Aidan Cassidy
AP English Language
Mr. Taylor
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M2 Generation: The First after a Virtual Generational Gap

Consider how wheels have fundamentally altered the lives of humans; without wheels, a human could not use a car, bicycle, train, rollercoaster, or stroller to carry his, or her, young child. Like the wheel, digital technology has become an integral part of modern day life, but in an entirely different way. Digital technology enables developers to change the world with their innovations and researchers to solve complex problems and find elusive answers. Wheels, despite being fundamental to everyday life, lack the dynamic functionalities, and seemingly endless potential, of new age technologies. In the past few decades, technology has transitioned from the distant fantasy found in science fiction novels to a universal reality; from television to 3D movies, bulky desktops to portable computers, or landlines to smart phones, technology has undoubtedly developed. But unlike the wheel, recent technological innovations possess novel interactive qualities, which subsequently increase their pervasiveness and potential, thus posing the imminent question of how, and to what extent, technology might fundamentally transform humankind.

Technology, as defined by Merriam Webster, is the product of using science to invent useful tools or to solve problems.[1] In the redefined sense of the modern world, the word "technology" subsumes a diverse selection of independent, and interdependent, tools, programs, machines, and visual or auditory mediums. Recent findings suggest that technology has both logical and counterintuitive effects. Today, for example, relatively mindless video games have been found to yield significant benefits. Researchers Lynn Okagaki and Peter Frensch found that after just six hours of playing Tetris, a simple digital game, a noticeable change in perceptual

[1] "Technology." *Merriam-Webster.com.* Merriam-Webster, 2014. Web. (15 April 2014).

skills will be observable.[2] Okagaki and Frensch indicate that simple games, like Tetris, can serve as developmental tools. However, some forms of technology have little to no effect on cognition, while others may have effects far beyond the intended outcome. Another study, performed by Miriam Novack et al, examined the most effective means of transferring, generalizing and applying knowledge in children. Novack et al provided three groups of third graders with strategies for solving mathematical problems; the first requiring a physical action on an object, the second a concrete gesture replicating the action, and the third an abstract gesture demonstrating the relationship of the objects. Although all three approaches were found to strengthen problem solving ability, the most effective was undoubtedly gesturing the relationship between objects.[3] In accordance to these findings, digital technology, and other interactive approaches, may not always be the most effective vehicle for education. Furthermore, due to the multifaceted nature of individual development and the various forms of technology, the many mechanisms responsible for interaction present a novel question: How do technological mediums, each with their respective media, act on the individual at a behavioral and neural processing level? To solve the issue of widespread modernization requires understanding how today's technology interacts with the brain, and the extent to which its media influences the psyche.

In the past few decades the presence of technology in everyday life has increased significantly, which has inevitably created more environmental pressures on children. Today's infants face exposure to programs demonstrating concepts of morality, friendship, and idealized reality, whereas its teenagers and young adults access explicit content at increasingly younger

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[2] Okagaki, Lynn, and Peter Frensch. "Effects of Video Game Playing on Measures of Spatial Performance: Gender Effects in Late Adolescence." *Journal of Applied Developmental Psychology* 15 (1994): 33-58. Digital file.
[3] Novack, Miriam, et al. "From Action to Abstraction: Using the Hands to Learn Math." *Psychological Science*: n. pag. Digital file.

ages. The late Jean Piaget, a well-known psychologist, theorized that children develop by actively interacting with their environments. Although at the time he may have been referring to friends or toys, his theory applies to interaction with technology and media. But to what extent can technology influence a child? First, technology's influence must be considered in a defined scope, as per Ellen Wartella and Nancy Jennings, both researchers at Princeton University, who assert that "studies of media effects on children must be grounded in an understanding of the dramatic development that occurs during childhood, encompassing phenomenal biological, physiological, psychological and social growth."[4] Second, imminent changes in cognition and behavior due to media exposure have been of concern in the past. In fact, as far back as 1933 studies such as the one conducted by the Payne Fund concluded that exposure to movies would influence a child in various ways depending on their age, sex, genetic predispositions, perceptions, social standing, experiences and parental relations.[5] And even more recently, a study published in 1980 by Boys Town, a non-profit organization caring for children and families examined roughly three thousand studies across twenty five years that focused on the impact of television on children.[6] Studies unanimously conclude that media can significantly influence children. Whether the data correlates to delayed development of verbal skills, or an increase in reading achievement, the results affirm that influences must exist. However, despite strong agreement that technology influences a child's development, the implications of the influences are shrouded in uncertainty and remain widely unaddressed by society.

