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The American University in Cairo

School of Humanities and Social Sciences

The Impact of a Cartoon Character's Gender on Egyptian Girls' Knowledge of
and Intentions toward Pneumonia Prevention

Thesis Submitted to

Department of Sociology, Anthropology, Psychology and Egyptology

Masters of Art in Community Psychology

By Farah El-Shiaty

September 2015

TABLE OF CONTENTS

I. Dedication	5
II. Acknowledgment	6
III. Abstract	7
IV. Pneumonia Disease	8
V. Health Education	10
A. Reasons to Educate Children about Health.....	12
B. Methods for Educating Children about Health.....	13
C. Educational Programs on Pneumonia for Children.....	16
VI. Theoretical Background	17
A. Social Learning & Social Cognitive Theories.....	17
B. Gender Socialization.....	20
C. Gender Schema Theory.....	21
D. Identification.....	21
VII. Gender in Egypt	23
VIII. Healthy Egyptians	24
A. Approach of Cartoon.....	25
IX. Methodology	26
A. Participants.....	26
B. Materials.....	26
1. Coloring Book.....	26
2. Interview.....	27
C. Procedures.....	28
D. Statistical Analysis.....	28
X. Results	29

A. Enjoyment of the Activity.....	29
B. Knowledge of the Material.....	30
C. Identification with the Character.....	31
D. Intentions towards Pneumonia Prevention.....	34
E. Later Recall.....	35
XI. Thematic Analysis.....	36
A. Identification with the Character.....	36
B. Importance of Physical Characteristics.....	37
C. Importance of the Characters' Personality Characteristics and God Behaviors.....	38
D. Importance of a Good Story.....	39
XII. Discussion.....	40
XIII. Implications.....	44
XIV. Limitations and Suggestions for Future Research.....	45
XV. Conclusion.....	46
XVI. References.....	47
XVII. Appendix A.....	56
XVIII. Appendix B.....	58
XIX. Appendix C.....	60
XX. Appendix D.....	64
XXI. Appendix E.....	66

List of Tables

1. Girls' Knowledge of the Five Healthy Practices that the Characters Did..... 31
2. How much did the girls like Montasser/Farah?..... 32
3. Girls Chose which Character is Most Like Them..... 33
4. Girls Chose which Character They Want to be Their Friend..... 33
5. Girls recall the 5 Healthy Practices that the Characters did..... 35

Dedication

I dedicate this thesis to my Family: my mother, Lamia Eloui, my father, Hafez El-shiaty, my sister, Hana El-Shiaty, my brother, Khaled Eloui, my aunt Laila Eloui, my grandmother, Stella Eloui, and my husband Tarek EL-Ebiary. I would like to thank each one of them for always being there for me, for supporting me and having faith in me, without them I could have never been the person I am today.

Acknowledgement

I would like to thank my thesis advisor, Dr. Carie Forden, for supporting me since I started the masters program; I would like to thank her for the time and effort she spent, without her my experience would not have been the same. I am grateful for having Dr. Marite Haynes and Dr. Yasmine Saleh as my committee members. I would like to thank Dr. Marite Haynes for her continuous help and support since I started working on the thesis. I would also like to thank Dr. Yasmine Saleh for supporting me and accepting to be one of my committee members, without her I would not have been able to finish on time. I would like to thank Dr. Hani Henry for the time and effort he spent on my thesis.

I would like to thank my colleague, Noha Hassanain, for helping me during the interventions, without her I would have never been able to finish the study in this short time. I would like to thank Dalia El-Serafy, Mervat Farag and Menna Magdy for helping me reach schools. I would like to thank all the schools and parents who agreed that their daughters participate in this study. I would like to thank Noheier Nashaat, my manager at work, for helping me and supporting me since I started the thesis. Finally, I would like to thank Ghada Sobhy for her time and effort she spent, helping me to reach as much girls as possible to do the interventions with, without her I would not have been able to complete my study.

I would like to thank my colleagues in the masters program who made the past two years an enjoyable and a useful experience to me, Baher Ibrahim, Amira Ragy, Amira El-Zawahry, Hamed El-Meghalawy, Yasmine Sabala, Hana Shahin, Nada El-Shazly, and Fatema Farghaly.

I would like to thank all my friends who supported me and attended my thesis defense, Hala El-Shahed, Farah Ghatwary, Yasmina Bazaraa, Basma Abdelhafiz, Fahd El-Abhar, Hanan El-Sobky, Amr Abdelmohsen, Silvie Mostafa, Nada Mohsen, Mayada El-Shabrawy, Eman Motawi, and Ahd Amir.

Abstract

Pneumonia kills 11% of children under the age of five in Egypt yearly. Studies suggest that health educational cartoons are effective ways to educate children about healthy practices to prevent diseases. The literature suggests that children tend to learn better from and imitate same-gender models more than opposite-gender models. Healthy Egyptians, a non-governmental organization, developed a health educational cartoon to educate young children on the preventative practices of pneumonia through a boy called Montasser as the main character. It was hypothesized that having a female character as the main character in this cartoon would increase the girls' knowledge of and intentions towards pneumonia prevention. To test this hypothesis, an alternative version of the coloring book was developed using a female character called Farah. Sixty girls ages four to seven, enrolled in three private schools in Cairo were exposed to either Montasser's story or Farah's story. The girls were interviewed both immediately after hearing the story and one week later in order to assess their enjoyment of the activity, knowledge of the material in the story, identification with the characters and their intentions towards pneumonia prevention. It was found that although there was insignificant difference in enjoyment of the story between the groups, across both groups the girls identified more with the Farah character. It was also found that the Farah group gained more knowledge and had higher intentions towards pneumonia prevention than the Montasser group, but this difference was insignificant. These results support studies that show that children tend to identify with same-gender models more than opposite-gender models. On the other hand, this insignificant difference might be due to small sample size of the study. The results support studies that found that health educational cartoons are effective in transmitting health information to children. The implications of this study for the health education of girls in Egypt are discussed.

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The Impact of a Cartoon Character's Gender on Egyptian Girls' Knowledge of and Intentions toward Pneumonia Prevention

In 2013, the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) reported that pneumonia is a preventable and treatable disease; however, it is considered the number one killer for children under the age of five in developing countries. Each year, pneumonia kills 11% of children under five years in Egypt (UNICEF/WHO, 2006). However, in 2010, the percentage of the death cases caused by pneumonia for children under the age of five in Egypt reached 18% (Liu et al., 2012). Therefore, in order to find ways to prevent the occurrence of pneumonia among children in Egypt, it is important to understand the causes and risk factors associated with pneumonia, and to identify the ways that pneumonia can best be prevented. It is also important to understand how to design educational interventions that would maximize their effectiveness. This thesis will assess the impact of gender on a cartoon character's ability to change girls' knowledge of and intentions toward pneumonia prevention.

Pneumonia Disease

Pneumonia is an acute respiratory infection in which one or both lungs are filled up with pus and fluid that hinders oxygen absorption, leading to difficulty in breathing (UNICEF/WHO, 2006). Two bacterial pathogens are the main causes for pneumonia among children in developing countries: *Streptococcus pneumoniae*, causing over 50% of the pneumonia cases, and *Haemophilus influenzae* type b (Hib), causing around 20% of pneumonia cases (UNICEF/WHO, 2006). These pathogens can be transmitted to children through either air droplets or blood-borne infections, and symptoms commonly include fever, cough, difficulty in breathing and loss of appetite (UNICEF/WHO, 2006). Although pneumonia can be easily treated through antibiotics and prevented through vaccines, hand

washing, ventilation and other healthy practices, a great number of children in developing countries die every year from pneumonia (WHO/UNICEF, 2013).

According to the “Global Action Plan for Prevention and Control of Pneumonia”, around 20% (1.8 million) of the child deaths that occurred globally in 2007 were caused by pneumonia, and more than 90% of these deaths were in developing countries (WHO/UNICEF, 2009). Egypt has around 2 million cases of children with pneumonia every year (WHO/UNICEF, 2013), and 42,000 Egyptian children under 5 die annually (UNICEF/WHO, 2006).

Many studies have been done to identify the causes and risk factors associated with pneumonia. A study conducted on Egyptian children with pneumonia indicated that low maternal education level, low family income, inadequate medical care, bad hygiene and parental smoking are all significant risk factors associated with pneumonia (Azab et al., 2014). Another study highlighted seven risk factors, which were significantly associated with pneumonia. These seven factors were exposure to indoor air pollution, low birth weight, HIV infection, malnutrition, crowding, insufficient immunization, and lack of breastfeeding (Jackson et al., 2013). Additionally, diagnosis requires advanced medical equipment, such as X-rays or laboratory tests and many poor places lack access to such amenities, resulting in many children who are not diagnosed and treated effectively, which can lead to their deaths (UNICEF/WHO, 2006).

Despite the many lives it takes every year, pneumonia can be treated through a full course of antibiotics, which are affordable and easy to implement (UNICEF/WHO, 2006). However, in order to effectively reduce the death cases of children with pneumonia, prevention efforts should take place. UNICEF and WHO (2006) reported that prevention against pneumonia can save the lives of 1 million of children around the world. There are several preventative practices that have proved to be effective in reducing pneumonia among

children. First, promoting exclusive breastfeeding for 6 months can reduce pneumonia cases by 15 – 23% (Jones, Steketee, Black, Bhutta & Morri, 2003; WHO/UNICEF, 2009), and exclusive breastfeeding for at least the first six months can save 1.5 million of children's lives every year (Morrow et.al., 1999). Second, hand washing can reduce 3% of children's death cases by pneumonia, especially if shared with other sanitation interventions (Jones, Steketee, Black, Bhutta & Morri, 2003; WHO/UNICEF, 2009). Third, sufficient nutrition can reduce 6% of the children's death incidences (Jones, Steketee, Black, Bhutta & Morri, 2003; UNICEF/WHO, 2006). Teaching girls and women about nutrition and how to improve it not only makes them healthier but also enables them to have healthy babies with good birth weight and to raise well-nourished children and families (Ransom & Elder, 2003). Fourth, vaccination can reduce 22 – 34% of the pneumonia cases caused by Hib and 23 - 35% of the pneumonia cases caused by Streptococcus pneumonia (Niessan et al., 2009; UNICEF/WHO, 2006). Fifth, educating parents on the risk factors and the symptoms of pneumonia, reducing indoor pollution and promoting ventilation of houses are all effective ways to prevent and protect children from pneumonia (WHO/UNICEF, 2009; UNICEF/WHO, 2006).

