REVIEW OF LITERATURE

Review of literature is a process that involves finding, reading, understanding and forming conclusion about the published research and theory on a particular topic. It is an essential part of all scientific and social investigation.

The available review of literature related to the topic under investigations was divided into following subheads:

2.1 Extent level of Multimedia Addiction

2.2 Factors that may influence Multimedia Addiction in adolescents

2.2.1 Gender

2.2.2 Age

2.2.3 Family factors

2.2.4 Social factors

2.3 Multimedia Addiction and its negative effect

2.3.1 Effect of Multimedia Addiction on Academic performance

2.3.2 Effect of Multimedia Addiction on Mental Health

2.3.2 Effect of Multimedia Addiction on Physical Health

2.4 Multimedia Addiction and Personality

2.5 Multimedia Addiction and Violent Behaviour

2.6 Multimedia Addiction and its Intervention Program

2.1 Extent level of Multimedia Addiction:

Yadav, et al. (2013) explored the internet addiction amongst Indian school students and they found that sixty five (11.8%) students had Internet
Addicted; it was predicted by time spent online, usage of social networking sites and chat rooms and also by presence of anxiety and stress.

Subba, et al. (2013) explored the ringxiety (Phantom ringing) and other perceived effects, as well as the pattern of the mobile phone usage among college students in South India, Mangalore, and they found that mostly, the person whom they talked to on their phones were parents for 220 (51%) of the students. 150 (48%) talked for less than half hour in a day and 137 (41%) were high volume message users. “Ringxiety” were more likely to use their phones at restricted place like class rooms (99%) and libraries (60.3%).

Sharma and Sahu (2014) evaluate the extent level of Internet addiction in the 15-25 years age group in Jabalpur city (Madhya Pradesh) India. The IAT scoring revealed that 57.3% as normal users, 35.0% as mildly addicted to the Internet, 7.4% as moderately addicted, and 0.3% as severely addicted.

Bahrainian and Khazaee (2014) evaluated prevalence of internet addiction and its relation with depression and self-esteem and they found that 40.7% of the students were addicted to the internet included 2.2% severe addicted and 38.5% moderate one. Both depression and self esteem were in relation with internet addiction so that the score of depression and self-esteem could anticipate the score of internet addiction to some extent.

Mazaheri and Najarkolaei (2014) observed that extent of cell phone and internet addiction and relationship between these two forms of behavioural addiction in student at Isfahan University of medical science in Iran. Overall prevalence of internet addiction was 20% and moderate and severe internet addictions were 19.1% and 0.9%, respectively. The prevalence of cell phone use
addiction was 56.2% for female students and 64.5% for male students. Internet and cell phone addiction were related to male gender, age less than 25 year, higher educated father and high socioeconomic status of family.

Wittek, et al. (2015) investigated prevalence rates and predictors of video game addiction in a sample of gamers, randomly selected from the National Population Registry of Norway (N=3389). Results showed there were 1.4 % addicted gamers, 7.3 % problem gamers, 3.9 % engaged gamers, and 87.4 % normal gamers.

Common Sense Media (2015) concluded that from a representative survey of American tweens (8 to 12 year olds) and teens (13 to 18 year olds), outside of school and homework, tweens spend almost six hours per day and teens spend almost nine hours per day using media.

Banjara and Bhukya (2015) investigated Internet addiction among medical college students in India, results showed that 71.9% students as mild addicted, 8.8% moderate addicted and 3.5% severe addicted.

2.2 Factors that may influence Multimedia Addiction in adolescents

2.2.1 Gender :

Lemmens, et al. (2006) found that boys were most attracted to violent video games and spent more time playing video games than did boys lower in traits aggressiveness. Lower educated boys showed more appreciation for both violent and non violent games and spent more time playing them than did higher educated boys.

Erdogan (2008) investigated that relationship among Internet usage, Internet attitudes and loneliness of adolescents in Turkey. 1049 adolescents
completed the questionnaires pertaining to their own interest usage, Internet attitudes and feelings of loneliness. At the end of the study, it was revealed that Turkish adolescents loneliness was associated with both increased Internet usage and Internet attitudes. Adolescents who reported excessive use of the Internet for web surfing, instant messaging, e-mailing and online games had a significantly higher mean score of loneliness than those who did not. In addition, male adolescents reported a higher frequency of internet usage and more loneliness than females. Male adolescents also reported a higher frequency of web surfing and online games than females. However, female reported a higher frequency of e-mailing.