Children born within the past twenty years, especially those in the United States of America, belong to the first generation to have been virtually guaranteed immersion in digital

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[4] Wartella, Ellen, and Nancy Jennings. "Children and Computers: New Technology. Old Concerns." *The Future of Children* 10.2 (2000): 33. *JSTOR*. Web. 11 Feb. 2014.
[5] Wartella, Ellen, and Nancy Jennings. Pg. 39.
[6] Wartella, Ellen, and Nancy Jennings. Pg 16.

life. From Leap Pads™ to iPads®, these children have unquestionably matured in environments in which technology serves as a platform for education, communication and recreation. In fact, the Kaiser Family Foundation, a non-profit organization providing information on health policy issues, conducted a study in 2010 which determined that American children consume, on average, seven and a half hours of media per day. The study, focusing on the Millennial-2 (M2) generation of 12-22 year olds, provides a startling look at the extent to which media has become integrated into everyday life of the M2 generation.[7] Children of the M2 generation are the first to develop entirely in a modernized and portably connected world. Although these children share similar developmental paths as their parents, their environments have changed drastically and the effect and extent of these changes remains unknown. Scholars unanimously agree that cognitive development follows a relatively predictable path; for example, children under the age of eight generally base their judgments on rules imposed by their respective authority figures.[8] However, digital technology and media have naturally become more influential in development, and thus their effects have increased in both scale and significance. Although commonalities across generations undoubtedly exist, recent modernization in the United States will likely cause the M2 generation to diverge in cognitive, behavioral and social regards. Moreover, previous generations faced exposure to telephones, but the extent of their interaction had negligible influence, and cannot be compared to the relationship between modern mobile devices and the M2 Generation. To demonstrate just how suddenly society has modernized, consider that the Kaiser Family Foundation reports that within five years the proportion of 8- to 18-year-olds that now own their own cell phone has grown from 39% to 66%,whereas the ownership of iPods and MP3 players

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[7] Rideout, Victoria, Ulla Foehr, and Donald Roberts. *GENERATION M2 Media in the Lives of 8- to 18-Year-Olds*. California: Kaiser Family Foundation, 2010. Digital file.
[8] Wilson, Barbara. "Media and Children's Aggression, Fear, and Altruism." *The Future of Children* 18 (2008): 88. PDF file.

has increased from 18% to 76%.[9] Undoubtedly, the increase of technology's presence has fundamentally altered the lives of children. The M2 generation, unlike past generations, strengthens friendships and forms relationships through text, settles arguments and fights over the phone, and displays emotions through social networks. But technology's pervasiveness extends far beyond mobile devices and their corresponding applications. Although previous generations have matured in societies that had digital technology, the M2 generation faces exposure to media succeeding on the principles of connectedness, of providing access to comprehensive collections of data, and of subjecting children and adults to constant external influences. Moreover, unlike other generations, the M2 generation consumes significant amounts of media per day; according to the Kaiser Family Foundation, 21% of all eight to eighteen year olds consume more than sixteen hours (heavy users), whereas 63% of children consume three to sixteen hours (moderate users).[10] So, in accordance with Jean Piaget's theory of childhood development, it can theoretically be assumed that stark differences in generational characteristics should develop over time. But how will these differences manifest over time, and how significant will they be? Well, as Erik Erikson, a German developmental psychologist asserts, the "fundamental psychosocial task of adolescence" is the establishment of a coherent identity.[11] So, one must consider whether or not digital age technology and media have made the process of developing an identity more difficult. With the increasing popularity of technology, it would be of no surprise if children have had a multidimensional variable added to their already complex development.

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[9] Rideout, Victoria, Ulla Foehr, and Donald Roberts. Pg. 5.
[10] Rideout, Victoria, Ulla Foehr, and Donald Roberts; See Appendix, Table 1
[11] David-Ferdon, Corinne, and Marci Feldman Hertz. "Electronic Media, Violence, and Adolescents: An Emerging Public Health Problem." *Journal of Adolescent Health* 41 (2007): 3. PDF file.

The question of how technology affects cognitive development is akin to asking how food affects physical development; its effect depends on the quantity and quality of what is being consumed. Children today, like their parents, grow in accordance to the social cognitive theory, which posits that children learn ideas, values, emotions, and behaviors through observations.[12] Thus, as children develop, the various components of their respective selves will be influenced and intertwined with the numerous forms of technology and media found in their environments. As such, their developments become increasingly complex and dependent on established identities both online, and in reality. As a result, the extent of technology's effect cannot be quantified in a single moment and must be inferred through observable tendencies particular to a population. Therefore, the best approach in understanding the effect of media is by examining various stages in development of children defined by the pervasive influence of technology.

Due to the lack of comprehensive data, it is too early to tell just how significantly technology impacts children. However, as technological advancements continue to increase efficiency and productivity, provide access to boundless amounts of information, and serve as outlets for entertainment and social communication, the psyches of children from the M2 generation and on will surely be different from children of previous generations. In the next few decades these children, who have developed in societies oversaturated with portable electronics and media, will become adults in a technologically oriented world. And so, as these children mature into adults, the effects of technology on society will slowly become evident.

