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THE INFLUENCE OF BOOKS, TELEVISION, AND COMPUTERS ON EMPATHY AND ALTRUISTIC BEHAVIOR IN YOUNG CHILDREN

by

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Abstract

The rising prevalence of media use and the decreasing use of books create a need for research on the positive learning effects these platforms may have on children. This study will explore how learning platforms (specifically books, television, and computers) in early childhood affect development of social awareness – in particular, empathy and altruistic behavior. The researcher will recruit approximately 192 participants, ages 3 to 5, and randomly assign them to one of three groups: book readers, television viewers, and computer gamers. The subject of the platform will be kept consistent through the use of the children's television program *Daniel Tiger's Neighborhood*. The dependent variables, empathy and altruistic behavior, will be measured in the lab before and after a 6-month period in which the platform stimuli will be presented in the children's homes by parents. All learning platforms are expected to have a positive effect on empathy and altruistic behavior, with books having the highest effect in participants. The results will help caregivers, parents, and teachers take steps to effectively create a better social awareness learning environment for children.

The influence of books, television, and computers on empathy and altruistic behavior in young children

Media has become increasingly ubiquitous in today's world. Due to its popularity, diverse subject matter, and ability to distract, media has become pervasive in the majority of children's lives. Most parents believe their children have learned from educational media, and 57% of parents indicate that their children have learned a lot in the 56 minutes (out of 2 hours and 7 minutes) the children spend watching media (Rideout, 2014). Whereas reading was once the activity in which the majority of learning and time was spent, now only an average of 40 minutes is spent reading (Rideout, 2014) – 30 minutes from books and 10 minutes from mobile media or computers. The 10 minutes represents only a small amount of the time children spend in front of a screen. In 1995, children 5 to 16 averaged approximately three hours per day on game consoles, computers, and television. Today, children 5 to 16 average six and a half hours per day on game consoles, mobile phones, computers, tablets, or television (Wakefield, 2015). Media is now part of the daily routine to occupy children, as well as a behavioral regulation tool (Radesky, Schumacher, & Zuckerman, 2015). As a result, educational media has increased and expanded across a wide variety of platforms, not only television. With more children spending time in front of a screen, it is important to fully examine how childrens' learning is affected by media.

In a meta-analysis, Mares and Woodard (2005) compared 34 studies and concluded that altruism and social interactions were improved when children watched pro-social television. However, television is not the only prevalent media platform. Toddlers and young children have access to a wide variety of media platforms now more

than ever before (Anderson & Pempek, 2005). In fact, it could be argued that computers, or even phones, are more predominantly used. Very little research has been done on the effects of these platforms on child development. Furthermore, very few studies have been done on social emotional learning, and even fewer on managing emotions and actions in children. In light of this information, it is imperative to understand the effects of learning platforms on early childhood social emotional learning and on both empathy development and altruistic actions. The proposed study focuses on several types of learning platforms, all with the same positive content, to explore early childhood media interaction from ages 3 to 5 and its effects on the development of empathy and altruistic actions within the social awareness aspect of social emotional learning.

Social Emotional Learning

Young children's capacity to learn and grow is astounding. However, learning can be both positive and negative. Throughout the world, there is a growing recognition that schools need to meet social and emotional developmental needs of students in order for students to reach their full potential and for effective teaching and learning to take place. While various approaches have been explored, a recent and successful program is Social and Emotional Learning. SEL has shown that a systematic process for promoting students' social and emotional development is the prevalent component among schools that report an increase in quality of student and teacher relationships, an increase in academic success, and a decrease in problem behavior (Durlak, Weissberb, Dymnicki, Taylor, & Schellinger, 2011). The CASEL guide is one such program that offers a framework for a well-designed SEL program as well as recommendations on how best to

select and implement the program (CASEL 2016). Improvements in the quality of learning environments – as well as significant shifts in social, emotional, and academic competencies – have been shown to result from SEL programs (Durlak, Weissberb, Dymnicki, Taylor, & Schellinger, 2011). As part of these programs, a strong focus is on emotional stability. This is because youth in the U.S. are more likely to experience verbal abuse or intimidation from peers at school compared to those in other developed countries, such as England or Japan (Miller, Malley, & Owen, 2009). Trends also show that for students aged 12-18, 28% report being victims of bullying (DeVoe & Murphy, 2011). Problematic behaviors are being observed which threaten the psychological and physical health of youth, leading to diminished ability to engage in society and learning. This emphasizes why SEL programs are needed.

SEL affects the process of integrated feeling, behaving, and thinking in order to help students become better aware of the self and others, manage their own behaviors and those of others, and make more responsible decisions (Elias et al., 1997). Supportive relationships are imperative to foster learning that is meaningful, challenging, and engaging. SEL serves to promote these relationships by providing learning environments that allow children to practice new skills and feel comfortable in their environments. The movement partly stems from scientific research by Salovey and Mayer (1990), on emotional intelligence. Emotional intelligence, or EI, reflects mental abilities associated with processing and responding to emotions. This includes using emotions to enhance thinking, recognizing expressions of emotions in others, and regulating emotions to fuel effective behaviors (Mayer & Salovey, 1997). These emotional abilities are then likely to be connected to social competence, adaptation, and academic success.

Within SEL, the Collaborative for Academic, Social, and Emotional Learning (CASEL) has identified five core competencies: self-awareness; self-management; social awareness; relationship management; and responsible decision making (Zins, Weissberg, & Walberg, 2004). This design was created to help schools use curricular strategies and tools to develop in students the competencies outlined in Figure 1. SEL is therefore one entry point for educators to impact student outcomes by teaching skills that contribute to optimal outcomes.