**Hsu and Chuang (2008)** compared gender differences in the intention and behaviour of university students with regard to visiting internet cafes. The result revealed that males and females respondents exhibited similar pattern when predicting their intention and behaviour toward visiting internet cafes and they used the internet same pattern (e.g.; online activities) and the same rates (e.g.; hours spent online).

**Lin and Yu (2008)** explored the gender differences in adolescent internet accessibility, motives for use, and online activities in Taiwan. 629 5th and 6th graders were surveyed. Findings revealed that the gap in gender differences with regard to internet use has decreased in this generation. No gender differences were found in adolescents motives for using the internet. The ranking of relative importance of motives for adolescents going online was searching for information, followed by socializing and boredom avoidance for both boys and girls. Searching for homework information and playing games were the most
popular online activities for all adolescents. However, while girls tended to view the internet more as a means of searching for information and e-mailing friends, boys tended to use it more for playing games and downloading software.

Devis, et al. (2009) concluded that boys spend more time on using mobile phones than girls and also adolescents consume more time on using mobile phones on weekend than on casual weekend day.

Primack, et al. (2009) investigated that the association in adolescence between media exposure and depression in young adulthood and they found that television exposure and total media exposure in adolescence are associated with increased odds of depressive symptoms in young adulthood, especially young men.

Razieh, et al. (2012) examined the prevalence of internet addiction among the universities girl’s and boy’s students, and also the relationship between internet addictions with anxiety. The results of their study demonstrated that prevalence of internet addiction among boy’s students in universities; boys were more addicted than girls and in science and engineering students were more than art and humanity students.

Nije, et al. (2012) stated that low educational ability as a risk factor for aggression and violent game play. Boys of lower educational ability are more attracted to violent video games than other boys are, and that they are also higher in trait aggressiveness and sensation seeking.

Das and Mishra (2013) examined the effect of gender and internet use on adolescent’s loneliness and they found that internet use had a significant effect
upon loneliness where as gender had no significant effect upon adolescent’s loneliness.

Robertson, et al. (2013) concluded that young adult who had spent more time watching television during childhood and adolescence were significantly more likely to have a criminal conviction, a diagnosis of antisocial personality disorder, and more aggressive personality traits compared with those who viewed less television. The association was similar for both sexes, indicating that the relationship between television viewing and antisocial behaviour is similar for male and female viewers.

Soh, et al. (2013) explored that gender differences in urban adolescent internet access, usage and motives. Data were collected from 914 urban school students in Malaysia, result showed that no differences between boys and girls were detected in Internet accessibility and home computer ownership. Boys and girls differed in their intensity of usage, place of access and their motivations to use the internet. Girls were more motivated by social-interaction, shopping and surveillance/ information while boys were more motivated by eroticism and had a higher tendency to be addicted to the Internet. However boys and girls did not exhibit any significant differences in online entertainment motivation.

Zongkui, et al. (2013) reported that the boys are more likely to be involved in cyber bullying both as perpetrators and victims. Students with lower academic achievement were more likely to be perpetrators online than were students with better academic achievement. Students who spend more time online, have access to the internet in their bedrooms, have themselves experienced traditional bullying as victims and are frequently involved in instant-
messaging and other forms of online entertainment are more likely to experience cyber bullying. Increased parent and teacher supervision reduced student’s involvement in cyber bullying.

**Mulgrew, et al. (2014)** examined the effect of viewing muscular and attractive singers in music video clips on early, mid and late adolescent boy’s body image, mood and schema activation. Participants were 180 boys who completed pre and post test measures of schema activation and social comparison after viewing the clips. The results showed that the boys who viewed the muscular clips reported poorer upper body satisfaction, lower happiness and more depressive feelings compared to boys who viewed the clips depicting singers of average appearance. There was no evidence of increased appearance schema activation but the boy who viewed the muscular clips did report higher levels of social comparison to the singers. Music video clips are a powerful form of media in conveying information about the male ideal body shape and the negative effects are found in boys.

**Kiraly, et al. (2014)** examined that the interrelationship and the overlap between Problematic Internet Use (PIU) and Problematic Online Gaming (POG) in terms of gender, school achievement, time spent using the internet or online gaming, psychological wellbeing and preferred online activities in adolescent gamers. Result showed that internet use was a common activity among adolescents, while online gaming was engaged in by a considerably smaller group. Similarly, more adolescents met the criteria for PIU than for POG and a smaller group of adolescents showed symptoms of both problem behaviours. The most notable differences between the two problem behaviours were in term of
gender. POG was much more strongly associated with being male. Self-esteem had low effect sizes on both behaviours, while depressive symptoms were associated with both PIU and POG, affecting PIU slightly more. In terms of preferred online activities, PIU was positively associated with online gaming. Based on their findings POG appears to be a conceptually different behaviour than PIU and therefore data support the notion that internet Addiction Disorder and Gaming Disorder are separate nosological entities.