Children of the M2 generation, due to their brains' malleability and ongoing cognitive developments, should exhibit observable cognitive differences that are divergent from characteristics commonly found in generations that lacked a significant presence of technology. Millennial-2s develop in a realm of accessibility and instantaneous gratification. Each day more

[12] Wilson, Barbara Pg. 90.

and more children utilize technology for communication, education, socialization and even recreation. Marie Schmidt and Elizabeth Vandewater, in reference to a child's susceptibility to media influence, opine "children and adolescents are particularly developmentally vulnerable because they are the earliest adopters and are generally heavier users of entertainment technology."[13] Adults too often overlook the ways in which technology has influenced their children. Undeniably, technology has become an integral component of childhood; the first smartphone a child receives marks the transition to adulthood, a new computer represents a newfound dedication to academics, and a Facebook account signifies a child's desire for individuality and connectedness. Societal changes have occurred significantly faster than many adults, and children, perceive. In fact, consider how children of the M2 Generation have always completed their homework surrounded by distracting media, and yet very few have questioned the implications of its presence in their development. But why would children question technology if the media they had grown up with glorified it? Consider that current theories contend that technology has no intrinsic value, and that its value exists only because of the low-educational activities it displaces.[14] The correlational study of Elizabeth Vandewater et al, for example, examined the media viewing habits of children and their corresponding impacts on time spent with other activities. Vandewater et al discovered that the amount of time spent consuming media as a child, in this case television, was negatively correlated to the amount of time spent engaging in social activities, completing homework, and participating in creative activities.[15] And yet as children age, technology becomes ever more present in their lives.

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[13] Schmidt, Marie Evans, and Elizabeth Vandewater. "Media and Attention, Cognition, and School Achievement." 2008. *The Future of Children*. Vol. 18. 65. PDF file.
[14] Bavelier, Daphne, Shawn Green, and Matthew Dye. *Children, Wired: For Better and for Worse*. Rochester: Cell Press, 2010. Neuron Perspective. 1. PDF file.
[15] Vandewater, Elizabeth, David Bickham, and June Lee. "Time Well Spent? Relating Television Use to Children's Free-time Activities." *Pediatrics* 117.2 (2006): e181-e191. Digital file.

Technology, especially in recent years, has become ubiquitous with education as school administrators and parents believe it inherently fosters academic growth. Surprisingly, however, very few studies have concluded that technology improves student achievement; in fact, it has been found to facilitate distraction by introducing media into rich academic environments.[16] For example, in 2004 researchers Cecilia Rouse and Alan Krueger introduced a program to American third-sixth graders called "FastForWord," which was designed to improve reading and language abilities.[17] Rouse and Krueger's study failed to find a trend suggesting that technology provides a more effective means in comparison to more classical methods. Evidently, as a society, it has been widely assume that technology has inherently positive influences in the classroom, and yet data seems to suggest otherwise. So before technology becomes even more prevalent in the classroom, it will be imperative to understand the development of a child through the lens of evolution and adaptation.

Technology presents the complex issue of addressing drastic, and sudden, environmental and developmental change; issues never encountered by human beings until now. In primitive times, humans experienced physical labor and sensory stimulation that was natural and simple, but now this has changed. Although people in the past may have utilized technology such as the wheel, the rapid advances in technology in the present day have resulted in a physically sedentary society that has an ever-increasing exposure to intense and enduring stimuli.[18] Therefore, media use should yield both transient and permanent changes, depending on the ways in which the medium influences mood, arousal, or moral development. Newer forms of technology interfere with cognitive tasks because their interactive characteristics cannot be

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[16] Bavelier, Daphne, Shawn Green, and Matthew Dye Pg. 2.
[17] Rouse, Cecilia, and Alan Krueger. "Putting Computerized Instruction to the Test: A Randomized Evaluation of a 'Scientifically-based' Reading Program." *Economics of Education Review* (2004): n. pag. Digital file.
[18] Nelson, Melissa, et al. "Longitudinal and Secular Trends in Physical Activity and Sedentary Behavior during Adolescence." *Pediatrics* (2006): 1632. PDF file.

processed by the brain in traditional or primitive ways. For example, in recent years there has been a surge of eReaders and touchscreen devices which provide access to literature and textbooks. According to Anne Mangen, a researcher from the University of Stavanger in Norway, students who read text on the computer demonstrate a decrease in reading comprehension when compared to those who read the material on paper.[19] Many researchers, such as Stephen Payne and William Reader, contend that the difference in comprehension can be attributed to the ways in which the brain perceives text. According to Payne and Reader, the brain perceives letters as physical objects, and when strung together as words, they are perceived as if they are a part of a physical landscape. Therefore, because onscreen texts lack the obvious topography of paper books, the intuitive navigation of a text becomes disrupted.[20] The increased implementation of touch screen devices highlights an important issue of understanding how the mind interacts with newer forms of technology. Consider that the most important components of proper childhood development, as Marit Korkman asserts, are "movement, touch and connection to other humans."[21] If children continue to disconnect from the world of physical play and meaningful interaction, their development, in accordance to scientific principles, should be influenced. In order to properly address issues of childhood media consumption, the effects of the quantity of media and technology consumed must be explored and explained.

With children consuming, on average, seven and a half hours of media per day, noticeable changes in behavior and cognitive function should materialize. At young ages, children are especially susceptible to media because it provides interesting sensory stimuli,

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[19] Mangen, Anne, Bente Walgermoa, and Kolbjørn Brønnick. "Reading Linear Texts on Paper versus Computer Screen: Effects on Reading Comprehension." *International Journal of Educational Research* 58 (2013): n. pag. Digital file.