Figure 1. CASEL SEL competencies

Self-awareness is the ability to accurately recognize and identify emotions, assess emotions, and possess self-confidence and self-efficacy. Self-management refers to impulse control, self-discipline, managing stress, and motivating oneself; setting and working towards goals (personal and academic) is also an important feature of self-management. Relationship skills focuses on establishing and maintaining diverse, rewarding, and healthy relationships; communications, social engagement, building relationships, and teamwork are main features. Responsible decision-making refers to

establishing personal behavior and social interaction choices that are constructive and based on ethics, safety, and social norms; problem solving, evaluation, reflection, and ethical responsibility are the key behaviors. Social awareness encompasses perspective taking, empathizing with others, recognizing and appreciating diversity while understanding behavioral norms and maintaining respect for others.

In terms of these five competencies, schools have designed and implemented a variety of programs that have shown that SEL interventions improve both academic well-being and the social-emotional attributes of classrooms (Raver et al. 2011). A meta-analysis of 213 studies evaluating SEL programming efforts demonstrated youth benefits from elementary though high school and all across rural, urban, and suburban schools in the U.S. (Durlak et al., 2011). Despite research on social emotional learning in schools, very little research has been done on whether social emotional learning can be done using learning platforms rather than programs in schools.

Altruism and Empathy

In order to know the effects of learning platforms, it is vital to first understand empathy and altruistic behavior. Within the field of psychology, there is great debate surrounding how exactly to define these two terms. As a result, psychologists have been unable to agree on single all-encompassing definitions.

Altruism has been defined in a variety of ways, and there have even been questions as to whether it exists. Carlo (2006) defines altruistic behavior as that which is intrinsically driven by the chief desire to benefit others. In other words, there is a psychological need to help someone else rather than oneself but without benefits to self.

Altruism also includes sharing valuable goods with others, helping others achieve their goals, and informing others of what they either want to know or what they need (Warneken & Tomasello, 2009). Another psychologist, Wilson (2015), suggests that individuals must understand and become a part of something larger than themselves – only then will they be practicing truly altruistic behaviors. A further definition declares that individuals must be willing to help an unrelated person while possibly being put at risk themselves (Trivers, 1971). In this case, however, it would not be considered altruistic if the behavior could be seen in any way as self-motivated or in which the person stands to gain more from the helping behavior than just helping another. Wilson's (2015) assertion coincides with this definition that altruistic behavior necessitates individuals to become a part of something larger than them. For this study, altruistic behavior will be defined as behavior primarily driven by the ultimate goal of increasing someone else's welfare (Batson, Ahmad, & Lishner, 2011).

Much like altruism, empathy is difficult to precisely define. There is also disagreement on the mearning. However, many psychologists explain the concept comparably. Eisenberg, Fabes, Schaller, et al. (2002) describe empathy as a reaction of an emotional nature based on the apprehension of someone else's emotional state or condition, thereby causing one's emotions to be consistent with the others' emotions. Similarly, Trommsdorff (1991) suggests that empathy is concern for another's well-being such that an emotional reaction occurs. Further definitions refer to empathy as a trait by explaining that without empathy, which lies at the center of human emotion, the "human" part of people ceases to exist (Zahn-Waxler & Radke-Yarow, 1990). For this proposed research, empathy can be defined as an other-oriented emotional response provoked by

and corresponding with the observed welfare of a person in need (Batson, Ahmad, & Lishner).

Empathy is more often than not considered to be a positive emotion which has the potential of encouraging the development of meaningful relationships by promoting pro-social behavior. Feeling empathy is a natural human tendency, and caring for others in society carries tremendous evolutionary benefits. If we care and trust others, they are more likely to trust and potentially provide for us in the future, a necessity for human survival and optimal functioning in society. Research suggests that humans are naturally more inclined to feel empathetic to people they know – their in-group – and are less likely to help (possibly even having specific motivations for not helping) when a potential "target" is a member of a perceived out-group (Cikara et al., 2011). This is important to note because children may conceptualize their in-group to be very small, thus only behaving altruistic and feeling empathetic towards a select few. However, this could also be the opposite – children may have a broader conceptualization of their in-group, and only those considered extremely different could be evaluated as part of their out-group. Therefore, it may be that learning platforms expand what is considered the out-group allowing children to feel more empathetic to more people.

These individual conceptualizations and the natural effect they have on empathetic responses can therefore also contribute to varying degrees in which children behave altruistically towards others within similar, or even the same, environments. Batson, Ahmad, and Lishner (2011) focused on the empathy-altruism hypothesis, a link in which empathetic response produces altruistic motivation. This proposed study will

also assume a link between empathy and altruism. The researcher expects that both variables will be effected similarly by learning platforms over time because of this link.

Book Effects

Books have held a prominent role in society for over 500 years. With the rise of public education and an emphasis on literacy came the development of children's stories, particularly picture books. Nowadays, kids can spend their days consumed with the imaginary worlds of children's fiction. The continued popularity of books raises questions as to whether children are able to develop empathy and other lessons through reading. Can reading books that highlight compassionate characters and model empathy allow children to learn positive empathy and altruistic skills?

While there have not been many studies on development of empathy and altruism in books, a few studies have been conducted on how literature can affect empathy. One such study conducted by Vezzali, Stathi, Giovannini, Capozza, & Trifiletti (2014) investigated the effect of the *Harry Potter* novels on attitudes towards stigmatized groups such as homosexuals, immigrants, and refugees. They hypothesized that participants would improve out-group attitudes when taking the perspectives of stigmatized groups in the *Harry Potter* novels and the corresponding perspectives towards stigmatized groups in the real world. Within this study were three separate studies that included participants from childhood to young adulthood. In the first study, 34 Italian fifth-grade elementary school children were divided into small groups and were then read selected passages from the *Harry Potter* novels. Half of the groups were read passages surrounding issues of prejudice and their consequences, and half were read passages unrelated to prejudice.