2.2.2 Age:

Mackay and Weidlich (2007) concluded that Australian youth is more inclined towards using mobile phones for activities other than communication than older generation, because in adolescence stage people are more susceptible to changing fashion trends and style, building them more Tech savvy which creates certain behavioural disorders.

Yang and Tung (2007) concluded a number of risk factors specific to adolescents that may increase the possibility of developing internet addiction such as a strong drive to develop a sense of identity, a desire to develop significantly, a desire to develop significant and intimate relationships, having a free and easily accessible internet connection and internet use normally being promoted in the home and school settings.

Walsh (2010) examined the young Australian’s mobile phone behaviour and they found that young Australian people are too much attached to their mobile phones that they demonstrate the symptoms of behavioural addiction.

Cabral (2011) reported that the present generation is psychologically addicted to the Social Medias like, Face book, Twitter, Linked In etc. The
addiction causes intra-psychic conflicts such as intolerance and relapse among the youth.

2.2.3 Family factors:

Leung and Lee (2005) stated that among the social interaction motives, parental emotional support is found to be consistently related to internet usage. More emotional support from the parents an adolescents feels the less likely they are to use the internet, this makes sense that those who are more stable secure and sure with parents and family, will spend more time doing different activities, instead of internet use.

Yen, et al. (2007) examined that the differences in diversity of family factors between adolescents with and without internet addiction and substance use experience in 3662 high school students in Taiwan. They found that the characteristics of higher parent-adolescent conflict, habitual alcohol use of siblings, perceived parents positive attitude to adolescent substance use, and lower family function could be developed a predictive model for internet addiction. The results revealed that adolescent internet addiction and substance family factors, which indicate that internet addiction and substance use should be considered in the group of behavioural problem syndromes.

Park, et al. (2008) reported that risk factor of family violence, such as marital violence and parent to child violence was strongly associated with excessive internet use and internet addiction in middle and high school students in South Korea.

Steeves and Webster (2008) examined the relationship between parental supervision and the protection of children’s online privacy by revisiting survey
and focus group responses from children aged 13 to 17 years old in Canada. The study reported that parental supervision contributed to the protection of children’s online privacy. In addition, the high levels of parental supervision simply reduced risky behaviours associated with the internet use.

**Lam, et al. (2009)** found that students who were very dissatisfied with their family were nearly 2.5 times more likely than those who were satisfied with their family, to be addicted to the internet.

**Zulkefly and Baharudin (2009)** examined the personal and family factors related to the mobile phone use. The results indicate that family income highly correlated with the duration of phone use and monthly expenditure. **Lin, et al. (2009)** explored the effects of parental monitoring, leisure boredom and leisure activity on internet addiction in 1,289 adolescents from eleven senior high schools in Taiwan. Results showed that leisure boredom and involvement in internet and social activities increase the probability of internet addiction; however, family and outdoor activities along with participative and supportive parental monitoring decrease these tendencies. Parental monitoring is a major inhibitor of internet addiction. They suggested that adolescents should develop a positive attitude toward leisure and the skills to prevent overdependence on online relationships with the assistance of parents.

**Huang, et al. (2010)** compared the personality profiles of adolescent males with and without Internet Addiction Disorder (IAD), and to determine if IAD is associated with specific parental rearing behaviours in adolescents. The result of their study confirmed that IAD often occurs concurrently with mental symptoms and personality traits such as introversion and psychoticism.
Adolescents with IAD consistently rated parental rearing behaviours as being over-intrusive, punitive and lacking in responsiveness. They suggested that the influences of parenting style and family function are important factors in the development of internet dependency.

Jang and Ji (2012) reported that parental problem drinking was associated with internet addiction through anxiety, depression and aggression for boys and through family function and aggression for girls.

Bhola and Mahakud (2014) concluded that most youngsters begin social networking at 14.6 years, being influenced by gender and nature of family. The average time spent was 3.6 hours daily, which was effected by degree of parental regulation. Facebook was the most preferred Social Networking Site (SNS) for function of chatting and making friends. Most of the students were found to carry social networking at night, interact with the opposite sex, have interest in electronic gadgets, ignore daily activities, hide their online tasks from others, use SNS secretly and feel frustrated in its absence.