Health Education

According to the WHO (2015), health education is any method designed to increase individuals' knowledge and influence their behavior in order to become healthier. Health education is a crucial tool that helps in the promotion of health and prevention of diseases, especially in developing countries (Nutbeam, 2006). Health education programs began in the 1970s; however, Nutbeam (2006) argues that many of these programs were simple health campaigns that were designed to provide people with information about diseases and did not cause significant behavioral change. Effective health education interventions are the ones which have a comprehensive approach in addressing social factors, environmental factors and personal behaviors; for example, to tackle pneumonia, there needs to be public policy that

provides for vaccination, social norms that frown upon smoking around children, and changing individual practices around handwashing. Additionally, by targeting health literacy, through expanding access to health information and improving people's ability to use this information, an increase in self-efficacy and ultimately to empowerment may occur (Nutbeam, 2006; Rootman, 2002).

Health literacy is the knowledge of health-related issues and skills that helps in acquiring, assessing and integrating health information from diverse sources; it is the outcome of health education (Institute of Medicine of the National Academies, 2004; Rootman, 2009; Nutbeam, 2006). Increasing people's health literacy reduces mortality rates, decreases costs for both individuals and health care systems, reduces people's use of healthcare services, allows people to seek preventive practices and services, and increases people's self-management of chronic diseases (Parker & Jacobson, 2012; Institute of Medicine of the National Academies, 2004). Therefore, it is essential to include health education and literacy approaches in interventions and prevention programs (Parker & Jacobson, 2012; Kanj & Mitic, 2009). Additionally, health education and literacy for women can be considered of great importance not only for them but also for their children and families. According to Abdel Mowla (2009) and the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2010) providing education for girls and women increases their knowledge of reaching appropriate health care, and is positively correlated with their longevity and their families' health, and leads to their empowerment. Health education for women not only has positive effects on their health but can also help in increasing their income and having healthy children (Ransom & Elder, 2003). However, in poor areas, parents tend to invest more in boys than girls in health and education (Kurz & Johnson-Welch, 2000).

Reasons to educate children about health. Health education programs are not only designed for adults but also for children as early as 4 years of age. Jurs et al. (1990) argue that creating healthy and positive attitudes is easier than altering negative and unhealthy ones; therefore, educational programs should target children at a young age in order to teach them healthy practices and prevent disease as early as possible. Several studies have shown that young children are highly suggestible, and highly influenced by others' thoughts and actions (Nicolas, Collins, Gounden, Roediger III, 2011; Ceci & Friedman, 2000). Binet (1900), Asch (1956). This is because children wish to conform to the social influences that surround them (Roediger, Meade, and Bergman, 2001). Thus, children at very young ages are highly influenced by their families' negative behaviors and practices. For example, several studies found that children as early as 3 years, who have parents or siblings who smoke, have a greater tendency to like smoking or think that smoking is a positive behavior (Porcellato, Dugdill, Springett & Sanderson, 1999; Fidler & Lambert, 1994). Further, according to Vartiainen, Fallonen, McAlister & Puska (1990), children who have already started smoking are not affected by anti-smoking educational programs; therefore, it is especially important that anti-smoking educational programs start at a young age to prevent from acquiring positive attitudes towards smoking (Porcellato, Dugdill, Springett & Sanderson, 1999).

Another important aspect of health education for children is the fact that they are not passive recipients of the messages transmitted to them but can make decisions and be responsible for their own health and the health of their families. For example, a study in Kenya found that a significant number of children were able to treat themselves for fever without the help of their parents (Geissler et al., 2000). A study by Deepthi, Kumar, Kamath and Rajeshwari (2014) showed that educating children can make them effective health agents, transmitting knowledge about vector-borne disease to their families and even to the whole community. Another study in Kenya showed that in a school-based education program

on malaria, children were effective health agents and increased knowledge in their community about malaria and how to prevent it (Brooker, Clarke, Snow & Bundy, 2008). Further, a school-based educational program in Ghana used children as health messengers, transmitting knowledge on malaria in their schools and communities; this educational program resulted in behavioral change for both the children and the people in their communities, and led to a decrease in malaria prevalence in their schools and communities (Ayi et al., 2010).

Methods for educating children about health. Many initiatives have been used to educate children on health-related issues, and many of these initiatives have been shown to have a significant impact on children's knowledge, attitudes and behaviors. Macnab, Stewart and Gagnon (2014) argue that schools are inexpensive and effective settings that can be used in health education to reach a large number of children. One of the health educational programs for children that was applied in schools trained teachers to provide children with information on malaria (Ayi et al., 2010). Teachers in this intervention used posters, charts, songs and drama to educate children on the transmission of malaria and prevention practices; they also encouraged the children to draw what they understood about malaria and assisted them in removing mosquitos' breeding places (Ayi et al., 2010). This intervention led to an increase in the children's knowledge on malaria and a significant reduction in malaria prevalence amongst them (Ayi et al., 2010). Further, a participatory school-based educational health program on vector-borne diseases that utilized lectures and role play in educating children about this disease showed a significant increase in the children's knowledge (Deepthia, Kumarb, Kamathb & Rajeshwaric, 2014). In addition to teachers, school nurses can play a significant role in health education programs targeting children. A study found that nurses were effective in educating students on sexual health issues and other sensitive topics

and that students reported that they perceived school nurses as knowledgeable outsiders and felt comfortable talking to them (Lightfoot & Bines, 2000).

Health education programs have also used non-traditional methods in order to be able to effectively reach children and change their knowledge and behavior on health-related issues. For example, theatre education programs have been used in health promotion for children and their families. Several educational theatre programs emerged in the 1980s (Ball, 1996; Stevens, Foote & Wu, 2008). Kaiser Permanente founded an educational theatre program, one of the prominent educational theatre programs in the United States of America, to engage children in productions and educate them on several health-related issues, including diabetes and substance abuse (Stevens, Foote & Wu, 2008). Illustrations, comic books and coloring books can increase attention and the ability to sustain information about health. Houts, Doak, Doak and Loscalzo (2005) found that adding pictures to spoken or written text increases people's ability to recall the medical information in what they referred to as the "pictorial superiority effect". Furthermore, two studies found that adding pictures to spoken or written information enables people with low literacy to comprehend, recall and adhere to medical instructions (Dowse & Ehlers, 2001; Houts, Doak, Doak & Loscalzo, 2005).

Educational cartoons are also being used extensively in the health field to increase children's knowledge and change their behaviors towards many diseases. An educational cartoon video was used alongside a storybook in an antismoking educational program called "AntE Tobacco" project (Surani et al., 2011). After watching the cartoon, 82% of the children were able to answer all the post intervention questionnaires correctly, while 83% of the children were able to answer the same questions correctly after 4-6 weeks from the intervention (Surani et al., 2011). Many studies have indicated that educational cartoons are more effective in transmitting health messages than using written material or orally

communicated information. Studies have shown that animated educational health cartoons change the behaviors and practices of children towards diseases. Sinor (2011) compared the effect of animated cartoons and oral health talk by nurses on preschoolers' knowledge of and attitude toward oral hygiene practice. The results of the study found that compared to the oral talk, using cartoons increased the children's acceptance of the messages given to them and increased their knowledge, behaviors and practices, and this was also the case for children with different learning abilities. Further, the children who watched the educational health cartoon were able to sustain the information they had learned two weeks after the intervention, while the children who had oral talks with nurses were not able to recall and sustain the information. Sinor (2011) argues that interesting stories and the similarity in context, environment, and activities between the cartoon character and the children enables them to sustain information and emulate the character leading to changing their health practices.

John, Asokan and Shankar (2013) found that children who watched their favorite cartoon characters performing health practices, improved significantly in their attitude and practices toward oral health. Additionally, in another study done to prevent school children from catching worm infections, the percentage of children who applied the health practice and washed their hands after using the toilets was twice higher in children who watched educational health cartoons than those children who took only health brochures (Bieri et al., 2013). Moreover, the incidence of infection was 50% lower with children who watched the educational health cartoon than those who took only a health brochure (Bieri et al., 2013).

Some studies have argued that an effective educational health cartoon should have a story and a central character that is relevant to the audience that is being targeted. The illustrations used to deliver the health message should be culturally relevant to the audience (Dowse and Ehlers, 2001; Sinor, 2011). Additionally, Dowse and Ehlers (2001) found that

people tend to notice the health messages in pictures when it is transmitted to them through characters that they perceive as similar to themselves. Sinor (2011) explained that children tend to imitate their superheroes and consider them their idols; therefore, he argued that the right cartoon character should be chosen carefully to convey the health message to its specific audience. UNICEF (n.d.) reported that using a female cartoon character called “Meena” was an effective tool in changing girls’ perceptions on diverse issues through UNICEF’s Meena Communication Initiative project. This character was featured in coloring books, videos, comic books and other forms, in order to change the attitude and behaviors of girls in such areas as education, health, and protection in South Asian countries.

Educational programs on pneumonia for children. Most pneumonia educational programs in developing countries have been implemented to educate adults, such as mothers, other family members, community leaders, and health professionals (International Vaccine Access Center, 2012). However, there have been some educational programs that targeted children to educate them on the causes of pneumonia and healthy practices to prevent its occurrence. In 2011, Save the Children Bangladesh and the Bangladesh Pediatric Association implemented a program for children where they designed plays on pneumonia (International Vaccine Access Center, 2012). In Nigeria, the University of Ibadan organized educational programs on pneumonia in which children participated in drama plays, dances and songs (International Vaccine Access Center, 2012). In India, three educational programs were done which included different activities by students including presentations on the disease and placement of booths and educational material to increase people’s knowledge of pneumonia (International Vaccine Access Center, 2012).

