to participate in the experiment. At the beginning of the study, the students were clearly informed that this study was about finding out how well they understand L2 reading material under certain conditions; that is, watching a wild life documentary and a compilation of various videos from popular internet upload websites. Relatedly, they were warned that some of the videos were bizarre, erotic, violent, and scary. Though they were told about the content of videos they were going to watch, they were not told that the reading comprehension tests they were required to take twice were the same.

In accordance with this, a reading comprehension test based on multiple-choice was compiled and adopted from questions in a reading comprehension book – *Issues for Today by Thomson- Heinle, 2004*- by four experienced teachers. The same teachers had been working as Module Coordinators (A1, A2, B1, and B2) at the preparatory school because of their highly valued qualifications. The twenty items (worth 20 points) on the test were designed in relation the Pearson and Johnson's (1978) classification to measure participants' performance by means of textually explicit questions for literal understanding of the passage and scriptally implicit questions for inferential comprehension. The reading comprehension test included an equal number of text explicit and implicit questions (10 of each type). Twelve instructors who taught different B1 modules verified that the reading text and comprehension questions were appropriate for the participants' level and interest. As far as reliability is concerned, Cronbach's alpha was 0.73 for the test.

As far as the first condition is concerned, during morning classes between 9:00 and 11:00 am all the 35 participants were summoned in one classroom for two successive lessons (2 x 45 minutes). They were given the pretest – the reading comprehension test including 20 questions- which they were supposed to finish in 40 minutes immediately after watching a 40 minutes National Geographic documentary on animal life in English. The documentary in DVD format was one of ten National Geographic's award-winning nature and wildlife specials which featured the marine life in the oceans. The animal documentary was chosen on purpose because it is assumed not include any sort of mental pollution - emotionally affective, violent, and sexually explicit images- which could inhibit students' cognitive functions.

As for the second condition, the same reading comprehension test was given one month later as a posttest to the same students in the same time period, but this time immediately after exposure to mental pollution - watching a mixture of videos including comedy gags, commercials and movie trailers for 40 minutes. The rationale behind giving the same reading comprehension test for a second time was the common expectation of higher reading scores due to students' familiarity with the same reading material. On the other hand, it was actually hoped that mental pollution would markedly limit students' text familiarity and schemata - the underlying connections that allow new experiences and information to be aligned with previous knowledge (McCarthy 1991, p.168). Furthermore, if a different reading comprehension test would be used instead of the same for the same condition, it was feared that the variance in scores could be attributed to the difference of reading material rather than mental pollutants. The experiment was particularly conducted early in the mornings between 9:00 and 11:00 am for only 40 minutes in order to minimize possible factors like condition of weariness (for example mid-afternoon exhaustion or a full-length film of 120 minutes) that could impact the results of the study.

The videos were all borrowed from popular video-sharing websites where users frequently upload miscellaneous video recordings of all sorts. The videos with violent, scary, sexy, and humorous content were emotionally affecting and highly rated by the viewers. They rarely included speech and were shown to the students arbitrarily without any censorship or edits. For example, one commercial advertisement featured a sexy and attractive celebrity *-Angelina Jolie- promoting a popular lipstick brand –Integrate- for 75 seconds. As a further example, another video was a movie trailer – Saw 3D-* containing gruesome, twisted, horror and violent traps. These videos which participants later on described as bizarre, humorous, erotic, comedic and emotionally and psychologically affecting acted like mental pollutants, for they were able to distract and disconcert their attention, memory and emotions for a limited period of time. The scores on the two tests were compared using SPSS 16.0.[1]

**Results**

**Table 1** One-Sample Kolmogorov-Smirnov Test Results for Group Normality

One-Sample Kolmogorov-Smirnov Test

| | N | Mean | Std. Deviation | Kolmogorov-Smirnov Z | Asymp. Sig. (2-tailed) |
|---|---|---|---|---|---|
| Documentary | 35 | 16,028 | 2,802 | 1,07 | ,198 |
| Mental Pollutants | 35 | 14,200 | 2,459 | ,685 | ,736 |

Kolmogorov-Smirnov test was used to test for a normal distribution in reading scores. The analyses revealed that Kolmogorov-Smirnov z values were 1.07 and .685 with significance levels of .198 and .736, thus showing that the reading scores came from a normal distribution. In this test the null hypothesis that data come from a normal distribution is accepted if significance level is above .05 (Akgül and Çevik 2003, p. 104).