The results suggested that children with extended contact with stories via reading improved out-group attitudes when they identified with the main character, Harry Potter. Results also revealed that when children identified with a main positive character as opposed to a villain or a smaller side character, the children had improved attitudes towards immigrants. This research suggests that reading novels as a child – implying literary engagement with life's cultural, social, and psychological complexities – can positively impact social skills and personality development.

Another study supporting this argument was conducted by Kidd and Castano (2013), who examined the effects of literary fiction (fiction that holds literary merit) on Theory of the Mind. They hypothesized that literary fiction would enhance one's ability to detect and understand emotions of other people. One thousand adults were randomly assigned extracts of popular fiction to read. Participants were then tested using Theory of the Mind techniques to measure how accurately participants could identify others' emotions as different from their own. Results showed that those who read literary fiction tested consistently higher on Theory of the Mind measures than those who read popular fiction or non-fiction. These results suggest that people transfer the experience of reading fiction into real-world situations by carrying over lessons learned. The results also suggest that keener social perception and increased empathy is developed when one is exposed to literary fiction.

While little direct research has been done on the effects of books on empathy and altruism in children, there has been a study on honesty. Lee, Talwar, McCarthy, Ross, Evans, & Arruda (2014), examining the effects of classic moral stories on children, hypothesized that *Pinocchio*, *The Boy Who Cried Wolf*, and *George Washington and the*

Cherry Tree would all promote honesty in children. Two hundred and sixty eight children ages 3 to 7 who were asked to individually play a guessing game to identify an object from the noise it made. Part way through, the experimenters would say that they had forgotten a storybook and left the next toy to be identified on the table behind the child and asked the child not to turn around. Children were then assigned to either hear *The Tortoise and the Hare* (the control book) or one of the other three stories. The experimenters would then ask the children a question about whether they peeked or not. Results found that the children who heard the George Washington story had a significantly higher rate of telling the truth than children who were assigned the other stories. In the George Washington story, children were given a realistic situation with a character that they could connect with, rather than a story like *The Boy Who Cried Wolf* in which an unrealistic penalty happens. This research suggests that while stories may promote moral values, children are more likely to be impacted when stories also offer a positive role model and emphasize the benefits of honesty.

Media Effects

Because media has become such a large part of everyday life, it is crucial to research the ways media may affect empathy and altruistic behavior. Despite clear recommendations by the American Academy of Pediatrics (AAP, 2011) that discourages children two years old and younger from using media, usage still remains prevalent. A 2006 survey of 1,000 United States families with children 2 to 24 months old revealed that parents justified the use of media because it either taught their child something positive or was good for their brain (Zack, Barr, Gerhardstein, Dickerson, & Meltzoff,

2009). Therefore, parents believe that exposure to television and computers is beneficial to children. Other research, however, has found that educational television and videos are ineffective for children 30 months and younger (Anderson & Hanson, 2013). Timing of exposure in early childhood has also shown to be important in how children are affected by television. Zimmerman and Chistakis (2005) found that television viewing before age 3 has adverse effects on cognitive development when these children reach ages 6 and 7, but if children wait to view television until they are between ages 3 and 5, there are beneficial effects for certain cognitive outcomes. The popularity of television and computers and parental beliefs in the benefits of such use underscores the importance of research on the effects of television on children.

Current research on media effects is numerous, varying in how media affects behavior such as aggression and social interactions. A review of research discussed the effects of television on children in general (Anderson and Hanson, 2013), finding that parent-child interactions and child play is disrupted when television is on in the background. They also found that background television exposure is connected to negative language and cognitive outcomes. It was further found that between the ages of 1-and-a-half and 2-and-a-half years, children begin to understand television programs that are conventionally age-directed (meaning programs that pander to children of certain ages in order to entertain them), and that after this age, television can actually be educational. Finally, they found that when children are younger than 2-and-a-half years, they learn less from television than from equivalent real life situations.

Because many children begin kindergarten and have increased social interactions around age 5 years, Mistry, Minkovitz, Strobino, & Borzekowski (2007) examined the

effects of early television, concurrent with other television, and sustained television exposure on 5-and-a-half year old children to see if there was any influence in behavioral and social skills. They noticed that many previous studies had demonstrated a variety of negative effects associated with heavy television viewing in early childhood such as obesity, irregular sleeping patterns, and poor cognitive skills. Previous research had also suggested that social skills and behavioral problems could be a result of heavy television exposure. However, the results were mixed. Therefore, they researched the effects of more than 2 hours of daily television viewing on social and behavioral skills in 5-and-a-half year old children. Using data collected from the Healthy Steps for Young Children national evaluation, when children reached 5-and-a-half years old they were assessed using the Social Skills Rating System and Child Behavioral Checklist. It was found that sustained exposure to television is a risk factor for behavioral problems, but reduced early exposure produced no added risks. Results also showed that for social skills, concurrent exposure had more of an effect than either early or sustained exposure.

Another group of researchers, Lauricella, Gola, & Calvert (2011) demonstrated infant and toddler conceptual learning from videos when presented with an onscreen character that is socially meaningful. After being exposed to a video with a socially meaningful character, 48 21-month-old toddlers performed a seriation sequencing task. Results indicated that when shown a socially meaningful character (familiar and meaningful to children in the sense they are likely to have learned from someone similar in the past) instead of a character less socially meaningful, toddlers learned the sequencing task better. Findings therefore showed that cognitive, logical reasoning skills can be learned by toddlers under the age of two when a socially meaningful character

presents the task onscreen. This study supports the findings of Mistry et al. (2007) in that social skills can be learned from television and videos. While this study focuses more on the cognitive aspects versus social aspects, the findings are relevant because they point to the importance of educational, socially meaningful characters and their positive effects on children.