[20] Payne, Stephen, and William Reader. "Constructing Structure Maps of Multiple On-line Texts." *International Journal of Human-Computer Studies*: n. pag. Digital file.

[21] Korkman, Marit. *Introduction to the Special Issue on Normal Neuropsychological Development in the School-Age Years.* US National Library of Medicine National Institutes of Health, 2001. Developmental Neuropsychology. Digital file.

which manifests in attention.[22] Technology allows an abundance of information and stimulation to be constantly accessible; in fact, many studies have found that with an increase in accessibility, significant behavioral changes emerge. For example, in 2010 researchers Edward Swing et al assessed 1,323 adolescents and the correlation between attentional problems and television and video game usage. Swing et al determined that viewing television and playing video games each had a positive correlation with attention problems in childhood.[23] In addition to attention problems, researchers have determined that usage of computer games and television attributes to a decrease in memory performance, disruption of sleep patterns, and teacher-reported problems. In a study administered by Marcus Dworak et al, eleven school-aged children were found to exhibit significant declines in verbal memory when exposed to computer games for extended periods of time.[24] Evidently, changes to a child's cognitive development must vary depending on the medium and duration of interaction. It must be understood that digital technologies and forms of media have a diversity of requirements, attentional demands, and content, making its effects appear similar, but not necessarily predictable.

The effect of media on a child's development depends on the amount consumed and the developmental maturity of the child. Children below the age of five are still in crucial periods of development, and as noted before, providing technology to a child will interfere with crucial components of development. In 2007, Frederick Zimmerman and Dimitri Chrisakis discovered links between high doses of entertainment television prior to the age of three, and attention

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[22] Malone, Thomas, and Mark Lepper. *Making Learning Fun: A Taxonomy of Intrinsic Motivations for Learning*. New Jersey: Lawrence Erlbaum Associates, 1987. Digital file. Aptitude, Learning, and Instruction 3.
[23] Swing, Edward, et al. "Television and Video Game Exposure and the Development of Attention Problems." *Pediatrics*: n. pag. Print.
[24] Dworak, Markus, et al. "Impact of Singular Excessive Computer Game and Television Exposure on Sleep Patterns and Memory Performance of School-aged Children." *Pediatrics* 120: n. pag. PDF file.

problems five years later.[25] Which, in turn, affirms the notion that exposing children to copious amounts of media will lead to issues later on in their lives. However, the general public continues to be oblivious to the effects of media consumption on children. In fact, in 2005 D.F. Roberts reported that 53% of eight- to eighteen-year-olds reported that their parents had set no limitations on media consumption, and for those who reported having rules, only 20% indicated that they were enforced.[26] Inevitably, children enthrall themselves in technology not only in part to its allure, but also in part of their parents' failure to proactively address its consequences rather than only glorifying its assumed benefits. Parents of the M2 generation must understand that experiences rooted in media can potentially create issues in a child's development because of the aforementioned displacement theory. In fact, in 2001 the American Academy of Pediatrics issued a statement that recommended children less than two years of age should consume no media at all.[27] As such, parents must recognize that although their children may be too young to understand a television show, it will ultimately influence development. Children at young ages should be actively engaged with friends and family; the more touching and connecting with other humans, the better off a child will be in terms of a developmental perspective.

Tweens and young adolescents who consume excessive amounts of media have already demonstrated distinct differences in their cognitive abilities. Whether it is attention difficulties or psychological issues, evidence strongly suggests a high negative correlation between media consumption and self-concept or self-perception. According to a survey which evaluated 2,000 elementary and middle school students, heavy television usage was associated with "symptoms

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[25] Zimmerman, Frederick, and Dimitri Christakis. "Associations between Content Types of Early Media Exposure and Subsequent Attentional Problems." *Pediatrics* 120.5 (2007): 987. PDF file.
[26] Rideout, Victoria, Ulla Foehr, and Donald Roberts. Pg. 3.
[27] Committee on Public Education. *Children, Adolescents, and Television*. Rept. no. 2. N.p.: Pediatrics, 2001. Digital file.

of anxiety, depression and post-traumatic stress."[28] Unsurprisingly, these symptoms likely have strong roots in a child's self-concept and self-esteem, each of which, when badly affected, have strong negative correlations with an increase in media consumption. Moreover, a child who consumes more media inadvertently removes him or herself from interaction, which leads to social isolation and an increased likelihood of experiencing emotional disturbances.[29] When a child becomes increasingly immersed in technology, academics and social life will likely suffer. Although children may engage with friends online or through text, frequent or excessive use has indicated the likelihood for issues to arise at school, with friends, or with oneself.