**Table 2** Paired Samples t Test Results for Reading Scores

Paired Samples Statistics

| | | Mean | N | Std. D. | Std. Error Mean | t | p |
|---|---|---|---|---|---|---|---|
| Pair 1 | Documentary | 16,0286 | 35 | 2,80216 | 3.51 | 3.447 | 0.002 |
| | Mental Pollutants | 14,2000 | 35 | 2,45908 | | | |

Table 2 shows paired samples t test conducted to compare reading scores between testing after watching a film and testing without watching it. There was a significant difference in the reading scores for without film (M=16.02, SD=2.84) and after film (M=14.20, SD=2.45) conditions (t=3.447; p<0.05). The Cohen's *d* effect size for the difference between the two means was 0.69.

**Discussion and Implications**

Research into foreign and second language learning lists several factors – social, psychological, cognitive, and affective – as reasons for poor performance of many language learners. This present study based on mental pollutants, whose negative effects on memory and cognition so far have been overlooked or unnoticed, aims to contribute to the ESL/EFL field from a psycholinguistic and cognitive perspective. Based on the present study, it was hypothesized that exposure to divers forms of mental pollution- violent, scary, erotic, and comedic visual stimuli as in this case- would be negatively related to L2 reading comprehension. The present study replicates previous research (Cetin and Flamand 2010) confirming that overmuch exposure to mental pollutants, for example televised violence, sex, horror, or comedy gags can impede memory performance for L2 vocabulary. Interestingly, the same students in the present study did not achieve higher reading comprehension scores when they were exposed to the same reading test for a second time after a month's interval. During this one month period, the students could have learnt more L2 vocabulary and grammar units which could contribute to their reading comprehension scores. Contrary to the expectations, students' reading performance of the same reading comprehension test after a period of one month was found to be lower most probably because of a polluted mind – watching a mixture of violent, scary, erotic, and humorous videos for 40 minutes - before reading comprehension check. In this experimental study, as pointed out by Bushman (2005), the impact of televised violence, sex, horror and comedy gags on students' L2 recall and reading comprehension could stem from encoding rather than retrieval processing.

The findings of the present study seem to be in accordance with Krashen's (1985) well-known Affective Filter Hypothesis in SLA (Second Language Acquisition). Krashen firmly believes that affective variables - like high anxiety, low motivation and low self-confidence – act like a filter which prevents L2 input to reach Language Acquisition Device (LAD). Similarly, it is possible that mental pollutants – violent, scary, and sexual visual stimuli - used in this study could have blocked access to LAD by resulting in lower reading comprehension scores even though the same reading text was employed for a second time. The same students scored higher in the first condition most probably because the animal documentary they watched prior to reading comprehension test did not raise their affective filter. Thus, it can be assumed that mental pollutants – further forms of affective variables – depending on their size, quality and content can apparently lead to poor memory and remarkably impede foreign and second language acquisition skills. Thus, this study contributes to Krashen's concept of Affective Filter for learning L2 by broadening the spectrum of affective variables.