Mares and Woodard (2005) conducted a meta-analysis that corroborated this research. They found that children who watched prosocial content had significantly more positive behavior and a more positive attitude in general. This supports the belief that there is a potential for media to affect children in a positive way, helping them feel and behave more pleasantly towards one another. It also found that television has a similar effect on both violent behavior and prosocial behavior. Another finding indicated that when there is a more apparent connection between one's own situation and the situation shown, one is more likely to model behavior. Finally, Mares and Woodard concluded by stating that television can potentially reduce aggression, encourage tolerant and helpful behavior, and foster positive social interactions. Therefore, research should focus on sophisticated efforts to use television as an instrument for positive social change.

Research has also been done on television's effect on cooperation in children. Paulson (1974) used *Sesame Street* to evaluate whether their social goal programs (particularly cooperation) had an effect on children. It was hypothesized that when 3-to-4-year-old disadvantaged, inner-city children watched one hour of *Sesame Street* a day, they would be more likely to cooperate than similar children who did not watch *Sesame Street*. One hundred and eighty-eight children watched an entire season of *Sesame Street* and then took a picture recognition test, a social competency test, and participated in free

play. The results showed that children who watched *Sesame Street* learned to cooperate more than those children who did not. This study further demonstrated that television can have a positive effect on children by teaching social skills.

Baran, Chase, & Courtright (1978) also looked at television and cooperation, but used a television drama rather than an educational program. The researchers hypothesized that children who viewed *The Waltons*, in which effective interpersonal relations are shown, would demonstrate much more cooperation than children who did not watch such a show. Eighty one second and third graders either watched a condensed version of an episode of *The Watson's*, a different 12-minute video, or no video at all. Questions were then asked before a research assistant dropped a pile of books. Researchers then recorded which children helped pick up the books. Results demonstrated partial support of the hypothesis but showed that television programs have the potential to transmit prosocial behaviors to children.

Media is also a socializing agent that involves the observation of others' behavior to help understand what is allowed by society. Video games have been a widely researched media platform due to the interactive component and high amount of time spent playing. They are very similar to computers in terms of interactions, and little to no research has been done on the effects of computer games. Therefore, video games and their effects will be analyzed as a comparison. The majority of research done in video games surrounds aggression. Numerous studies have shown that violent video games can increase subsequent aggression. A meta-analysis by Anderson et al. (2010) explored the effects of violent video games on a variety of areas (aggressive behavior, aggression affect, aggressive cognition, physiological arousal, empathy/desensitization, and

prosocial behavior). They found significant effects for all six outcomes. The results strongly suggested that exposure to violent video games increases aggressive behaviors, angry feelings, physiological arousal, and aggressive thoughts, while decreasing empathic feelings and helpful behaviors. This research is one of many that focuses on the negative effects of violent video games when played by a single player in isolation.

However, there is some research on the positive effects of video games. Greitemeyer and Mügge (2014) conducted a meta-analysis on the effects of violent and prosocial video games. They looked at 98 independent studies containing 36,965 participants. Using these studies, the researchers expected to determine whether the content of the game played affects social behavior. The results showed that increases in aggressive behavior and decreases in prosocial behavior ensued from violent video games. They also found that prosocial video games increased prosocial behavior and decreased aggressive behavior. These results suggest that video games may be beneficial if the content is focused on or includes large amounts of prosocial content. Overall, this study and previous studies on media use have all shown that children can be affected by media. Much of the research surrounding media focuses on social behavior or aggression. The proposed study focuses on children's development of social awareness – in particular, empathy and altruistic behavior – and how it is affected over time by books, television, and computers rather than the classroom.

Proposed Study

In this repeated measures experimental study, the researcher will investigate how the type of learning platform affects the development of empathy and altruistic actions on

social emotional learning for young children. Specifically, the researcher will examine if the type of learning platform (whether it be a book, a television show, or a computer game), despite the content being the same, influences empathetic and altruistic behaviors. The researcher will recruit a sample of children between ages 3 and 5 years who have had minimum exposure to media, and split the sample into three groups within their age range: book readers, television viewers, and computer gamers. Children will come to the lab where they will complete an initial test on empathy and altruistic behavior, while their parents complete questionnaires concerning their child's media use and the amount of time spent reading to the child or the amount of time the child spends reading. Parents will then be provided either a USB drive with episodes of *Daniel Tiger's Neighborhood*, books on *Daniel Tiger's Neighborhood*, or links to various *Daniel Tiger's Neighborhood* computer games. Parents will be asked to have their children interact at least once each day with their assigned platform for 6 months. The researcher will assess children's empathy levels and altruistic behavior for each child upon completion of the 6 months.

Books, television, and computers are designed to be sufficiently interesting in order to engage and affect consumers. With the rise in use of television and computers, and the growing trend for young children to be exposed to media, the importance for research into differences is needed. Instead of children being required to play with games or read in order to entertain themselves, these new devices have provided an easy and efficient way to occupy children. The researcher hypothesizes that there will be a strong positive correlation between empathy and altruistic behavior. The researcher also predicts that books, television, and computers with prosocial material will all have a positive effect on empathy and altruism. Books will be most likely to produce the highest levels of

change in empathy and altruism, television next highest levels, and computers lowest levels. Finally, the researcher predicts that platform and time will interact to positively affect empathy and altruistic behavior meaning that there will be an increase in empathy and altruism scores across all three of the platforms over time.