Heavy to moderate users of technology in the M2 generation are certainly the most at risk for developing behavioral, personal, and academic problems. According to an informative chart provided by the Kaiser Family Foundation, there are strong correlations between media consumption and grades, happiness, familial relations, boredom, and satisfaction with life. Of the findings, the most surprising result was that 47% of heavy consumers and 31% of moderate consumers reported having grades of C or below.[30] Another significant find of the Kaiser Family Foundation suggests that with an increase in media consumption, the more likely a child will have strained relationships at home, feelings of unhappiness and boredom, and an increased likelihood of getting into trouble.[31] Evidently, children's excessive exposure creates both social and personal issues in their lives. But what characteristics of media can be held accountable for such drastic decreases in self-perception and academic performance? Well, in a recent study, Ophir et al asked roughly 250 Stanford University students about their media habits. Students

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[28] Singer, Mark, et al. "Viewing Preferences, Symptoms of Psychological Trauma, and Violent Behaviors among Children Who Watch Television." *Journal of the American Academy of Child & Adolescent Psychiatry* 37.10 (1998): 1046. PDF file.
[29] Hancox, Robert, Barry Milne, and Richie Poulton. "Association of Television Viewing during Childhood with Poor Educational Achievement." *Archives of Pediatric and Adolescent Medicine* 159.7 (2005): 616. *JAMA*. Web. 15 Feb. 2014.
[30] Table 1: Media, Grades Personal Contentment; See Appendix
[31] Table 1: Media, Grades Personal Contentment; See Appendix

who reported high concurrent use of various forms of media, similar to children in the Kaiser Family Foundation study, also reported a decrease in their ability to filter distractions in their environments. In fact, according to the data gathered, the increase in media consumption makes it more likely for a student to be "distracted by irrelevant information in memory, and less efficient when required to quickly switch between tasks."[32] Although technology may be academically resourceful, its nature of pervasiveness and overwhelming stimulation undoubtedly becomes difficult to control. If consumption of media goes unmediated, a child can likely expect significant changes to their mindset. Correlational research strongly indicates a relationship between problematic behaviors, attentional issues, and decreased grade point averages with increasing exposure to media. Despite the clear evidence supporting that an increase in quantity will overwhelm and negatively affect the psyche, one must consider what other components of the self can be affected.

According to the cultivation theory proposed by George Gerbner and Larry Gross of the University of Pennsylvania, children who consume excessive amounts of media will eventually perceive the real world as if it were congruent with what has been observed.[33] Therefore, television and other forms of media that consistently portray behaviors tend to have the most influence of a child. Daphne Bavelier asserts that a television show can only be beneficial for a child if it "engages the viewer, elicits active participation, provides a strong language model, avoids overloading the child with distracting stimulations, and includes a well-articulated narrative structure."[34] However, many of the television shows dedicated to childhood education actually fail to meet these criteria. In the twenty-first century a divide between entertainment and

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[32] Ophir, Eyal, et al. "Cognitive Control in Media Multitaskers." *Proceedings of the National Academy of Sciences of the United States of America* (2009): 15585. Web. 15 Feb. 2014.
[33] Wilson, Barbara 95
[34] Bavelier, Daphne, Shawn Green, and Matthew Dye Pg. 1.

educational television has continued to grow; the quality of educational programs has decreased, and few programs fit the proper educational model that promotes intellectual growth in young children.[35] For example, in recent years there has been a surge of popularity of "baby DVDs," or media intended to enhance cognitive capabilities of both infants and young toddlers. However, rather than being beneficial, just an hour of exposure to a "baby DVD" has been associated with a 17-point decrease in language score. Surprisingly, in contrast, a daily reading with a parent has been associated with a 7-point increase.[36] Despite such moving research, parents continue to expose their own children to media that may seriously inhibit their development. In fact, a study administered in 2005 by Lingebarger and Walker found a surprising correlation between vocabulary and expressive language skills and media content. Lingebarger and Walker contend that their research fully supports the notion that content, even of childhood television shows, can dramatically influence development in both positive and negative ways. More specifically, Lingebarger and Walker determined that when a two-year old has an increase in exposure to "Dora the Explorer" their language skills are expected to improve, whereas exposure to "Teletubbies" results in clear decrease in both measures.[37] But media's influence on development does not cease at this age, as it continues to influence a child's moral development throughout adolescence. As the M2 generation is succeeded by the next, it will be imperative to develop proper programs that promote the cognitive development of children rather than inhibiting it.

Perhaps one of the most pressing issues regarding the influence of technology on children is the ability of media to increase aggressive and violent tendencies. One could imagine that

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[35] Mayo, Merrilea. "Video Games: A Route to Large-Scale STEM Education?" *Science* 323 (2009): 80. PDF file.
[36] Bavelier, Daphne, Shawn Green, and Matthew Dye Pg. 2.
[37] Linebarger, Deborah, and Dale Walker. "Infants' and Toddlers' Television Viewing and Language Outcomes." *American Behavioral Scientist* 48.5 (2005): 634. Digital file.

children may in fact be becoming more aggressive; recent studies have shown that 70% of children's shows contain violence, most of which have an average of fourteen violent exchanges an hour.[38] However, despite such findings, children's programming continues to promote violence, whether directly or indirectly, through the regular glorification of violent acts. In 1999, researchers Marina Krcmar and Patti Valkenberg discovered that heavy childhood viewers of fantasy violence programs such as Power Rangers were more likely to find unjustified violence as morally correct.[39] Young children develop beliefs about social norms and acceptable behavior entirely on their experiences; therefore, any activity promoting violence, whether fictional or not, will potentially cause a child to develop violent behavior. Recently, the U.S. Surgeon General released a statement that concluded that "research on violent television and films, video games, and music reveal unequivocal evidence that media violence increases the likelihood of aggressive and violent behavior in both immediate and long-term contexts."[40] As such, parents must be aware of the content their child consumes, and should attempt to curb violent behaviors by decreasing exposure to violence.