Additionally, educational cartoons were developed to educate children on pneumonia. UNICEF’s cartoon character “Meena”, was used to educate girls on pneumonia in Bangladesh and other South Asian countries (Raha, 2012). On World Pneumonia Day 2010,

a contest was sponsored by the JB Grant International Health Society and the International Vaccine Access Center to create an educational coloring book for children on pneumonia and the coloring book “How You Can Beat Pneumonia” won the contest. This cartoon educated children on the causes of pneumonia, how to cure it and prevent it, through boy and girl cartoon characters, with the girl character explaining the causes and symptoms of pneumonia and some of the healthy practices that should be done to prevent it, and the boy cartoon character performing the healthy practices. Furthermore, Healthy Egyptians, a non-governmental organization in Egypt, developed a cartoon coloring book and a cartoon movie called “Montasser Overcomes Pneumonia”; it was used to educate children on the causes of pneumonia and how to prevent it, through a boy cartoon character called “Montasser” (Protect your child/Egyptian Medical Students' Association, 2012). Most of the educational programs mentioned use cartoons to educate children on pneumonia. Social learning theory and social cognitive theory help explain why cartoons are an effective way to teach children about good health practices. They also suggest that gender might be important to consider when designing these cartoons.

Theoretical background

Social learning & social cognitive theories. Social learning theory suggests that individuals tend to learn new behaviors if these behaviors are reinforced (Artino, 2007). For instance, a girl learns that cleaning the house is expected for females; the girl learns such behavior through positive reinforcement when her mother praises her for cleaning her room. This theory also suggests that children emulate the behaviors of same-gender adults more than those of opposite-gender adults (Kretchmar, 2009). Bandura, Ross and Ross (1961) studied children's imitation of adults through the Bobo doll experiment in which a group of children observed adults performing aggressive behaviors towards a plastic Bobo doll, while another group was not exposed to these adults. In the first group, half of the children were

exposed to same-gender model and the other half were exposed to an opposite-gender model. Results demonstrated that children who observed the aggressive model behaved more aggressively toward the Bobo doll than the group of children who did not observe the model. Additionally, the study revealed that children's emulation of the models was affected by the gender of the model; it was found that the boys displayed more violent behaviors after observing a male model than the girls who observed a male model. Bandura, Ross and Ross (1963) also did a similar study but used a film containing aggressive content; the results showed that children who watched this aggressive movie expressed more aggressive reactions than the children who did not watch. Bandura, Ross and Ross concluded that individuals learn through observation without direct reinforcement.

Bandura developed social cognitive theory, which included observational learning and social modeling. He argued that there are four processes in observational learning: attention, retention, production and motivational processes (Bandura, 1986). When observing a model, an individual tends to pay attention to specific information in the behavior performed by a model; this is referred to as the attention process (Bandura, 1989). For example, a student who pays attention in class is able to learn the new behavior or skill that he or she observed, while a student who observes without paying attention does not learn the new behavior (Artino, 2007). Retention is the stage involving active cognitive structuring of the information that has been observed in order to recall it afterwards (Bandura, 1989). Through this retention process, the observed behavior is transformed to mental images or symbols in the memory and these symbols are cognitively practiced and rehearsed (Bandura & Jeffery, 1973; Bussey & Bandura, 1999). This transformation of representations and cognitively practicing them increase the observer's self-efficacy to perform the observed behavior successfully (Bandura & Jeffery, 1973; Carroll & Bandura, 1990; Bussey & Bandura, 1999); self-efficacy is the belief in one's abilities and competencies that make one

achieve certain accomplishments (Bandura, 2006). For example, a person can learn new-modeled information through actively linking it to prior information or through cognitively repeating the information several times (Ormrod, 2004).

The production process is an individual's ability to perform the modeled behavior (Bandura, 1989). For instance, a child can perform a new physical behavior that he observed from his father, if he has the suitable strength and physical ability needed to copy the modeled behavior. Bandura (1989) argued that an individual could learn a certain behavior that was modeled but may not be able to perform it. Finally, the motivation process refers to the reinforcers that motivate an individual to do the observed behavior (Bandura, 1989). These reinforces can occur in the form of direct reinforcement applied to an individual when he/she models a behavior (Bandura, 1989), or vicarious reinforcement that occurs when the model is reinforced and, as a result, the learner is motivated to behave similarly (Bandura, 1977). For example, a child can perform a newly modeled behavior when the teacher praises him or her for doing that behavior or praises a classmate for doing the same behavior.

Bussey and Bandura (1999) suggested that individuals are encouraged by other people's achievements if they believe those people to have similar traits as themselves. Bussey and Bandura (1999) found that selective attention to a model's behavior depends on the circumstance the observer is in. When a child is exposed to only one model, as in laboratories, the child tends to equally pay attention and learn the behavior of the same-gender model and the opposite-gender model. On the other hand, if a child is exposed to both gender models, a child tends to attend to same-gender model (Bussey & Bandura, 1984).

Most of these findings indicate that children have a greater tendency to pay attention and model the behaviors of same-gender models. Gender socialization, gender schema theory, and identification show why children might prefer and learn more from same-gender models than from opposite-gender models.

Gender socialization. According to Wharton (2005), gender socialization is the process by which individuals adopt gender-appropriate behaviors and traits from the society and the people around them. From the instant they are born, infants are taught by their society the expected gender appropriate behaviors; these elements include family, school, peers and the media (Kretchmar, 2009). For instance, families treat their daughters and sons within the individual household differently (Bell, 2004), and the family provides the siblings with different toys to match their gender (Wharton, 2005). As a result of family socialization, children at an early age tend to prefer playing with same-gender peers rather than opposite-gender ones; this process is called “homophily” (Ridgeway & Smith-Lovin, 1999). Lips (1994) argued that, since women are less powerful than men in society, young girls and boys are socialized to accept and behave differently based on these different statuses in society. Girls are taught that they should be nice rather than tough and that their role is to be supporters of boys and men rather than leaders. Additionally, Lips (1994) argued that young girls are taught by society that their actions do not make any change, while boys are taught to believe in their competencies that will make a difference. Children tend to internalize these messages and influence one another to conform to these gender appropriate behaviors, pushing them into the acceptable gender roles (Kretchmar, 2009). For instance, when young boys are seen exhibiting girl-affiliated behaviors, their peers criticize them (Wharton, 2005).

Additionally, the media plays a significant role in the socialization of children. This occurs when children tend to internalize the gender appropriate behavior that they see from stories and characters in different forms of media (Ahmed & Abdul Wahab, 2014). Martin, Ruble and Szkrybalo (2002) argued that cartoons influence children's perception of gender roles and their expected behaviors in society. Ahmed and Wahab (2014) found that in many cartoons, males are portrayed as powerful and strong, while females are portrayed as intelligent but in most cases passive. As a result, children tend to internalize these gender

stereotypes and behave similarly to their same-gender characters (Ahmed & Abdul Wahab, 2014).

Gender schema theory. The gender schema theory developed by Sandra Bem helps explain how children learn gender-appropriate behaviors. Schema is a cognitive structure that enables children to arrange the information they receive in their daily lives (Kretchmar, 2009). According to gender schema theory, “in cultures where distinctions between men and women are emphasized, children learn to use gender as a way to process information about the world” (Kretchmar, 2009, p.3). According to the gender schema theory, children tend to consider that not everything that is appropriate for one gender is appropriate for the other (Wharton, 2005). For example, children in societies, where it is expected for girls to be nurturing, believe that this trait is then not appropriate for boys (Bem, 1981). As a result children tend to select these gender-appropriate schemes, internalize them and apply them to themselves (Bem, 1981).

Identification. Identification is the process of adopting another individual's behaviors or characteristics and integrating them to one's self (Zillmann, 1994). According to Kelman (1958), identification happens when an individual wants to create a bond or connection with another person; and that individual becomes influenced by the behaviors or characteristics of that person. Sigmund Freud considered identification as an emotional bond between children and parents that leads the children to imitate their same-sex parent (Bronfenbrenner, 1960). As discussed earlier, Bandura (1986) argued that people tend to imitate the behaviors of others whom they consider similar to themselves. In addition, several studies found that people tend to emulate the behaviors of characters in the media whom they perceive to be similar to themselves (Hoffner & Cantor, 1991; McDonald & Kim, 2001; Hoffner & Buchanan, 2005). It has also been found that children and adults relate to media characters who are similar to them in gender and age (Appiah, 2001). Hoffner and Buchanan (2005)

described the term *wishful identification* as “the desire to become like a media character”.

However, it was found that boys exhibit a stronger identification with male characters than girls do with female characters (Hoffner, 1996), and it is argued that this difference occurs as a result of a social norm which accepts girls behaving like males but scorns boys behaving like females (Deaux & LaFrance, 1998).

In addition to demographic characteristics, personality characteristics are another element that makes individuals identify with media characters. Studies have found that people identify with media characters when they believe they share common personality traits (Eyal & Rubin, 2003). Intelligence and attractiveness are two traits that predict identification of children with same-gender media characters; a study has found that young boys considered intelligence as an important trait in their identification with male characters while young girls regarded attractiveness as a significant trait in to their identification with female characters (Hoffner, 1996). On the other hand, a more recent study found that both men and women identified with same-gender characters whom they perceive as intelligent while only women identified with same-gender characters whom they perceived as attractive (Hoffner and Buchanan, 2005). Additionally, several studies found that success was a significant factor that made children identify with media characters (Bandura, Ross & Ross, 1963; Hoffner 1996). According to Hoffner and Buchanan (2005), “character’s success was the only attribute that predicted wishful identification in all four subgroups [young men and women identifying with female and male characters]” (p.342). Hoffner and Buchanan (2005) found that success was the significant factor that led young women and men to identify not only with same-gender characters but also with characters of the other gender. Bandura (1986) explained that people tend to identify with successful individuals because the rewards that these individuals receive act as vicarious reinforces that influence other people to emulate their behaviors. Finally, studies have found that violence was a predictor of the

identification only for boys and young men with same-gender characters (Hoffner, 1996; Hoffner & Buchanan, 2005); on the other hand, admiration was a factor that predicted only women's identification with same-gender characters (Hoffner & Buchanan, 2005).