An important body of research suggests a close connection between memory - particularly short-term and working memory- and language acquisition (Miyake and Shah 1999; Lightbown and Spada 1999; Baddeley 2003; Cowan 2001; Conway et al., 2005; Gass Roots and Lee 2006). It

is known that successful L2 learning depends on the ability to store and manipulate relevant information long enough to decode its meaning and syntax. Within this perspective, Cook (2001) argues that L2 learners suffer from 'cognitive deficit' since the capacity of human mind is rather less efficient in learning a new language. Moreover, Ledoux (2002) points out that implicit memory functions which control our emotions, senses, instincts and reflexes can affect memory and thinking by disrupting brain chemicals. Thus, mental pollutants in the form of scary, violent and sexually suggestive visual distractors could have interfered with memory structure and processes by occupying a huge amount of short-term memory space which in turn resulted in lower reading comprehension scores.

Accordingly, Bushman and Bannoci (2002) report that people are more attentive to visual and audio material with sexual and violent content than nonsexual and nonviolent visual and audio material. Similarly, Geer and Melton (1997) put forward that an individual's memory requires greater cognitive capacity so as to process material with sexual content than material with nonsexual content. Therefore, Bushman and Bannoci (2002) conclude that constant exposure to violent and sexual material may leave less cognitive space and power for processing of other stimuli. Correspondingly, as for the second condition in the present study, probably the subjects did not perform well on the reading comprehension test simply because their attention was possibly directed elsewhere, for instance, they might have been thinking about a charming TV commercial or erotic video fragment they were exposed to. On the other hand, it is likely that the same subjects attained higher reading comprehension scores in the first condition mainly because the documentary they watched was not affectively, cognitively, and psychologically challenging. This implies that neutral TV programs such as documentaries do not have serious impact on viewers' mental functions as long as they are devoid of violent, sexual, and erotic motifs.

It is true that violent, scary and sexual movies are the most favorite forms of entertainment for many young people regardless of their sex, age, and socio economic status. A substantial body of studies has investigated how exposure to violent TV and film media impacts young people of all ages. As an example, according to Anderson et al. (2002), short exposure to violent dramatic TV programs and video films results in short-term fluctuations in adolescents' thoughts, emotions and behavior. Relatedly, Lang et al. (1996) argue that the more people pay attention to TV programs, the less attention they pay to other stimulants. From this point view, Hunt & Ellis (1999) argue that retrieval failure is inevitable for people when they cannot attend to the information they have encoded into their long-term memory. Even though retrieval failure can be explained as a result of several competing factors, interference forgetting seems to be relevant to a polluted memory. With respect to interference forgetting it is possible to conclude that students could not retrieve L2 reading text well because of the interfering aspect of mental pollutants. Therefore, the present study has significant implications for the society. In this quantitative study, a 40 minute compilation of videos with violent, erotic, scary and comedic content which is considered as a common form of mental pollution remarkably decreased L2 reading comprehension. When we consider the fact that almost 60% of TV programs include violence, sex and horror, many efforts are needed to lessen the effects of media violence and sex not only to society but also education.

A number of studies have already confirmed the negative impact of violent video games on children and adolescents (Buchman and Funk 1996; Gentile and Walsh 2002). For instance, a survey across fourth and eighth-graders revealed that video games with primarily violent content were listed in the top three favorite games for girls and boys (Buchman and Funk 1996). It has been reported that playing violent video games, once popularized in real life, may have detrimental effects on children, perhaps leading to increase in aggression and decrease in moral values (Funk 2003; Anderson et al. 2002; Huesmann et al. 2003; Johnson, et al. 2002; Bushman and Huesmann 2001). Likewise, apart from desensitization to violent behavior, the present study indicated that

when foreign language learners are exposed to video films with violent content, one common form of mental pollutants, they can experience L2 reading comprehension limitations. If watching a mixture of violent, scary, comedic, and erotic videos for circa 40 minutes can result in poor L2 reading comprehension, one may wonder how much mental pollution – in the form of mental fantasy and cognitive rehearsal of aggression- is caused by constant exposure to violence in media over the years. Therefore, further studies are necessary that elaborate on both short-term and long-term effects of televised violence and sex as common forms of mental pollution on academic performance including EFL/ESL research.