2.2.4 Social factors:

Bickman, et al. (2006) found that as children spend more total time watching T.V., they spend a significantly shorter amount of time with friends as compared to those who don’t. thus viewing television causes poor peer relationship and thereby increases the risk for social isolation, anxiety disorder and antisocial behavior including aggression and gang involvement.

Singhsawas (2008) observed that Internet addiction is becoming a behaviour of concern among adolescent’s given the social and emotional problems being demonstrated as a direct result of internet over use.
Milani, et al. (2009) concluded that problematic internet use exerts certain level of impacts on interpersonal relationship in which the quality of interpersonal relationship is found to correlate negatively with problematic internet use and the amount of time spent on the internet.

Park, et al. (2009) observed that while adolescent’s use Social Networking Sites to socialize with friends, they may not develop a strong emotional and social attachment with each other.

Barthakur and Sharma (2012) explored the pattern of information technology usage among 200 adolescents and its impact on psycho-social distress. They showed that negative effects of technology over use involved in such as academic, social, emotional, financial, occupational and physical problems.

Fioravanti, et al. (2012) concluded that Internet Addiction Disorder (IAD) has been associated with low self-esteem, family dissatisfaction, recent stressful event and few social friends, poor relations with teachers and students and conflicting family relationship.

2.3 Multimedia Addiction and its negative effect:

2.3.1 Effect of Multimedia Addiction on Academic performance:

Young (2004) reported that excessive technology use may affect academic performance, relationships, as well as overall development among youth. Such baffling technology use has been identified as technology addiction and has many negative impacts on health and social behaviour.
Kroneberger, et al. (2005) showed that adolescents who spent a lot of time viewing violent media (both television and video games) performed more poorly on the stroop task than those who rarely consumed violent media.

Sharif and Sargent (2006) investigated the relative effects of television, movie and video game screen time and content on adolescent school performance in the Northeastern United States. There were 4508 students who participated in their study. They looked at weekday television and video game screen time, weekend television and video game screen time, cable movie channel availability, parental R-rated movie restriction and television content restriction. They found that both content exposure and screen time had independent detrimental associations with school performance.

Cummings and Vandewater (2007) investigated that gamers spent 30% less time reading and 34% less time doing homework than non gamers, indicating that video game play is a distraction from school related activities.

Mistry, et al. (2007) examined that relations among children’s early, concurrent and sustained television exposure and behavioural and social skills outcomes at 5.5 year. Results showed that sustained television viewing was associated with behavioural outcomes. Concurrent television exposure was associated with fewer social skills. For children with heavy television viewing only in early childhood, there was no consistent relation with behavioural or social skills outcomes. Having a television in the bedroom was associated with sleep problems and less emotional reactivity at 5.5 years but was not associated with social skills.
Canales, et al. (2009) explored that an extended presence on face book can have harmful effects on productivity and task performance. Long hours spent on face book seem to decrease student’s academic performance and thus their grades.

Swing, et al. (2010) described that frequent television viewing and playing violent video game during adolescence each are associated with risk for development of attention problems, learning difficulties and adverse long term educational outcomes.

Bailey, et al. (2010) described that video game experience may also be negatively related to cognitive control, the ability to maintain goal-directed information processing in the face of distraction or competing response alternatives.

Wang, et al. (2011) investigated that the prevalence of Problematic Internet Use (PIU) and the potential risk factors for PIU among high school students in China. A cross-sectional study was conducted. Generalized mixed-model regression revealed that there were no gender differences between PIUs and non-PIUs. High study related stress, having social friends, poor relations with teachers and students and conflictive family relationships were risk factors for PIU. Students who spend more time online were more likely to develop PIU. The habits of and purposes for internet usage were diverse, influencing the susceptibility to PIU. PIU is common among high school students and risk factors found at home and at school. Teachers and parents should pay close attention to these risk factors. Effective measures are needed to prevent the spread of this problem.
Cagan, et al. (2014) stated that daily cellular phone use has increased the level of addiction. It has been established that there is a negative correlation between addiction to cellular phone and academic success and also a positive correlation between addiction to cellular phone and the level of depression.

Singh and Barmola (2015) examined that the effect of internet addiction on mental health and academic performance of students. The sample consisted of 100 high school students, age ranging, 14 to 16 years drawn randomly from English medium schools of Rishikesh and Haridwar (Uttarakhand). Finding of their study revealed that there was a significant effect of internet addiction on academic performance and mental health of students. Results further indicated that the students who were in the severe and profound groups of internet addiction were found to have detrimental effects on both in their academic performance and mental health rather than the students who were addicted to the internet usage moderately.