Gender in Egypt. In Egypt, family is considered the first and the most important gender socialization agents for children; families tend to teach their children the expected gender roles and gender appropriate behaviors (Abu Gazaleh, Bulbul, Hewala, & Najim, 2004; Mensch, Ibrahim, Lee, & El- Gibaly, 2003). Additionally, peers are also gender socialization agents, and tend to reflect the adults' views of the appropriate behavior for each gender instead of rebelling against these views and norms (Youniss, 1989). There is a significant gender differentiation in autonomy, economic empowerment and household division of tasks between boys and girls in Egypt. Regarding household tasks, girls are expected to assist in household chores, such as cleaning and cooking, and to take care of their siblings more than boys are (Abu Gazaleh, Bulbul, Hewala, & Najim, 2004). Families expect boys to be independent and encourage their autonomy (Mensch, Ibrahim, Lee, & El-Gibaly, 2003). Families teach boys that a significant part of their gender role in society is to be economically empowered while this is not considered necessary for girls (Abu Gazaleh, Bulbul, Hewala, & Najim, 2004). A study that was done in Egypt shows that adolescent girls and boys agree with the traditional gender roles (Mensch, Ibrahim, Lee, & El- Gibaly, 2003). Additionally, both boys and girls support the idea that wives should be submissive to their husbands and these results conform with the gender roles that are taught in Egypt (Mensch, Ibrahim, Lee, & El- Gibaly, 2003). Since part of Egyptian girls' gender roles is to be submissive to Egyptian men, whether their fathers, brothers or husbands, then girls in Egypt are used to trusting male figures and do what these male figures tell them to do.

Based on these findings, it is clear that Egyptian children tend to learn and adhere to gender appropriate behaviors accepted in their society. Although Egyptian girls might trust

male figures and adhere to what they tell them to do, they tend to identify with and imitate female figures in order to perform gender appropriate behaviors. And, based on gender and learning theories, we can predict that children might learn health messages best from same-gender characters, particularly in Egypt where different gender roles are emphasized.

Therefore, to create a health education story that can effectively teach both boys and girls and influence their behavior; developers of educational health cartoons should design both male and female characters to equally impact boys' and girls' knowledge and attitude. An Egyptian nonprofit organization, called Healthy Egyptians, has developed the first educational health cartoon to effectively educate children on the good practices of pneumonia prevention in order to prevent the occurrence of pneumonia among children in Egypt. This cartoon "Montasser Overcomes Pneumonia", however, only features a male main character and therefore may not be as effective at reaching girls as it is at reaching boys.

Healthy Egyptians

Healthy Egyptians is an Egyptian citizen organization (CO) founded by Dr. Mohamed Zaazoue in 2012. The main purpose of the CO is to provide children and parents with preventive health education, which is lacking in the Egyptian society (Healthy Egyptians, 2012). Since most Egyptians are more focused on treatment rather than prevention of diseases, Healthy Egyptian targets children and parents from all socioeconomic strata throughout Egypt (Healthy Egyptians, 2012). In order to be able to trigger a cultural shift from treatment to prevention, Healthy Egyptians decided to develop attractive ways to deliver health education for different diseases (Healthy Egyptians, 2012). Therefore, a set of quiz games, puppet shows, coloring books and an animated cartoon were employed in different places, such as hospital waiting rooms and health caravans, in order to be able to reach both children and their parents (Healthy Egyptians, 2012). Healthy Egyptians decided to start an initiative addressing pneumonia, and in coordination with students at the School of Fine Arts

at a local university, Health Egyptians developed a comic book, that is also used as a coloring book, for children called “Montasser Overcomes Pneumonia” (Healthy Egyptians, 2012). In order to attract the parent’s attention in hospital waiting rooms or campaigns, the volunteers at Healthy Egyptians ask parents if they will take part in a competition where prizes will be distributed to the winners (Healthy Egyptians, 2012). The volunteers then show a short presentation to parents on the healthy practices that should be done to prevent pneumonia, give them a paper that outlines the main points that were covered, give them a short quiz and then review the answers together (Healthy Egyptians, 2012). Finally, they give all the children comic coloring books and crayons as prizes and read for them the story of pneumonia (Healthy Egyptians, 2012). Additionally, Healthy Egyptians has coordinated with twenty local university hospitals in 15 governorates for volunteers from medical schools to hold these health education sessions and activities on an ongoing basis (Healthy Egyptians, 2012). Their health education activities have expanded out to many places as nurseries, schools, and impoverished communities to reach and educate children (Healthy Egyptians, 2012). The CO is planning to do a series of comic books on different diseases (Healthy Egyptians, 2012).

Approach of the cartoon. “Montasser Overcomes Pneumonia” is the story of a boy called Montasser, who catches pneumonia from the evil bacteria, Hemo and Nemo (named after Hemophilus influenza and Streptococcus pneumonia), roaming inside the house (Healthy Egyptians, 2012). Montasser’s mother then takes him to see a doctor who recommends a medicine and the vaccine, as well as outlining other healthy practices for Montasser to follow such as opening the windows, washing his hands and eating healthy food regularly (Healthy Egyptians, 2012). In the storybook, the illustrations then display how Montasser performs such healthy practices as ordered by the doctor, therefore weakening the evil bacteria, overcoming pneumonia, and becoming healthy again.

Healthy Egyptians uses a male cartoon character to reach both boys and girls. Although it is reported that most children seem to enjoy the cartoons, it may be important for children to identify with the character and consider the character as their role model to better internalize the information and model the behavior of the character. Therefore, this thesis proposes that using a central female character in this educational health cartoon is likely to be more effective in increasing girls' knowledge of and intentions towards pneumonia prevention than the Montasser cartoon.

Methodology

Participants

The participants were 60 girls between the ages of 4-7 years as this is the main age range that Healthy Egyptians target with their coloring books. The study was performed in private schools in Cairo, since these schools easy to access without government permission. Three schools were selected using convenience sampling since Healthy Egyptians do not have any sampling method to reach the children in their intervention. The researcher contacted the schools to acquire consent. The researcher asked an official principal of each school to sign a consent form (See Appendix B) prior to conducting this study, with the assurance that all identities would remain confidential and neither the schools' nor the children's names would be mentioned in the study. Then, the researcher provided the schools with parents' consent forms (See Appendix A) that were sent to the girls' parents in hard copy and retrieved before the scheduled day of the study.

Materials

Coloring Book. Two coloring books were used in the research: "Montasser Overcomes Pneumonia", the coloring book that was designed by Healthy Egyptians, and "Farah Overcomes Pneumonia", a coloring book that the researcher developed. Both coloring books have the same story, which was developed by Healthy Egyptians; however, in order to

be able to test the hypothesis, the researcher changed the main cartoon character and used a female character called Farah as the central character, instead of the male character Montasser, in the original coloring book. Therefore, in order to know the impact of the gender of the cartoon character, each girl was exposed to only one of these two stories.

Interview. In the literature, all the studies that assessed the impact of educational health cartoons on children either used guided questionnaires or interviews to assess their level of knowledge after being exposed to the educational cartoon. Sinor (2011) used structured questionnaires to measure the knowledge and behavior of 5- to 6-year-old children on their oral health after watching an educational cartoon both immediately and after one or two weeks. Another study used interviews to assess the overall experience, including understanding the cartoon and identification with the character, of 5 to 6 years old children after watching several cartoons (Bjorkqvist & Lagerspetz, 1985). The researchers also interviewed the children six months after the intervention to determine how much information they could recall (Bjorkqvist & Lagerspetz, 1985). In an anti-smoking educational program, children from 1st – 3rd grade were given short questionnaires, to assess if their level of knowledge increased after watching the anti-smoking educational cartoon and 4-6 weeks later to see how much information they retained (Surani, 2011). In another educational health program, school children were given questionnaires, consisting of multiple choice questions and open ended questions, to assess both their level of knowledge and their attitudes after watching an educational cartoon that informed them on soil-transmitted helminthes (Bieri, 2013). Therefore, in this study, structured interviews were used.

Since the participants were too young to be able to read and write full sentences, the interviewer asked them the questions. The interviews were conducted in Arabic since the coloring books are written in Arabic. The questions that were used in the interview were piloted on girls ranging from 4 to 7 years to make sure that the questions were

understandable. The interview consisted of 12 questions: five of these questions were multiple-choice questions, while the remaining seven were qualitative questions. The questions were divided into four sections, the first section assessing the girls' knowledge of material, the second section, their enjoyment of the activity, the third section, their degree of identification with the character, and the fourth section, their intentions towards pneumonia prevention. (See Appendix C for the list of questions and Appendix D for the categories of the questions)

Procedure

After acquiring the consent of the schools and the parents, the girls who provided signed consent forms were divided into two groups within each school. The first group of girls, the Montasser group, was given the coloring book with the hero of the story a boy called Montasser, while the girls in the second group, Farah group, were exposed to the same story but with a girl as the central character called Farah. For each group of girls, the interviewer read the story to the children and then they were given the coloring books to color them for 15 – 30 minutes. Then the interviewer asked each one of the girls for her verbal assent to be asked questions regarding the coloring book. When asking the questions related to identification with the characters, girls in both groups were shown pictures of both Montasser and Farah so that they could choose between them. One week after the intervention, the girls were asked the same questions that were used to assess their knowledge of the material in the first interview, in order to determine how much they remember of the information communicated through the character in the coloring book. (See Appendix E)

Statistical Analysis

T-tests were used to test for significant differences in attitude, knowledge, enjoyment of activity and identification between the Montasser and Farah groups. For the qualitative questions, thematic analysis was used. When using the thematic analysis, the data are

identified and categorized into themes and then analyzed (Braun & Clarke, 2006). Thematic analysis is used to illustrate crucial patterns or themes throughout the data collected; themes are patterns that reveal significant information across the data that is related to the hypothesis (Braun & Clarke, 2006). In this case, themes around identification with the Farah/Montasser character, enjoyment of the activity, and intentions toward pneumonia prevention were extracted and sorted into categories. To check for inter-rater reliability, one of the researcher's peers in the masters program coded and sorted a random sample of the responses.

It was anticipated that the themes would reveal a stronger identification with the Farah character across both groups, while revealing more enjoyment of the activity and stronger intentions toward pneumonia prevention in the Farah group.

Results

Enjoyment of the Activity

It was hypothesized that the girls in the Farah group would like coloring the book and enjoy listening to the story more than the girls in the Montasser group. However, there was little difference between the two groups in their liking for the coloring the book and their enjoyment of the story. In the Montasser group, 93% ($n=28$) of the girls liked coloring the book very much, while 3% ($n=1$) liked it a medium amount and another 3% ($n=1$) liked coloring the book a little amount. In the Farah group, 97% ($n=29$) of the girls liked coloring the book very much, while 3% ($n=1$) liked coloring the book a medium amount and none of the girls reported that they liked coloring the book a little amount. Therefore, this means that across both groups, 95% ($n=57$) of girls reported that they liked coloring the book very much.