Proposed Method

Participants

The participants in this study will be 3-5 year old children. The population of interest is pre-school aged children, and ideally the sample will contain children from diverse cultural, racial, and socioeconomic backgrounds. In order to determine the number of participants needed, the researcher performed a power analysis. First, past research generally indicated a medium effect size. Using Cohen's (1992) power table, for a power of .8 and a medium effect size ($\alpha = .05$) for a 2x3 factorial ANOVA, the recommended number of participants was 162, or 54 participants per cell. However, to account for attrition issues within this study, the researchers added 10 participants to each condition. Therefore, there will be approximately 192 participants in this study, 64 participants per condition.

Recruitment will be done in a variety of ways in order to reduce the effects of unbalanced samples and self-selection biases. The researcher will go through local elementary schools and putt up flyers at family-friendly associations, such as Boys and Girls Clubs, day care centers, pediatrician offices, and churches. It is predicted that the sample will be representative of the general population of the United States in terms of socioeconomic status, race, and education. The sample will not represent all geographical

areas of the U.S. due to local recruitment. All parents will be compensated for transportation to and from the lab, as well as an additional $20 for time. Children will be compensated in the form of small toys at the end of each lab session.

Materials

This study will include an assessment of empathy, altruism, and social emotional learning, age of child, amount of media use, content of media use, amount of reading, and content of books.

Empathy. Children's empathy will be measured using the Empathic Responsiveness Scale (Belacchi & Farina, 2012), and the Index for Empathy for Children and Adolescents (Bryant, 1982).

The Empathic Responsiveness Scale will be completed by parents. Modified from the Interpersonal Reactivity index (IRI; Davis, 1980), two subscales (Perspective Taking and Empathetic Concern) from the ERS which will be used. See Appendix A for modified scales. The Perspective Taking subscale measures cognitive empathy by measuring a child's ability to take and understand others' points of view. The Empathetic Concern subscale measures affective empathy in children by measuring affective reactions to others' distress. Parents will be asked to rate each of the eight items using a 5-point Likert scale (1=*never*; 5=*always*). 3 items will be reverse coded as suggested in the original scale. Cronbach's α (.78-.85) suggests that this scale has good reliability. Both subscales also have reasonable reliability, with perspective taking equaling .64-.74 and empathetic concern equaling .65-.78 (Belacchi & Farin, 2012).

The Index for Empathy for Children and Adolescents will be completed by the children. Bryant (1982) developed this scale to be used for younger children, and it taps into a variety of individuals' emotional reactions: understanding the feelings of both familiar and unfamiliar people; sympathetic feelings towards others; emotional responsiveness to others' emotions; and susceptibility to emotional septicity (or invasion of emotions). It is a 22-item questionnaire based on Mehrabian and Epstein's (1972) affective empathy scale with adjustments made for children by using a binary response choice: agree/disagree. There were no factor analyses, but the scale is considered to be unidimensional and only a total score is used.

Altruistic behavior. This dependent variable will be measured using a modified version of Penner et al.'s (1995) Prosocial Personality Battery and Ma and Leung's (1991) Child Altruism Inventory.

Penner et al.'s (1995) abbreviated Prosocial Personality Battery (PSB) is a 30 item questionnaire used to determine personality components and how a person thinks, feels, and behaves. The measurement is usually based on self-report, but the test will be slightly modified to allow parents to answer the questions. Parents will rate their agreement with each question using a 5-point Likert scale (1=*strong disagreement*, 5=*strong agreement*). This test diagnoses four components using seven different sub scales. The four components are ascription of social responsibility, empathy, moral reasoning, and helpfulness. The social responsibility scale includes items such as "when people are nasty, my child feels very little responsibility to treat them well." The empathy scale includes three subscales: empathic concern (4 items), perspective taking (5 items), and personal discomfort (3 items). This section includes questions such as "my child is

often quite touched by things that they see happen". The moral reasoning scale includes two subscales: other-oriented reasoning (3 items) and mutual moral reasoning (3 items). In this section, there will be questions such as "my child makes decisions based on their concern for other people." The helpfulness section is measured with one subscale, altruism. This section captures the tendency to help groups of individuals, or just individuals in need. Questions such as "my child has offered to help a handicapped or elderly person in need" will be asked in this section. Cronbach's α (.78-.85) suggests that these subscales have reasonable to low reliability (social responsibility = .65, empathic concern = .67, perspective taking = .66, personal distress = .77, mutual moral reasoning = .64, other oriented reasoning = .77, and self-reported altruism = .73) (Penner, 2002).

Altruism will be assessed using the Child Altruism Inventory developed by Ma and Leung (1991). It contains 24 items that reflect the general altruistic orientation of children. Children are given a list of questions, each corresponding with a behavior or feeling. They are instructed to then answer "yes" or "no" to these questions. This score is computed by dividing the raw score by the number of relevant items making the range of the score 0 to 1. Cronbach's α (.78-.85) suggests that this scale has reasonable reliability (Ma & Leung, 1991).

Learning Platform. There will be three different learning platform conditions used to manipulate empathy and altruistic behavior. The researcher will select a neutral subject that has books, a TV series, and online computer games. For this study, *Daniel Tiger's Neighborhood* was selected. The researchers will then systematically select 40 books in the series and 40 episodes of the TV series by choosing the ones that correspond to and give lessons on empathy and altruism. Researchers will also systematically choose

an online computer game that corresponds most closely to the books and episodes chosen from the options available. Parents will be encouraged to allow the children to choose how much time they would like to spend on their assigned platform, with a minimum of one per day (either one book, one TV episode, or one level of the computer game). Before using these materials, researchers will first contact the relevant companies to request permission for their use.

Pervasiveness of Platform Use. Pervasiveness of TV use, reading time, and computer use likely will relate to how often these media platforms (television and computers) are used. Researchers will ask parents to record how often the child uses their designated platform in this study. Parents will also be asked how much their child has used each platform in the past. Responses will be recorded with a numerical value based on time (total hours).