2.3.2 Effect of Multimedia Addiction on Mental Health:

Soderqvist, et al. (2008) explored the assess use of wireless phones and health symptoms in 2000 Swedish adolescents and they showed that frequent mobile phone users reported health complaints, such as tiredness, stress, headache, anxiety, concentration difficulties and sleep disturbances. Regular users of wireless phones had health symptoms more often and reported poorer perceived health than less frequent users.

Selfhout, et al. (2009) stated that Dutch adolescents who perceive low friendship quality, internet use for communication purposed predicted less depression,
where as internet use for non communication purposes predicted more depression and more social anxiety.

Kowalski (2010) investigated that cyber bullying has been shown to cause higher levels of depression and anxiety for victims than traditional bullying and has also been connected to cases of youth suicide with teens known to engage in reading hurtful comments before their suicide attempts.

Thomee, et al. (2011) examined the associations between psychosocial aspects of mobile phone use and mental health symptoms in a prospective cohort of young adults, who responded to a questionnaire at baseline and 1-year follow-up. There were cross-sectional associations between high compared to low mobile phone use and stress, sleep disturbances and symptoms of depression for men and women.

White, et al. (2011) explored that the relationship between sleep quality/length and mobile phone use among college students and they found that various aspect of mobile phone use such as addictive text messaging, problematic texting and pathological texting are related to sleep quality but not sleep length.

Srivastava and Tiwari (2013) investigated that the effects of excess use of cell phone on adolescent’s mental health and quality of life. They randomly selected 100 male students from Uttar Pradesh, India. They found that limited users of cell phone have better mental health and quality of life than unlimited users of cell phone.

Acharya, et al. (2013) examined that the health effects of cell phones usage amongst students pursuing professional courses in colleges. College students of both sexes in the age group 17-23 years from urban and rural
backgrounds were selected at random (those using cell phones). Result showed that headache was to be the commonest symptoms followed by irritability/anger. Other common mental symptoms included lack of concentration and poor academic performance, insomnia, anxiety etc. Among physical symptoms- body aches, eye strain, digital thumb were found to be frequently in both sexes.

**Kino, et al. (2013)** investigated that short term impact of adolescent’s prolonged exposure to violent video game on sleep and they found that prolonged video game may cause clinically significant disruption to adolescent sleep, even when sleep after video-gaming in initiated of normal bed-time.

**Kodvanji, et al. (2014)** investigated the impact of internet use on lifestyle of undergraduate medical students in India. Their cross-sectional study involved 90 (18-20 years) undergraduate medical students. The two groups addictive and non-addictive were compared for environmental stressors and lifestyle factors such as sleep, dietary pattern, physical activities and hobbies. The addictive internet user group had a statistically significant impairment of sleep and excessive day time sleepiness and presence of environmental stressors when compared to the non-addictive internet user group.

**Teppers, et al. (2014)** examined the relationship between Facebook use and loneliness. Cross-lagged analysis based on data from 256 adolescents revealed that peer-related loneliness was related over time using Facebook for social skills compensation, reducing feelings of loneliness, and having interpersonal contact. Facebook use for making new friends reduced peer-related loneliness over time, whereas Facebook use for social skills compensation increased peer-related loneliness over-time.
Alam, et al. (2014) explored that the impact of internet addiction on young adult in Malaysia. Result showed that male adults those are using internet excessively were having some problems such as interpersonal problem, behavioural problem, physical problem, psychological problem and work problem in their daily life and females were having their physical problems while using internet excessively. The young adults believed that the internet usage can help them to improve their skills for doing their work better.

Arora, et al. (2014) concluded that frequent type of all technology types was significantly inversely associated with weekday sleep duration. Frequent music listeners and video gamers had significantly prolonged sleep onset. The greatest effect was observed in frequent television viewers. Difficulty falling asleep was significantly associated with frequent mobile telephone use, video gaming and social networking with music listeners demonstrating the greatest effect.

Kathait and Singh (2014) investigated that internet addiction has a greater effect on the mental health of youth and it is significantly related with psychological symptoms such as depression, anxiety, social isolation and disturbed sleep pattern.

Pandey (2014) concluded that internet users are reported many types of problems techno stress, anxiety, maladjustment, depression, internet addicted disorders and cyber sexual addiction are most common and more particularly the teenagers are the most vulnerable to these negative effects. Excessive internet usage negatively affects to the level of adolescents techno stress. It affects more
negatively to the rural and female adolescents in comparison to urban and male adolescent.