In the Montasser group, 97% ($n=29$) of the girls reported that they liked Montasser's story very much, while 3% ($n=1$) of the girls reported that they liked the story a medium amount and no one reported that they liked it a little amount. In the Farah group, 87% ($n=26$) reported that they liked the Farah's story very much, while 13% ($n=4$) reported that they

liked it a medium amount and no one of the girls reported that they liked it a little amount.

Therefore, across both groups 92% ($n=55$) of all the girls who participated in this study liked the stories of Montasser and Farah, while 8% ($n=5$) liked the stories a medium amount.

Knowledge of Material

It was hypothesized that the girls in the Farah group would remember the material better than the girls in the Montasser group. All the girls in the Farah group remembered that the father was smoking and that this action made Farah ill. In the Montasser group, all of the girls except one remembered that Montasser's father was smoking and that made Montasser ill, which constitutes 97% ($n=29$) of the girls. Therefore, this shows that 98% ($n=59$) of the girls from both groups recalled that the father was smoking cigarettes and only 2% ($n=1$) did not recall this information.

In both stories, the characters did 5 things to be cured and not have pneumonia again; these things were taking medicine, eating healthy food such as vegetables and milk, taking vaccines, washing their hands and opening the window. In order to know how much of this information the girls remembered from the story, the researcher counted the number of items each girl recalled. Supporting the hypothesis, the Farah group ($M = 3.9$) recalled more items on average than the Montasser group ($M = 3.56$). However, a t-test was conducted to compare the two groups and found no significant difference in item recall $t(58) = -1.405, p = .165$. See Table 1 for a summary of items remembered.

Table 1

Girls' Knowledge of the Five Healthy Practices that the Characters Did

What did Farah/Montasser do	Montasser Group	Farah Group	Total
right in order to be cured and not have pneumonia again?			
Remembered one item	1	0	1
Remembered two items	4	2	6
Remembered three items	8	8	16
Remembered four items	11	10	21
Remembered all five items	6	10	16
Mean items recalled	3.56	3.9	

Identification with the Character

It was predicted that girls would identify more strongly with the Farah character than the Montasser character. Identification with the character was measured by three categories: liking of the character of the story, naming one of the characters as most like themselves, and picking one of the characters as a friend. To assess the second and third categories, the researcher showed the girls from both groups the pictures of both characters, without reading to them the story of the character that they do not know. In terms of liking, the hypothesis was not supported as there was no real difference between the two groups; girls in both

groups liked their character. In the Montasser group, 80% ($n=24$) of the girls reported that they liked Montasser very much, and in the Farah group 77% ($n=23$) reported that they liked Farah very much. In both groups, 17% ($n=5$) reported that they liked the character a medium amount, and 3% ($n=1$) in the Montasser group reported liking the character a little amount, while 7% in the Farah group liked the character a little amount.

Table 2

How much did the girls like Montasser/Farah?

Degree	Montasser Group	Farah Group	Total
Liked him/her a little amount	3%	7%	5%
Liked him/her a medium amount	17%	17%	17%
Liked him/her very much	80%	77%	78%

In support of the hypothesis however, across both groups, girls named Farah as being most like them and they preferred her as a friend. When the girls were asked to pick one of the characters whom they think is most like them, 87% ($n=26$) of the girls in the Montasser group picked Farah and 90% ($n=27$) in the Farah group picked Farah. Only 13% ($n=4$) of the girls in the Montasser group picked Montasser and only 10% ($n=3$) of the girls in the Farah group picked Montasser. Therefore, across both groups 88% ($n=53$) of the girls picked Farah as the one they see the most like them, while only 12% ($n=7$) of the girls from both groups picked Montasser as the one they see the most like them.

Table 3

Girls Choose which Character is Most Like Them

Which one is most like you	Montasser Group	Farah Group	Total
Number of girls who picked Montasser	13%	10%	12%
Number of girls who picked Farah	87%	90%	88%

Similarly, when the girls were asked to pick which of the characters they would want to be their friend, 83% ($n=25$) of the girls in the Montasser group picked Farah, and 80% ($n=24$) of the girls in the Farah group picked Farah. Only 13% ($n=4$) in the Montasser group and 17% ($n=5$) in the Farah group picked Montasser. One girl in each group (3%) picked both.

Table 4

Girls Choose which Character They Want to be Their Friend

Which one you want to be your friend	Montasser Group	Farah Group	Total
Number of girls who picked Montasser	13%	17%	15%
Number of girls who picked Farah	83%	80%	82%
Number of girls who picked both characters	3%	3%	3%

Intentions towards Pneumonia Prevention

It was predicted that girls in the Farah group would have stronger intentions to prevent pneumonia and would be more likely to see themselves as playing a role in preventing pneumonia than girls in the Montasser group. To assess this, the researcher counted how many healthy practices each girl reported that she should do in order to prevent pneumonia. Four out of the five practices, done by each character in the story to cure themselves from pneumonia, can be done to prevent having pneumonia; these four preventative practices are eating healthy food as vegetables and milk, washing hands, opening the window and taking vaccines. The mean number of healthy practices mentioned by the Montasser group was 2.6 and for the Farah group was 2.8. A t-test revealed no significant difference $t(58) = -.851, p = .398$. Across both groups, 27% ($n=16$) of the girls mentioned 4 out of the 4 healthy practices that they should do to prevent having pneumonia; 35% ($n=21$) mentioned 3 out of the 4 healthy practices that they should do to prevent having pneumonia; 23% ($n=14$) of the girls mentioned 2 out of the 4 healthy practices that they should do to prevent having pneumonia; 13% ($n=8$) of the girls mentioned 1 out of the 4 healthy practices that they should do to prevent having pneumonia and 2% ($n=1$) of the girls did not mention any of the healthy practices. Thirty-three percent ($n=10$) of Farah group and 50% ($n=15$) from Montasser group mentioned taking medicine, as one of the preventative practices that should be done to prevent pneumonia; however, taking medicine does not prevent pneumonia and so was not considered as an answer to the question. Additionally, 17% ($n=5$) of Farah group and 10% ($n=3$) girls in Montasser group mentioned that they would ask their fathers to stop smoking; however, it was not considered as an answer, since the characters did not directly communicate it.

Table 5

Girls list the Healthy Practices that Could Help Them Not to Get Pneumonia

What are the things you should do in order not to get pneumonia?	Montasser Group	Farah Group	Total
Did not remember any item	3%	0	2%
Remembered one item	23%	3%	13%
Remembered two items	10%	37%	23%
Remembered three items	37%	33%	35%
Remembered all four items	27%	27%	27%
Mean items recalled	2.6	2.8	

Later Recall

After a week had passed the girls in both groups were interviewed again. It was hypothesized that girls in the Farah group would remember the details of the story more accurately than girls in the Montasser group. All the girls, who participated in the first interview, were present after one week from the intervention except two girls from the Montasser group. These two girls were absent on that day and the researcher could not interview them; therefore, the researcher did the interviews with 30 girls in the Farah group and 28 girls in the Montasser group. To measure their recall, all of the girls were asked if they remembered the story, and in both groups, 93% ($n=26$) of the girls said that they remembered the story, and 7% ($n=2$) of the girls from both groups said that they did not remember the story. The girls were also asked if they remembered what Farah/Montasser's father had done that made Farah/Montasser get pneumonia. Again, there was little difference in recall between the two groups. In the second interview, 93% ($n=26$) of the girls in the Montasser group remembered that the father was smoking while 7% ($n=2$) of the girls in the

group did not remember. In the Farah group, 97% ($n=29$) of the girls remembered that the father was smoking while 3% ($n=1$) of the girls in the group did not remember. Therefore, this shows that 95% ($n=55$) of the girls from both groups recalled that the father was smoking cigarettes and 5% ($n=3$) did not recall this information.

The girls were asked to list all the healthy practices that Farah/Montasser did, and the researcher counted the number of healthy practices they mentioned. Out of a possible five practices, girls in the Farah group remembered a mean of 3.6, while girls in the Montasser group remembered a mean of 3.57, again, a statistically insignificant difference $t(56) = -.093$, $p = .926$.

Table 6

Girls Recall the 5 Healthy Practices that the Characters did

What did Farah/Montasser do right in order to be cured and not have pneumonia again?	Montasser Group	Farah Group	Total
One practice recalled	4%	3%	3%
Two practices recalled	21%	13%	17%
Three practices recalled	25%	20%	22%
Four practices recalled	14%	47%	31%
Five practices recalled	36%	17%	26%
Mean items recalled	3.6	3.9	

Thematic Analysis

Identification with the Characters

The hypothesis that girls would identify more with the female character, Farah, was supported by the survey data. An analysis of the qualitative data allows us to understand why

they identified with her. Three major categories emerged from the analysis, 1) physical characteristics, including gender; 2) personality characteristics and behavior; and 3) enjoyment of the story.

Importance of physical characteristics. Three physical characteristics emerged as important to the girls in seeing Farah as like them: gender, similarity, and appearance. In the Farah group, 27 out of the 30 girls in the group picked Farah as the character that they see as the most like them. From these 27 girls, 10 girls reported that they chose Farah as the character that they see as the most like them because she is a girl; two girls reported that they chose Farah because she has brown hair like them. On other hand, 26 girls out of the 30 girls in Montasser group chose Farah as the character that is most like them; 14 girls reported that they chose her because she is a girl; 3 girls reported that they chose her because she looks like them and one of them specified that Farah has the same brown hair as hers; two girls reported that they chose her because she is beautiful and smiling.

Three physical characteristics also emerged as important to the girls in choosing Farah or Montasser to be their friend: gender, liking, and appearance. In the Farah group, when they were asked to pick one of the characters they want to be their friends, 24 out of the 30 girls in the group picked Farah; four girls said they chose her because she was a girl, two of the girls chose her because they love playing with girls more, and two girls reported that they chose her because they like her. Additionally, one of the girls in Farah group who chose Montasser to be her friend reported that the reason behind this choice was that she loves boys. On the other hand, in Montasser group, 25 out of 30 of the girls in the group chose Farah to be their friend; 14 girls chose Farah because she is a girl like them; one of these girls reported that she only has girls as her friends, while another girl mentioned that she chose her because “girls like to have girls as their friends and boys like to have boys as their friends”.