Demographic Information. A demographic background survey will be given to parents in order to control for the following covariates: age, race, gender, ethnicity, socioeconomic status, language spoken at home, starting age of media use, starting age of reading, amount of reading and amount of media use. Gender options will be “male” or “female”. For ethnicity, the following choices will be available: “White (non-Latino)”, “African American/Black”, “Latino”, “Asian/Asian American”, “Native American”, “Pacific Islander”, or “Other”. Reported annual household income will determine socioeconomic status. In order to determine the amount of reading and media use, parents will be asked about the average week. They will report how many hours their child read or was read to, used the TV, used the computer, used an iPad, used a cellphone, or used any other media device. For determining starting age of use, parents will record at what

age their child started reading, watching TV, and using a computer.

Procedure

There are three groups of platform users: book readers, computer users, and TV users. Participants and parents will come into the lab, and after parents provide informed consent and children provide assent, the child will enter a room where he or she will engage in a 5-10 minute familiarization process with a research assistant. This room will have a two-way mirror in order for the child and parent to feel safe. After the socialization period, the research assistant will explain the empathy and altruistic behavior measures to the kids.

While the child is completing these tests, parents will receive and fill out the demographic information. They then complete their empathy and altruistic behavior measures. At this time, researchers will randomly assign participants to one of the three conditions. After the initial dependent variables measurements are complete, parents will receive either a flash drive (containing either the books in pdf form or the TV episodes) or a link to the computer game that they will present to their children on a daily basis over the next six months. This should allow for the platform to take effect on the participants. Parents will be instructed to have their child engage in the platform for at least one book to be read, one TV episode to be watched, or one level of a computer game in which to compete. However, parents will not be given a limit on the maximum amount of interaction. The researcher will encourage parents to not drastically change the child's normal entertainment habits due to the researcher trying to create a natural environment for the manipulations. In order to minimize confounding factors, parents

will also be encouraged to have the child engage in the platform when alone rather than when other children are present. Parents will be provided a log to record when their child starts and stops engaging with the platform, if another child was present, and if children were interrupted by any strange occurrence. At the end of the six months, parents and participants will return to the lab for another session in which empathy and altruistic behavior will be measured. Parents and children will then receive a full debriefing and given compensation for participation.

Ethics

Due to the high prevalence of technology and media available to children, it is vital to understand how these platforms may affect children. The results of this study could have beneficial findings for both the psychological community and society at large. No research has been done to date on the effects of the type of learning platform on empathy and altruism. If the type of learning platform does have an effect on empathy and altruism, a new area of study will be opened up for psychologists and media researchers. There could also be a variety of societal impacts. The general public, and importantly parents, can gain awareness and knowledge about how young children are affected by the type of learning platform they are using. The results of this study could help people understand just how much television and computers are influencing children's behavior, thus leading to more regulation of guidelines on media use. The proposed research will attempt to address these gaps in the literature and provide a foundation for further research.

However, while the study has notable societal benefits, there are no direct benefits to participants other than the information given in debriefing. Parents may find this information especially helpful because it will allow them to be more aware of how different learning platforms may influence their children's behavior. Then, they could share this information with other parents.

No participants will be exposed to anything that they would not otherwise experience in everyday life. The experimental stimuli will be drawn from a real children's television show, book series, and online computer game, so no ethical issues with selection are anticipated. The empathetic and altruistic messages in the stimuli are also commonly presented to children through other shows, book series, and computer games, and therefore are not anticipated to add risk or negative influences on children that are not already encountered in everyday life.

As this study involves child participants, additional precautions must be taken given that children are a protected population. Using child participants is absolutely necessary to learn how empathy and altruistic behavior may be affecting children. Participants will not be subjected to any risks beyond those that they may experience in everyday life. Dependent variable measures are low-risk and simple, and parents will be allowed to stay nearby to both decrease the possibility of unexpected trauma and increase comfort. Children will also participate in a familiarization process when they first come into the lab in order to help them feel comfortable and safe with the researchers. Consent from the parents and assent from the children will be gained. A full debriefing will also be given to parents after the study has concluded in order for them to be able to know about and explain what their child experienced and answer any questions their child may

have. Children will also be debriefed, however their debriefing will be less detailed than the one their parents receive.

All information will be kept confidential so as not to expose any of the children to risk. Anonymity for participants is impossible in this study because there will be direct interaction between the children and researchers in the lab. In order to partly combat this, participants will receive a number that will be associated with their data in order to protect their identities during data analysis. Researchers measuring dependent variables will not be aware of the condition to which the children have been assigned; however, in order to accurately record data, they will be given access to the numbers assigned the children, so this experiment will be double-blind. Materials will be marked with letters to indicate conditions to ensure that research assistants give out the correct materials to each participant, and participants will be randomly assigned to conditions. The lead researcher will be the only one to know which letters correspond to which condition.

Participants will be protected by researchers as the study does not involve collecting any sensitive information, includes no deception, and participation is voluntary. Because there is no sensitive information being given, there are no extra considerations to take into account. In order to ensure voluntary participation, informed consent will be given by parents for their children, and children will be required to give verbal assent. The child will not participate in the study if either of these conditions are not met.

Overall, potential societal and scientific benefits outweigh potential risks in this study. The possible benefits of the study outweigh the potential risks that participants face, especially due to the study being below the level of minimal risk.

Predicted Results

First, the researcher will begin by assessing the reliability of the Empathic Responsiveness Scale, Index for Empathy for Children and Adolescents, Prosocial Personality Battery scale, and the Child Altruism inventory. These measures will be established as reliable if Cronbach's α is greater than .70. But ideally it would be .80 or higher. The researcher will also conduct an outlier analysis, and any outliers found will be removed from the data analysis.