2.3.2 Effect of Multimedia Addiction on Physical Health:

Hakala, et al. (2006) studied that how the use of computers, internet and mobile phones, playing digital games and viewing television are related to Neck-Shoulder pain (NSP) and Low back pain (LBP) in adolescents. They showed that time spent on digital gaming, viewing television and using mobile phones were not associated with NSP, nor were use of mobile phones and viewing television with LBP after adjusting for confounding factors. Frequent computer-related activities are an independent risk factor for NSP and exceeding 5 hour for LBP.

Pardee, et al. (2007) reported that children watching 2 to 4 hours of T.V. a day had 2.5 times the likelihood of having high blood pressure compared with children watching 0 to less than 2 hours. While those children watching 4 or more hours of T.V. were 3.3 times more likely to have high blood pressure.

Agrawal, et al. (2008) reported that the cell phones harmful radiations were able to degrade the quality of sperm with regard to quantity, viability, motility, morphology and few mutations in DNA causing severe changes in sperms.

Niaz (2008) reported that addictive mobile use has now become a public health problem and awareness about the dangers associated with excessive used and addictive behaviours must be extended among common people.

Epstein, et al. (2008) assessed the effects of reducing television viewing and computer use on children’s body mass index (BMI) and they concluded that
reducing television viewing and computer use may have an important role in preventing obesity and in lowering BMI in young children.

Choi, et al. (2009) observed that the prevalence of insomnia, witnessed, snoring, apnea, teeth grinding and nightmares was also higher in internet addicts compared with possible addicts and non addicts.

Vandelanotte, et al. (2009) studied that the association of leisure time on the internet and computer with overweight and obesity among Australian citizens. The survey’s participants with a high leisure-time on the internet and computer use were 1.46 times more likely to be overweight and 2.52 times more likely to be obese, compared to those who reported no internet and computer use in their leisure-time.

Kapadia, et al. (2014) investigated the impact of media on adolescent’s health and behaviour including eating patterns and violent behaviour in India. A total of 300 adolescents studying in 8th and 9th standard were interviewed by using predesigned and pretested proforma. Result showed that violent behaviour had been reported in 65%. Excessive eating pattern was found among 63% while using media more than 3 hours a day. A significant no. of females tried to maintain their weight.

Arumugan, et al. (2014) observed the over usage of electronic devices and its effects among school going adolescents in Chennai, India and they showed that the over usage of electronic devices led to academic hindrance and health problems like headache, sleep disturbances, numbness and fatigue of the fingers etc.
Samahel, et al. (2015) described that the technology’s impact on physical and mental health from children’s perspectives. In their study children reported several physical and mental health problems without indicating internet addiction or overuse. Physical health symptoms included eye problems, headaches, not eating and tiredness. For mental health symptoms, children reported cognitive salience of online events, aggression and sleeping problems. Sometimes they reported these problems within 30 min of technology usage.

2.3 Multimedia Addiction and Personality

Landers & Lounsbury (2006) investigated in a study on the relationship between the remaining factors of the Big Five Inventory and the usage of the Internet for 117 undergraduate students and they found that three of the Big Five traits such as agreeableness, conscientiousness, and extraversion were negatively related to total Internet usage.

Valkenburg, et al. (2006) investigated the consequences of friend networking sites (e.g. frienster, MySpace) for adolescent’s self-esteem and well being. They found that the frequency with which adolescent used the site had an indirect effect on their social self-esteem and well being. The use of the friend networking site stimulated the number of relationship formed on the site, the frequency with which adolescents received feedback on their profiles, and the tone (i.e. positive vs. negative) of this feedback. Positive feedback on the profiles enhanced adolescent’s social self-esteem and well being, whereas negative feedback decreased their self-esteem and well being.

Ha JH, et al. (2008) found that excessive cellular phone user Korean adolescents expressed more depressive symptoms, higher interpersonal anxiety
and lower self-esteem, a positive correlation was also observed between excessive cellular phone use and internet addiction.

Kumar & Sayadevi (2009) found that positive relationship between neuroticism and internet addiction and negative relationship between extroversion, agreeableness and conscientiousness with internet addiction in Indian students.

Gentile (2009) described that adolescent’s who used videogames at pathological levels were nearly three times more likely to be diagnosed with Attention Deficit Disorder or Attention Deficit Hyper activity Disorder than adolescent’s who played at non pathological levels.