Children repeatedly exposed to media violence will likely develop aggressive tendencies that, when triggered, will be utilized to solve social disputes. Many theories of childhood development have agreed that children will regularly imitate behaviors seen on the television, especially if said behavior is rewarded. Recently, Rowell Huesmann theorized that children develop mental routines that serve as guidelines for regular events. For example, Huesmann suggests that children have scripts which define specific procedures like getting ready for school,

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[38] Wilson, Barbara Pg. 101
[39] Krcmar, Marina, and Patti Valkenberg. "A Scale to Assess Children's Moral Interpretations of Justified and Unjustified Violence and Its Relationship to Television Viewing." *Communication Research*: n. pag. Digital file.
[40] Anderson, Craig, et al. "The Influence of Media Violence on Youth." *Psychological Science in the Public Interest* 4.3 (2003): Digital file..

or going to the doctor.[41] In accordance to Huesmann's theory, a child exposed to significant amounts of rewarded violence, whether virtual or physical, will concurrently promote the development of scripts utilizing aggression for problem solving. As social animals, humans communicate through verbal, nonverbal, and behavioral avenues. Moreover, if children adapt dominant and aggressive characteristics, the means of interaction will change. If technology continues to incite aggressive behavior in children then one should expect a social paradigm plagued increasingly by violence.

Adolescents have begun to utilize social networks and other forms of communication to establish a clear sense of individuality, and often times abuse the anonymity provided for the sake of self-exploration, experimentation, and disembodied interaction. Technology enables adolescents to mask their identities, which in turn, enables youth to perpetrate aggressive or socially unacceptable behavior. Kaveri Subramanyam et al argue that "for today's youth, media technologies are an important social variable and that physical and virtual worlds are psychologically connected; consequently, the virtual world serves as a playing ground for developmental issues from the physical world, such as identity and sexuality."[42] In an online world, children are provided a freedom to do and say as they please. Unfortunately, many children abuse this freedom by using it as a vehicle for directing their aggression towards others. While some children may be exploring their sexuality, others are targeting their peers. According to Janis Wolak and her colleagues, between 2000 and 2005 there was a 50% increase in the number of youth who had reported online harassment.[43] Moreover, in 2007 researchers Kirk

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[41] Huesmann, Rowell. "Psychological Processes Promoting the Relation between Exposure to Media Violence and Aggressive Behavior by the Viewer." *Journal of Social Issues* 42.3 (1986): 136. Digital file.
[42] Subrahmanyam, Kaveri, Patricia Greenfield, and Brendesha Tynes. "Constructing Sexuality and Identity in an Online Teen Chat Room." *Applied Developmental Psychology* 25 (2004): 654. *ScienceDirect*. Web. 15 Feb. 2014.
[43] Wolak, Janis, Kimberly Mitchell, and David Finkelhor. *Online Victimization of Youth: 5 Years Later*. 2006. Digital file.

Williams and Nancy Guerra discovered that online victimization ranges from 9% to 34% of youth, and 4% to 21% of adolescents. Rather than overlooking these statistics, consider how these trends can be expected to change. With youth and adolescents being exposed to more violence and access to social networks each day, should these trends be expected to rise? Regardless, youths of today suffer at the hands of both anonymous and identifiable peers. Unfortunately, these children who face constant and aggressive online harassment often cannot defuse the situation as effectively as they could if it were happening in person. Michele Ybarra asserts that "the anonymity provided by a new technology limits a victim from responding in a way that may ordinarily stop a peer's aggressive behavior or influence the probability of future acts, which provides an advantage to the perpetrator."[44] Thus, it is pertinent for children to understand how to resolve social conflicts in person, rather than resorting to resolving, or possibly intensifying, them online. As a society, children must be guided through their development understanding that aggression does not solve problems; however, in order to do so, initiatives must be taken to combat the prevalence of violent behavior in children's media. In fact, the finding that the ease of electronic communication has made teens less interested in face-to-face communication with friends has highlighted a fundamental change in children.[45] For youth to develop properly media must be monitored and tailored to the child. Evidence has continued to support the notions that excessive exposure to media will lead to attentional or behavioral issues, whereas violent media will lead to children undertaking aggression as a means for solving social disputes.

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[44] Ybarra, Michele, Marie Diener-West, and Philip Lead. "Examining the Overlap in Internet Harassment and School Bullying: Implications for School Intervention." *Journal of Adolescent Health* 41.6 (2007): 44. Digital file.