Next, the researcher will recode the data from the empathy and altruism scales. The researcher will recode by combining the data from pre-study measures of empathy into one variable and then combine the data from post-study measures into a second empathy variable. The same will be done for altruism.

A simple correlation will be conducted between the dependent variables, empathy and altruism, to see if the researcher's expectation of a positive correlation is supported. A strong positive correlation between the two is expected because previous research about the connection between empathy and altruism by Batson, Ahmad, and Lishner (2011) has shown that empathetic concern for others can induce altruistic motivation.

A Mixed Model Analysis of Variance (ANOVA) will be used to examine the effects of time and learning platform on empathy. The researcher predicts that there will be a main effect of time such that empathy scores will be higher at the end of the 6 month time period. Social Learning Theory supports this hypothesis, as kids learn from what they see, and therefore by interacting and seeing empathy across the platforms, the children will learn and show improvement in their empathy scores. The researcher also predicts that there will be a main effect of learning platform on empathy. Within this

main effect, the researcher expects to find books will have a greater effect than television and computers. In order to test for this, the researcher will run a one-way ANOVA to compare mean scores of books, television and computers. The researcher expects to find this result because previous research by Landry, Smith, Swank, Zucker, Crawford and Solari, (1974) has shown that children are able to have more open discussions with their parents and show more engagement and enthusiasm when read to by their parents. The researcher expects to see less parental engagement with children assigned to television and computers because (unlike with books) there is no requirement for parental involvement. It is also expected that television will have a greater effect than computers on empathy. This predicted result is consistent with research by Paulson (1974), which showed that socially meaningful characters in *Sesame Street* affected children such that they behaved more cooperatively. While research by Greitemeyer and Mügge (2014) has also shown that prosocial video games can positively influence children, the researcher believes that television will have a more profound effect because children are more focused on the story line in an episode rather than completing a level. Finally, the researcher expects to find a significant interaction between learning platform and time showing a change between pre vs post study empathy scores and books will have the biggest change followed by television and then computers.

The researcher expects to see the same pattern of results for altruism. Similar to the first hypothesis, these predictions are expected because of the strong positive correlation between empathy and altruism. Therefore, similar results are expected.

In order to analyze the effects of specific platform use during the study, the researcher will use a 2 (time) X 2 (specific platform use) X 3 (learning platform)

ANOVA. In order to determine a high or low amount of use, the researcher will use a median split on number of hours children have spent on their assigned platform in the past. The researcher will determine if there are interactions between specific platform use and time, such that children who spend a high or low amount of time on their platform will affect empathy and altruism. Specific platform use will be defined by the time the children have previously (before the study) spent on their platform. First, the researcher predicts that there will be an interaction between specific platform use and time such that improvement will depend on previous experience. Children who originally had low amounts of specific platform use will be more affected by their use during the study. Previous research suggests that novelty drives children to process information, and paying attention to something new allows the child to obtain additional information in a shorter amount of time (Ostroff, 2012). The researcher expects the effects of novelty to carry across all further interactions as well. Next, the researcher predicts there will be an interaction between specific platform use and platform such that across the different platforms, having low use in that particular platform previously will result in more change in empathy and altruism than children who have previous high use. Within this interaction, the researcher expects to see similar main effects of platform such that books will continue to result in the greater change, then television, then computers. Finally, the researcher predicts that there will be an interaction between specific platform use, platform, and time. There will be a change between pre versus post study scores such that children with low specific platform use will show a bigger change in empathy and altruism levels than children with high specific platform use, and books will have the biggest change, followed by television and then computers.

Conclusion

The ability to learn empathy and altruism through different learning platforms is crucial to a young child's development of self and morals. Young children rely on the world around them to gather and manage information they need to navigate in their environment. The development of strong empathy and altruism begins in early childhood and will continue to be nurtured or hindered through differences in upbringing and changes in environment. Media use in childhood is one such factor that affects children in a variety of ways. With the rise of the entertainment industry and the development of technology, portable and easily accessible technology has made it easier for children to access and easier for parents to rely upon this technology. Increasingly, children at younger ages are gaining more and more access to media (Common Sense Media, 2013). Despite this ever rising prevalence of media in young children's lives, discord surrounding the effects (as well as varying and limited guidelines) make parents and educators uninformed about not only the effects of media, but also on how to use such technology to their children's advantage. The researcher expects that this study will provide insight to caregivers on how learning platforms, specifically books, television, and computers, in early childhood affects empathy and altruism.

The researcher predicts that in comparison to computers and television, early exposure to books will be associated with higher levels of empathy and altruism. From ages 3 through 5, this effect will be constant, such that learning is consistent over time and children do not become resistant to book use effects.

One explanation that supports this predicted result is that children who use media for larger amounts of time tend to have attention problems (Landhuis, Poulton, Welch, &

Hancox, 2007). The researcher predicts that children using the television and computer are spending longer amounts of time overall than those who read books. Because children will have their parents read to them, they might be more limited in the amount of time they are able to spend on this platform. Television and computers are easier to interact with for a variety of reasons. Since computers are now portable, children can spend time on them in a variety of settings. Television has become a convenient behavioral regulation tool in order to pacify children or distract them while parents are performing important daily tasks. Thus, children have more access to television and computers then they might for books, and it has been shown that when parents use media as a regulation tool, sustained attention development is less likely to occur (Radesky, Schumacher, & Zuckerman, 2015). Due to attention problems, researchers predict that children are less likely to be solely focused on the television or computer and the empathy and altruism lessons they may be receiving, which leads to less learning.