Interestingly, although many of the past enthusiasts and polyglots did not have the modern technological opportunities and supports (such as cable, internet, and satellite TV, L2 computer programs and games and so on) at hand, they managed successfully to learn and communicate in numerous languages. As an example, Cardinal Giuseppi Mezzofanti (1774–1849) is known to speak more than 50 languages; Sir William Jones (1746–1794) who is an English philologist is believed to speak around 28 languages; Jean-Francois Champollion (1790–1832) and Sir Richard Francis Burton (1821–1890) had the ability to speak and read in many languages and dialects (Perry 2004). Their achievement in learning multiple languages is rather incredible when we compare them to present L2 learners who experience serious difficulty in the mastery of only one foreign language despite the availability of various modern methodologies and technologies. Based on the findings of the present study it can be reasoned that the remarkable success of many past scholars and polyglots with numerous foreign languages is not only because they were gifted and enthusiastic but also most probably they were not exposed to serious amounts of mental pollution. For example, Cardinal G. Mezzofanti could maintain a strong memory because he spent his entire life in the monastery and battlefields which were completely closed to mental pollutants. Therefore, one might wonder whether or not Mezzofanti would manage to learn the same number of languages if he was exposed to constant and immeasurable volumes of violent, scary and sexual visual stimuli from various media sources such as TV, internet websites, videogames, movies, billboards, magazines, and books on an almost daily basis.

Furthermore, according to Gordon (2005), African continent with more than 2000 languages out of around 6700 world languages is the language-richest place on earth despite its poorest literacy rate. It has been listed in the 2005 edition of Ethnologue that approximately 400 hundred languages are spoken in Nigeria, over 280 languages in Cameroon and more than 200 languages in Congo (Gordon 2005). Based on research by the Centre for Advanced Study of African Languages (CASAS), Prah (2002) reports that around 85 percent of Africans are multilingual and speak an average of 15 languages either as their native or second language. It is rather thought-provoking how Africans are able to learn so many languages in spite of their poverty, illiteracy and lack of technological resources and facilities. Correspondinlgy, from the findings of the present research it can be implied that because of absence of high amount of mental pollution, Africans seem to have a strong and stable memory and therefore are able to outperform Westerners as far as learning foreign languages are concerned.

Finally, as far as access to new forms of technological tools is concerned, the time period in which the present young generation grows up is incomparable to the past. Williams et al. (1982) long before reported TV viewing more than eleven hours a week as heavy viewing and therefore, negatively correlated to academic achievement. A survey by Roberts (2000) revealed that youngsters between 8 to18 ages are exposed to some form of media for more or less 7 hours every day. It is not an exaggeration to say that diverse forms of communications – televisions (satellite, cable), internet, videogames, DVD's and so on- whose content may include violent, scary, and sexual motifs play an indispensible role in the life of many people. Therefore, arbitrary exposure to miscellaneous media sources over years may be harmful to one's intellect since they may contain

mental pollutants: various forms of intrusive and emotionally affecting visual stimuli. The participants in the present study experienced memory weakness for L2 reading comprehension just only by watching a compilation of highly rated videos available on popular video sharing websites for forty minutes. Accordingly, one might wonder how much defilement a lifelong exposure to mental pollution on other possible media contents, for example posters, brochures, magazines, billboards, and tabloids may cause to our cognitive and memory functions. Further studies that focus on the relationship between long-term exposure to mental pollutants and memory functions may uncover exciting findings for different disciplines in science and social science.

**Limitations**

The number of participants was limited only to 35 since not all invited 75 B1 students volunteered to take part in the present study. Particularly, when they were informed about the contents of the experimental videos- comedic, bizarre, violent, scary, and sexual visual stimuli- many of the invited students disagreed to participate in the study. It is a fact that in many Muslim countries including Turkey because of the conservative majority, it is a taboo and against their belief to watch or talk about sex in the society, in particular schools. Therefore, the researchers had to be content with this small number of participants and follow this type of research design, even though an experiment was planned including both control and experimental groups. Thus, future studies in more liberal societies where watching or talking about sex is not a taboo, based on the involvement of many more numbers and populations (kids, teens, adolescents, and adults) can come up with challenging and interesting impact of various media sources in the form of mental pollutants on human mind and learning.