[45] Subrahmanyam, Kaveri, Patricia Greenfield, and Brendesha Tynes Pg. 655.

Undoubtedly, the M2 generation has developed in a technologically driven society which poses many uncertain and troubling questions. In the past, children faced limited exposure to media and technology, but today, children have, on a consistent basis, been swayed and shaped by online media. As a generation, we are connected and intertwined in each other's lives; we envy the new shoes of a friend, and yearn for our opinions to be supported. Social networks, integral to children's social lives, enable users to express and portray themselves as they please, whether that be wealthy, intelligent, complex, mysterious, bad, beautiful, or popular. Children post pictures on Facebook, random thoughts on Twitter, and pictures and videos on Snapchat. Netflix, Hulu, and Youtube let the user indulge in endless amounts of conten.t, while their counterparts provide access to sexually explicit and gruesome content. But nothing that bad has happened to our children, right? No, a change significant enough to spark widespread discussion will eventually occur. Remember, evolution does not occur at an individual level; instead it occurs across a population. But today, consider that small changes have already happened; for example, Kathryn Rose et al discovered that a lack of outdoor exposure will likely lead to the onset of myopia (nearsightedness).[46] Attributing a decrease in outdoor activity and an increase in nearsightedness to anything other than the modernization of society is illogical. Even though this evidence is only correlational, it only makes sense for the eyes to adapt as a result of the changes in visual stimuli. Furthermore, following a similar logic it would be expected for even more changes to occur, and the next will not even be the most substantial. People must realize that modern day technology has the potential to affect nearly every aspect of life. Imagine the day when software can complete low skilled jobs, drive a car, or navigate the ocean and skies on its own. The M2 generation, like future generations, lives in a society that will be responsible for

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[46] Rose, Kathryn, et al. *Outdoor Activity Reduces the Prevalence of Myopia in Children*. N.p.: Elsevier, 2008. Digital file.

controlling and understanding technology's impact on the individual. Today's technology evolves faster than a person, and just one evolution has the potential to change mankind forever. So why wait to address it?

Appendix

Table 1: Media, Grades and Personal Contentment

Media, Grades and Personal Contentment

Among all 8- to 18-year-olds, percent of heavy, moderate, and light media users who say they get mostly:[†]			
	Heavy Users	**Moderate Users**	**Light Users**
Good grades (A's and B's)	51%[a]	65%[b]	66%[b]
Fair/poor grades (C's or below)	47%[a]	31%[b]	23%[c]
Among all 8- to 18-year-olds, percent of heavy, moderate, and light media users who say they:[††]			
Have a lot of friends	93%	91%	91%
Get along well with their parents	84%[a]	90%[b]	90%[ab]
Have been happy at school this year	72%[a]	81%[b]	82%[b]
Are often bored	60%[a]	53%[b]	48%[b]
Get into trouble a lot	33%[a]	21%[b]	16%[b]
Are often sad or unhappy	32%[a]	23%[b]	22%[b]

Note: Statistical significance should be read across rows.
[†] Students whose schools don't use grades are not shown.
[††] Percent who say each statement is "a lot" or "somewhat" like them.

Rideout, Victoria, Ulla Foehr, and Donald Roberts. *Media, Grades and Personal Contentment*. Table. Digital file.

Works Cited

Anderson, Craig, et al. "The Influence of Media Violence on Youth." *Psychological Science in the Public Interest* 4.3 (2003): n. pag. Digital file.

Bavelier, Daphne, Shawn Green, and Matthew Dye. *Children, Wired: For Better and for Worse*. Rochester: Cell Press, 2010. Neuron Perspective. PDF file.

Committee on Public Education. *Children, Adolescents, and Television*. Rept. no. 2. N.p.: Pediatrics, 2001. Print.

David-Ferdon, Corinne, and Marci Feldman Hertz. "Electronic Media, Violence, and Adolescents: An Emerging Public Health Problem." *Journal of Adolescent Health* 41 (2007): 1-5. PDF file.

Dworak, Markus, et al. "Impact of Singular Excessive Computer Game and Television Exposure on Sleep Patterns and Memory Performance of School-aged Children." *Pediatrics* 120: n. pag. Digital file.

Hancox, Robert, Barry Milne, and Richie Poulton. "Association of Television Viewing during Childhood with Poor Educational Achievement." *Archives of Pediatric and Adolescent Medicine* 159.7 (2005): 614-18. *JAMA*. Web. 15 Feb. 2014.

Huesmann, Rowell. "Psychological Processes Promoting the Relation between Exposure to Media Violence and Aggressive Behavior by the Viewer." *Journal of Social Issues* 42.3 (1986): 125-39. Digital file.

Jackson, Linda, et al. "Self-concept, Self-esteem, Gender, Race and Information Technology Use." *Computers in Human Behavior* 26 (2010): 323-28. *ScienceDirect*. Web. 11 Feb. 2014.

Korkman, Marit. *Introduction to the Special Issue on Normal Neuropsychological Development in the School-Age Years.* US National Library of Medicine National Institutes of Health, 2001. Developmental Neuropsychology. Digital file.