Another explanation for books being more effective than television and computers is the parental interaction component. While parents are encouraged to interact with children after using all of the learning platforms, researchers predict that more parental interaction will be done with the children assigned to books. Word recognition and literacy skills are exceedingly impacted by book reading, especially book reading with parents (Roberts, Jurgens, & Burchinal, 2005). Literacy development and socioemotional development can impact one another. Partridge (2004) suggests that parents use analytical talk when reading books to children in order to advance both literacy development and socioemotional development. This analytical talk helps the children get involved in what is happening in the pictures, which may not be referred to in the book's

text. Children are able to respond to the book by analysis of pictures, which may lead to talks about life experiences as well as clarification of ideas. Most storybooks revolve around personified animals or people. It is an excellent way for children to talk about feelings and emotions because according to Aram & Aviram (2009) emotions or social events are referred to in children's books every three sentences on average. Parents are therefore able to use book reading to discuss empathy development and altruistic behavior in an easy and natural way.

Although this study will address new material and a gap in the existing literature, there are a few limitations that should be discussed. First, because the learning platform materials will be administered in the field, experimental control is lessened. The experimental stimuli will be administered by parents, therefore potentially leading to errors that skew data, such as missing a day or not properly recording amount of time spent. Exposure to manipulations is most appropriate within the children's homes because the researcher is trying to create a natural environment for the participants. Additionally, having parents administer manipulations is more convenient, but doing so for six months may lead to attrition problems because it is unlikely every parent will remember to perform the activity daily. However, future researchers could address this issue by having participants come to the lab, or having the parent's text the researcher to check in daily that they've showed the material.

Another limitation is using material that is already created instead of making new material. This existing material may contain some inherent biases that further limits experimental control. Children may also have already been exposed to the material because it is a popular children's show. A further problem is that not all the episodes,

computer game, and books may have a lesson in empathy and altruism, which could affect how much children are learning and developing these skills. Future researchers could try creating their own TV episodes, corresponding books, and corresponding computer game in order to control for this limitation. This would remove any possible confounding variables as well as make sure that the material is relevant to the research.

A third limitation of this study is that the researcher chose to use television and computers as relevant media platforms. There are other media platforms, such as iPads and smart phones that have become more and more relevant to children. These could also have an important effect on children, and this could be addressed in future research by adding them as another predictor variable. Although the research on iPads and smart phones is not as extensive as that of television, computers, and video games, there are still indications that these forms of technology could be influencing learning in children.

Finally, another limitation that is important to consider, is the parent-reported measure used for amount of platform use. Parental reports of learning platform use may not be an accurate measure of true use due to issues discussed earlier. Christakis, Zimmerman, DiGiuseppe, & McCarty (2004) suggest assessing amount of use through more direct measures; for example, daily time use diaries that include shows and apps used, tracking programs, and direct observations. Despite previous research finding no bias in either direction using the parental report method, future researchers could use these more direct means to control for bias as a precaution.

Regardless of these limitations, there are important implications of the results from this study. Existing guidelines on media use, solely based on television effects on childhood development, by the American Academy of Pediatrics is now considered

outdated. With the rise in television use and media in general, knowing the current effects, especially on learning, can help both inform and update recommended guidelines for media use. Similar to media, research has been done on how long children should read (Johnson, 2015). Educators, pediatricians, caregivers, and especially parents, should be accurately informed in media and book use in order to decrease any potentially lasting negative implications of such use on children's cognitive, social, and emotional development. The researcher expects that this study will add a comparison of book, television, and computer effects to the previously studied effects of television on emotional learning. Future research would be helpful in order to examine whether using a majority of books, television, or computers extends into adolescent development and the social and cognitive implications. A longitudinal study following different learning platform users from early childhood into adolescence and beyond would directly track individual developmental changes over time, contributing crucial research to the understanding of using different learning platforms and their longstanding effects on empathy and altruism.

In summary, while there are various factors that influence empathy and altruistic learning, the results from this study could help caregivers, parents, and teachers to take steps with respect to which learning platform should be used most often as well as what amount of time is best suited for that particular platform. Adding parental interaction and eliminating media as a behavioral regulation tool can increase learning in children. Because empathy and altruism are crucial to humans, any improvement that can be made to advance and impress positive outcomes in children's learning is significant.

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Appendix A
Empathetic Responsiveness Scale

Please answer the following questions in regards to your child's empathetic responses.

Perspective Taking:

1. My child sometimes finds it difficult to see things from the "other guy's" point of view.
   1 2 3 4 5
2. My child tries to look at everybody's side of a disagreement before they make a decision.
   1 2 3 4 5
3. My child sometimes tries to understand their friends better by imagining how things look from their perspective.
   1 2 3 4 5
4. If my child is sure they're right about something, they don't waste much time listening to other people's arguments.
   1 2 3 4 5
5. My child believe that there are two sides to every question and tries to look at them both.
   1 2 3 4 5
6. When my child is upset at someone, they usually try to "put them self in his shoes" for a while.
   1 2 3 4 5
7. Before criticizing somebody, my child tries to imagine how they would feel if they were in their place.
   1 2 3 4 5

Empathetic Concern:

1. My child often has tender, concerned feelings for people less fortunate than them.
   1 2 3 4 5
2. Sometimes my child doesn't feel very sorry for other people when they are having problems.
   1 2 3 4 5
3. When my child sees someone being taken advantage of, they feel kind of protective towards them.
   1 2 3 4 5
4. Other people's misfortunes do not usually disturb my child a great deal.
   1 2 3 4 5
5. When my child sees someone being treated unfairly, my child sometimes doesn't feel very much pity for them.
   1 2 3 4 5
6. My child is often quite touched by things that they see happen.
   1 2 3 4 5
7. My child would describe them self as a pretty soft-hearted person.
   1 2 3 4 5