Furthermore, the sexual visual stimuli employed in this experiment were limited to only commercials with low sexual content - such as a beautiful young woman seductively kissing a young boy in order to get his coke - shown on public TV channels because of the sensitivity of the topic in the society. Future studies with different populations which focus on exposure to visual stimuli with higher sexual content (especially in soap operas, movies, internet websites, and so on) can produce findings whose value and significance can be of particular interest to many pedagogues and policymakers.

**Conclusion**

The pedagogical conclusion of the present study is that teachers need to be very careful and sensitive in the practice and promotion of popular media products in class, in particular foreign language teaching and learning. What teachers can do at least is to inform their students about the negative effects of too much exposure to mental pollutants from various media sources at their finger tips which can hamper memory functions and accordingly lead to lower academic achievement. In support of this view, the present study confirmed that exposure to violent, scary, and sexually explicit videos prior to L2 Reading Comprehension Test remarkably dropped FL students' reading scores. Interestingly enough, researchers in psychology and communication for more than 40 years have already drawn attention to the negative impact of various media sources and their contents to memory, cognition and personality. However, it seems that the significant body of research on the side effects of media-based technology is either unknown or disregarded by the pedagogues in various academic disciplines where memory involvement is of utmost importance: education, sociology, history, literature, math, and foreign language learning. Therefore, this study calls for more research targeting mental pollutants- contamination of the mind and memory by violent visual distractors and images present in a variety of media sources- whose effects seem to play a crucial role in all aspects of life.

**REFERENCES**

AKGUL Aziz & CEVIK Osman (2003). *İstatistiksel Analiz Teknikleri,* Ankara, Emek Ofset.

ALLEN Mike, D'ALESSIO Dave, & Brezgel, K.A. (1995). A meta-analysis summarizing the effects of pornography: II. Aggression after exposure. *Human Communication Research*, 22, 258–283.

ANDERSON Craig A., BERKOWITZ Leonard, DONNERSTEIN, Edward, HUESMANN L. Rowel, JOHNSON James D., LINZ Daniel, et al. (2003). The influence of media violence on youth. *Psychological Science in the Public Interest*, 4(3), 31-110.

ANDERSON Craig A. & BUSHMAN Brad J. (2002). The effects of media violence on society. *Science, 295*(5564), 2377-2378.

ANDERSON Daniel K. & REED W. Michael (1998). The effects of Internet instruction, prior computer experience, and learning style on researchers' Internet attitude and knowledge. *Journal Educational Computing Research*, 19(3), 227–246.

BADDELEY Alan D. (2003). Working memory and language: an overview. *Journal of Communication Disorders*, 36, 189–208.

BUCHMAN, D., & Funk, J. B. (1996). Video and computer games in the '90s: Children report time commitment and game preference. *Children Today,* 31, 12–15.

BUSHMAN Brad J. (2005). Violence and sex in television programs do not sell products in advertisements. *Psychological Science, 16*, 702-708.

BUSHMAN Brad J. & BONACCI Angelica M. (2002). Violence and Sex Impair Memory for Television Ads. *Journal of Applied Psychology*, 8(3), 557–564.

BUSHMAN Brad J., & HUESMANN L. Rowell (2001). Effects of televised violence on aggression. In Dorothy G. Singer & Jerome L. Singer (Eds.), *Handbook of children and the media* (pp. 223-254). Thousand Oaks, CA: Sage.

CETIN Yakup & FLAMAND Lee (2010). Mental Pollution Hypothesis and Foreign Vocabulary Retention. *Poznan Studies of Contemporary Linguistics*, 46(3), 275-293.