Another girl reported that she chose Farah because she is wearing a pink shirt like her, while

another girl reported that she chose Farah as her friend because she is smiling. From the 4 girls in Montasser group who chose Montasser as their friend, only one girl reported that she chose Montasser because he is good looking and has nice teeth.

Importance of the characters' personality characteristics and good behaviors.

Good behavior emerged as important to the girls in their liking of Farah and Montasser. In Farah group, 19 of the 23 girls, who reported that they liked Farah a lot, mentioned that they liked her because she did the right healthy practices that the doctor told her to do. Two of the 23 girls reported that they liked Farah a lot because she is nice and good. Moreover, in Farah group, three out of the five girls, who reported that they liked Farah medium amount, mentioned that they liked her medium amount because she was doing bad health practices in the beginning and did not wash her hands. On the other hand, in Montasser group, 16 of the 24 girls who reported that they liked Montasser a lot said that they liked him a lot because he did the right healthy practices that the doctor told him to do. In Montasser group, three out of the five girls who said that they liked Montasser a medium amount was because he did not do the right healthy practices in the beginning. The only girl in Montasser group and one out of two girls in Farah group, who reported that they liked Farah/Montasser a little amount, reported that the reason behind this is because she/he did not wash his hands in the beginning.

In the Farah group, 27 out of the 30 girls in the group picked Farah as the character that they see as the most like them. From these 27 girls, 12 girls chose Farah as the character that is most like them because she did everything that the doctor told her to do, did everything right at the end and did the healthy practices to be cured from pneumonia. Additionally, two girls reported that they chose her as the most like them because she is nice. Three out of the 30 girls in Farah group picked Montasser as the character that is most like them; they reported that they chose him because he was clean and good. On the other hand, In Montasser group, three out of the 26 girls, who chose Farah as the most like them, said that

they chose her because she did good healthy practices and one out of the 26 girls reported that she chose her because she is good. In Montasser group, four out of the 30 girls chose Montasser as the most like them; two of the girls reported that they chose him because he did good healthy practices.

In the Farah group, 14 out of the 24 girls who chose Farah to be their friend, reported that they wanted her to be their friend because she did the healthy practices that the doctor told her about. One of the girls mentioned that she picked her because although she did wrong things at the beginning, at the end, she was doing the right behavior. Besides mentioning the healthy practices that Farah did, two of the girls reported that they want her to be their friend because she told her father to stop smoking. Two girls chose her because she is nice. Additionally, in Farah group, 5 of the 30 girls chose Montasser to be their friend; 3 of these girls chose Montasser because of the healthy behaviors that he did and because he is clean. On the other hand, out of the 25 girls from the Montasser group who chose Farah, five girls reported that they chose Farah because she did the right healthy practices and did what the doctor told her to do, while one girl reported that she chose Farah because she is nice. Additionally, two out of the four girls who chose Montasser to be their friend reported that they chose him to be their friend because he was doing the right healthy practices.

When the girls in the Farah and Montasser group were asked what are the things that the characters did and they liked, all of the girls who answered this question, who were 24 girls in the Farah group and 28 girls in the Montasser group, listed the healthy practices that the character did as the things that the characters did and they liked. These healthy practices included washing hands, opening the window, eating healthy food, taking medicine and getting vaccinations.

Importance of a good story. Finally, the story itself emerged as a reason why the girls liked Farah and Montasser. From the 24 girls in the Montasser group, who reported that

they liked Montasser a lot, four girls said that they liked him a lot because the story was nice and interesting and one girl said that she liked him a lot because she liked coloring the story. Moreover, one girl from Farah group reported that she liked Farah a lot because the story was nice and another girl said that she liked Farah a lot because she got cured. One of the girls stated that she liked Farah a little amount because the story was short. Moreover, two out of the 24 girls in the Farah group who chose Farah to be their friend, reported that they chose her because they liked her story. On the other hand, one out of the 4 girls in the Montasser group who chose Montasser to be their friend chose him because she liked his story.

Discussion

It was expected that the girls in the Farah group would enjoy listening to and coloring the story more, gain more knowledge, have stronger intentions toward pneumonia prevention than the girls in Farah group, while the girls in both groups will identify more with Farah character than the Montasser character. In terms of the enjoyment of the activity, the hypothesis was not supported as the majority of the girls from both groups, which is about 78% of the girls, enjoyed listening to the story and coloring the books, thus there was no significant difference between both groups. Additionally, the results showed that although the girls in the Farah group remembered more items, had stronger intentions towards pneumonia prevention and sustained more information a week after the intervention than the girls in the Montasser group, these differences were not statistically significant. Finally, it was found, as hypothesized, that the majority of the girls in both groups had stronger identification with the character Farah than the Montasser character, as across both groups 88% chose Farah as the most like themselves and 82% picked Farah to be their friend.

Almost all of the girls in the present study enjoyed listening to and coloring the story in both the Montasser and Farah conditions. These results support previous research, which found that it is important for health education activities to be relevant in terms of culture,

environment, and the daily activities that characters perform (Dowse and Ehlers, 2001; Sinor, 2011). It appears that Healthy Egyptians has created an educational activity that is likely to be engaging for young girls.

Not only did the girls seem to enjoy the activity, the results also showed that girls in both groups remembered most of the healthy practices that were communicated by the characters, had strong intentions towards pneumonia prevention and sustained the information over a week. Again, this can be attributed to the similarity in context and culture between both characters and the girls, which enabled them to remember the healthy practices and be motivated to do them (Dowse and Ehlers, 2001; Sinor, 2011). This might also be attributed to the inclusion of illustrations in the story, as this has been shown to increase people's ability to recall the health information, through the "pictorial superiority effect" (Houts, Doak, Doak and Loscalzo (2005). It also provides support for the effectiveness of cartoon characters for teaching children healthy practices (Sinor, 2011; Bieri et al., 2013), and confirms research by of John, Asokan and Shankar (2013) who found that children, who watched their favorite cartoon character performing healthy practices, improved their oral health attitudes and behaviors.

Although it was unexpected that compared to the Farah group, the girls in the Montasser group remembered almost as many items, had strong intentions towards pneumonia prevention, and recalled the information almost as well a week after the intervention, this might be due to the fact that Egyptian girls tend to trust male figures, and so they conformed to Montasser's healthy practices (Mensch, Ibrahim, Lee, & El- Gibaly, 2003). Additionally, Bussey and Bandura (1999) found that children can be selectively attentive to an opposite-gender model if this is the only model they are exposed to, so this might be another reason why the majority of the girls in the Montasser group did not differ significantly from the Farah group. Finally, though the results showed trivial differences

between the knowledge gained and the intentions towards pneumonia by both groups, these differences were in the predicted direction of the girls in the Farah group remembering more items during and after the intervention and having stronger intentions than the girl in Montasser group. That this difference was not significant might simply be due to the small sample size.

Girls in both the Farah and Montasser groups reported liking the main character. When asked why they liked Farah or Montasser, girls in both groups who said they liked the character very much reported that their reason for liking the character was because of doing the right healthy practices and being cured. On the other hand, the majority of the girls who reported that they liked the characters medium amount or a little amount responded that the reason for that is because they failed to do the right practices from the beginning of the stories. These results support the literature that found that success is a factor that made individuals identify and like same and opposite gender models (Hoffner and Buchanan, 2005; Bandura, 1986). In a later version of the Montasser story, told in video, (www.youtube.com/watch?v=U0EaMtb16oA), Healthy Egyptians changed Montasser's role from a sick child to a superhero who understands good health practices and helps a child who is sick with pneumonia. Given the results of the present study, this appears to have been a wise decision as doing healthy practices affected the girls' liking of the Montasser or Farah character. Furthermore, it is important in the health educational cartoons to create illustrations in which the main characters perform the healthy practices, as these illustrations increase children's attention, help the girls to sustain the information, and follow medical instruction (Dowse & Ehlers, 2001; Houts, Doak, Doak & Loscalzo, 2005). In addition, the results showed that having a good story was a factor that made the girls from both groups like the characters a lot, as five of the girls from both groups reported that they liked the characters a lot because the story was nice and three of the girls picked one of the characters

to be their friends because of the interesting story. This supports earlier studies that found that having a good story enables children to like and identify more with the characters (Dowse and Ehlers, 2001; Sinor, 2011).

The results showed that the girls from both groups identified more strongly with Farah than Montasser. When naming the character most like themselves and picking a character for a friend, the majority of the girls from both groups named Farah as the most like themselves and chose her as a friend, stating that the reasons for choosing her were: her gender, having a similar appearance to themselves, having a good appearance, doing good behaviors, and having a good personality. These results support research which found that children identify with and emulate the behaviors of the models they see in the media when they see them as similar to themselves in personality, age and gender, and when they think that these models are attractive and successful (Appiah, 2001; Hoffner & Cantor, 1991; McDonald & Kim, 2001; Eyal & Rubin, 2003; Hoffner, 1996; Bandura, Ross & Ross, 1963). Additionally, researchers have found that children tend to imitate the behavior of same-gender models (Bandura, Ross and Ross, 1963; Ahmed & Abdul Wahab, 2014). This may be especially relevant in Egypt since there are many gender socialization agents that tend to teach Egyptian girls to abide by the gender-appropriate behaviors and to imitate female models (Abu Gazaleh, Bulbul, Hewala, & Najim, 2004; Mensch, Ibrahim, Lee, & El- Gibaly, 2003). On the other hand, in the case of the minority of girls who chose Montasser as similar to themselves or picked him as a friend, they said they chose him because of his good behaviors, which again is congruent with the findings of the studies which show that individuals identify almost equally with same-gender and opposite-gender models when these models are seen as successful (Hoffner and Buchanan, 2005; Bandura, 1986).

It is important for girls to see a female cartoon character in health education interventions because it may increase their self-efficacy and self-esteem and empower them.