Krcmar, Marina, and Patti Valkenberg. "A Scale to Assess Children's Moral Interpretations of Justified and Unjustified Violence and Its Relationship to Television Viewing." *Communication Research*: n. pag. Digital file.

Kring, Brunhild. "Generation Text Goes to College: A Developmental Perspective." *Social Media and Group Psychotherapy* 36 (2012): 233-42. *JSTOR*. Web. 11 Feb. 2014.

Linebarger, Deborah, and Dale Walker. "Infants' and Toddlers' Television Viewing and Language Outcomes." *American Behavioral Scientist* 48.5 (2005): 624-45. Digital file.

Malone, Thomas, and Mark Lepper. *Making Learning Fun: A Taxonomy of Intrinsic Motivations for Learning*. New Jersey: Lawrence Erlbaum Associates, 1987. Print. Aptitude, Learning, and Instruction 3.

Mangen, Anne, Bente Walgermoa, and Kolbjørn Brønnick. "Reading Linear Texts on Paper versus Computer Screen: Effects on Reading Comprehension." *International Journal of Educational Research* 58 (2013): n. pag. Digital file.

Mayo, Merrilea. "Video Games: A Route to Large-Scale STEM Education?" *Science* 323 (2009): 79-82. PDF file.

"technology." *Merriam-Webster.com.* Merriam-Webster, 2014. Web. (15 April 2014).

Nelson, Melissa, et al. "Longitudinal and Secular Trends in Physical Activity and Sedentary Behavior during Adolescence." *Pediatrics* (2006): 1627-34. PDF file.

Novack, Miriam, et al. "From Action to Abstraction: Using the Hands to Learn Math." *Psychological Science*: n. pag. Digital file.

Okagaki, Lynn, and Peter Frensch. "Effects of Video Game Playing on Measures of Spatial Performance: Gender Effects in Late Adolescence." *Journal of Applied Developmental Psychology* 15 (1994): 33-58. Digital file.

Ophir, Eyal, et al. "Cognitive Control in Media Multitaskers." *Proceedings of the National Academy of Sciences of the United States of America* (2009): 15583-87. Web. 15 Feb. 2014.

Payne, Stephen, and William Reader. "Constructing Structure Maps of Multiple On-line Texts." *International Journal of Human-Computer Studies*: n. pag. Digital file.

Rideout, Victoria, Ulla Foehr, and Donald Roberts. *GENERATION M2 Media in the Lives of 8-to 18-Year-Olds*. California: Kaiser Family Foundation, 2010. Print.

- - -. *Media, Grades and Personal Contentment*. Table. Digital file.

Rose, Kathryn, et al. *Outdoor Activity Reduces the Prevalence of Myopia in Children*. N.p.: Elsevier, 2008. Print.

Rouse, Cecilia, and Alan Krueger. "Putting Computerized Instruction to the Test: A Randomized Evaluation of a 'Scientifically-based' Reading Program." *Economics of Education Review* (2004): n. pag. Digital file.

Schmidt, Marie Evans, and Elizabeth Vandewater. "Media and Attention, Cognition, and School Achievement." 2008. *The Future of Children*. Vol. 18. 63-77. PDF file.

Singer, Mark, et al. "Viewing Preferences, Symptoms of Psychological Trauma, and Violent Behaviors among Children Who Watch Television." *Journal of the American Academy of Child & Adolescent Psychiatry* 37.10 (1998): 1041-48. PDF file.

Subrahmanyam, Kaveri, Patricia Greenfield, and Brendesha Tynes. "Constructing Sexuality and Identity in an Online Teen Chat Room." *Applied Developmental Psychology* 25 (2004): 651-66. *ScienceDirect*. Web. 15 Feb. 2014.

Swing, Edward, et al. "Television and Video Game Exposure and the Development of Attention Problems." *Pediatrics*: n. pag. Print.

Vandewater, Elizabeth, David Bickham, and June Lee. "Time Well Spent? Relating Television Use to Children's Free-time Activities." *Pediatrics* 117.2 (2006): e181-e191. Digital file.

Wartella, Ellen, and Nancy Jennings. "Children and Computers: New Technology. Old Concerns." *The Future of Children* 10.2 (2000): 31-43. *JSTOR*. Web. 11 Feb. 2014.

Wilson, Barbara. "Media and Children's Aggression, Fear, and Altruism." *The Future of Children* 18 (2008): 87-110. PDF file.

Wolak, Janis, Kimberly Mitchell, and David Finkelhor. *Online Victimization of Youth: 5 Years Later*. N.p.: n.p., 2006. Print.

Ybarra, Michele, Marie Diener-West, and Philip Lead. "Examining the Overlap in Internet Harassment and School Bullying: Implications for School Intervention." *Journal of Adolescent Health* 41.6 (2007): 42-50. Digital file.

Zimmerman, Frederick, and Dimitri Christakis. "Associations between Content Types of Early Media Exposure and Subsequent Attentional Problems." *Pediatrics* 120.5 (2007): 986-92. PDF file.