CHEN, D. (1997). Computerization in education. In Y. Kashti, M. Arieli, & S. Laski (Eds.), The teaching and education lexicon (pp. 348–349). Tel-Aviv, Israel: Tel-Aviv University, RAMOT.

CHRISTAKIS Dimitri. A.; ZIMMERMAN Frederick J.; DIGIUSEPPE David L.; & MCCARTY Carolyn A. (2004). Early television exposure and subsequent attentional problems in children. *Pediatrics*, 113(4), 708-713.

COMMON SENSE MEDIA. (2008). Last accessed April 20, 2011. www.commonsensemedia.org http://www.screensmart.ca/assets/docs/CSM_media+health.pdf

COOK Vivian (2001). *Second language learning and language teaching.* (3rd ed.) Arnold. London.

COWAN Nelson (2001). The magical number 4 in short-term memory: A reconsideration of mental storage capacity. *Behavioral and Brain Sciences,* 24, 87–185.

CONWAY Andrew R. A., KANE Michael J., BUNTING Michael F., HAMBRICK D. Zach, WILHELM Oliver & ENGLE Randall W. (2005). Working memory span tasks: A methodological review and user's guide. *Psychonomic Bulletin & Review,*12, 769–786.

CSIKSZENTMIHALYI Mihaly (1990). *Flow: The psychology of optimal experience.* New York: Harper & Row.

DALY Laura A. & PEREZ Linda M. (2009). Exposure to Media Violence and Other Correlates of Aggressive Behavior in Preschool Children. *Early Childhood Research & Practice*. 11(2), 1-13.

FUNK Jeanne B. (2003). Violent video games: Who's at risk? In D. Ravitch, & J. Viteritti (Eds.), *Kid stuff: Marketing violence and vulgarity in the popular culture* (pp. 168–192). Baltimore, MD: Johns Hopkins University Press.

GASS Susan, MACKEY Alison, Alvarez-Torres Maria Jose, and Fernández-García Marisol (1999). The effects of task repetition on linguistic output. *Language Learning*, 49, 549–581.

GASS Susan, LEE Junkyu., and ROOTS Robin (2007). Firth and Wagner: new ideas or a new articulation? *Modern Language Journal*, 91, 786–797.

GENTILE Douglas A. & WALSH David (2002). A normative study of family media habits. *Journal of Applied Developmental Psychology*, 23, 157–178.

Gordon RG Jr (Ed.) (2005). *Ethnologue: Languages of the world* (15th edition). Dallas: Sil International. Accessed June 2009, http://www.ethnologue.com/

HUESMANN L. Rowell; MOISE-TITUS Jessica; PODOLSKI Cheryl-Lyn; & ERON Leonard D. (2003). Longitudinal relations between children's exposure to TV violence and their aggressive and violent behavior in young adulthood: 1977-1992. *Developmental Psychology*, 39(2), 210-221.

HUNT R. Reed, & ELLIS Henry C. (1999). *Fundamentals of cognitive psychology (6th ed.)*. Dubuque, IA: McGraw-Hill College.

JOHNSON Jeffrey G.; COHEN Patricia; SMAILES Elizabeth M.; KASEN Sephanie; & BROOK Judith S. (2002). Television viewing and aggressive behavior during adolescence and adulthood. *Science, 295*(5564), 2468-2471.

KIEFER Markus, SCHUCH Stefanie, SCHENCK Wolfram and FIEDLER Klaus. (2007). Emotion and memory: Event-related potential indices predictive for subsequent successful memory depend on the emotional mood state. *Advances in Cognitive Study*, 3(3), 363–373.

KRASHEN Stephen D. 1985. *The input hypothesis: Issues and implications*. London: Longman.

KUNKEL Dale, COPE-FARRAR Kirstie, FARINOLA Wendy Jo, BIELY Erica, ROLLIN E., & DONNERSTEIN Edward (1999). *Sex on TV.* Menlo Park, CA: Kaiser Family Foundation.