The results of this study showed that the girls from both groups strongly identified with the female cartoon character and considered her similar to themselves more than the male cartoon character. Witnessing a female model who is successful in taking care of her health and performing the healthy practices, should help girls have higher self-efficacy and believe more strongly in their ability to perform the observed healthy practices (Bandura & Jeffery, 1973; Carroll & Bandura, 1990; Bussey & Bandura, 1999; Bandura, 2006). In fact, the researcher received unsolicited positive feedback from some of the parents and teachers that the girls began to do the healthy practices at home or ask their parents to stop smoking; this supports the idea that providing the girls with health-related information at that young age is empowering to them and makes them feel that they are the ones who are in control of their health and lives. Additionally, according to Lips (1994), the girls are taught by society that they are powerless and that their behaviors do not make a difference, while boys are taught that they can depend on their abilities and skills to make a difference. Therefore, when girls witness a female character whose actions can cure her and make a difference in her life, they will have more confidence in their abilities, feel that they are successful and powerful as the female character and have high self-esteem.

Implications. This study showed that a health educational coloring storybook developed by Healthy Egyptians was an effective way to teach girls the preventative practices of pneumonia. However, since some of the girls reported that they did not like the characters because they did not do the right practices from the beginning, it is important to have another child do the unhealthy practices, while the main character performs the healthy practices in front of the second character in the coloring book. In addition, even though the majority of both groups gained knowledge and had positive intentions towards pneumonia prevention, the girls from both groups strongly identified with the female character more than the male character. This provides support for the idea that creating health educational stories that

include female cartoon characters as one of the main characters will encourage girls to identify more with the character and emulate their healthy behaviors. Even though there was no significant difference between the girls from both groups in their knowledge of and intentions towards pneumonia prevention, developers of the cartoon characters should include female characters beside male character in health education cartoons, because the girls liked and identified more with female character. It was interesting that most of the girls in the Montasser group asked the researcher to give them the coloring book of Farah.

Limitations and suggestions for future research. The first limitation of the study is the small sample size as a larger sample might have resulted in finding a significant difference. The survey questions too, might have picked up differences more effectively if there had been a wider range of choices in the close-ended questions. Second, due to the strict government permission that is required before conducting studies in public schools in Egypt, and the limited time the researcher had to conduct the study before the end of the school year, the study was only conducted in private schools since they were easier to access. This lead to a lack of socioeconomic diversity in the sample. That the study was only conducted in urban Cairo is another limitation, so care must be taken in generalizing the results to all Egyptian girls. Finally, due to the limited time the researcher had to conduct the study before the end of the school year, the researcher only waited for a week to retest how much information the girls were able to recall from the cartoon. A longer span of time before the retest might provide a more accurate picture of long-term recall.

In addition to increasing the size and diversity of the sample in future research, it would be interesting to include boys in order to see how they respond to a female character. Future research should also test recall over a longer period of time, and examine other health prevention practices in addition to pneumonia. Researching how girls (and boys) view the Farah and Montasser characters when they play the role of a superhero who teaches other

children about good health practices would also be valuable. Health education for children in Egypt is new, so there is much to be learned about how to implement it effectively.

Examining a variety of variables such as presentation format (for example, video or coloring book), characteristics of the characters, amount and type of information presented, and characteristics of the audience (such as age, gender, and urbanicity), is important to learning what educational methods work best in which circumstances.

Conclusion

Finally, this study supports the findings of other studies that reveal that health educational cartoons are effective ways to increase children's knowledge and have strong intentions towards disease prevention. The health educational cartoons should be relevant to the context, culture and daily activities of the children to have an impact on them. Although the results of the study revealed trivial difference between the girls who were exposed to the female character and the girls who were exposed to the male character, the results were in the predicted direction that the girls who were exposed to the female character gained more knowledge and had stronger intentions toward pneumonia prevention than the girls who were exposed to the male character. Moreover, this study shows how girls strongly identify with the female cartoon character. Therefore, it is important to design health educational cartoons with female characters as central characters to effectively reach girls not only to increase their knowledge, but also to increase their self-efficacy and self-esteem, enable them to feel responsible for their lives and health, and empower them.

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Appendix A

Parents' Consent Forms



Documentation of Informed Consent for Participation in Research Study

Project Title: Impact of Cartoon Character's Gender on Girls' Knowledge of and Intentions toward Pneumonia Prevention

Principal Investigator: Farah El-Shiaty, shiaty@aucegypt.edu

*Your daughter is being asked to participate in a study conducted for a master's thesis degree at the American University in Cairo as part of fulfilling the requirements for the Community Psychology graduate program.

The purpose of this research is to explore the impact of a cartoon character's gender on a girl's knowledge of and intentions toward pneumonia prevention, through using the educational health coloring book "Montasser/Farah overcomes pneumonia", which has been developed by the Egyptian non-governmental organization: Healthy Egyptians. The findings may be published, presented or both. The expected duration of your daughter's participation is for only two days (a day every week for two consecutive weeks).

*The procedures of the research are as follows:

An educational health story book will be read to your daughter while she is in a group with other children at the school/nursery. The story is about a girl/boy who performs some unhealthy behaviors that cause him/her to catch pneumonia; in order to get well, the boy/girl then performs some healthy practices recommended by a doctor. After volunteers from Healthy Egyptians read the story to the girls in the nursery, they will be given the coloring books and will color it for 15 – 30 minutes. Then an interviewer will ask your daughter if she would be willing to answer some questions regarding the coloring book. The interviewer will ask your daughter some questions about the health practices taught in the coloring book and about her feelings regarding the boy/girl character. A week afterwards, the interview your daughter will again be asked the same questions in order to see whether she is able to remember the information communicated through the character in the coloring book.

*There are no known risks or discomforts associated with participation in this research.

*Your daughter may benefit from her participation through learning about the prevention of pneumonia. Her participation will also help the staff at Healthy Egyptians learn what kinds of educational materials are most effective when working with girls.

*Your daughter's identity, name or any personal information will be confidential, only her age will be asked for in the interview

* Questions about the research, my rights, or research-related injuries should be directed to Farah El-Shiaty via phone, 01220147014.

*Your daughter's participation in this study is voluntary. Refusal to participate will involve no penalty or loss of benefits to which you or she are otherwise entitled. Your daughter's assent to be interviewed will be asked for before interviewing her. She may discontinue participation at any time without penalty or the loss of benefits.

Signature _____

Printed Name _____

Date _____

Arabic Version of the Parents' Consent Form

استمارة الموافقة للاهل

الجامعة الأمريكية بالقاهرة

استمارة موافقة مسبقة للمشاركة في دراسة بحثية

عنوان البحث : مدى تأثير جنس الشخصية الكرتونية على معرفة الفتيات و موقفهم تجاه الوقاية من الالتهاب الرئوي
الباحث الرئيسي: فرح الشيتي ، طالبة ماجستير بالجامعة الأمريكية
البريد الإلكتروني: shiaty@aucegypt.edu
الهاتف: 01220147014

ابنتك مدعوة للمشاركة في دراسة بحثية عن مدى تأثير جنس الشخصية الكرتونية على معرفة الفتيات و موقفهم تجاه الوقاية من الالتهاب الرئوي.

هدف الدراسة هو استكشاف تأثير جنس الشخصية الكرتونية على معرفة الفتيات وموقفهم تجاه الالتهاب الرئوي، من خلال استخدام كتاب التلوين للتوعية الصحية "فرح / منتصر يتغلب على الالتهاب الرئوي"، الذي تم تطويره من قبل المنظمة غير الحكومية المصرية ، مصريون اصحاء

نتائج البحث قد تنشر في دوريه متخصصه أو مؤتمر علمي أو ربما كليهما.

المدة المتوقعة للمشاركة في هذا البحث لمدة يومين (يوم واحد في الاسبوع لمدة اسبوعين متتاليين داخل المدرسة)

اجراءات الدراسة تشتمل على: سيتم قراءة قصة للتوعية الصحية (كتاب التلوين) لابنتك مع مجموعة من الاطفال في الفصل. والقصة تدور حول فتاة / فتى الذي يؤدي بعض السلوكيات غير الصحية التي تسبب له / لها الالتهاب الرئوي. من أجل ان يشفى من المرض ويكون بصحة جيدة، يقوم الفتى/الفتاة بتنفيذ بعض الممارسات الصحية الموصى بها من قبل الطبيب. بعد قراءة القصة للأطفال في الفصل من قبل متطوعين من جمعية مصريون اصحاء، فسوف تعطى كل فتاة كتاب التلوين وسوف تلون ذلك لمدة 15 30 دقيقة. ثم سيطلب من كل فتاة إذا كانت ستكون على استعداد للإجابة على بعض الأسئلة المتعلقة بهذه القصة . سوف تسأل كل فتاة بعض التساؤلات حول الممارسات الصحية التي تدرس في كتاب التلوين وعن مشاعرها بشأن شخصية الفتى / الفتاة. أسبوع بعد ذلك، سوف يتم مرة أخرى أن يطلب من الفتيات الاجابة عن نفس الأسئلة من أجل معرفة إذا كانوا قادرات على تذكر المعلومات المرسله من خلال الشخصية في كتاب التلوين.

لا يوجد اي مخاطر أو مضايقات متوقعة من المشاركة في هذا البحث

سوف تستفيد ابنتك من المشاركة في هذا البحث من خلال تعلم طرق الوقاية من الالتهاب الرئوي.

السرية واحترام الخصوصية: سوف تكون اسم ابنتك و هويتها سرية في هذا البحث , فقط سوف يسأل عن سنها في المقابلة

أي أسئلة متعلقة بهذه الدراسة أو حقوق المشاركين فيها أو عند حدوث أي اصابات ناتجة عن هذه المشاركة يجب ان توجه الى فرح الشيتي على 01220147014

ان المشاركة في هذه الدراسة ماهي الا عمل تطوعي, حيث أن الامتناع عن المشاركة لاينضمن أي عقوبات أو فقدان أي مزايا تحق لابنتك. ويمكنها أيضا التوقف عن المشاركة في أي وقت من دون عقوبة أو فقدان لهذه المزايا.

الامضاء:

اسم ولي الامر :

التاريخ :/...../.....

Appendix B
Schools' Consent Form



Documentation of Informed Consent for Participation in Research Study

Project Title: Impact of Cartoon Character's gender on the girls' Knowledge of and Intentions toward Pneumonia Prevention

Principal Investigator: Farah El-Shiaty, Shiaty@aucegypt.edu, 01220147014

*The girls in the school are being asked to participate in a study at the American University in Cairo being conducted for a master's degree thesis in the Community Psychology graduate program. The purpose of this research is to explore the impact of the cartoon character's gender on girl's knowledge of and intentions toward pneumonia prevention, through using the educational health coloring book "Montasser/Farah overcomes pneumonia", which has been developed by the Egyptian non-governmental organization, Healthy Egyptians. The findings may be published, presented or both. The expected duration of the girls' participation is for only two days (a day every week for two consecutive weeks).