Wilson, et al. (2010) showed that personality characteristics such as extroversion and conscientiousness and self esteem predicted both time spent on social networking sites use and addictive tendencies toward SNS.

Kuss, et al. (2010) investigated that the interaction between personality traits and the usage of particular internet applications as risk factor for internet addiction in 3105 adolescents at the Netherland and they found that the use of online gaming and social applications (online social networking sites and Twitter) increased the risk for addiction.

Schommenti and Vincenzo (2010) concluded that technology addiction showed some psychodynamic aspects similar to those of other forms of addiction, such as obsessiveness, impulsivity and compulsivity.

Pantic, et al. (2012) investigated that the relationship between social networking and depression indicators in 160 high school students and their result
indicate that the time spent on online social networking in high school students is related to the risk for depression.

Dong, et al. (2012) examined the potential personality predictors of internet addicted Chinese adolescents and they found that students addicted to the internet showed higher neuroticism/stability scores, higher psychoticism/socialization scores and lower lie scores than their normal peers before their addiction. Internet addiction was accounted by three independent variables, neuroticism/stability, psychoticism/socialization and lie.

Fraser, et al. (2012) investigated that the associations between violent video gaming empathic, responding and prosocial behaviour enacted toward strangers, friends and family members. Participants consisted of 780 emerging adults from four universities in the United States. Result showed small to moderate effects between playing violent video game and lowered empathic concern for both males and females. In addition, lowered empathic concerned partially mediated the pathways between violent video game and prosocial behaviour toward all three targets, but was most strongly associated with lower prosocial behaviour toward strangers.

Xu, et al. (2012) explored that the prevalence of adolescent internet addiction (AIA) and associated symptoms in 5,122 adolescents from 16 high schools of different school types (junior, senior, senior ordinary and senior vocational) in Sanghai. Their study provides evidence that adolescent personal factors play key roles in inducing adolescent internet addiction. Adolescents having aforementioned personal characteristics and online behaviours are at high-risk of developing AIA that may compound different Psychological symptoms.
associated with AIA. Spending excessive time online is not in itself a defining symptom of AIA. More attention is needed on adolescent excessive weekend internet use in prevention of potential internet addicts.

Carli, et al. (2013) found that a strong association between problematic internet uses and the symptoms of Attention deficit hyperactivity disorder (ADHD) /depression with relatively higher effect size, and anxiety, social phobia, obsessive-compulsive symptoms and aggression had small effect sizes.

Rosen, et al. (2013) stated that the more facebook friends predicted more clinical symptoms of biopolar-mania, narcissism and histrionic personality disorder but fewer symptoms of dysthymia and schizoid personality disorder. Technology related attitudes and anxieties significantly predicted clinical symptoms of the disorder. After factoring out attitudes and anxiety, facebook and selected technology uses predicted clinical symptoms with facebook use, impression management and friendship being the best predictors. Both positive and negative aspects of technology including social media as well as apparently detrimental effects of preference multitasking.

Romano, et al. (2013) explored the immediate impact of internet exposure on the mood and psychological states of internet addicts and low internet users and they found that internet addiction was associated with long standing depression, impulsive non conformity and autism traits. High internet users also showed a pronounced decrease in mood following internet use compared to the low internet users.

Koronczai, et al. (2013) found that dissatisfaction with bodily appearance can sometimes lead to the avoidance of personal contacts and the increase of
internet use among adolescent’s. A direct relationship between increase of internet use and association with bodily appearance along with the possible mediation effects of depression, anxiety and self-esteem.

Sheopuri and Sheopuri (2014) observed that extent of addictive behaviour towards the usage of mobile phones and the relation between the users of the mobiles and the psychological behaviour among adolescents in Bhopal, India. They showed that cell phone usage is so strongly integrated in to young people’s behaviour that symptoms of behavioural addiction, such as cell phone usage interrupting their day to day activities.

Davey and Davey (2014) concluded that Smartphone addiction among Indian teens can not only damage interpersonal skills, but also it can lead to significant negative health risks and harmful psychological effects on Indian adolescents. Increase in the use of Smartphone’s in societies, has raised concern about social and psychological effects of excessive use of Smartphone’s especially among Indian adolescents. Smartphone’s have made mobile connectivity so accessible that today’s Indian generations are abusing their Smartphone. Smartphone abuse to addiction has become more serious since adolescent can download and run numerous applications with Smartphone even without internet connection.