LAM Yvonne. (2000). Technophobia or technophilia? A preliminary look at why second language teachers do or do not use technology in their classrooms. *The Canadian Modern Language Review/La Revue canadienne des langues vivantes*, 56(3), 389– 420.

LANG Annie, NEWHAGEN John, & REEVES Byron (1996). Negative video as structure: Emotion, attention, capacity, and memory. *Journal of Broadcasting and Electronic Media*, 40, 460–477.

LEDOUX Joseph (2002). *Synaptic self: How our brains become who we are.* New York: Viking Press.

LEE Doohwang and LaRose Robert. (2007). A socio-cognitive model of video game usage. *Journal of Broadcasting and Electronic Media,* 51(4). 632–650.

LEVIN Diane E. (2003). *Teaching young children in violent times: Building a peaceable classroom.* 2d ed. Cambridge, MA: Educators for Social Responsibility; Washington, DC: NAEYC.

LIGHTBOWN Patsy M. and SPADA Nina. (1999). *How languages are learned.* Oxford: Oxford University Press.

MCCARTHY Michael (1991). *Discourse Analysis for Language Teachers.* Cambridge: Cambridge University Press.

MIYAKE Akira, and SHAH Priti. (Eds.). (1999). *Models of Working Memory: Mechanisms of Active Maintenance and Executive Control.* Cambridge, UK: Cambridge University Press.

PENG Hsinyi, SU Yi-Ju, CHOU Chien. ve TSAI Ching-Chang. (2009). Ubiquitous knowledge construction: mobile learning re-defined and a conceptual framework. *Innovations in Education and Teaching International*, 46(2), 171-183.

PEARSON David P., Johnson, D., 1978. *Teaching Reading Comprehension*. Holt, Rinehart, and Winston, New York.

PERRY Ronald Alan (2004). Foreign language acquisition and individual learner traits. A look at some spectacularly successful language learners. *Revista de Ciencias Humanas,* 33, 67-83.

PRAH Kwesi Kwaa (2002). *Language, neo-colonialism, and the African development challenge*. TRIcontinental No. 150 (Havanna, Cuba). İKİ YANA YASLANACAK

RIEBER Lloyd P. (1996). Seriously Considering Play: Designing Interactive Learning Environments Based on the Blending of Microworlds, Simulations, and Games. *Educational Technology Research and Development*, 44, 43–58.

*ROBERTS D*onald (*2000*). *Media and youth*: *Access, exposure, and privatization*. Journal of *Adolescent Health*, 27(2), 8-14.

ROBINSON Thomas N., WILDE Marta L., NAVRACRUZ Lisa C., HAYDEL K. Farish, & VARADY Ann. (2001). Effects of reducing children's television and video game use on aggressive behavior: A randomized controlled trial. *Archives of Pediatrics & Adolescent Medicine*, 155, 17–23.

ROSENFIELD Israel. 1988. *The invention of memory. A new view of the brain.* New York: Basic Books.

SCHMIDT Marie Evans, & VANDERWATER Elizabeth A. (2008). Media and attention, cognition, and school achievement. *The Future of Children*, 18, 63–85.

THOMAS Peter & MACREDIE, Robert (1994). Games and the Design of Human-Computer Interfaces. *Educational Technology,* 31, 134–42.

TONER Gregory, BARR David, MARTINS Sofia Carvalho & Vicky Wright (2008). Multimedia language learning in higher education in the UK. http://www.arts.ulster.ac.uk/lanlit/cetl/news/survey/index.html.

TSCHIRNER Erwin (2001). Language acquisition in the classroom: The role of digital video. *Computer Assisted Language Learning,* 14 (3/ 4), 305–319.

WILLIAMSON Sarah S., KOSMITZKI Corinne, & KIBLER John L. (1995). The effects of viewing violence on attention in women. *The Journal of Psychology*, 129, 717–721.