*The procedures of the research are as follows:

An educational health storybook will be read to a group of girls in the school. The story is about a girl/boy who performs some unhealthy behaviors that cause him/her to catch pneumonia; in order to get well, the boy/girl then performs some healthy practices recommended by a doctor. After volunteers from Healthy Egyptians read the story to the girls in the nursery, they will be given the coloring books and will color it for 15 – 30 minutes. Then an interviewer will ask each girl if she would be willing to answer some questions regarding the coloring book. The interviewer will ask each girl some questions about the health practices taught in the coloring book and about her feelings regarding the boy/girl character. A week afterwards, the girls will again be asked the same questions in order to see whether she is able to remember the information communicated through the characters.

*There are no known risks or discomforts associated with this participation in this research.

*The girls may benefit from their participation through learning about the prevention of pneumonia. Their participation will also help the staff at Healthy Egyptians learn what kinds of educational materials are most effective when working with girls.

*The girls' identities, names or any personal information will be confidential, only her age will be asked for in the interview.

* Questions about the research, my rights, or research-related injuries should be directed to Farah El-Shiaty via phone, 01220147014

*The girls' participation in this study is voluntary. Refusal to participate will involve no penalty or loss of benefits to which you or she are otherwise entitled. The girls' assent to be interviewed will be asked for before interviewing them. They may discontinue participation at any time without penalty or the loss of benefits.

Signature _____

Printed Name _____

Date _____

n of the Schools' Consent FormsArabic Versio

استمارة موافقة للمدرسة

الجامعة الأمريكية بالقاهرة

استمارة موافقة مسبقة للمشاركة في دراسة بحثية

عنوان البحث : مدى تأثير جنس الشخصية الكرتونية على معرفة الفتيات و موقفهم تجاه الوقاية من الالتهاب الرئوي
 الباحث الرئيسي: فرح الشيتي ، طالبة ماجستير بالجامعة الأمريكية
 البريد الإلكتروني: shiaty@aucegypt.edu
 الهاتف: 01220147014

الفتيات الصغيرات في المدرسة مدعوات للمشاركة في دراسة بحثية عن مدى تأثير جنس الشخصية الكرتونية على معرفة الفتيات و موقفهم تجاه الوقاية من الالتهاب الرئوي.

هدف الدراسة هو استكشاف تأثير جنس الشخصية الكرتونية على معرفة الفتيات وموقفهم تجاه الالتهاب الرئوي، من خلال استخدام كتاب التلوين للتوعية الصحية "فرح/ منتصر يتغلب على الالتهاب الرئوي"، الذي تم تطويره من قبل المنظمة غير الحكومية المصرية ، مصريون اصحاء

نتائج البحث قد تنشر في دوريه متخصصه أو مؤتمر علمي أو ربما كليهما.

المدة المتوقعة للمشاركة في هذا البحث لمدة يومين (يوم واحد في الاسبوع لمدة اسبوعين متتاليين)

اجراءات الدراسة تشمل على:

سيتم قراءة قصة للتوعية الصحية (كتاب التلوين) لمجموعة من الاطفال في الفصل. والقصة تدور حول فتاة / فتى الذي يؤدي بعض السلوكيات غير الصحية التي تسبب له / لها الالتهاب الرئوي. من أجل ان يشفى من المرض ويكون بصحة جيدة، يقوم الفتى/الفتاة بتنفيذ بعض الممارسات الصحية الموصى بها من قبل الطبيب. بعد قراءة القصة للأطفال في الحضانه من قبل متطوعين من جمعية مصريون اصحاء، فسوف تعطى كل فتاة كتاب التلوين وسوف تلون ذلك لمدة 15 30 دقيقة. ثم سيطلب من كل فتاة إذا كانت ستكون على استعداد للإجابة على بعض الأسئلة المتعلقة بهذه القصة . سوف تسال كل فتاة بعض التساؤلات حول الممارسات الصحية التي تدرس في كتاب التلوين وعن مشاعرها بشأن شخصية الفتى / الفتاة. أسبوع بعد ذلك، سوف يتم مرة أخرى أن يطلب من الفتيات الاجابة عن نفس الأسئلة من أجل معرفة إذا كانوا قادرات على تذكر المعلومات المرسله من خلال الشخصية في كتاب التلوين.

لا يوجد اي مخاطر أو مضايقات متوقعة من المشاركة في هذا البحث

قد تستفيد الفتيات من المشاركة في هذا البحث من خلال تعلم طرق الوقاية من الالتهاب الرئوي. ايضا مشاركتهم سوف تساعد الموظفين في جمعية مصريون اصحاء معرفة أنواع المواد التعليمية الأكثر فعالية عند العمل مع الفتيات.

السرية واحترام الخصوصية: سوف تكون اسم و هوية الفتيات سرية في هذا البحث , فقط سوف يسأل عن سنها لفي المقابلة

أي أسئلة متعلقة بهذه الدراسة أو حقوق المشاركين فيها أو عند حدوث أي اصابات ناتجة عن هذه المشاركة يجب ان توجه الى فرح الشيتي على 01220147014

ان المشاركة في هذه الدراسة ماهي الا عمل تطوعي, حيث أن الامتناع عن المشاركة لا يتضمن أي عقوبات أو فقدان أي مزايا تحق للفتيات. ويمكنهم أيضا التوقف عن المشاركة في أي وقت من دون عقوبة أو فقدان لهذه المزايا.

الامضاء:

اسم المسؤول في المدرسة :

التاريخ :

Appendix C

Interview Questions Used after the Intervention

Age:

Group:

- 1) How much did you like coloring the book? (The researcher will use her hands to show the three levels of love to help the children understand the answers)
 - You liked it little amount
 - You liked it a medium amount
 - You liked it very much
- 2) How much did you like the story?
 - You liked it little amount
 - You liked it a medium amount
 - You liked it very much
- 3) How much do you like Montasser/Farah?
 - You liked him/her a little amount
 - You liked him/her a medium amount
 - You liked him/her very much
- 4) Why do you like him/her (little amount, medium amount or a lot)?
- 5) What did the father do wrong that made Montasser/Farah ill?
- 6) What did Montasser/Farah do right in order to be cured and not have pneumonia again?
- 7) Pick which one you see as the most like you? (The researcher will show the participants the pictures of both characters)
 - Montasser
 - Farah
- 8) Why did you pick Montasser/Farah?

- 9) Pick the one that you would most want to have as a friend (The researcher will show the participants pictures of both characters)
- Montasser
 - Farah
- 10) Why did you pick Montasser/Farah?
- 11) What are the things that Montasser/Farah did that you liked ?
- 12) What are the things you should do in order not to get pneumonia?

Arabic Version of the Interview Questions

مجموعة منتصر/فرح :

السن :

1 عجبك تلوين الكتاب اد ايه؟ (سوف استخدم يدي لتحديد الفرق بين مستويات

(الاعجاب)

*عجبني شوية صغيرين

*عجبني اكثر من شوية صغيرين / نص نص

*عجبني كثير قوي

2 عجبك القصة اد ايه؟

*اعببتني شوية صغيرين

*اعببتني اكثر من شوية صغيرين / نص نص

*عجبتي كثير قوي

3 حبيت منتصر / فرح اد ايه؟

*حبيت منتصر / فرح شوية صغيرين

* حبيت منتصر / فرح اكثر من شوية صغيرين / نص نص

* حبيت منتصر / فرح كثير قوي

4 ليه حبيت منتصر / فرح (شوية صغيرين اكثر من شوية صغيرين كثيرا)؟

5 بابا منتصر / فرح عمل ايه غلط خلى منتصر / فرح يعيبي / تعيبي؟

6 منتصر / فرح عمل ايه صح عشان يخف و ميجلوش البرد الاسم الالتهاب

الرئوي مرة ثانية؟

7 اختار وحد فيهم سيفه / سيفاه زيك اكثر؟

*منتصر

*فرح

8 ليه اخترت منتصر / فرح؟

9 اختار واحد فيهم عيزه يبقى / تبقى صحبتك/ صحبتك؟

*منتصر

*فرح

10 ليه اخترت منتصر / فرح؟

11 ايه الحاجات المنتصر / فرح عملها / عملتها عجبك؟

12 ايه الحاجات المفروض تعملها عشان ميخلص البرد الاسم الالتهاب الرئوي؟

Appendix D

The classification of the questions according to the four categories that will be assessed

Questions assessing Knowledge of Material:

What did the father do wrong that made Farah/Montasser ill?

What did Farah/Montasser do right in order to be cured and not have pneumonia again?

Questions assessing enjoyment of activity:

How much did you like coloring the book?

- You liked it little amount
- You liked it a medium amount
- You liked it very much

How much did you like the story?

- You liked it little amount
- You liked it a medium amount
- You liked it very much

Questions assessing Identification:

How much do you like Farah/Montasser?

- You liked him/her a little amount
- You liked him/her a medium amount
- You liked him/her very much

Why do you like him/her (little amount – medium amount – a lot)?

Pick which one you see as the most like you?

- Montasser
- Farah

Why did you pick Farah/Montasser?

Pick the one that you would most want to have as a friend.

- Montasser
- Farah
- Why did you pick Farah/Montasser?

What are the things that Farah/Montasser did that you liked?

Question assessing intentions towards pneumonia prevention:

What are the things you should do in order not to get pneumonia?

Appendix E

Interview Questions Used after Intervention with One Week

Age:

Group:

- 1) Do you remember the story of Montasser/Farah?
 - Yes
 - No
- 2) What did the father do wrong that made Montasser/Farah ill?
- 3) What did Montasser/Farah do right in order to be cured and not have pneumonia again?

**Arabic Version of the Questions that will be Used
after the Intervention with One Week**

الاسئلة التي سوف تسال بعد اسبوع:

السن:

1 فاكر قصة منتصر / فرح؟

*نعم

*لا

2 بابا منتصر / فرح عمل ايه غلط خلى منتصر / فرح يعيي / تعيي؟

3 منتصر / فرح عمل ايه صح عشان يخف و ميجلوش البرد الاسم الالتهاب الرئوي مرة ثانية؟