Mohammadzadeh, et al. (2015) evaluated that the relationship between personality traits and attachment styles with addiction to the internet in 300 high school students in the city of Ilam. Results showed that correlation exists between personality traits, attachment styles and Internet addiction. Secure attachment, extroversion, ambivalent attachment and flexibility addiction to internet in the
students. It can be concluded that personality traits and attachment styles are influential factors on internet addiction.

2.5 Multimedia Addiction and Violent Behaviour:

Konijn, et al. (2007) investigated that the relationship between violent video games and players aggression when players identify with violent game characters. Dutch adolescent’s boys with low education ability were randomly assigned to play a realistic or fantasy violent or non-violent video game. These participants used noise level loud enough to cause permanent hearing damage to their partners, even though their partners had not provoked them. These results showed that identifying with violent video game characters makes players more aggressive.

Hopf, et al. (2008) showed that the more frequently children view horror and violent films during childhood and the more frequently they play violent electronic games at the beginning of adolescence, the higher will these students violence and delinquency be at the age of 14.

Anderson, et al. (2009) observed that the impact of excessive violence in sport video game on aggression related variables. Participants played either a simulation based sports video game or matched excessively violent sport video game and they found that violent content uniquely leads to increase in several aggression related variables, as predicted by the general aggression model and related social cognitive models.

Moller and Krahe (2009) examined the relationship between exposure to violent electronic games and aggressive cognitions and behaviour in the German adolescents and they found relationship between violent game usage and
aggressive norms and an indirect link to hostile attribution bias through aggressive norms. In combination, exposure to game violence, normative beliefs and hostile attribution bias predicted physical and indirect/relational aggression.

2.6 Multimedia Addiction and its Intervention Program:

Yang and Hao (2005) investigated that the effect of the seven interventions among 52 adolescents in China. They found that Internet Addiction scores and length of time online significantly decreased after three months of the treatment.

Wieland (2005) found that Psychopharmacology, especially selective serotonin-reuptake inhibitors (SSRIs), effective for obsessive-compulsive spectrum disorders; therefore, it may be effective for the treatment of Internet addiction.

Orzack, et al. (2006) concluded that the Cognitive-Behavioural therapy (CBT) method comprises six stages of change: pre-contemplation, contemplation, determination, action, maintenance and relapse. This method also helps clients to develop problem solving techniques to change their current circumstance.

Kouimtsidis, et al. (2007) reported that Distraction may be a useful tool for adolescent’s clients to help refocus attention from internal (emotional states, automatic thoughts) or external internet related stimulation. Cognitive distraction involves helping clients to focus their attention away from the internet cues by focusing on other thoughts.

Kim (2008) suggested that Reality Therapy Group Counseling as a way of addressing Internet Addiction. The reality therapy is based on choice theory, which views individuals as completely responsible for their own lives. The reality
therapy aims to encourage individuals to improve their lives by committing to changing their Internet related behaviours. The therapy includes sessions that help clients understand that addiction is a choice, aids with the learning of proper time management skills, and introduces alternative activities to the addictive behaviour.

Shek, et al. (2009) described an indigenous multi-level counselling program designed for young people with internet addiction problems based on the responses of 59 clients. Regarding objective outcome evaluation, pre-test and post-test data generally showed that the internet addiction problems of the participants decreased after joining the program and there were some slight positive changes in parenting attributes. Participants generally perceived that the program was helpful.

Han, et al. (2010) found that Bupropion reduced cravings for online video game play, total game play time and cue-induced brain activity.

Du, et al. (2010) investigated that randomized, controlled trial for the treatment of Internet addiction in adolescents. Their study involved a multimodal school-based intervention involving eight sessions of group-based Cognitive Behavioral Therapy (CBT). Therapy involved addicted adolescents learning principles of effective communication with their parents, learning how to manage online relationships, techniques for controlling impulses, and techniques for recognizing and stopping problematic behaviour. Parent training was also delivered in tandem, and this involved teaching parents to recognize their child’s emotions, increase problematic solving and communication between family members and develop techniques for managing adolescents with problem
technology use. Psycho education was also delivered to teachers in the school. Post treatment, adolescents significantly reduced their Internet use and anxiety and improved their time management skills. Treatment gains were maintained at 6-month follow-up.

Rowan (2010) described that the following technology addiction prevention guidelines for parents with young children’s:

(a) Limit technology use to 1-2 hours per day

(b) Exercise for 3-4 hours per day

(c) Listen, hugs, bedtime stories

(d) Removing TVs from bedrooms, no “tech dinners” Sundays and holidays

(e) No technology at school recess. These may also be adapted as goals for therapeutic purposes.